



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  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:	Elevator Controller
Ratings & Principle Characteristics:	100-240V, 50/60Hz
Models:	DTM
Brand Name:	---
Relevant Standards/ Specifications/Directives:	EN 55022: 2010 / Information technology equipment — Radio disturbance characteristics — Limits and methods of measurement 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:	13 August 2014 - 26 August 2014
Test Report Number(s):	140415039GZU-001: 03 September 2014

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

Signature: Name: Strong Yao
Position: Asst. Tech. Manager
Date: 03 September 2014

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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 : Elevator Controller
 Model No. : DTM
 Electrical Rating : 100-240V, 50/60Hz

Date Received : 15 April 2014

Date Test Conducted : 13 August 2014 - 26 August 2014

Test standards : EN 55022: 2010
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:

Helen Ma
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Strong Yao ***Signature***
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Asst. Tech. Manager
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03 September 2014 ***Date***

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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

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TEST RESULTS SUMMARY

Classification of EUT: Class B in EN 55022

Test Item	Standard	Result
Conducted disturbance voltage at mains ports	EN 55022: 2010	Pass
Conducted Disturbance at telecommunication ports	EN 55022: 2010	N/A
Radiated emission (30 MHz–1000 MHz)	EN 55022: 2010	Pass
Radiated emission (1 GHz–6 GHz)	EN 55022: 2010	N/A
Continuous conducted disturbance voltage	EN 61000-6-3:2007+A1: 2011 Reference: EN 55022: 2010	Pass
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	Pass
Flicker	EN 61000-6-3:2007+A1: 2011 Reference: EN 61000-3-3: 2013	Pass
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	Pass
Surge immunity	EN 61000-6-1:2007 Reference: EN 61000-4-5: 2006	Pass
Inject current immunity	EN 61000-6-1:2007 Reference: EN 61000-4-6: 2009	Pass
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	Pass

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 Elevator Controller,
Model: DTM.

We tested the Elevator Controller, Model: DTM, 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 55022, EN 61000-6-3, EN 61000-6-1 (EN 61000-4-2), EN 61000-6-1 (EN 61000-4-4), EN 61000-6-1 (EN 61000-4-6), EN 61000-6-1 (EN 61000-4-5), EN 61000-6-1 (EN 61000-4-3), &EN 61000-6-1(EN 61000-4-11) standards when tested as received.

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):	Elevator Controller
Model:	DTM
Serial No.	Not Labeled
Support Equipment:	N/A
Rated Voltage:	100-240V, 50/60Hz
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.

3. Test Sites:

Intertek Testing Services Shenzhen Ltd. Guangzhou Branch

All tests were performed at:

Block E, No.7-2 Guang Dong Software Science Park, Caipin Road, Guangzhou Science City, GETDD
Guangzhou, China

Except Radiated Disturbance was performed at:

Room 101, Block A, No.11 Jing Ye San Street, Yu Shu Industrial Park, Guangzhou Science City,
GETDD Guangzhou

4 EMI TEST

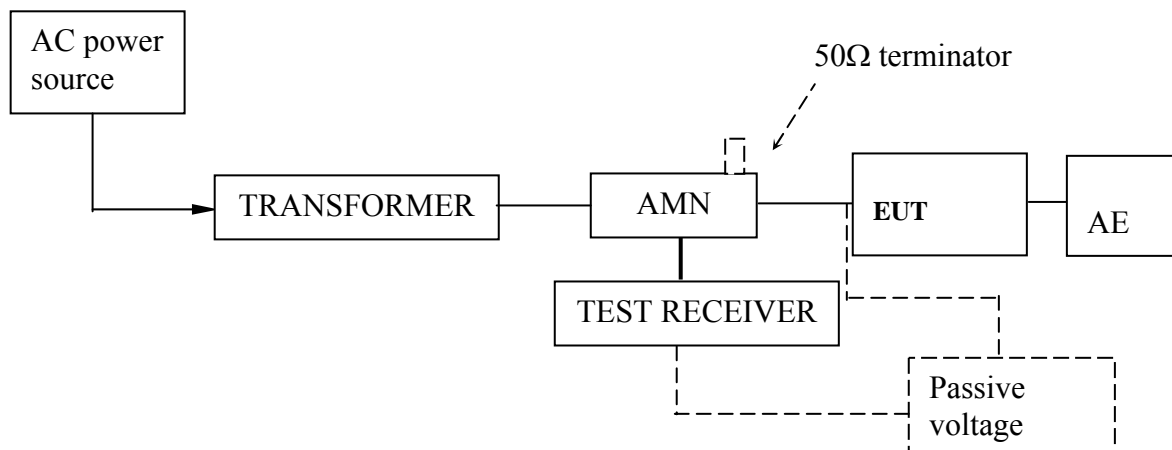
4.1 EN 61000-6-3/EN 55022 Continuous Conducted Disturbance Voltage Test

Test Result: Pass

4.1.1 Used Test Equipment

Equipment No.	Equipment	Model	Manufacturer
EM080-05	EMI receiver	ESCI	R&S
EM006-05	LISN	ENV216	R&S
EM004-04	EMC shield Room	8m×3m×3m	Zhongyu

4.1.2 Block Diagram of Test Setup



4.1.3 Test Setup and Procedure

The EUT was set to achieve the maximum emission level. The mains terminal disturbance voltage was measured with the EUT in a shielded room. The EUT was connected to AC power source through an Artificial Mains Network which provides a 50Ω linear impedance. Artificial hand is used if appropriate (for handheld apparatus). The load/control terminal disturbance voltage was measured with passive voltage probe if appropriate.

