Intertek Legal Entity: Intertek Testing Services Shenzhen Ltd. Guangzhou Branch
Address: Block E, No.7-2 Guang Dong Software Science Park, Caipin Road,
Guangzhou Science City, GETDD Guangzhou, China
Tel / Fax: 86-20-8213 9688/86-20-3205 7538
Website : www.intertek.com

Test Verification of Conformity

On the basis of the referenced test report(s), sample(s) of the below product have been found to comply with the harmonized standards and Directives listed on this verification at the time the tests were carried out. Other standards and Directives may be relevant to the product.

Once all product relevant CE mark directives are verified in compliance, the manufacturer may indicate compliance by signing a Declaration of Conformity themselves and applying the mark to product identical to the test sample(s) if the product complies with all relevant CE mark Directives requirements.

Applicant Name & Address:	GUANGDONG BE-TECH SECURITY SYSTEMS LIMITED . NO. 17, Keyuan 3 Road, Ronggui, Shunde High-Tech Zone, Foshan, Guangdong, P.R.China
Product Description:	Handheld Service Unit
Ratings & Principle Characteristics:	DC 6V
Models:	RD-08
Brand Name:	BE-TECH
Relevant Standards/ Specifications/Directives:	EN 61000-6-1: 2007/ Electromagnetic compatibility (EMC) — Part 6-1: Generic standards — Immunity for residential, commercial and light-industrial environments EN 61000-6-3: 2007+A1: 2011/ Electromagnetic compatibility (EMC) — Part 6-3: Generic standards — Emission standard for residential, commercial and light-industrial environments EMC Directive 2004/108/EC
Verification Issuing Office:	Same as Legal Entity
Date of Tests:	07 May 2014-21 May 2014
Test Report Number(s):	140324103GZU-002: 30 May 2014

Note 1: This verification is part of the full test report(s) and should be read in conjunction with them.

Signature: Helen Ma
Name: Helen Ma
Position: Sr. Project Engineer
Date: 30 May 2014

Report No.: 140324103GZU-002
Issued: 30 May 2014

TEST REPORT

Applicant Name & Address	:	GUANGDONG BE-TECH SECURITY SYSTEMS LIMITED . NO. 17, Keyuan 3 Road, Ronggui, Shunde High-Tech Zone, Foshan, Guangdong, P.R.China
Manufacturing Site	:	Same as applicant
Sample Description		
Product	:	Handheld Service Unit
Model No.	:	RD-08
Electrical Rating	:	DC 6V
Date Received	:	07 May 2014
Date Test Conducted	:	07 May 2014-21 May 2014
Test standards	:	**EN 61000-6-1: 2007** **EN 61000-6-3: 2007+A1: 2011**
Test Result	:	Pass
Conclusion	:	The submitted samples complied with the above EMC standards.
Remark	:	None.

**********End of Page**********

Prepared and Checked By:

John Meng

John Meng
Engineer
Intertek Guangzhou

Approved By:

Helen Ma ***Signature***

Helen Ma
Sr. Project Engineer
Intertek Guangzhou
30 May 2014 ***Date***

Intertek Testing Services Shenzhen Ltd. Guangzhou Branch
Block E, No.7-2 Guang Dong Software Science Park, Caipin Road, Guangzhou Science City, GETDD Guangzhou, China
Tel / Fax: 86-20-8213 9688/86-20-3205 7538

CONTENT

1 TEST RESULTS SUMMARY

Test Item	Standard	Result
Continuous conducted disturbance voltage	EN 61000-6-3:2007+A1: 2011 Reference: EN 55022: 2010	N/A
Discontinuous conducted disturbance voltage	EN 61000-6-3:2007+A1: 2011 Reference: EN 55014-1: 2006+A1: 2009	N/A
Emission at Telecommunications/ network Ports	EN 61000-6-3:2007+A1: 2011 Reference: EN 55022: 2010	N/A
Radiated emission (30 MHz–1000 MHz)	EN 61000-6-3:2007+A1: 2011 Reference: EN 55022: 2010	Pass
Radiated emission (1 GHz–6 GHz)	EN 61000-6-3:2007+A1: 2011 Reference: EN 55022: 2010	N/A
Harmonic of current	EN 61000-6-3:2007+A1: 2011 Reference: EN 61000-3-2: 2006+A1: 2009+A2: 2009	N/A
Flicker	EN 61000-6-3:2007+A1: 2011 Reference: EN 61000-3-3: 2013	N/A
ESD immunity	EN 61000-6-1:2007 Reference: EN 61000-4-2: 2009	Pass
Radiated EM field immunity	EN 61000-6-1:2007 Reference: EN 61000-4-3 :2006 +A1:2008 + A2:2010	Pass
EFT immunity	EN 61000-6-1:2007 Reference: EN 61000-4-4: 2012	N/A
Surge immunity	EN 61000-6-1:2007 Reference: EN 61000-4-5: 2006	N/A
Inject current immunity	EN 61000-6-1:2007 Reference: EN 61000-4-6: 2009	N/A
Power frequency magnetic field immunity	EN 61000-6-1:2007 Reference: EN 61000-4-8: 2010	N/A
Voltage dips and interruption immunity	EN 61000-6-1:2007 Reference: EN 61000-4-11: 2004	N/A

