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:	Door Control Unit
Ratings & Principle Characteristics:	Input: 12V DC
Models:	MJM
Brand Name:	BE-TECH
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:	05 Nov.,2014 - 06 Dec.,2014
Test Report Number(s):	141031047GZU-001: 12 May 2015

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

Signature: Strongyao
Name: Strong Yao
Position: Asst. Manager
Date: 12 May 2015

This Verification is for the exclusive use of Intertek's client and is provided pursuant to the agreement between Intertek and its Client. Intertek's responsibility and liability are limited to the terms and conditions of the agreement. Intertek assumes no liability to any party, other than to the Client in accordance with the agreement, for any loss, expense or damage occasioned by the use of this Verification. Only the Client is authorized to permit copying or distribution of this Verification. Any use of the Intertek name or one of its marks for the sale or advertisement of the tested material, product or service must first be approved in writing by Intertek. The observations and test/inspection results referenced in this Verification are relevant only to the sample tested/inspected. This Verification by itself does not imply that the material, product, or service is or has ever been under an Intertek certification program.

Report No.: 141031047GZU-001
Issued: 12 May 2015

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	:	Door Control Unit
Model No.	:	MJM
Electrical Rating	:	Input: 12V DC
Date Received	:	04 Nov.,2014
Date Test Conducted	:	05 Nov.,2014 - 06 Dec.,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

Helen Ma
Team Leader
Intertek Guangzhou

Approved By:

Strong Yao ***Signature***

Strong Yao
Asst. Manager
Intertek Guangzhou
12 May 2015 ***Date***

This report is for the exclusive use of Intertek's Client and is provided pursuant to the agreement between Intertek and its Client. Intertek's responsibility and liability are limited to the terms and conditions of the agreement. Intertek assumes no liability to any party, other than to the Client in accordance with the agreement, for any loss, expense or damage occasioned by the use of this report. Only the Client is authorized to permit copying or distribution of this report and then only in its entirety. Any use of the Intertek name or one of its marks for the sale or advertisement of the tested material, product or service must first be approved in writing by Intertek. The observations and test results in this report are relevant only to the sample tested. This report by itself does not imply that the material, product, or service is or has ever been under an Intertek certification program.
The test report only allows to be revised within three years from its original issued date unless further standard or the requirement was noticed.

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

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 Door Control Unit, Model: MJM.

We tested the Door Control Unit, Model: MJM, 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 product was tested EN55022 according client's requirement.

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):	Door Control Unit
Model:	MJM
Serial No.	Not Labeled
Support Equipment:	Adaptor: model no.: GFP361DA-1230-1 Input: 100-240V, 50-60Hz, 1.2A Output: 12V DC 3A
Rated Voltage:	12V DC
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

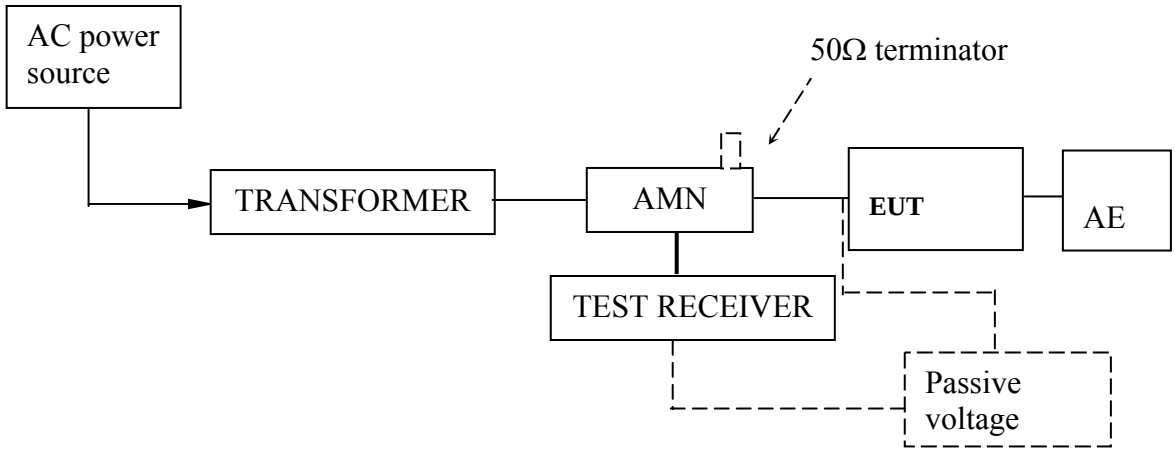
4.1 EN 61000-6-3/EN 55022 Continuous Conducted Disturbance Voltage Test

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**

Frequency	Quasi-Peak		Average	
[MHz]	Disturbance level [dB(µV)]	Permitted limit [dB(µV)]	Disturbance level [dB(µV)]	Permitted limit [dB(µV)]
0.160	<55	65.5	<45	55.5
0.240	<52	62.1	<42	52.1
0.550	<46	56.0	<36	46.0
1.000	<46	56.0	<36	46.0
1.400	<46	56.0	<36	46.0
2.000	<46	56.0	<36	46.0
3.500	<46	56.0	<36	46.0
6.000	<50	60.0	<40	50.0
10.000	<50	60.0	<40	50.0
22.000	<50	60.0	<40	50.0
30.000	<50	60.0	<40	50.0