The EUT was placed on a 0.8m high non-metallic table above a metallic plane, and 0.4m from wall of shielded room which is considered as Ground Reference Plane (GRP) (For floor standing EUT, was placed on a 0.1m high non-metallic supported on GRP) The EUT keeps a distance of at least 0.8m from any other of the metallic surface. The Artificial Mains Network is situated at a distance of 0.8m from the EUT.

During the test, mains lead of EUT excess 0.8m was folded back and forth parallel to the lead so as to form a horizontal bundle with a length between 0.3m and 0.4m.

The bandwidth of test receiver was set at 9 kHz. The frequency range from 150 kHz to 30MHz was checked.

4.1.4 Test Data

At main terminal: Pass

Tested Wire: Live

Operation Mode: EUT on

EDIT PEAK LIST (Final Measurement Results)				
Trace1:	CE22QP			
Trace2:	CE22AV			
Trace3:	---			
TRACE	FREQUENCY	LEVEL dB μ V		DELTA LIMIT dB
2 Average	22.586 MHz	43.73	L1	-6.26
1 Quasi Peak	22.474 MHz	49.52	L1	-10.47
1 Quasi Peak	162 kHz	54.02	L1	-11.33
2 Average	17.39 MHz	34.50	L1	-15.49
1 Quasi Peak	270 kHz	44.91	L1	-16.20
2 Average	162 kHz	37.82	L1	-17.54
2 Average	9.982 MHz	31.16	L1	-18.83
2 Average	4.838 MHz	26.87	L1	-19.12
2 Average	270 kHz	31.38	L1	-19.73
1 Quasi Peak	17.274 MHz	38.81	L1	-21.18
1 Quasi Peak	10.018 MHz	36.30	L1	-23.69
2 Average	1.978 MHz	22.13	L1	-23.86
2 Average	2.574 MHz	21.97	L1	-24.03
1 Quasi Peak	4.902 MHz	31.81	L1	-24.18