Remark: 1. The symbol "N/A" in above table means Not Applicable.
2. When determining the test results, measurement uncertainty of tests has been considered.

.

2 EMC Results Conclusion
(with Justification)

RE: EMC Testing Pursuant to EMC Directive 2004/108/EC Performed On the Handheld Service Unit, Models: RD-08.

We tested the Handheld Service Unit, Models: RD-08, to determine if it was in compliance with the relevant EN standards as marked on the Test Results Summary. We found that the unit met the requirement of EN 61000-6-3, EN 61000-6-1 (EN 61000-4-2), EN 61000-6-1 (EN 61000-4-3) standards when tested as received. The worst case's test data was presented in this test report. Test item Radiated EM Field Immunity was subcontracted.

The production units are required to conform to the initial sample as received when the units are placed on the market.

3 LABORATORY MEASUREMENTS

Configuration Information

Equipment Under Test (EUT):	Handheld Service Unit
Model:	RD-08
Serial No.	Not Labeled
Support Equipment:	Laptop supplied by Intertek and Lock supplied by client
Rated Voltage:	DC 6V
Condition of Environment:	Temperature : 22~28°C Relative Humidity: 35~60% Atmosphere Pressure 86~106kPa

Notes:
1. The EMI measurements had been made in the operating mode producing the largest emission in the frequency band being investigated consistent with normal applications.
An attempt had be made to maximize the emission by varying the configuration of the EUT.

2. The EMS measurements had been made in the frequency bands being investigated, with the EUT in the most susceptible operating mode consistent with normal applications. The configuration of the test sample had been varied to achieve maximum susceptibility.

4 EMI TEST

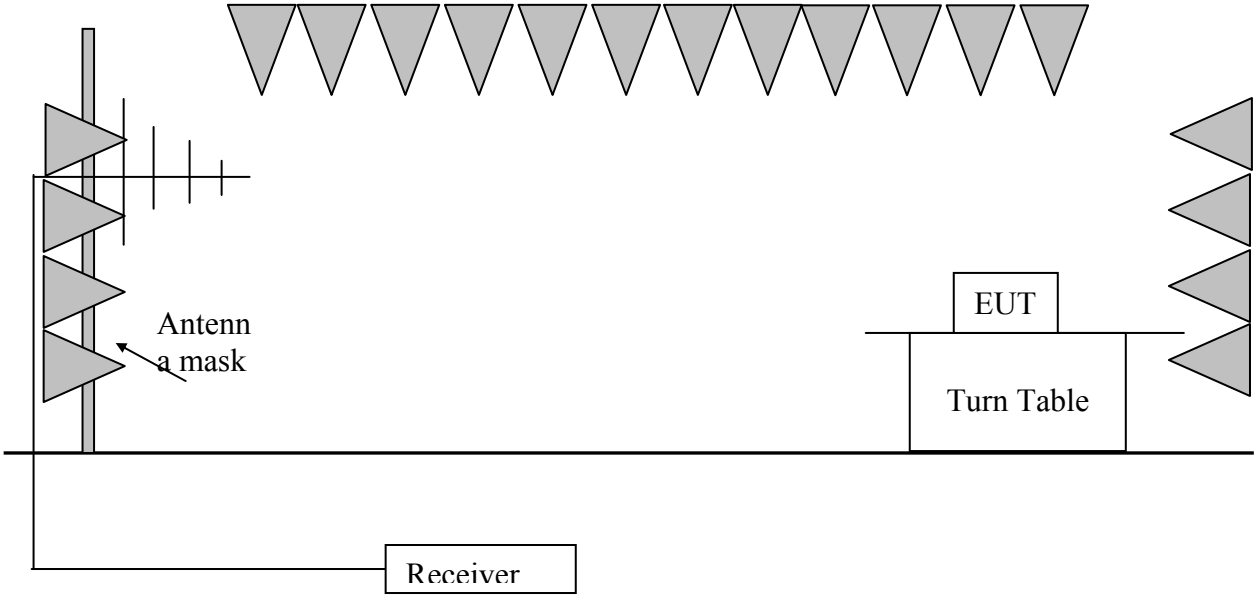
4.1 EN 61000-6-3 Radiated Emission below 1 GHz