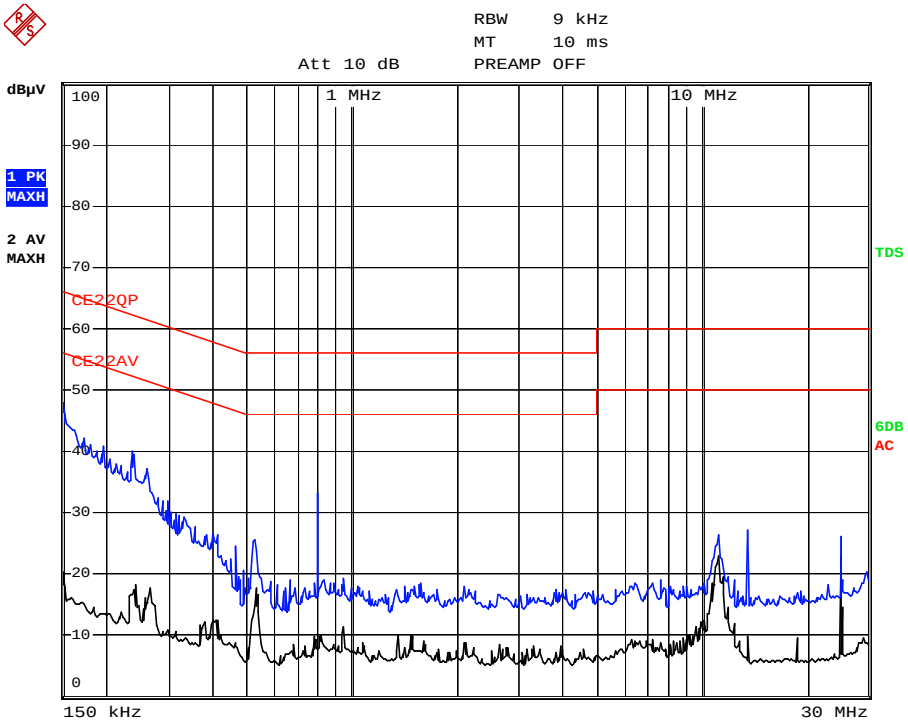
Tested Wire: Neutral **Operation Mode: EUT on**

Frequency	Quasi-Peak		Average	
[MHz]	Disturbance level [dB(µV)]	Permitted limit [dB(µV)]	Disturbance level [dB(µV)]	Permitted limit [dB(µV)]
0.160	<55	65.5	<45	55.5
0.240	<52	62.1	<42	52.1
0.550	<46	56.0	<36	46.0
1.000	<46	56.0	<36	46.0
1.400	<46	56.0	<36	46.0
2.000	<46	56.0	<36	46.0
3.500	<46	56.0	<36	46.0
6.000	<50	60.0	<40	50.0
10.000	<50	60.0	<40	50.0
22.000	<50	60.0	<40	50.0
30.000	<50	60.0	<40	50.0

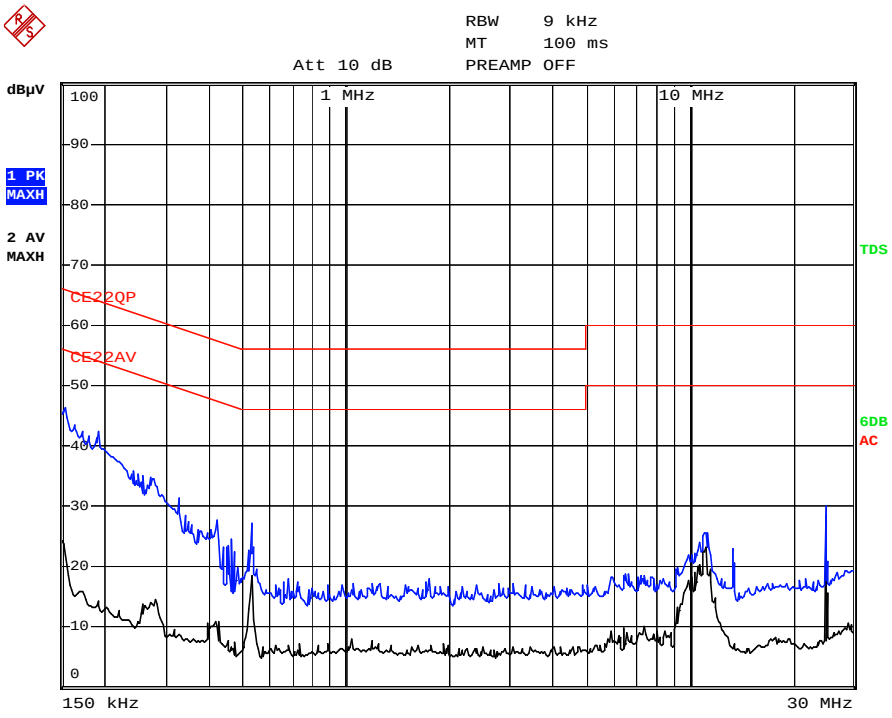
4.1.5 Emission Curve

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.