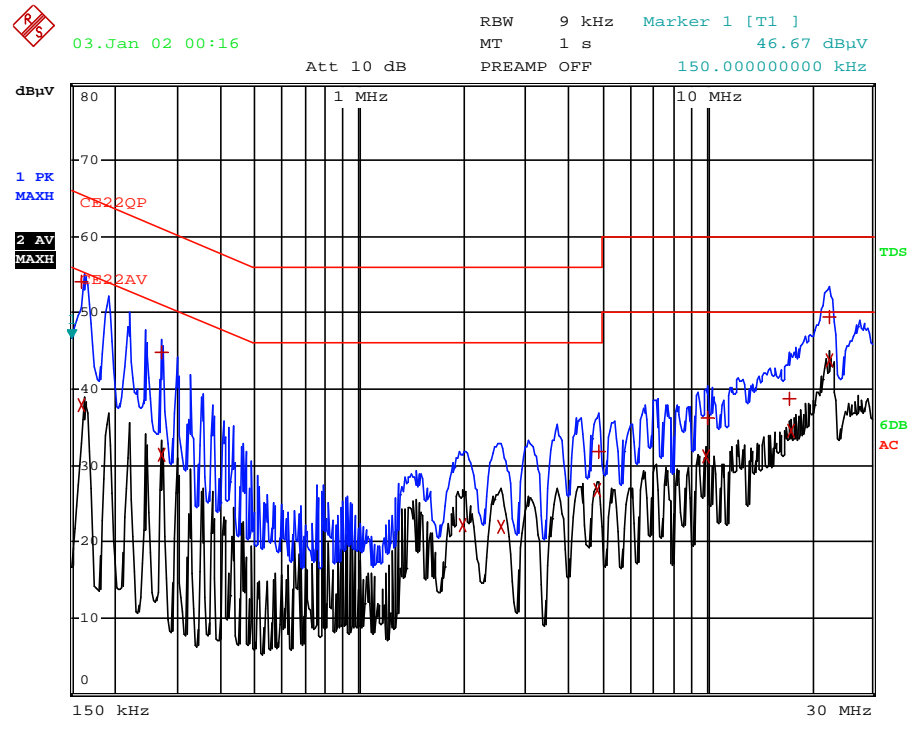
Tested Wire: Neutral

Operation Mode: EUT on

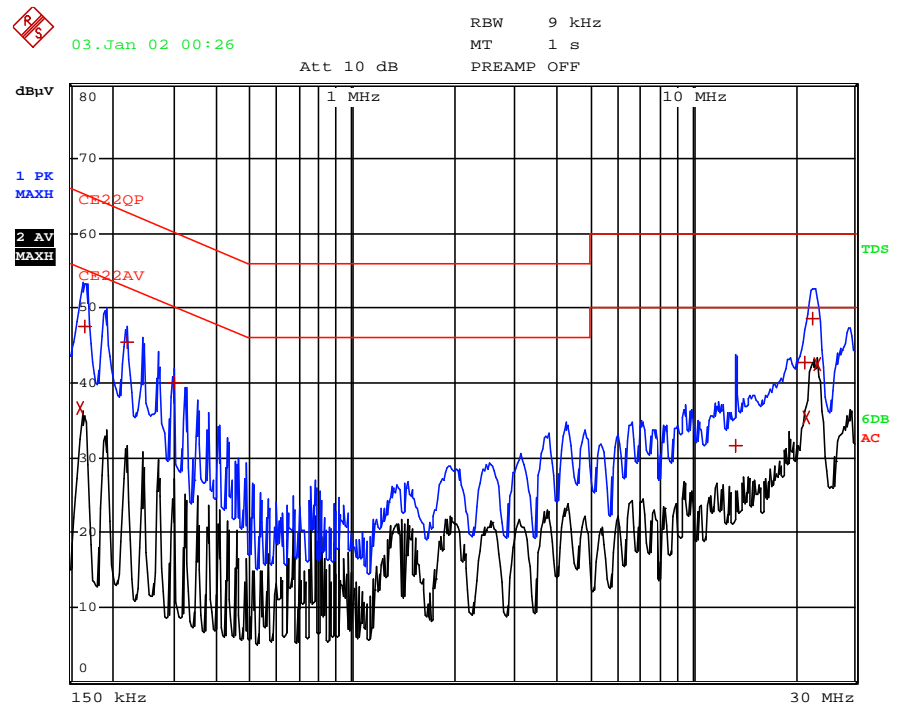
EDIT PEAK LIST (Final Measurement Results)				
Trace1:	CE22QP			
Trace2:	CE22AV			
Trace3:	---			
TRACE	FREQUENCY	LEVEL dB μ V		DELTA LIMIT dB
2 Average	23.302 MHz	42.60	L1	-7.39
1 Quasi Peak	22.594 MHz	48.68	L1	-11.31
2 Average	21.538 MHz	35.27	L1	-14.72
1 Quasi Peak	21.474 MHz	42.66	L1	-17.34
1 Quasi Peak	218 kHz	45.40	L1	-17.49
1 Quasi Peak	166 kHz	47.53	L1	-17.61
2 Average	162 kHz	36.58	L1	-18.78
1 Quasi Peak	298 kHz	39.95	L1	-20.33
1 Quasi Peak	13.426 MHz	31.70	L1	-28.29



4.1.5 Emission Curve At mains terminal: Tested Wire: Live



Tested Wire: Neutral



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 mains terminal disturbance voltage in CISPR band B: 2.58 dB.

The measurement uncertainty is given with a confidence of 95%, k=2.

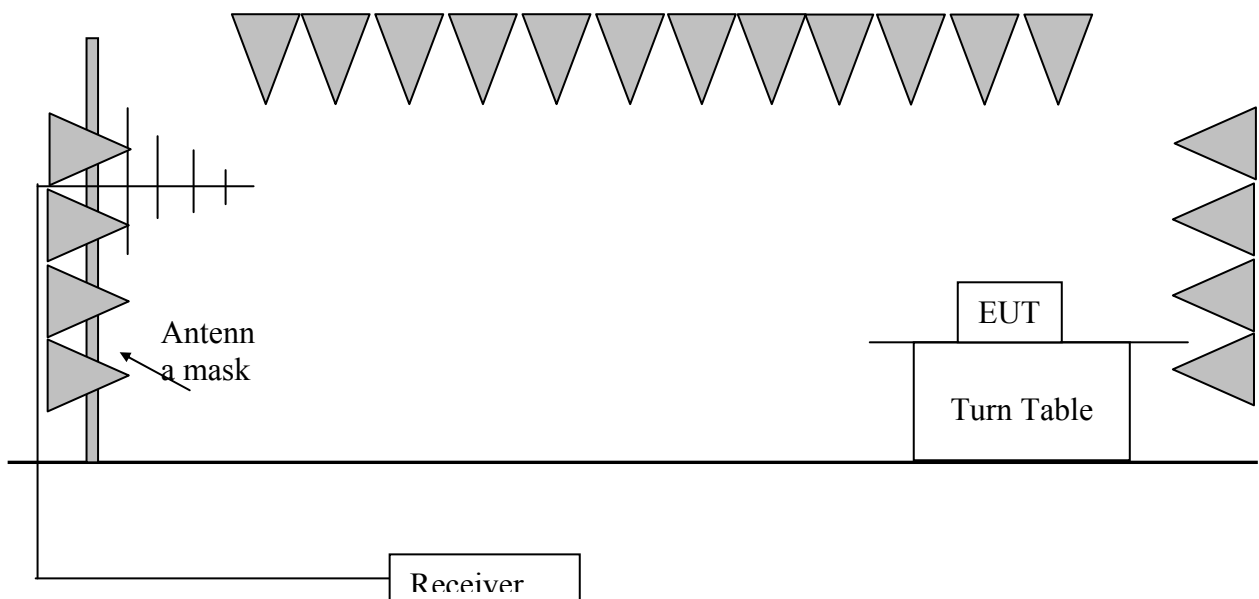
4.2 EN 61000-6-3/EN 55022 Radiated Emission below 1 GHz

Test Result: Pass

4.2.1 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
EM033-01	TRILOG Super Broadband test Antenna (30 MHz-3 GHz)	VULB 9163	SCHWARZBECK
EM031-02-01	Coaxial cable	/	R&S

4.2.2 Block Diagram of Test Setup



4.2.3 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.

