

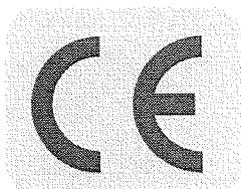
## Test Verification of Conformity

On the basis of the referenced test report(s), the sample(s) of the below product has been found to comply with the relevant harmonized standard(s) to the directive(s) listed on this verification at the time the tests were carried out. The manufacturer may indicate compliance to said directive(s) by signing a DoC himself and applying the CE-marking to products identical to the tested sample(s). In addition, the manufacturer shall file and keep the documentation according to the rules of the applicable directive(s) and shall consider changes of the standard(s) if relevant. Additional requirements may be applicable such as additional directives or local laws.

<b>Applicant Name &amp; Address</b>	: Uni-Trend Group Limited. Rm901,9/F,Nanyang Plaza, 57 Hung To Road, Kwun Tong, Kowloon, Hong Kong.
<b>Product(s) Tested</b>	: Digital Multimeter
<b>Ratings and principal characteristics</b>	: 1x9V 6F22 battery, Class II; AM-450 series, AM-510 series: CAT III 600V; AM-520 series, AM-530 series: CAT II 1000V CAT III 600V; AM-540 series, AM-550 series: CAT III 1000V CAT IV 600V
<b>Model(s)</b>	: AM-450, AM-450-EUR, AM-510, AM-510-EUR, AM-520, AM-520-EUR, AM-530, AM-530-EUR, AM-540, AM-540-EUR, AM-550, AM-550-EUR
<b>Brand name</b>	: UNI-T, 
<b>Relevant Standard(s) / Specification(s) / Directive(s)</b>	: EN 61326-1: 2006/ Electrical equipment for measurement, control and laboratory use – EMC requirements Part 1: General requirements  EN 61326-2-2: 2006/ Electrical equipment for measurement, control and laboratory use – EMC requirements Part 2-2: Particular requirements – Test configuration, operational conditions and performance criteria for portable test, measuring and monitoring equipment used in low-voltage distribution systems  EMC Directive 2004/108/EC
<b>Verification Issuing Office Name &amp; Address</b>	: Same as Legal Entity
<b>Verification/Report Number(s)</b>	: GZ11081880-1/GZ11081880-1

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

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Signature

Name: Carrie Chen

Position: Senior Project Engineer

Date: 09 Jan., 2012

### TEST REPORT

Applicant Name & Address : Uni-Trend Group Limited.  
Rm901,9/F,Nanyang Plaza, 57 Hung To Road, Kwun Tong, Kowloon, Hong Kong.

Manufacturing Site : Uni-Trend Technology (Dongguan) Limited  
Dong Fang Da Dao, Bei Shan Dong Fang Industrial Development District, Hu Men Town, Dong Guan City, Guangdong Province, China

Sample Description  
Product : Digital Multimeter  
Model No. : AM-450, AM-450-EUR, AM-510, AM-510-EUR, AM-520, AM-520-EUR, AM-530, AM-530-EUR, AM-540, AM-540-EUR, AM-550, AM-550-EUR

Electrical Rating : 1x9V 6F22 battery, Class II;  
AM-450 series, AM-510 series: CAT III 600V;  
AM-520 series, AM-530 series: CAT II 1000V CAT III 600V;  
AM-540 series, AM-550 series: CAT III 1000V CAT IV 600V

Date Received : 31 Aug., 2011  
Date Test Conducted : 31 Aug., 2011-30 Oct., 2011  
Test standards : EN 61326-1: 2006  
EN 61326-2-2: 2006

Test Result : Pass

Conclusion : The submitted samples complied with the above EMC standards.

Remark : None.

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

**Prepared and Checked By:**

**Approved By:**



**Jack Dai**  
**Project Engineer**  
**Intertek Guangzhou**

**Carrie Chen**  
**Sr. Project Engineer**  
**Intertek Guangzhou**

**09 Jan., 2012**                      **Date**

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## 1

**TEST RESULTS SUMMARY**

<b>Test Item</b>	<b>Standard</b>	<b>Result</b>
Continuous Conducted Disturbance Voltage	EN 61326-1: 2006, EN 61326-2-2: 2006 Reference: CISPR 11: 2003	N/A
Discontinuous Conducted Disturbance Voltage	EN 61326-1: 2006, EN 61326-2-2: 2006 Reference: CISPR 11: 2003	N/A
Radiated Emission	EN 61326-1: 2006, EN 61326-2-2: 2006 Reference: CISPR 11: 2003	Pass
Harmonic of Current	EN 61326-1: 2006, EN 61326-2-2: 2006 Reference: IEC 61000-3-2:2000	N/A
Flicker	EN 61326-1: 2006, EN 61326-2-2: 2006 Reference: IEC 61000-3-3: 1994+A1: 2001	N/A
ESD Immunity	EN 61326-1: 2006, EN 61326-2-2: 2006 Reference: IEC 61000-4-2: 1995+A1: 1998+A2: 2000	Pass
EFT Immunity	EN 61326-1: 2006, EN 61326-2-2: 2006 Reference: IEC 61000-4-4:2004	N/A
Surge Immunity	EN 61326-1: 2006, EN 61326-2-2: 2006 Reference: IEC 61000-4-5:1995+A1: 2000	N/A
Inject Current Immunity	EN 61326-1: 2006, EN 61326-2-2: 2006 Reference: IEC 61000-4-6: 2003	N/A
Radiated Electromagnetic Field Immunity	EN 61326-1: 2006, EN 61326-2-2: 2006 Reference: IEC 61000-4-3: 2002	Pass
Power Frequency Magnetic Filed Immunity	EN 61326-1: 2006, EN 61326-2-2: 2006 Reference: IEC 61000-4-8:1993+A1:2000	N/A
Voltage Dips and Interruption Immunity	EN 61326-1: 2006, EN 61326-2-2: 2006 Reference: IEC 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 Digital Multimeter, Models: AM-450, AM-450-EUR, AM-510, AM-510-EUR, AM-520, AM-520-EUR, AM-530, AM-530-EUR, AM-540, AM-540-EUR, AM-550, AM-550-EUR.

We tested the Digital Multimeter, Model: AM-450, AM-510, AM-520, AM-530, AM-540, AM-550, 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 61326-2-2(CISPR 11), EN 61326-2-2: 2006 (IEC 61000-4-2), EN 61326-2-2: 2006 (IEC 61000-4-3) standards when tested as received. The worst case’s test data was presented in this test report. Test items Radiated Electromagnetic Field Immunity were subcontracted.