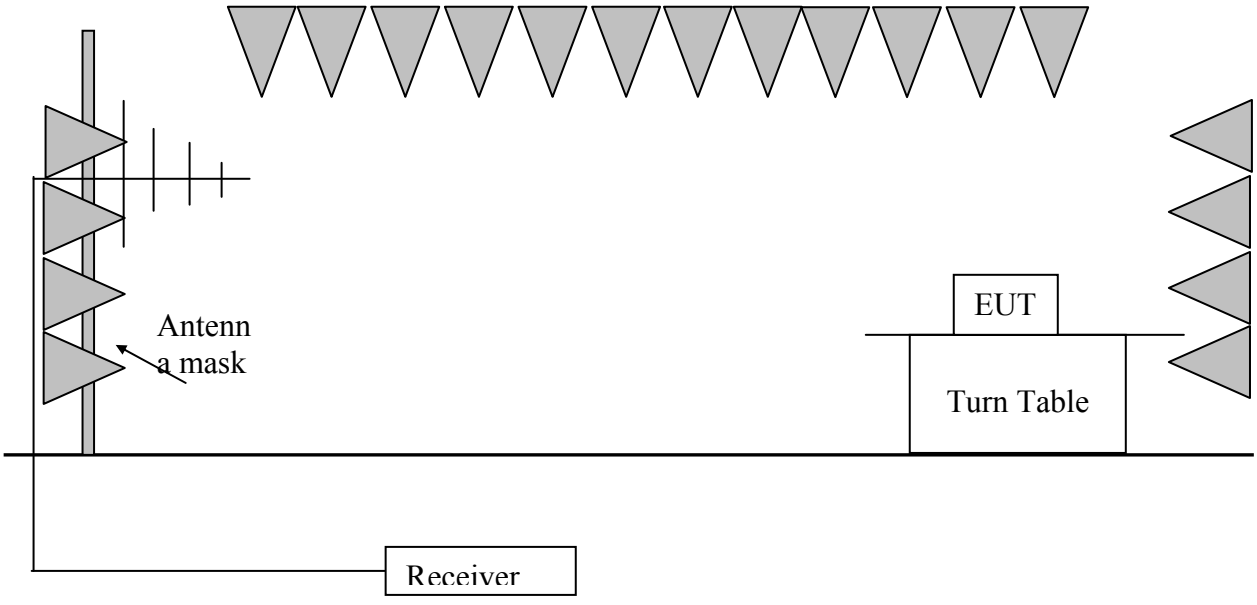
4.2 EN 61000-6-3/EN 55022 Radiated Emission below 1 GHz

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.

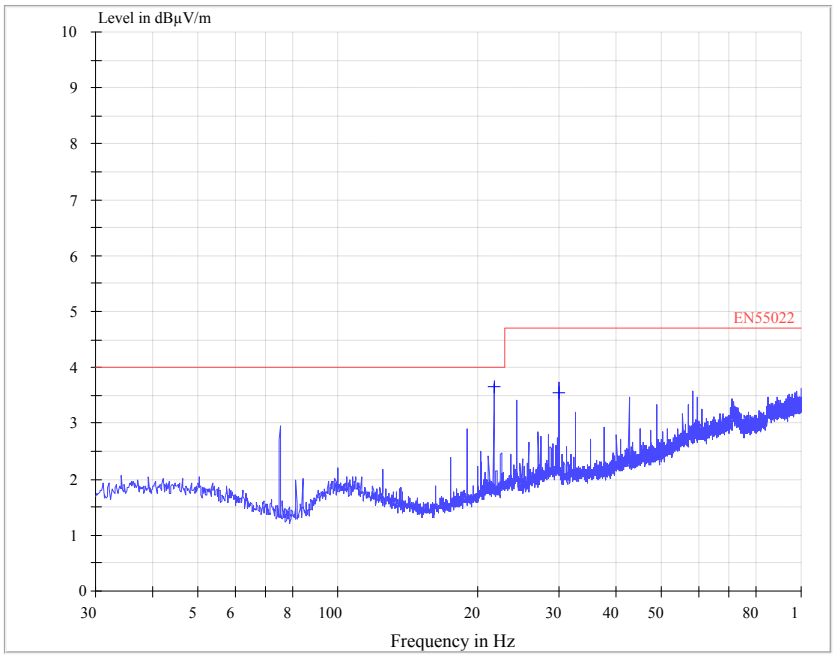
The frequency range from 30MHz to 1000MHz was checked

4.2.4 Test Data

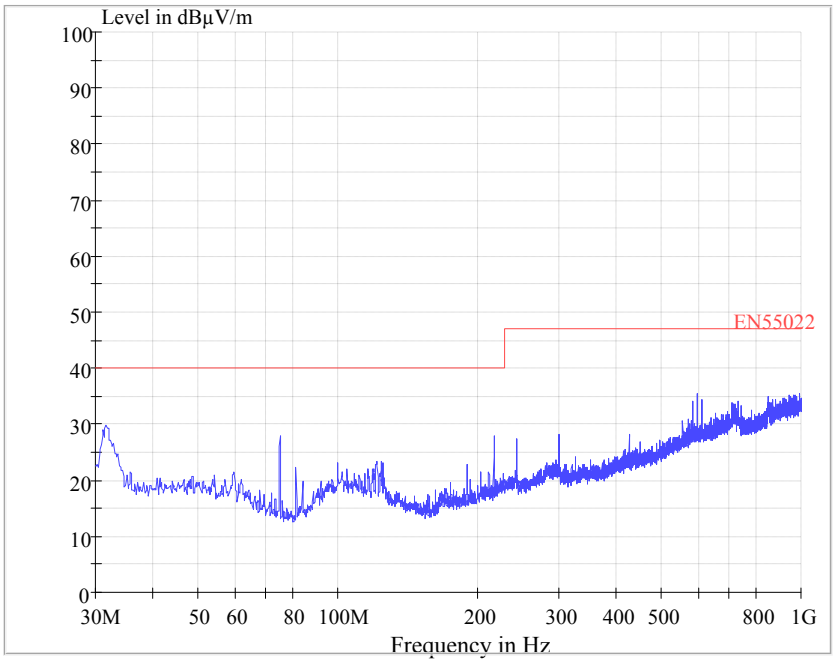
Antenna Polarization	Frequency [MHz]	Measured Net at 3m [dB(µV/m)]	Limit at 3m [dB(µV/m)]
Horizontal	200.000	< 30.0	40.000
Horizontal	216.000	36.500	40.000
Horizontal	300.000	35.600	47.000
Vertical	200.000	<30.0	40.000
Vertical	400.000	<37.0	47.000
Vertical	900.000	<37.0	47.000

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.