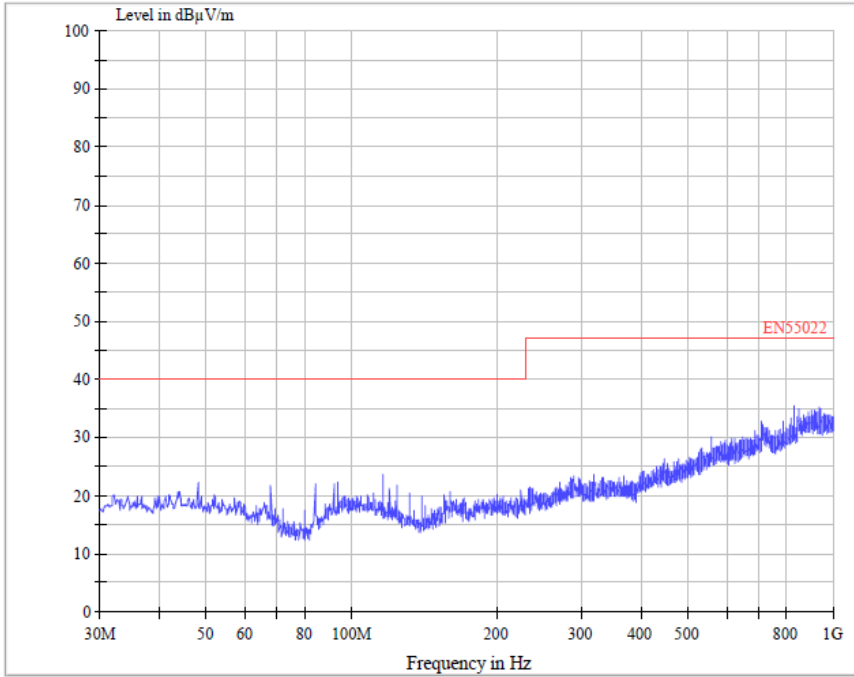
The frequency range from 30MHz to 1000MHz was checked

4.2.4 Test Data

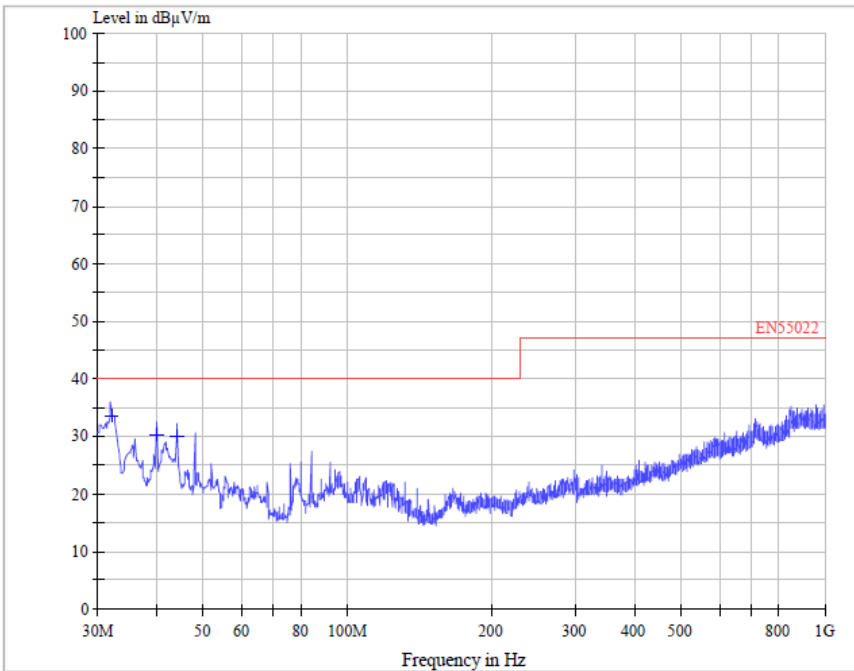
Antenna Polarization	Frequency [MHz]	Measured Net at 3m [dB(μV/m)]	Limit at 3m [dB(μV/m)]
Horizontal	200.0	< 30.0	40.0
Horizontal	400.0	< 37.0	47.0
Horizontal	800.0	< 37.0	47.0
Vertical	32.0	33.6	40.0
Vertical	40.0	30.4	40.0
Vertical	44.0	30.1	40.0

4.2.5 Test Curve

H:



V:



4.2.6 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: 4.87 dB.

The measurement uncertainty is given with a confidence of 95%, $k=2$.

4.3 EN 55022 Radiated Emission above 1 GHz

Test Result: Not Applicable

Remark:

The highest internal source of the EUT is not more than 108 MHz, so the measurement above 1000 MHz is not applicable.

5 Harmonic of Current

Test Result: Pass

Remark: This product is not defined as lighting equipment, and rated power is less than 75W, therefore, no limit applies according to EN 61000-3-2.

6 Flicker

Test Result: Pass

Remark: This product is unlikely to produce voltage flicker or fluctuation, so no flicker test was performed on the product.

7 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.