General product information:

This meter is a portable professional measuring instrument. They can perform measurements of AC/DC voltage, AC/DC current, resistance, continuity, diode, battery test and so on.

AM-XXX is the same product as AM-XXX-EUR, just difference in model name for trade purpose. (XXX indicates the model number )

AM-450 series have an individual construction difference with other series.

The function difference refers to below table.

Type No. Features	AM-450	AM-510	AM-520	AM-530	AM-540	AM-550
Count number	2000	4000	4000	4000	4000	4000
Conversion rate		3.0/s	3.0/s	3.0/s	3.0/s	3.0/s
RANGE change	Manual	Auto	Auto	Auto	Auto	Auto
Safety	CAT III 600V	CAT III 600V	CAT II 100 0V CAT III 600V	CAT II 100 0V CAT III 600V	CAT III 1000V CAT IV 600V	CAT III 1000V CAT IV 600V
Voltage measure	O	O	O	O	O	O
Current measure	O	O	O	O	O	O
Capacitor measure	X	O	O	O	O	O
Resistance measure	O	O	O	O	O	O
Continuity check	O	O	O	O	O	O
Temperature measure	X	X	O	O	O	O
Hz Measure	X	O	O	O	O	O

MAX/MIN mode	X	O	O	O	O	O
HOLD mode	O	O	O	O	O	O
REL mode	X	O	O	O	O	O
Sleep mode	X	O	O	O	O	O
Back light	X	O	O	O	O	O
Low battery detect	O	O	O	O	O	O
Bar graph mode	X	X	O	O	O	O
Display driver	LCD	LCD	LCD	LCD	LCD	LCD
NCV	X	O	O	O	O	O
Low-pass filter detection	X	X	X	X	O	O
Dry battery	X	O	O	O	X	X

“O” indicates have such function;

“X” No have such function

Full test were conducted on the model AM-450, AM-510, AM-520, AM-530, AM-540, AM-550 respectively.

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

<b>Equipment Under Test (EUT):</b>	Digital Multimeter
<b>Model:</b> 550	AM-450, AM-510, AM-520, AM-530, AM-540, AM-550
<b>Serial No.</b>	Not Labelled
<b>Support Equipment:</b>	N/A
<b>Rated Voltage:</b>	1x9V 6F22 battery
<b>Condition of Environment:</b>	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 Continuous Conducted Disturbance Voltage Test

**Test Result: Not applicable**

### 4.2 Discontinuous Conducted Disturbance Voltage

**Test Result: Not applicable**

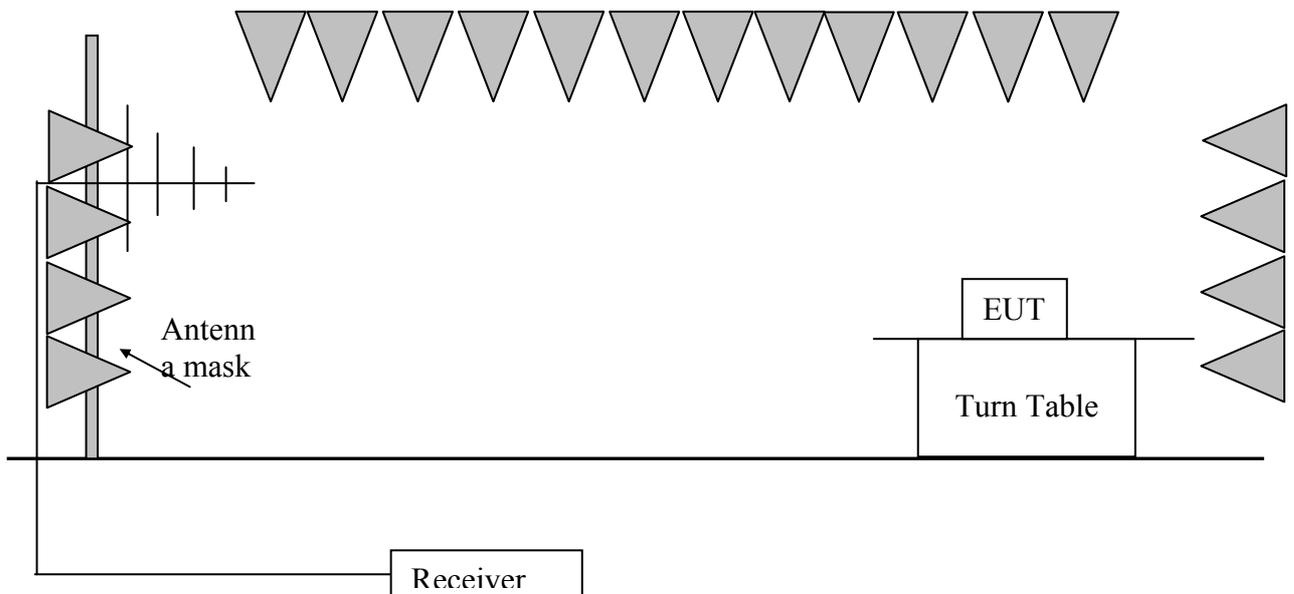
### 4.3 Radiated Emission

**Test Result: Pass**

#### 4.3.1 Used Test Equipment

Equip. No.	Equipment	Model	Manufacturer
SZ185-01	EMI receiver	ESCI	R&S
SZ061-03	BiConiLog Antenna	3142C	ETS
SZ188-01	3 m Anechoic Chamber	RFD-F/A-100	ETS

#### 4.3.2 Block Diagram of Test Setup



**4.3.3 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

**4.3.4 Test Data**

AM-450

Voltage model:

<b>Antenna Polarization</b>	<b>Frequency [MHz]</b>	<b>Measured Net at 3m [dB(μV/m)]</b>	<b>Limit at 3m [dB(μV/m)]</b>
Horizontal	200.0	<30	40.0
Horizontal	400.0	<30	47.0
Horizontal	800.0	<30	47.0
Vertical	200.0	<30	40.0
Vertical	400.0	<30	47.0
Vertical	800.0	<30	47.0

AM-510

Voltage model:

<b>Antenna Polarization</b>	<b>Frequency [MHz]</b>	<b>Measured Net at 3m [dB(μV/m)]</b>	<b>Limit at 3m [dB(μV/m)]</b>
Horizontal	200.0	<30	40.0
Horizontal	400.0	<30	47.0
Horizontal	800.0	<30	47.0
Vertical	200.0	<30	40.0
Vertical	400.0	<30	47.0
Vertical	800.0	<30	47.0