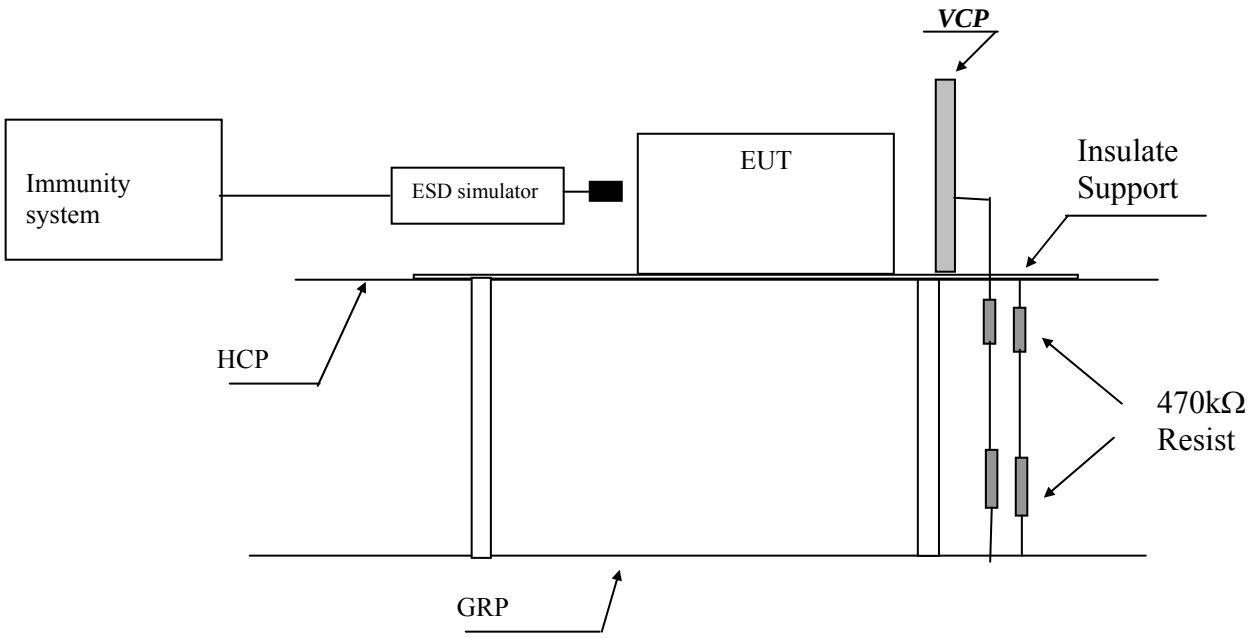
7.1 EN 61000-4-2(Pursuant to EN 61000-6-1) Electrostatic Discharge Immunity

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 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.

7.1.4 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

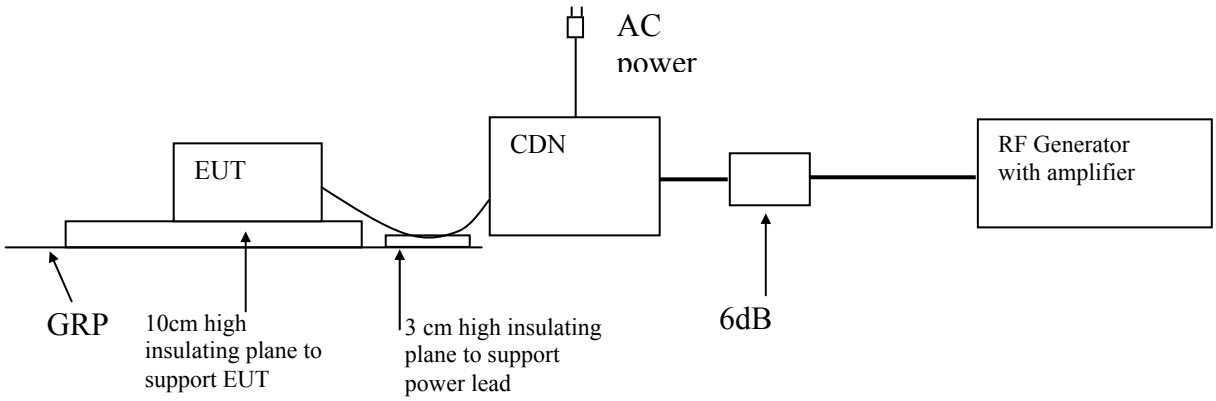
7.2 EN 61000-4-6(Pursuant to EN 61000-6-1) Injected Current (0.15 MHz to 80 MHz)

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
EM019-01	Conducted Immunity Testing System	NSG4070-75	Teseq GmbH
EM019-01-02	Coupling & Decoupling Network	CDNM016	Teseq GmbH
EM019-01-03	6dB Attenuator	ATN6075	Teseq 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.)	N/A
Control Lines	0.15 to 80	3V (r.m.s.)	N/A
Functional Earth	0.15 to 80	3V (r.m.s.)	N/A