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

Tested Port: Enclosure

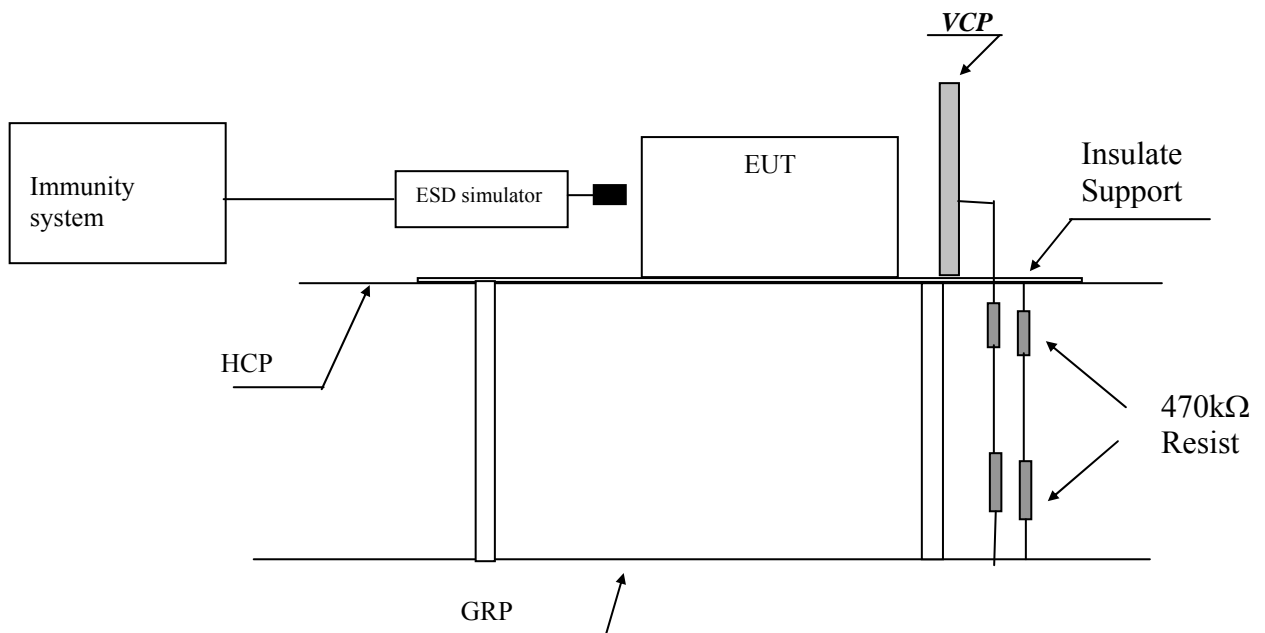
Performance criterion: B

Test Result: Pass

7.1.1 Used Test Equipment

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

7.1.2 Block Diagram of Test Setup



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

7.1.3 Test Setup and Procedure

The EUT was put on a 0.8m high wooden table/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 & 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 & 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 discharges 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 ($2 \times 470 \text{ k}\Omega$) 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.

7.1.4 Test Result

Direct Application of ESD

Direct Contact Discharge

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

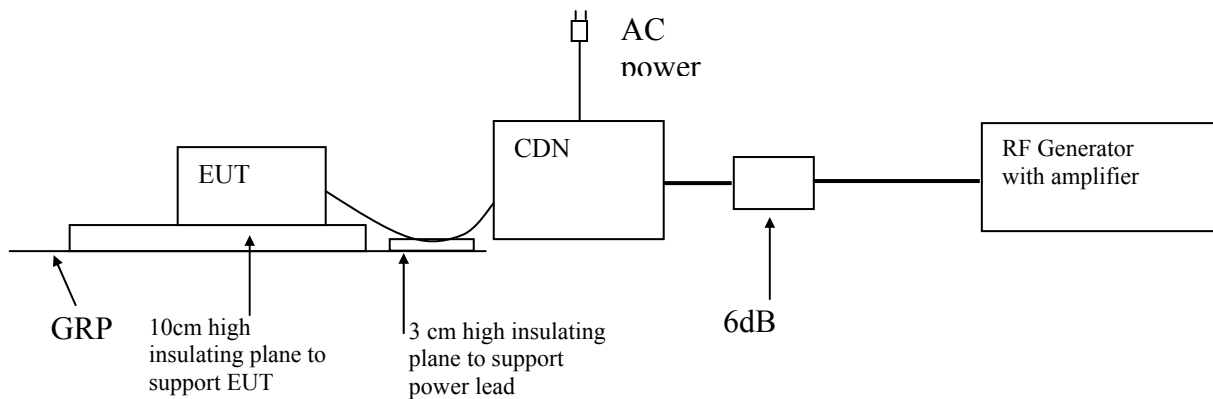
7.2 EN 61000-4-6(Pursuant to EN 61000-6-1) Injected Current (0.15 MHz to 80 MHz)

Tested Port: AC power DC power Functional earth Signal/Control
Performance criterion: A
Test Result: Pass

7.2.1 Used Test Equipment

Equip. No.	Equipment	Model	Manufacturer
EM003-01	Conducted Disturbance Generator	CDG_1020	Dr.Hubert GmbH

7.2.2 Block Diagram of Test Setup



7.2.3 Test Setup and Procedure

The EUT was placed on an insulating support of 0.1m height above a ground reference Plane, arranged and connected to satisfy its functional requirement.
 All relevant cables were provided with the appropriate coupling and decoupling devices at a distance between 0.1m and 0.3m from the projected geometry of the EUT on an insulating support of 0.03m height above the ground reference plane.
 Test voltage was verified before each testing though power meter combined in the RF generator with AMP.
 Dwell time was set to 3s and step was set as 1% to keep sufficient response time for EUT.
 The frequency from 0.15MHz to 230MHz was checked.