Test Result: Pass

4.1.1 Used Test Equipment

Equip. No.	Equipment	Model	Manufacturer
EM030-01	3m Semi-Anechoic Chamber	9×6×6 m3	ETS·LINDGREN
EM030-02	Control room for 3m Semi-Anechoic Chamber	4×4×3 m3	ETS·LINDGREN
EM031-02	EMI Test Receiver (9 kHz~7 GHz)	R&S ESR7	R&S
EM061-03	TRILOG Super Broadband test Antenna（30 MHz-1.5 GHz）	VULB 9161	SCHWARZBECK
EM031-02-01	Coaxial cable	/	R&S

4.1.2 Block Diagram of Test Setup



4.1.3 Test Setup and Procedure

The measurement was applied in a semi-anechoic chamber. The EUT and simulators were placed on a 0.8m high wooden turntable above the horizontal metal ground plane. The turn table rotated 360 degrees to determine the position of the maximum emission level. The EUT was set 3 meters away from the receiving antenna which was mounted on an antenna mask. The antenna moved up and down between from 1meter to 4 meters to find out the maximum emission level.

Broadband antenna was used as receiving antenna. Both horizontal and vertical polarization of the antenna was set on measurement. In order to find the maximum emission, all of the interface cables were manipulated according to EN55022 requirement during radiated test.

The bandwidth setting on R&S Test Receiver was 120 kHz.

The frequency range from 30MHz to 1000MHz was checked

4.1.4 Test Data

Mode: Communication with PC

Antenna Polarization	Frequency [MHz]	Measured Net at 3m [dB(μV/m)]	Limit at 3m [dB(μV/m)]
Horizontal	162.8	35.7	40.0
Horizontal	168.1	35.9	40.0
Horizontal	800.0	<37.0	47.0
Vertical	96.0	32.8	40.0
Vertical	158.4	37.3	40.0
Vertical	162.6	37.0	40.0

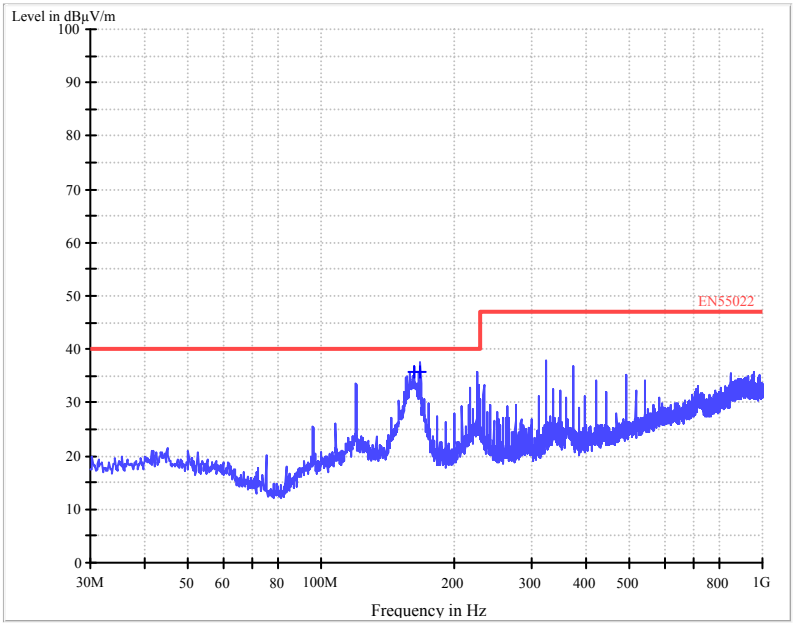
Mode: Communication with Lock

Antenna Polarization	Frequency [MHz]	Measured Net at 3m [dB(μV/m)]	Limit at 3m [dB(μV/m)]
Horizontal	214.7	32.4	40.0
Horizontal	372.0	37.0	47.0
Horizontal	800.0	<37.0	47.0
Vertical	181.6	31.4	40.0
Vertical	400.0	<37.0	47.0
Vertical	800.0	<37.0	47.0