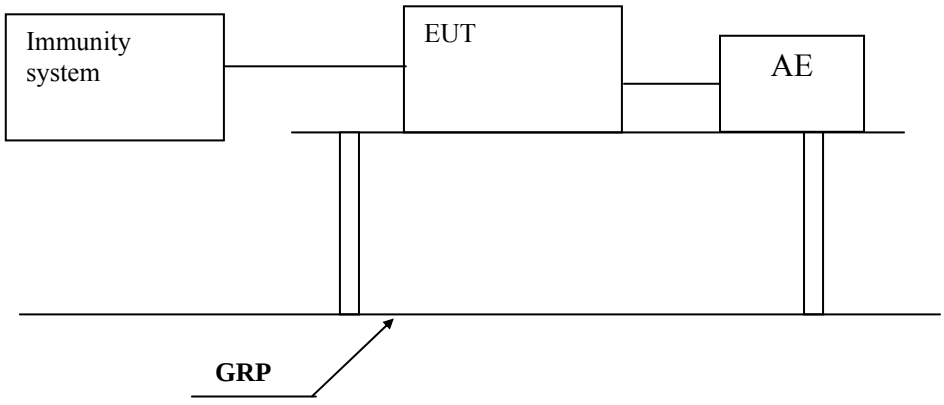
7.3 EN 61000-4-4(Pursuant to EN 61000-6-1) Electrical Fast Transient/Burst

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

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	N/A
0.5kV	-	N/A	N/A
1kV	+	Pass	N/A
1kV	-	Pass	N/A

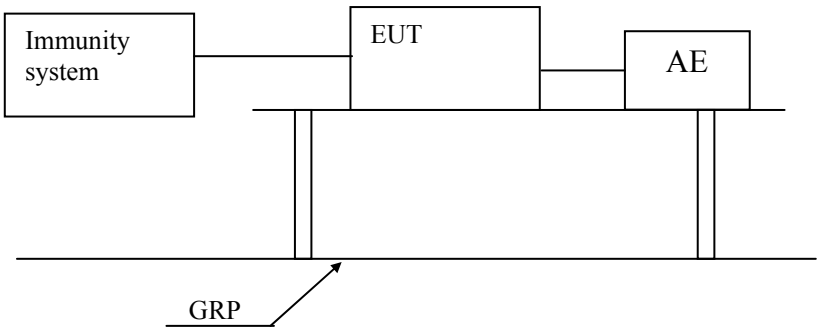
7.4 EN 61000-4-5(Pursuant to EN 61000-6-1) Surge Immunity

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

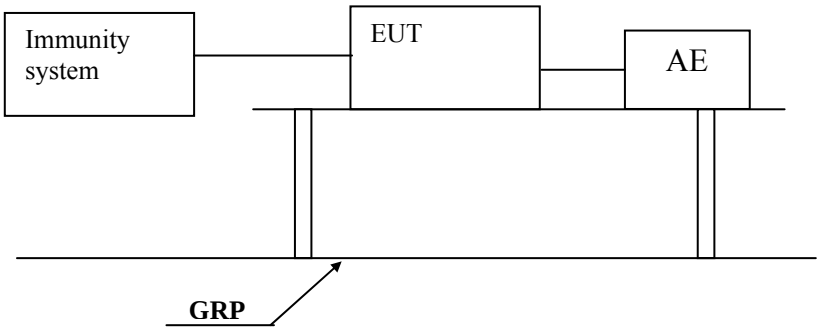
7.5 EN 61000-4-11(Pursuant to EN 61000-6-1) Voltage Dips and Interruptions

Tested Port: AC power
Performance criterion: B (only for test level of 70%Ut 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%Ut, 250 period, 40%Ut, 5 periods and 70%Ut, 0.5 periods, for 100%Ut, 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.

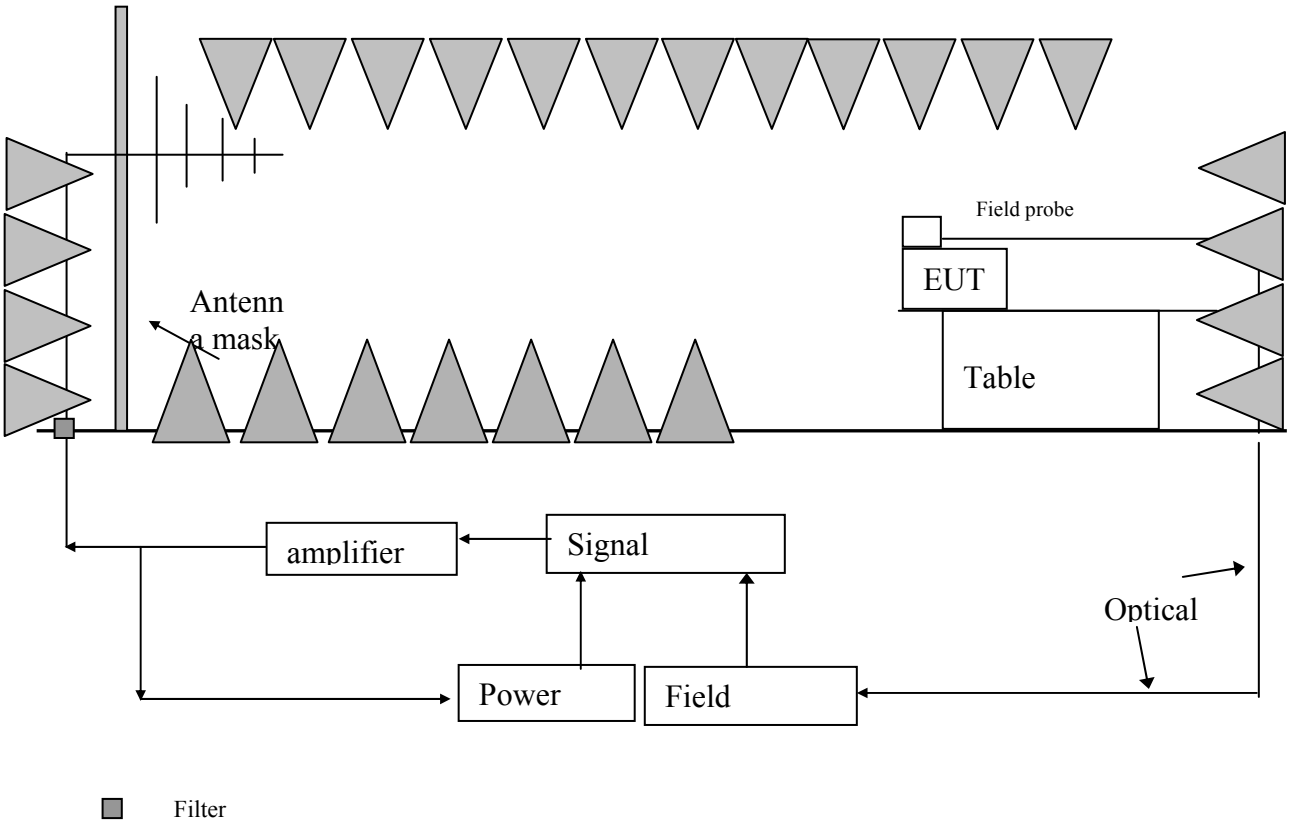
7.6 EN 61000-4-3(Pursuant to EN 61000-6-1) Radiated Electromagnetic Field Immunity