7.2.4 Test Result

Port:	Frequency (MHz)	Level (Pursuant to EN 61000-6-1)	Result
A.C. Power Lines	0.15 to 80	3V (r.m.s.)	Pass
D.C. Power Lines	0.15 to 80	3V (r.m.s.)	N/A
Signal Lines	0.15 to 80	3V (r.m.s.)	Pass
Control Lines	0.15 to 80	3V (r.m.s.)	N/A
Functional Earth	0.15 to 80	3V (r.m.s.)	N/A

7.3 EN 61000-4-4(Pursuant to EN 61000-6-1) Electrical Fast Transient/Burst

Tested Port: AC power DC power Functional earth Signal/Control

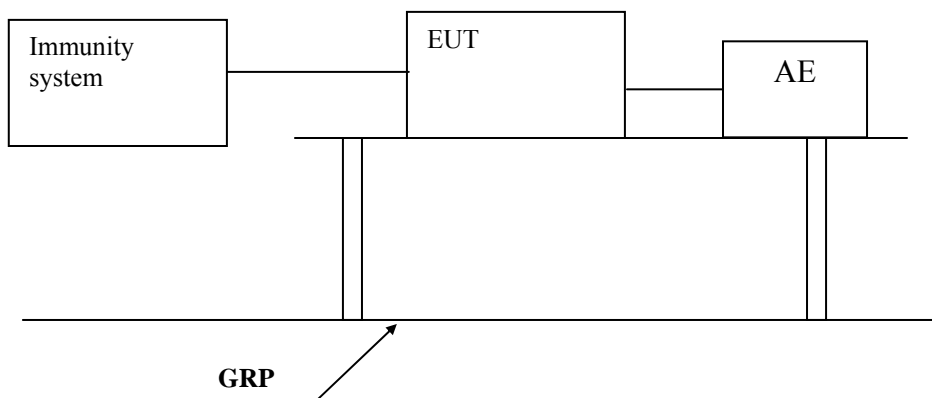
Performance criterion: B

Test Result: Pass

7.3.1 Used Test Equipment

Equip. No.	Equipment	Model	Manufacturer
EM005-07	EMS test system	Ecompact 4	HAEFELY
EM005-07-01	Capacitive Coupling Clamp	IP4A	HAEFELY

7.3.2 Block Diagram of Test Setup



7.3.3 Test Setup and Procedure

The EUT was placed on a 0.1m high wooden table, standing on the ground reference plane 3m by 2m in size, made by steel 1mm thick.

The distance between the EUT and any other of the metallic surface except the GRP is greater than 0.5m.

The mains lead excess than 0.5m is folded to avoid a flat coil and situated at a distance of 0.1m above the ground reference plane to insure the distance between the coupling device and the EUT were 0.5m.

The EUT was arranged and connected to satisfy its functional requirement and supplied by the coupling-decoupling network.

7.3.4 Test Result

Level (Pursuant to EN 61000-6-1)	Polarity	A.C. Power supply line and functional earth terminal	D.C. Power Lines, Signal Line & Control Line
0.5kV	+	N/A	Pass
0.5kV	-	N/A	Pass
1kV	+	Pass	N/A
1kV	-	Pass	N/A

7.4 EN 61000-4-5(Pursuant to EN 61000-6-1) Surge Immunity

Tested Port: AC power DC power

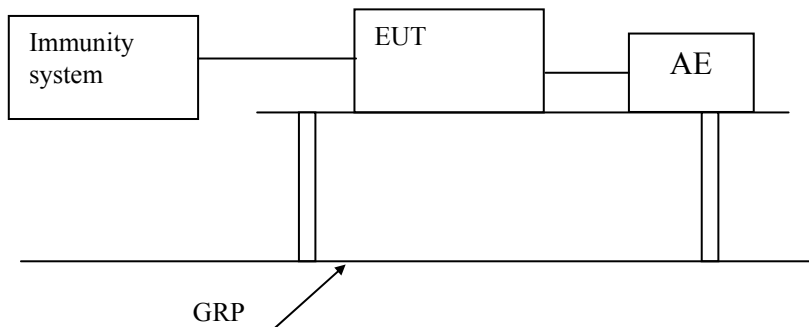
Performance criterion: B

Test Result: Pass

7.4.1 Used Test Equipment

Equip. No.	Equipment	Model	Manufacturer
EM005-09	Surge/DIP Generator	NSG3040	TESEQ

7.4.2 Block Diagram of Test Setup



7.4.3 Test Setup and Procedure

The surge is to be applied to the EUT power supply terminals via the capacitive coupling network.

Decoupling networks are required in order to avoid possible adverse effects on equipment not under test that may be powered by the same lines and to provide sufficient decoupling impedance to the surge wave so that the specified wave may be developed on the lines under test.

The EUT was arranged and connected according to its functional requirements. The EUT was placed on a 0.1m high wooden support above the GRP, supplied by the coupling-decoupling network, and arranged and connected to satisfy its functional requirement and the power cord between the EUT and the coupling/decoupling network was less than 2 meters.

Surge is applied to the EUT power supply terminals.