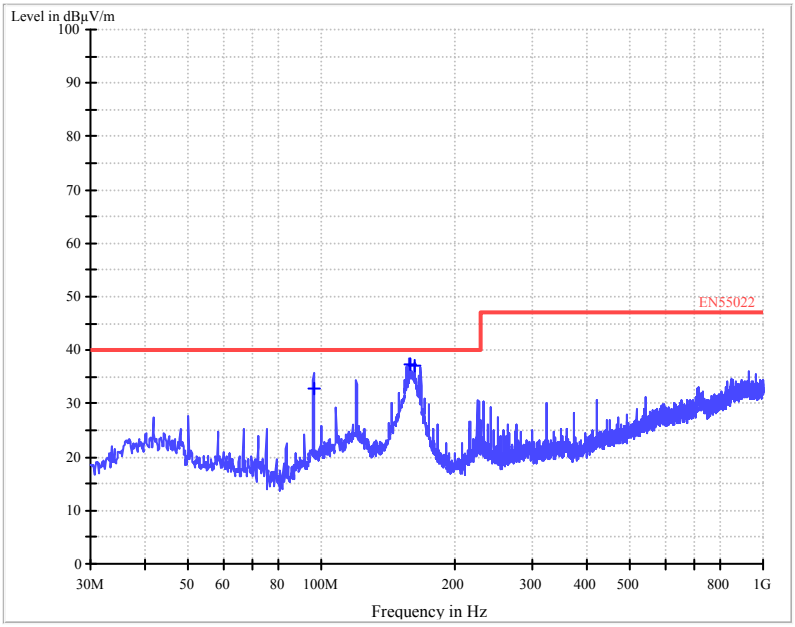
4.1.5 Test Curve

Mode: Communication with PC

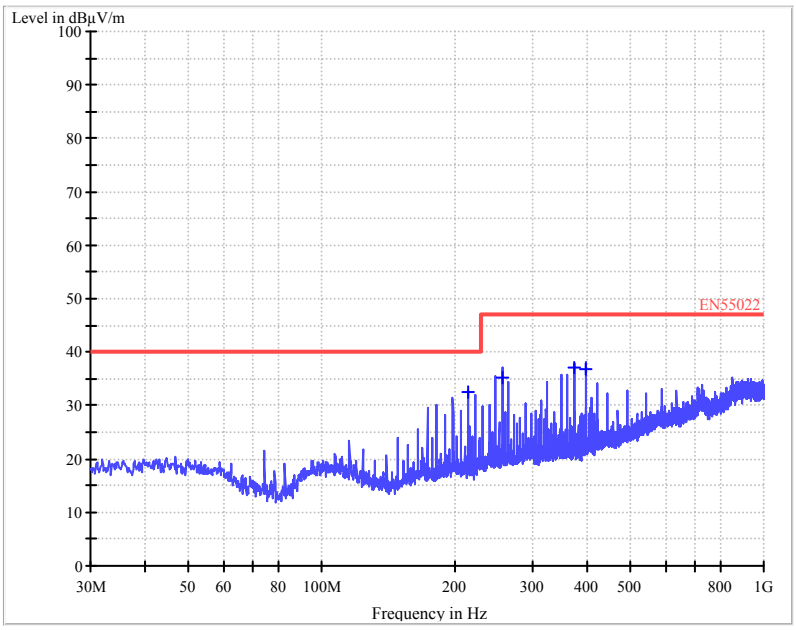
Horizontal



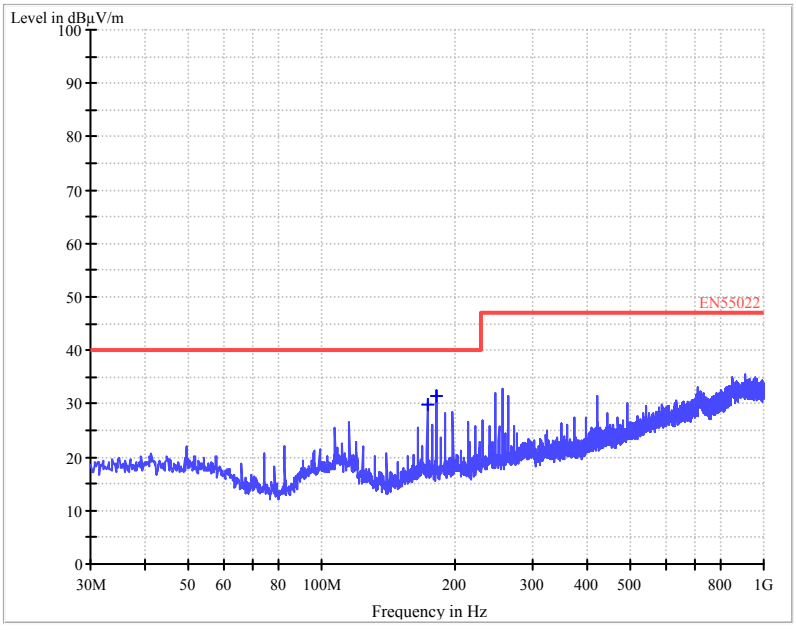
Vertical



Mode: Communication with Lock
Horizontal



Vertical



4.1.6 Measurement uncertainty

The measurement uncertainty describes the overall uncertainty of the given measured value during the operation of the EUT.
Measurement uncertainty is calculated in accordance with CISPR 16-4-2:2003.
Measurement uncertainty of radiated emission: 4.48 dB.
The measurement uncertainty is given with a confidence of 95%, k=2.

5 EMS TEST

Performance Criteria:

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 permission 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 permission 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 instruction for use.