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

7.6.1 Used Test Equipment

Serial No.	Equipment	Model	Manufacturer
MY50145187	signal generator	N5181A-506	Agilent
10539	RF Power Meter. Dual Channel	4232A	BOONTON
34236/34238	50ohm Diode Power Sensor	51011EMC	BOONTON
10I00037SO22	Field Strength Meter	RSS1006A	DARE
N/A	Power Amplifier	AP32MT215	PRANA
N/A	Power Amplifier	AS0102-55	MILMEGA
1059348	Power Amplifier	80RF1000-175	Milmega
N/A	Log.-Per. Antenna	VULP 9118E	SCHWARZBECK
9149-227	Broad-Band Horn Antenna	STLP 9149	Schwarzbeck

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

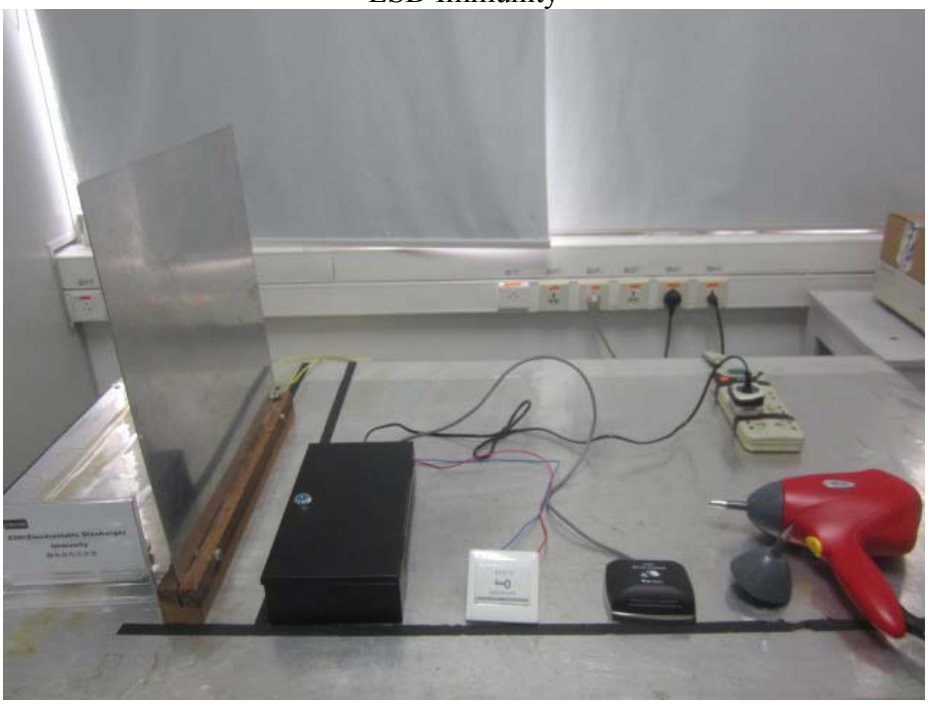
Frequency (GHz)	Exposed Side	Field Strength (V/m)	Result
1.4 to 2.0	Front	3V/m (r.m.s.)	Pass
1.4 to 2.0	Left	3V/m (r.m.s.)	Pass
1.4 to 2.0	Rear	3V/m (r.m.s.)	Pass
1.4 to 2.0	Right	3V/m (r.m.s.)	Pass