7.4.4 Test Result

Tested Port	Level (Pursuant to EN 61000-6-1)	Result
AC power	Line to line ± 0.5 kV, ± 1 kV	Pass
AC power	Line to earth ± 0.5 kV, ± 1 kV, ± 2 kV	N/A
DC power	Line to line ± 0.5 kV	N/A
DC power	Line to earth ± 0.5 kV	N/A

7.5 EN 61000-4-11(Pursuant to EN 61000-6-1) Voltage Dips and Interruptions

Tested Port: AC power

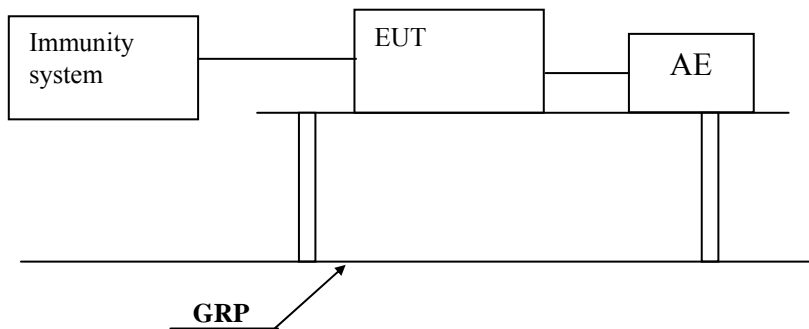
Performance criterion: B (only for test level of 70% U_t with 0.5 cycle), C

Test Result: Pass

7.5.1 Used Test Equipment

Equip. No.	Equipment	Model	Manufacturer
EM005-07	EMS test system	Ecompact 4	HAEFELY

7.5.2 Block Diagram of Test Setup



7.5.3 Test Setup and Procedure

The EUT was placed on an insulating support of 0.8m height, standing on a ground reference plane, and arranged and connected to satisfy its functional requirement

The test was performed with the EUT connected to the test generator with the shortest power supply cable as specified by the EUT manufacturer.

The EUT was tested for each selected combination of test level and duration with a sequence of three dips/interruptions with intervals of 10 s minimum. Each representative mode of operation was tested.

EUT is tested for voltage dips of 100%U_T, 250 period, 40%U_T, 5 periods and 70%U_T, 0.5 periods, for 100%U_T, both the positive and negative polarity test was conducted.

Abrupt changes in supply voltage was occur at zero crossings of the voltage.

7.5.4 Test Result

Test condition (Pursuant to EN 61000-6-1)		Result
Test Level in %U _T	Duration (in period of the rated frequency)	
0	0.5	Pass
0	1	Pass
0	250/300 at 50/60Hz	Pass
70	25/30 at 50/60Hz	Pass

Remark: U_T is the rated voltage for the equipment.

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

Tested Port: Enclosure

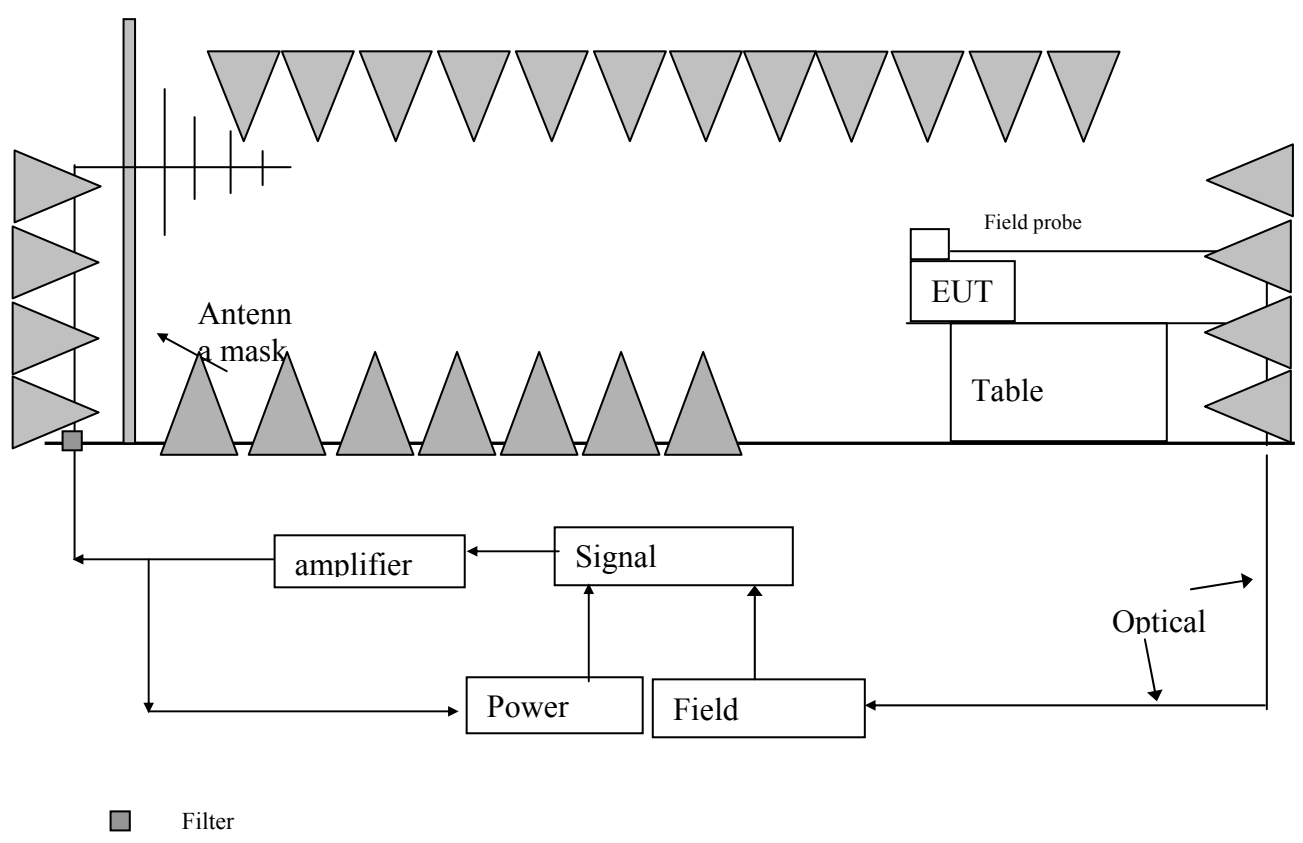
Performance criterion: A

Test Result: Pass

7.6.1 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

7.6.2 Block Diagram of Test Setup



7.6.3 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.