AM-520

Voltage model:

<b>Antenna Polarization</b>	<b>Frequency [MHz]</b>	<b>Measured Net at 3m [dB(μV/m)]</b>	<b>Limit at 3m [dB(μV/m)]</b>
Horizontal	200.0	<30	40.0
Horizontal	400.0	<30	47.0
Horizontal	800.0	<30	47.0
Vertical	200.0	<30	40.0
Vertical	400.0	<30	47.0
Vertical	800.0	<30	47.0

AM-530

Voltage model:

<b>Antenna Polarization</b>	<b>Frequency [MHz]</b>	<b>Measured Net at 3m [dB(μV/m)]</b>	<b>Limit at 3m [dB(μV/m)]</b>
Horizontal	200.0	<30	40.0
Horizontal	400.0	<30	47.0
Horizontal	800.0	<30	47.0
Vertical	200.0	<30	40.0
Vertical	400.0	<30	47.0
Vertical	800.0	<30	47.0

AM-540

Voltage model:

<b>Antenna Polarization</b>	<b>Frequency [MHz]</b>	<b>Measured Net at 3m [dB(μV/m)]</b>	<b>Limit at 3m [dB(μV/m)]</b>
Horizontal	200.0	<30	40.0
Horizontal	400.0	<30	47.0
Horizontal	800.0	<30	47.0
Vertical	200.0	<30	40.0
Vertical	400.0	<30	47.0
Vertical	800.0	<30	47.0

AM-550

Voltage model:

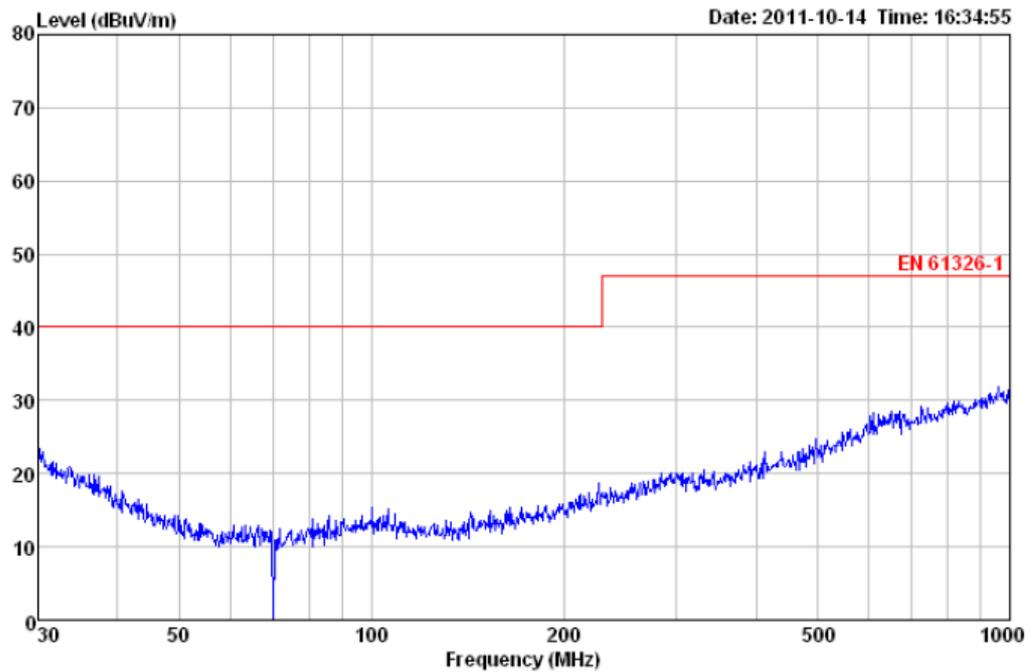
Antenna Polarization	Frequency [MHz]	Measured Net at 3m [dB(μV/m)]	Limit at 3m [dB(μV/m)]
Horizontal	200.0	<30	40.0
Horizontal	400.0	<37	47.0
Horizontal	800.0	<37	47.0
Vertical	200.0	<30	40.0
Vertical	400.0	<30	47.0
Vertical	800.0	<30	47.0

### 4.3.5 Test Curve

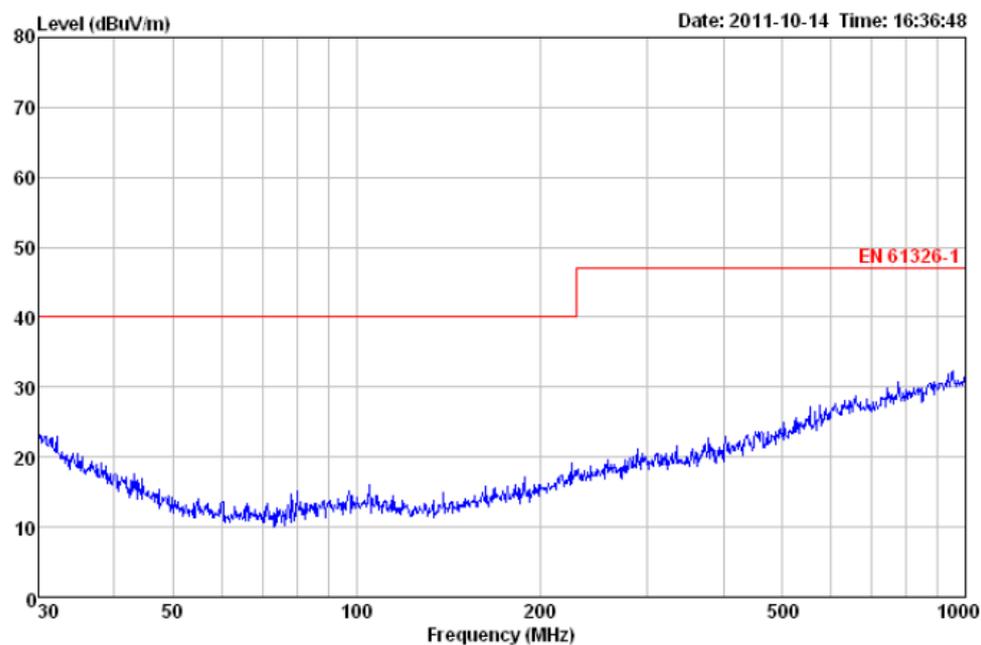
AM450

Voltage model:

Horizontal



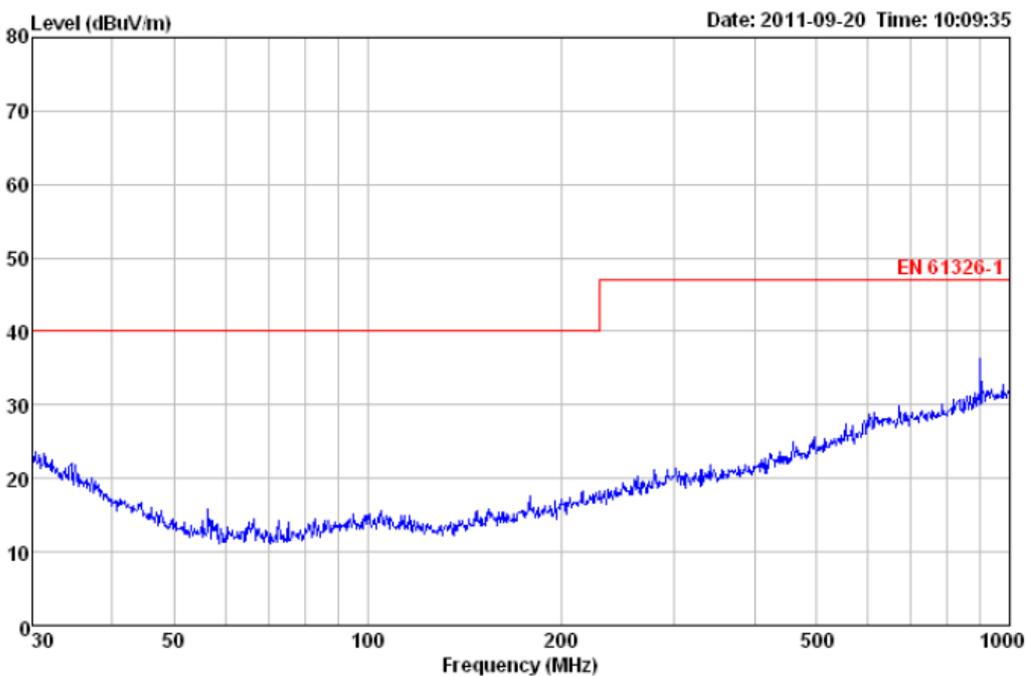
Vertical



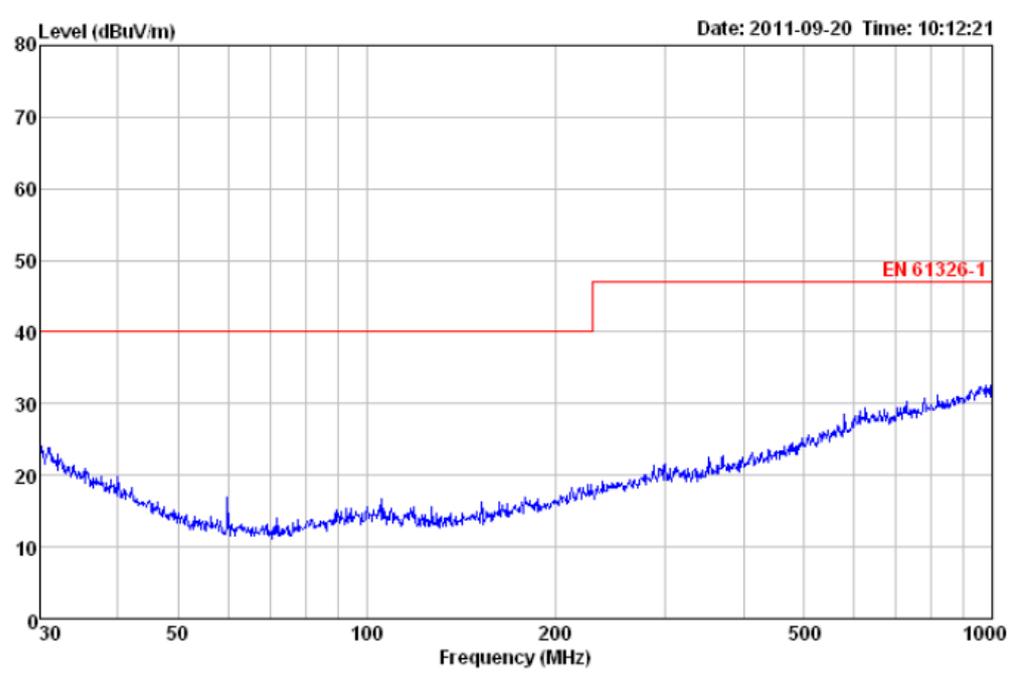
AM510

Voltage model:

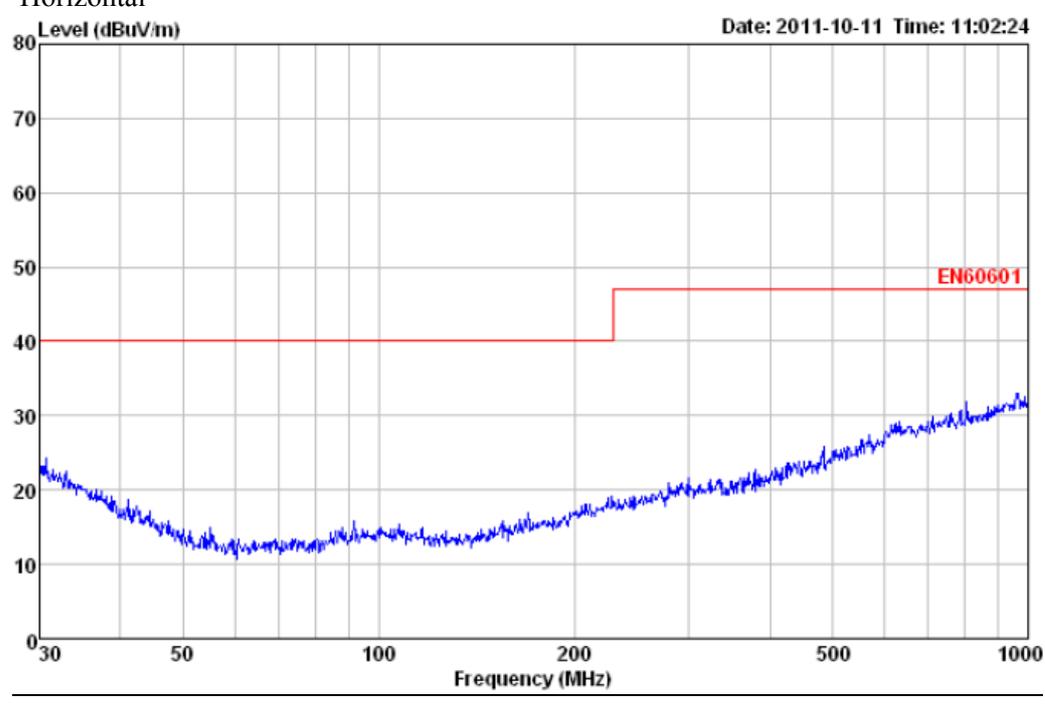
Horizontal



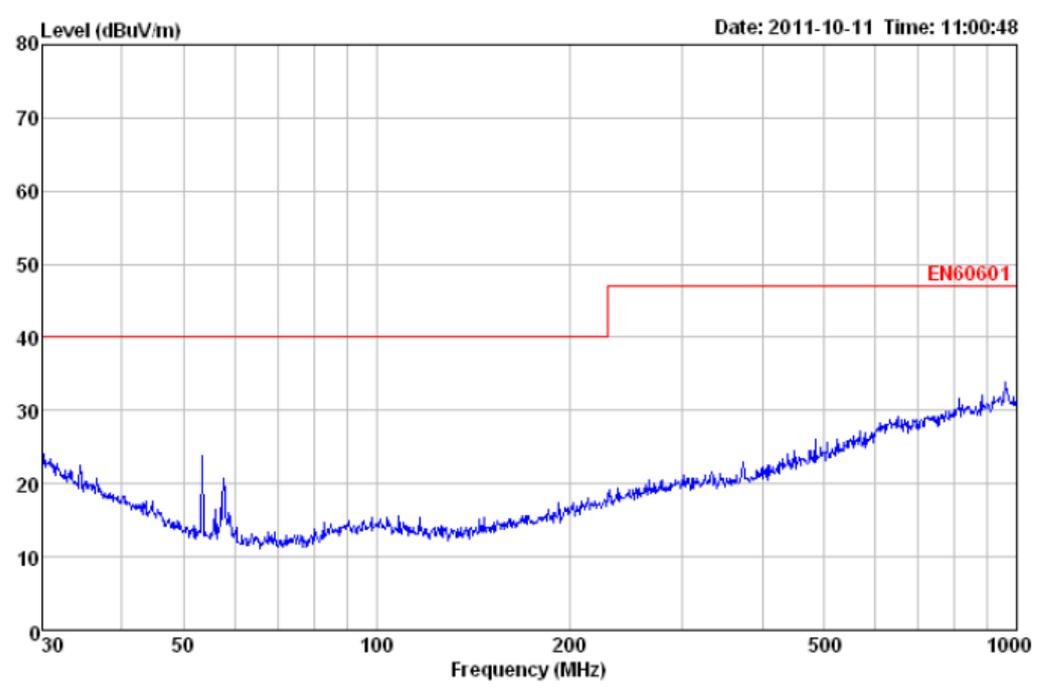
Vertical



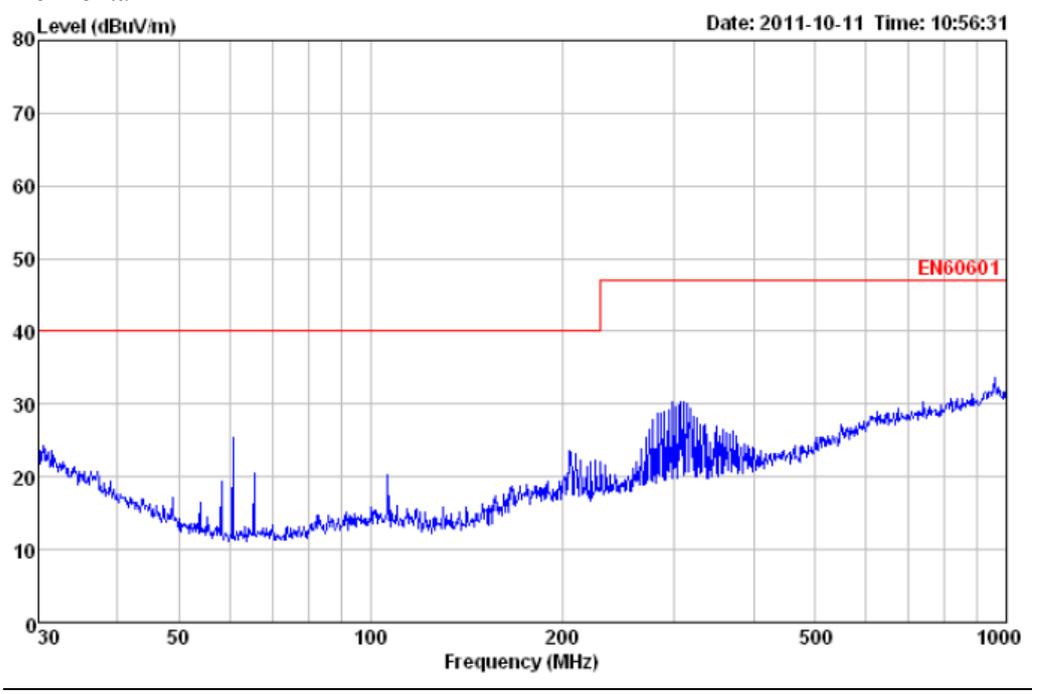
AM520  
Voltage model:  
Horizontal



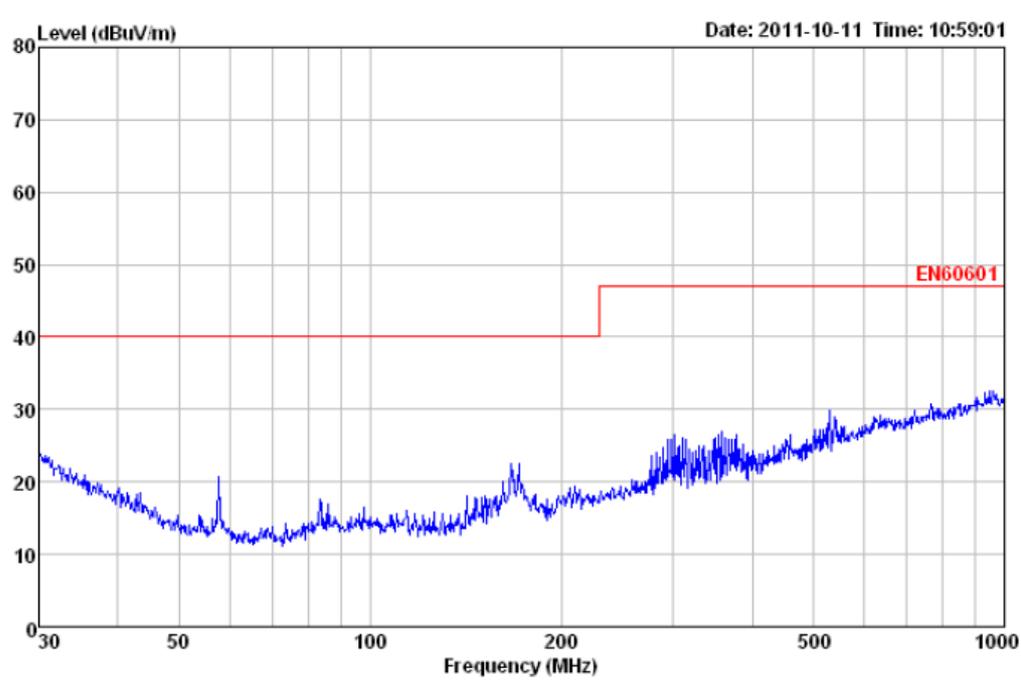
Vertical



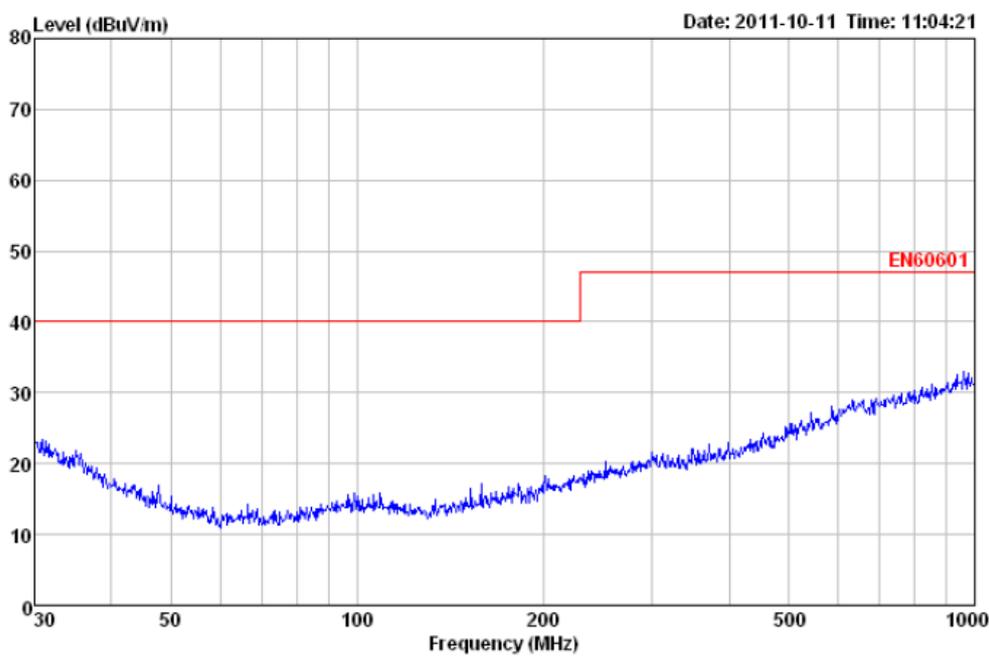
AM530  
Voltage model:  
Horizontal



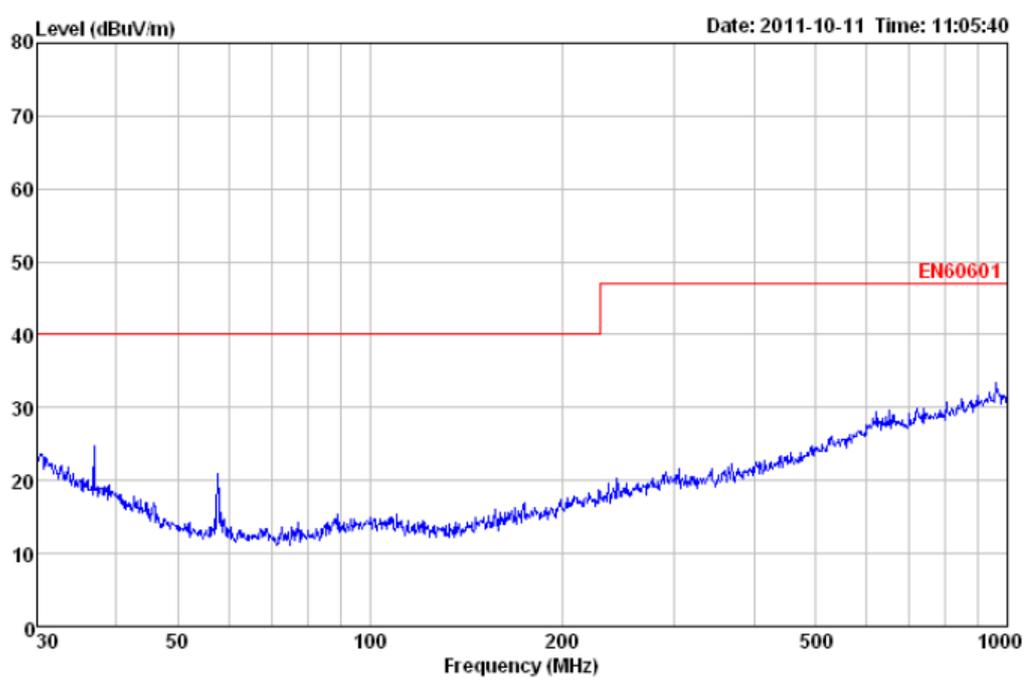
Vertical



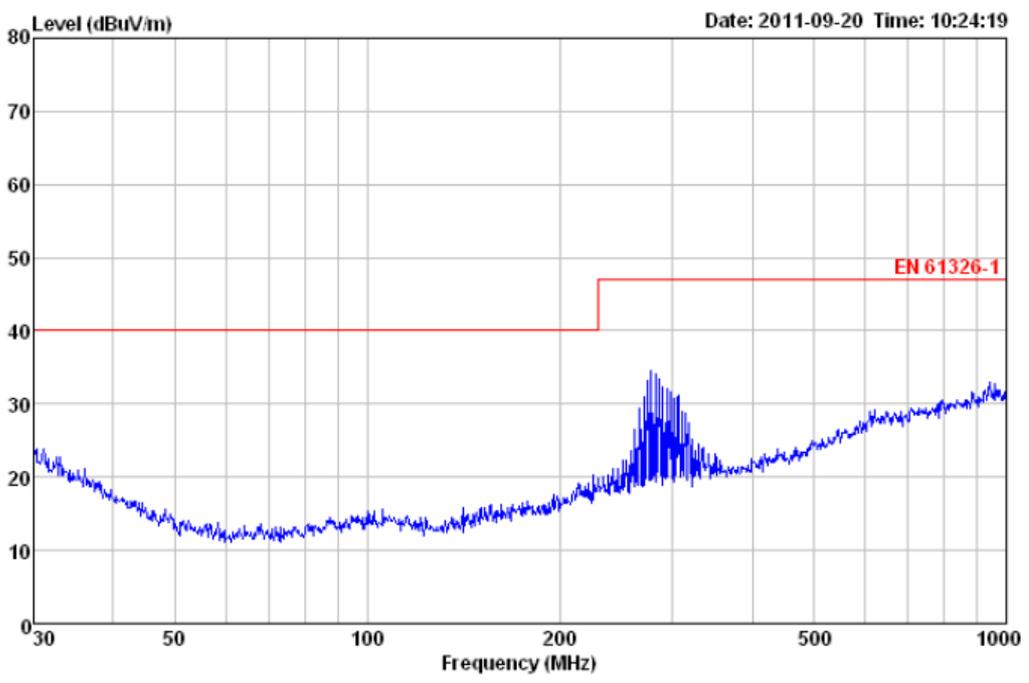
AM540  