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

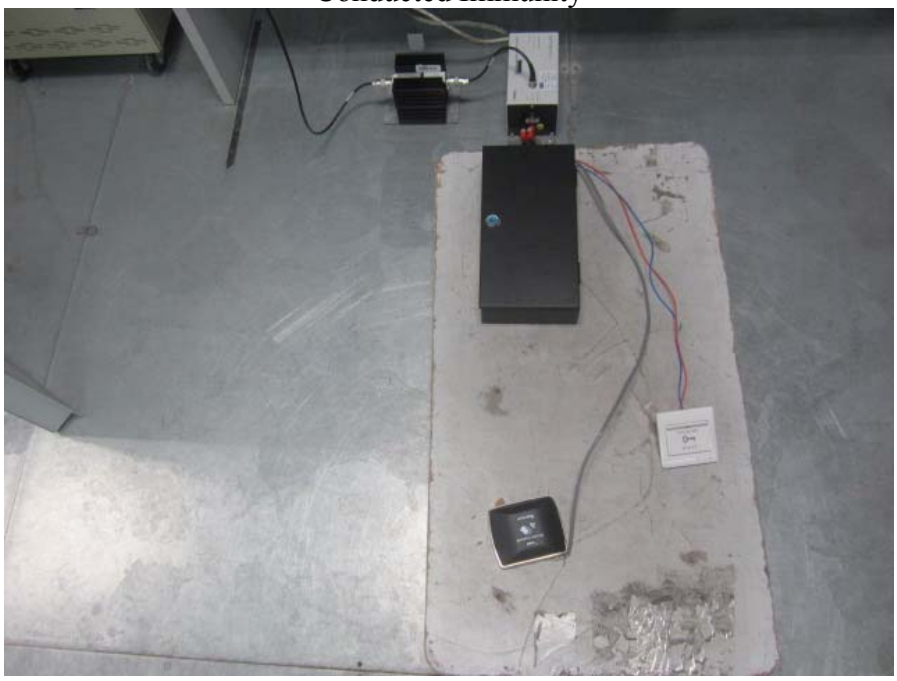
8 Appendix I - Photos of test setup

Conducted Emission

ESD Immunity

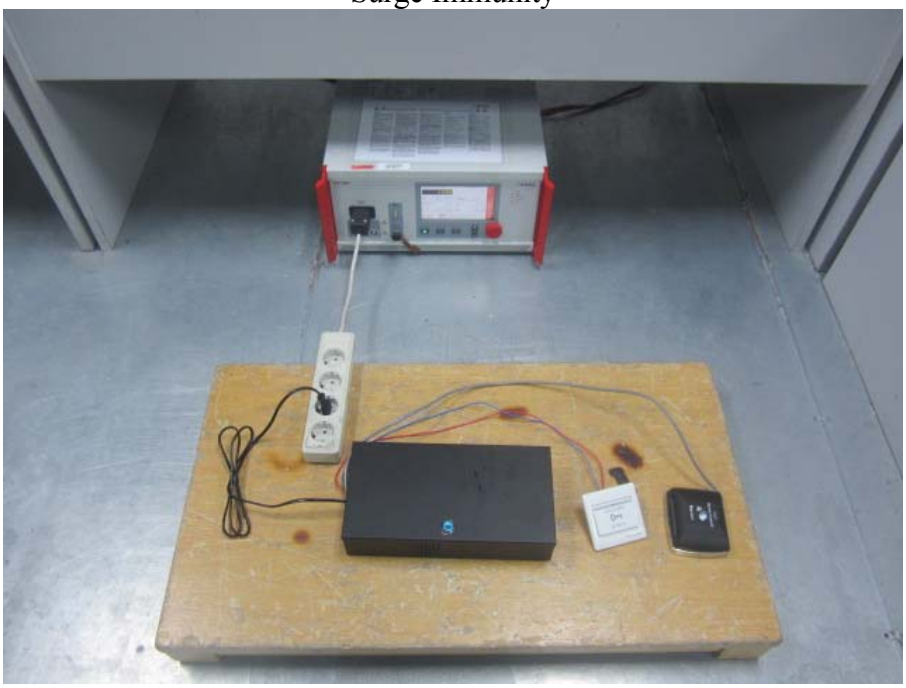


Conducted Immunity



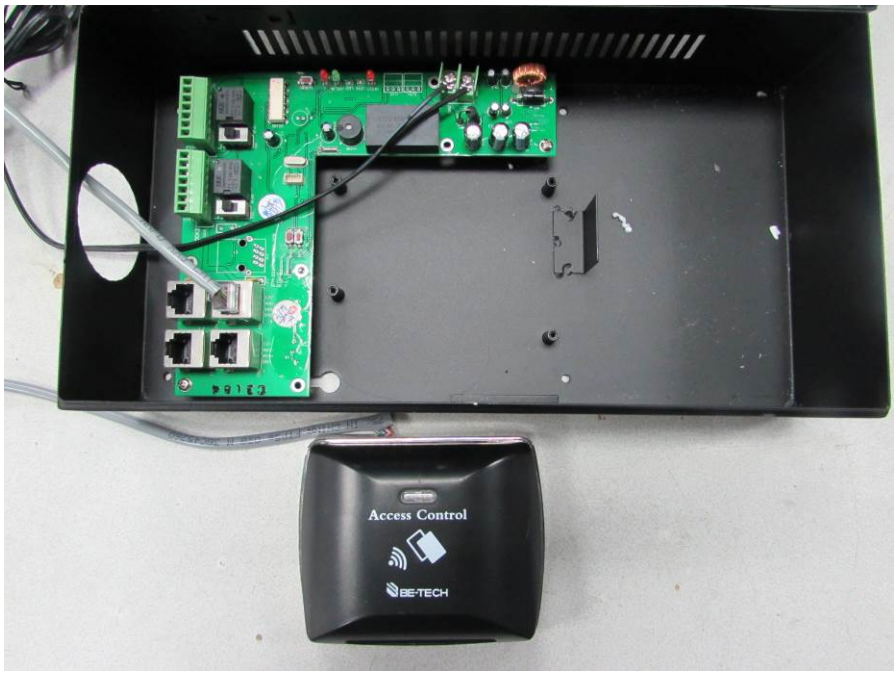