7.6.4 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

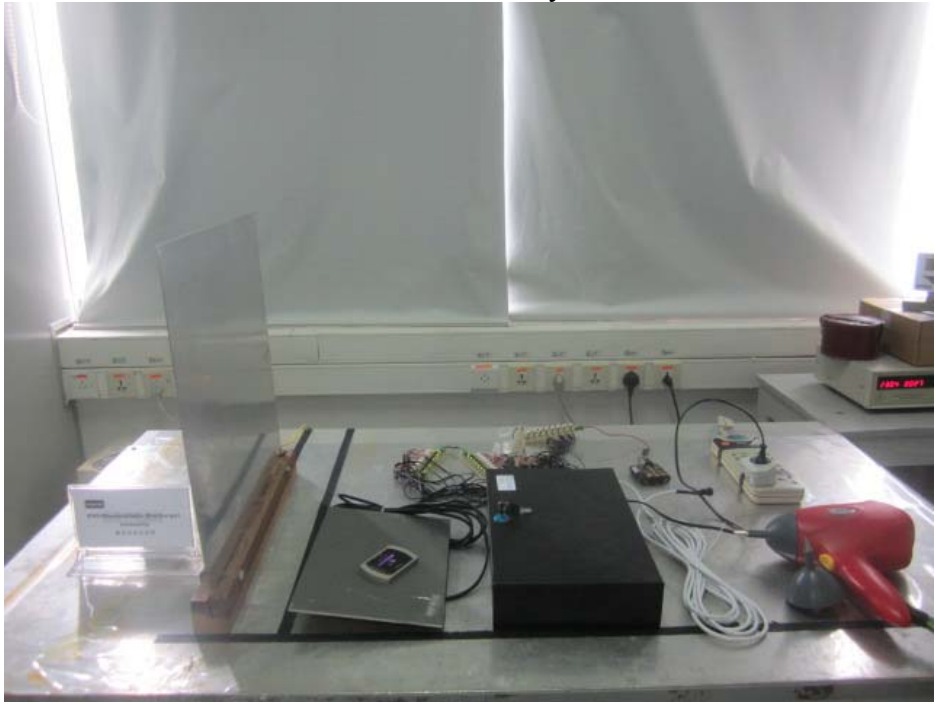
Frequency (GHz)	Exposed Side	Field Strength (V/m)	Result
2.0 to 2.7	Front	1V/m (r.m.s.)	Pass
2.0 to 2.7	Left	1V/m (r.m.s.)	Pass
2.0 to 2.7	Rear	1V/m (r.m.s.)	Pass
2.0 to 2.7	Right	1V/m (r.m.s.)	Pass

8 Appendix I - Photos of test setup

Conducted Emission



ESD Immunity



Conducted Immunity



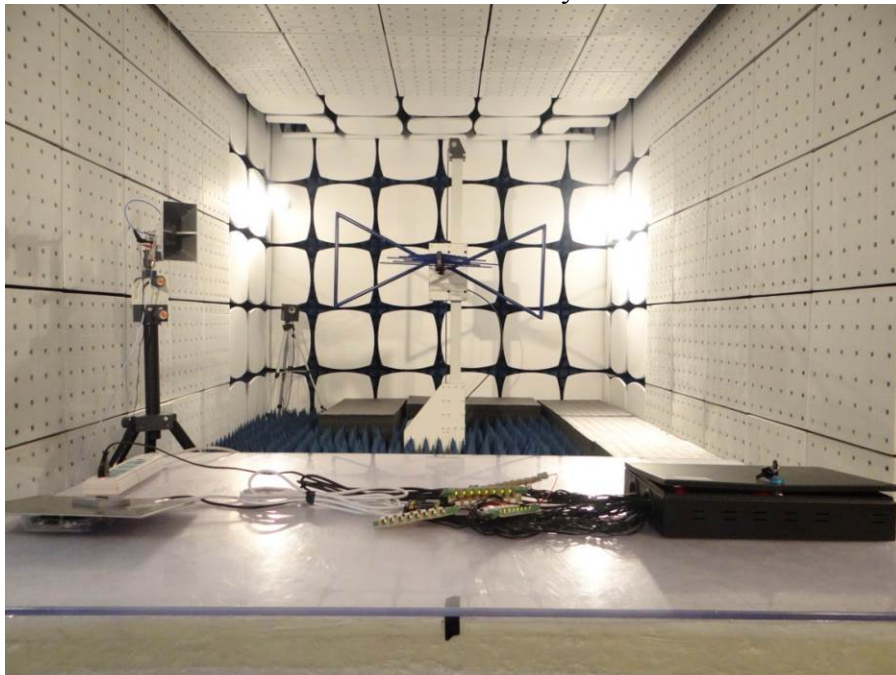
EFT/DIP Immunity



Surge Immunity



Radiated Immunity



9 Appendix II - Photos of EUT