Measurement Uncertainty
According to CISPR 16-4-2:2003, measurement uncertainty to immunity test is under consideration.

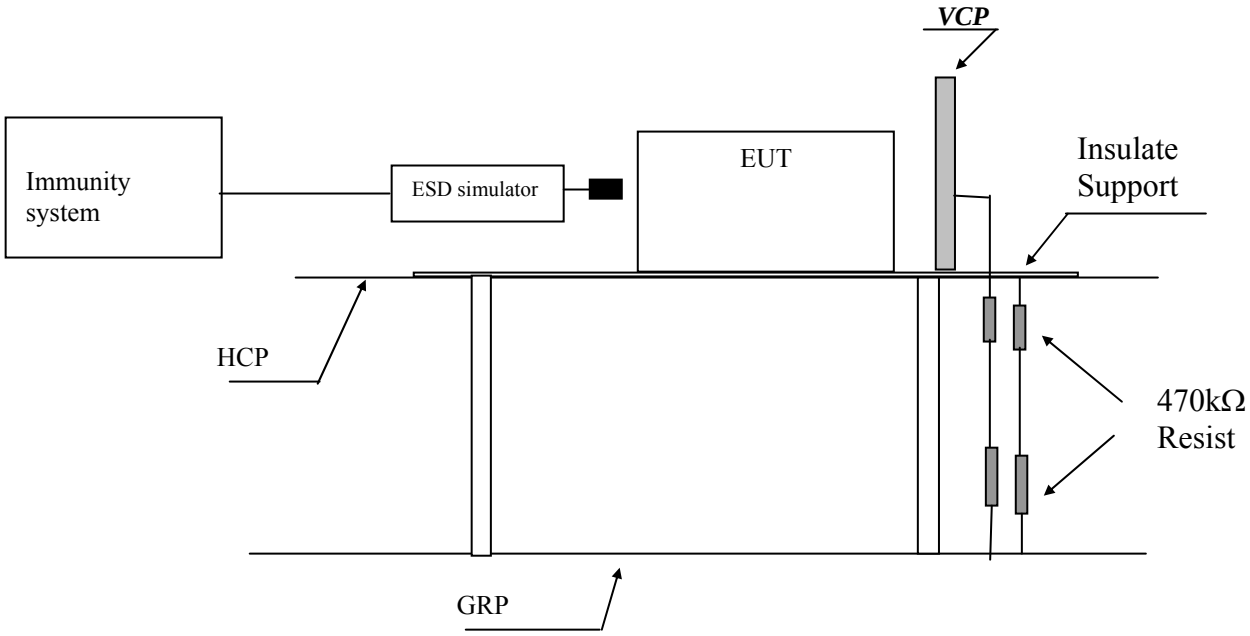
5.1 EN 61000-4-2(Pursuant to EN 61000-6-1) Electrostatic Discharge Immunity

Tested Port: Enclosure
Performance criterion: B
Test Result: Pass

5.1.1 Used Test Equipment

Equip. No.	Equipment	Model	Manufacturer
EM077-04	ESD Simulator	NSG437	TESEQ

5.1.2 Block Diagram of Test Setup



Note: HCP means Horizontal Coupling Plane,
VCP means Vertical Coupling Plane
GRP means Ground Reference Plane

5.1.3 Test Setup and Procedure

The EUT was put on a 0.8m high wooden tabel/0.1m high for floor standing equipment standing on the ground reference plane(GRP) 3m by 2m in size, made by iron 1.0 mm thick.