Voltage model:  
Horizontal



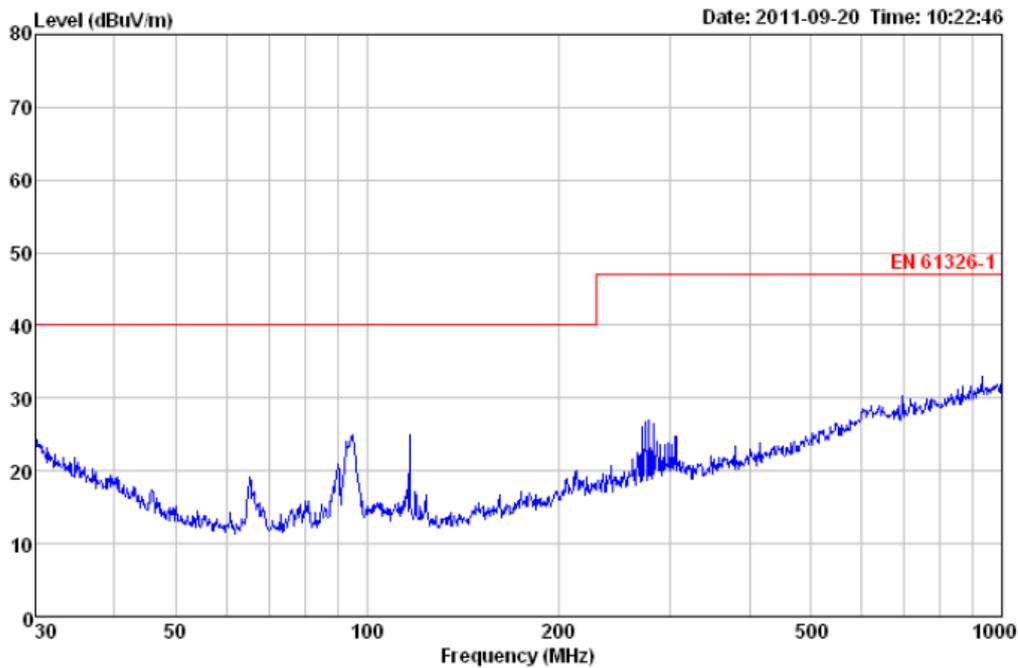
Vertical



AM550  
Voltage model:  
Horizontal



Vertical



#### 4.3.6 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: 4.8 dB.

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

#### 5 Harmonic of Current

**Test Result: Not applicable**

#### 6 Flicker

**Test Result: Not applicable**

## 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 