EFT/DIP Immunity

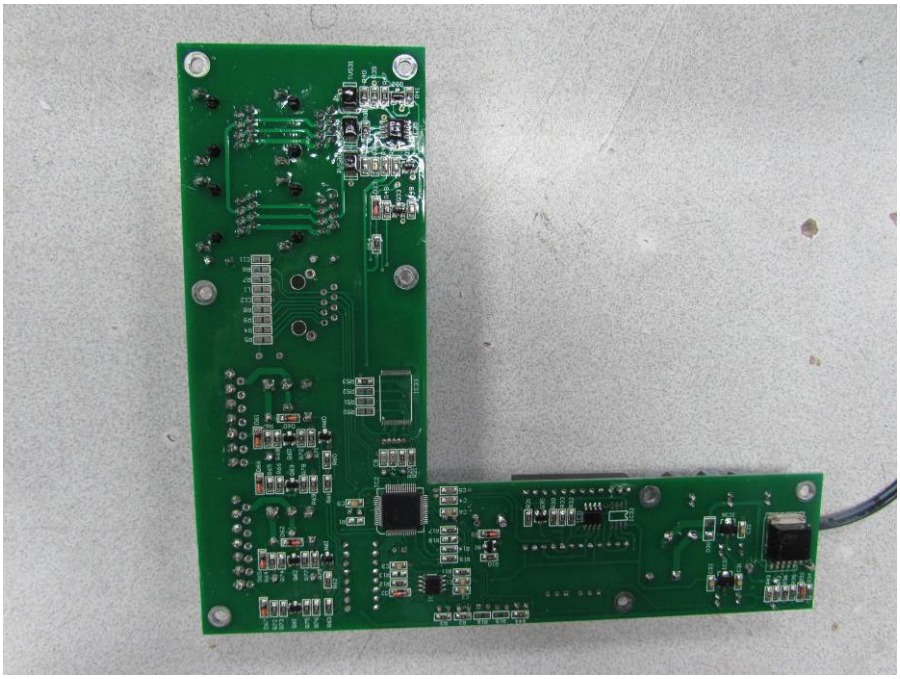
Surge Immunity



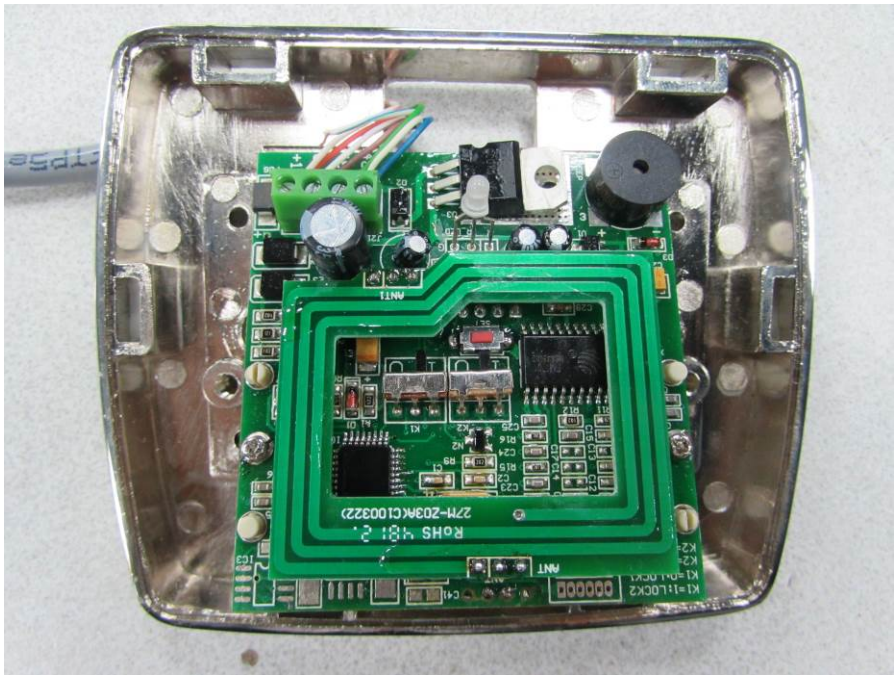
Radiated Immunity

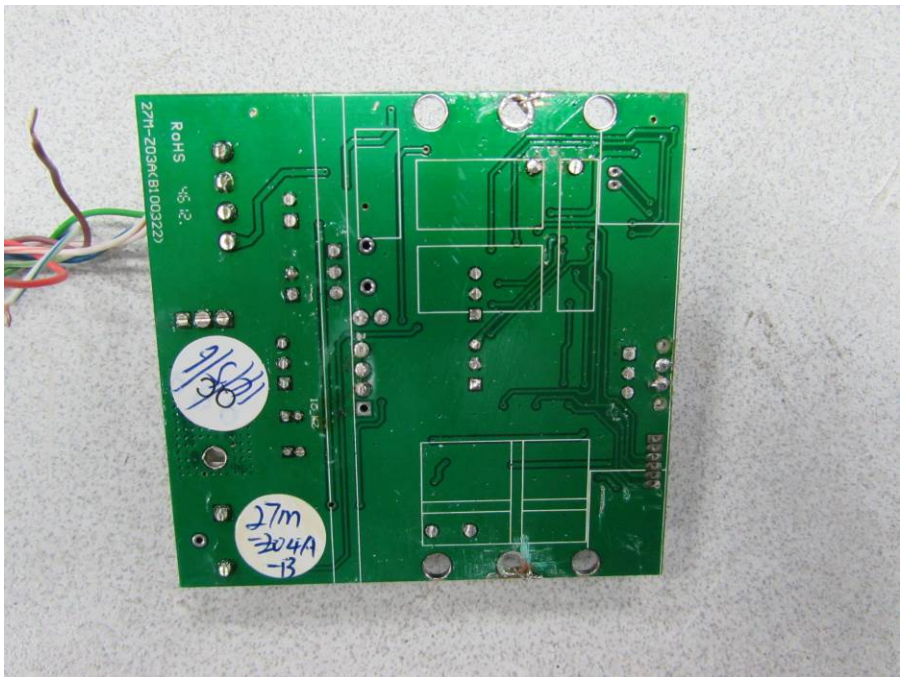
9 Appendix II - Photos of EUT






Access Control
BE-TECH





Support Equipment
Adaptor