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 & HCP were constructed from the same material type & thinkmess 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 & VCP was greater than 1m.

The EUT was arranged and connected according to its functional requirements.
The EUT was arranged and connected according to its functional requirements

Direct static electricity discharges was applied only to those points and surface which are accessible to personnel during normal usage.

Test voltage was increased from the minimum to the selected test level and with single discharge.

On each preselected points 10 times of each polarity single discharge were applied The time interval between successive single discharges is 1s.

The ESD generator was held perpendicular to the surface to which the discharge is applied. The discharge return cable of the generator was kept at a distance of 0.2m whilst the discharge is being applied. 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.

Indirect discharge was conducted to objects placed near the EUT, simulated by applying the dischares of the ESD generator to a coupling plane, in the contact discharge mode.

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 grounded carbon fibre brush with bleeder resistors (2×470 kΩ) in the grounding cable was used after each discharge to remove remnant electrostatic voltage.

10 times of each polarity single discharge were applied to HCP and VCP. The detail selected points are listed in the following table.

5.1.4 Test Result

Direct Application of ESD

Direct Contact Discharge

Applied Voltage (kV)	No. of Discharge for each point	Result	Discharged Points
2, 4	20	Pass	Accessible metal parts of the EUT Conductive substrate with coating which is not declared to be insulating

Direct Air Discharge

Applied Voltage (kV)	No. of Discharge for each point	Result	Discharged Points
2, 4, 8	20	Pass	All accessible points where contact discharge cannot be applied such as Displays, Indicators light, Keyboard, Button, Switch, Knob, Air gap, Slots, Hole and so on

Indirect Application of ESD

Horizontal Coupling Plane under the EUT

Applied Voltage (kV)	No. of Discharge for each point	Result	Discharged Point
2, 4	20	Pass	At the front edge of each HCP opposite the centre point of each unit of the EUT

Vertical Coupling Plane beside the EUT

Applied Voltage (kV)	No. of Discharge for each point	Result	Discharged Point
2, 4	20	Pass	The centre of the vertical edge of the coupling plane

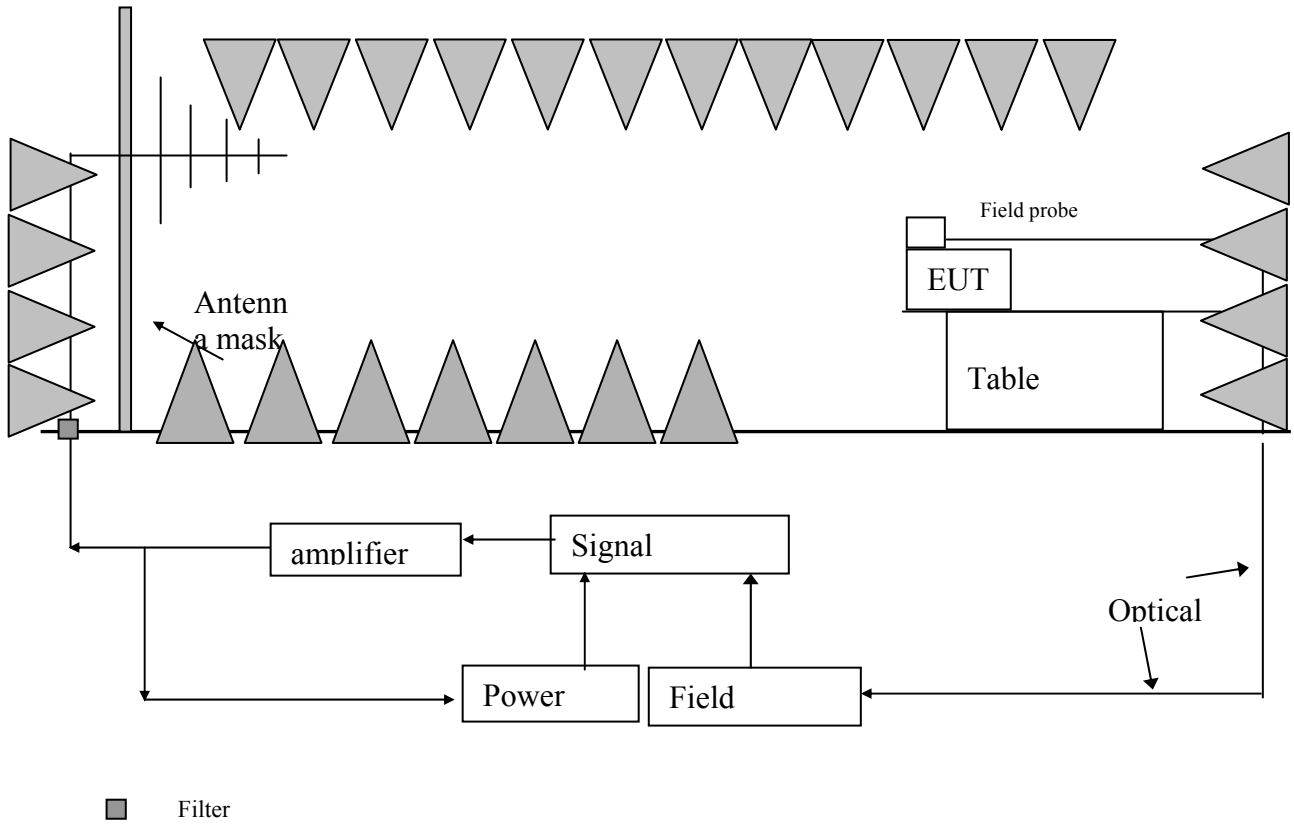
5.2 EN 61000-4-3(Pursuant to EN 61000-6-1) Radiated Electromagnetic Field Immunity