61326) Electrostatic Discharge Immunity

**Tested Port: Enclosure**

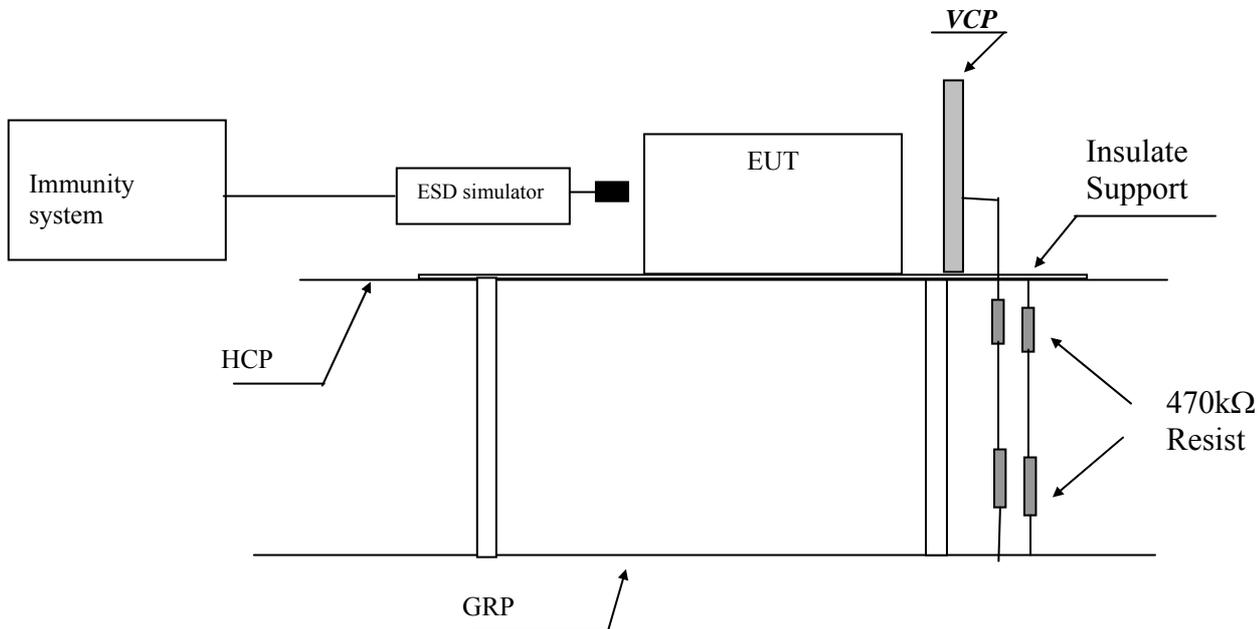
**Performance criterion: B**

**Test Result: Pass**

### 7.1.1 Used Test Equipment

Equip. No.	Equipment	Model	Manufacturer
EM077-02	ESD Simulator	NSG435	SCHAFFNER

### 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	N/A	all touchable screws of enclosure, accessible metal parts of the EUT