Tested Port: Enclosure
Performance criterion: A
Test Result: Pass

5.2.1 Used Test Equipment

Equipment No.	Equipment	Model	Manufacturer
NTC-E-015	Signal Generator	N5181A	Agilent
NTC-E-016	Antenna Log-Periodic	ATR80M6G	CORAD
NTC-E-018	Switch Controller	SC1000	CORAD
NTC-E-021	RF Power Meter	4242	ESE
NTC-E-022	Power Sensor	51011EMC	ESE
NTC-E-019	Power Amplifier	CBA 1G-150	TESEQ
NTC-E-025	Dual Directional Coupler	CPH-274F	TESEQ
NTC-E-013	Horn Antenna	AH-118	COM-Power

5.2.2 Block Diagram of Test Setup



5.2.3 Test Setup and Procedure

The test was conducted in an fully anechoic chamber to maintain a uniform field of sufficient dimensions with respect to the EUT, and also in order to comply with various national and international laws prohibiting interference to radio communications.

The equipment is placed in the test facility on a non-conducting table 0.8m high (for floor standing EUT, is placed on a non-conducting support 0.1m height).

The EUT was placed on the uniform calibrated plane which is 3V/m and 1V/mEM field.

For all ports connected to EUT, manufacturer specified cable type and length was used, for those cables no specification, unshielded cable applied.

Wire is left exposed to the electromagnetic field for a distance of 1m from the EUT.

The EUT was arranged and connected according to its functional requirements

Before testing, the intensity of the established field strength have been checked by placing the field sensor at a calibration grid point, and with the field generating antenna and cables in the same positions as used for the calibration, the forward power needed to give the calibrated field strength was measured.

Spot checks was made at a number of calibration grid points over the frequency range 80 to 1000MHz and 1.4 to 2.7 GHz, both polarizations was checked.

After calibration, the EUT is initially placed with one face coincident with the calibration plane.

The frequency range is swept from 80 to 1000MHz and 1.4 to 2.7 GH, with the signal 80% amplitude modulated with a 1 kHz sinewave, pausing to adjust the r.f. signal level.

The dwell time at each frequency was 3s so as that the EUT to be exercised and be able to respond.

The step size was 1% of the fundamental with linear interpolation between calibrated points. Test was performed with the generating antenna facing each of the four sides of the EUT.

5.2.4 Test Result

Frequency (MHz)	Exposed Side	Field Strength (V/m)	Result
80 to 1000	Front	3V/m (r.m.s.)	Pass
80 to 1000	Left	3V/m (r.m.s.)	Pass
80 to 1000	Rear	3V/m (r.m.s.)	Pass
80 to 1000	Right	3V/m (r.m.s.)	Pass

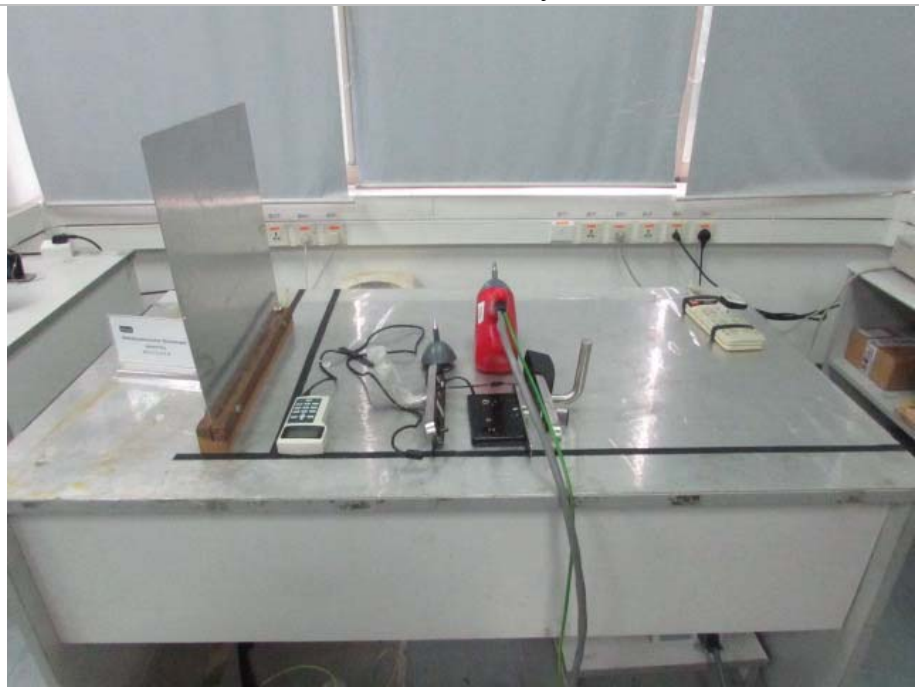
Frequency (GHz)	Exposed Side	Field Strength (V/m)	Result
1.4 to 2.0	Front	3V/m (r.m.s.)	Pass
1.4 to 2.0	Left	3V/m (r.m.s.)	Pass
1.4 to 2.0	Rear	3V/m (r.m.s.)	Pass
1.4 to 2.0	Right	3V/m (r.m.s.)	Pass

Frequency (GHz)	Exposed Side	Field Strength (V/m)	Result
2.0 to 2.7	Front	1V/m (r.m.s.)	Pass
2.0 to 2.7	Left	1V/m (r.m.s.)	Pass
2.0 to 2.7	Rear	1V/m (r.m.s.)	Pass
2.0 to 2.7	Right	1V/m (r.m.s.)	Pass

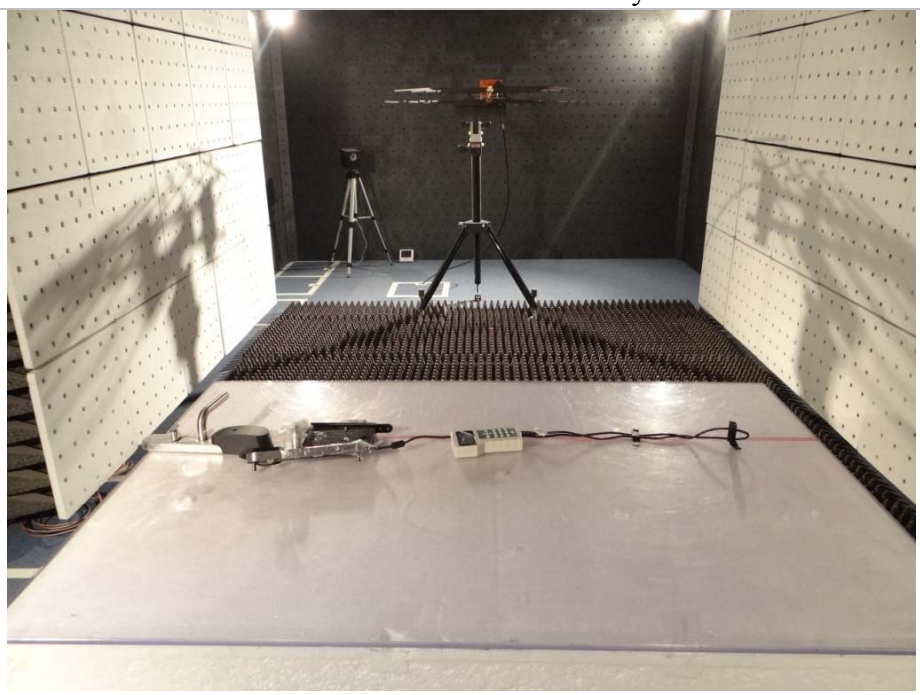
6 Appendix I - Photos of test setup

Radiated Emission

ESD Immunity



Radiated EM Field Immunity



7 Appendix II - Photos of EUT

Outside

Inside

PCB View