Direct Air Discharge

Applied Voltage (kV)	No. of Discharge for each point	Result	Discharged Points
8	20	Pass	Air gap of the switch, button, the air in-taking opening, slots around the EUT

**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	Edge of centre, corner on HCP

Vertical Coupling Plane beside the EUT

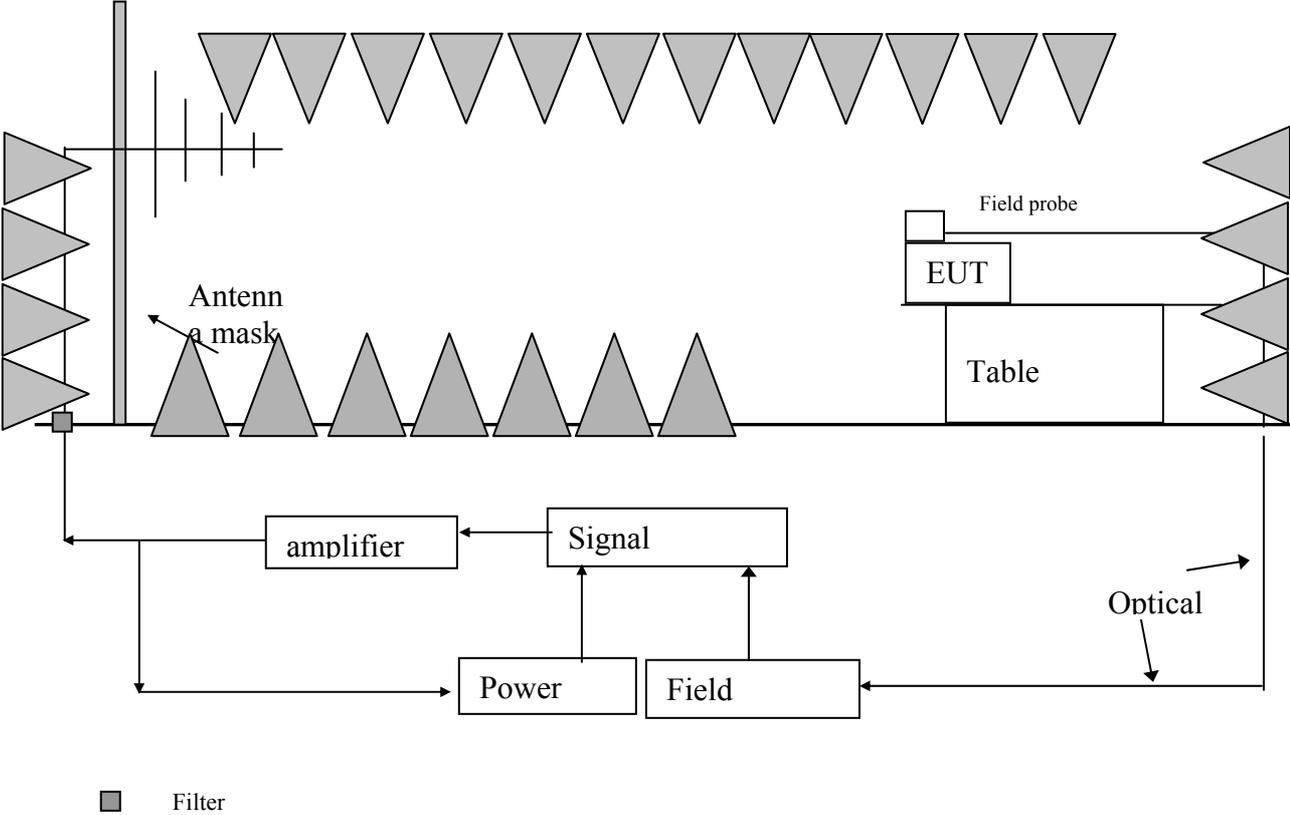
Applied Voltage (kV)	No. of Discharge for each point	Result	Discharged Point
4	20	Pass	Edge of centre, corner on VCP

- 7.2 IEC 61000-4-6(Pursuant to EN 61326) Injected Current (0.15 MHz to 80 MHz)**  
**Tested Port:**  AC power     DC power     Functional earth     Signal/Control  
**Performance criterion: A**  
**Test Result: Not applicable**
- 7.3 EN 61000-4-4(Pursuant to EN 61326) Electrical Fast Transient/Burst**  
**Tested Port:**  AC power     DC power     Functional earth     Signal/Control  
**Performance criterion: B**  
**Test Result: Not applicable**
- 7.4 EN 61000-4-5(Pursuant to EN 61326) Surge Immunity**  
**Tested Port:**  AC power     DC power  
**Performance criterion: B**  
**Test Result: Not applicable**
- 7.5 EN 61000-4-11(Pursuant to EN 61326) 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: Not applicable**
- 7.6 EN 61000-4-3(Pursuant to EN 61326) Radiated Electromagnetic Field Immunity**  
**Tested Port: Enclosure**  
**Performance criterion: A**  
**Test Result: Pass**

**7.6.1 Used Test Equipment**

Equip. No.	Equipment	Model	Manufacturer
103002	Signal generator	SML03	R & S
0611-768	Power amplifier	AP32DT214	PRAnA
0611-767	Power amplifier	AP32SV150A	PRAnA
10543	Power meter	4232A	BOOTON
9128-029	Double Log.-Per. Antenna	STLP9128E	SCHWARZBECK
BBHA9120E318/0899	Horn Antenna	BBHA9120E	SCHWARZBECK

**7.6.2 Block Diagram of Test Setup**



### 7.6.3 Test Setup and Procedure

The test was conducted in a 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).

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.

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

The frequency range is swept from 80MHz to 1000MHz at 3V/m EM field, 1.4 GHz to 2 GHz at 3V/m EM field and 2.0 GHz to 2.7 GHz at 1V/m EM field, with the signal 80% amplitude modulated with a 1 kHz sine-wave, 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

**7.7 EN 61000-4-8(Pursuant to EN 61326) Power Frequency Magnetic Field Immunity**

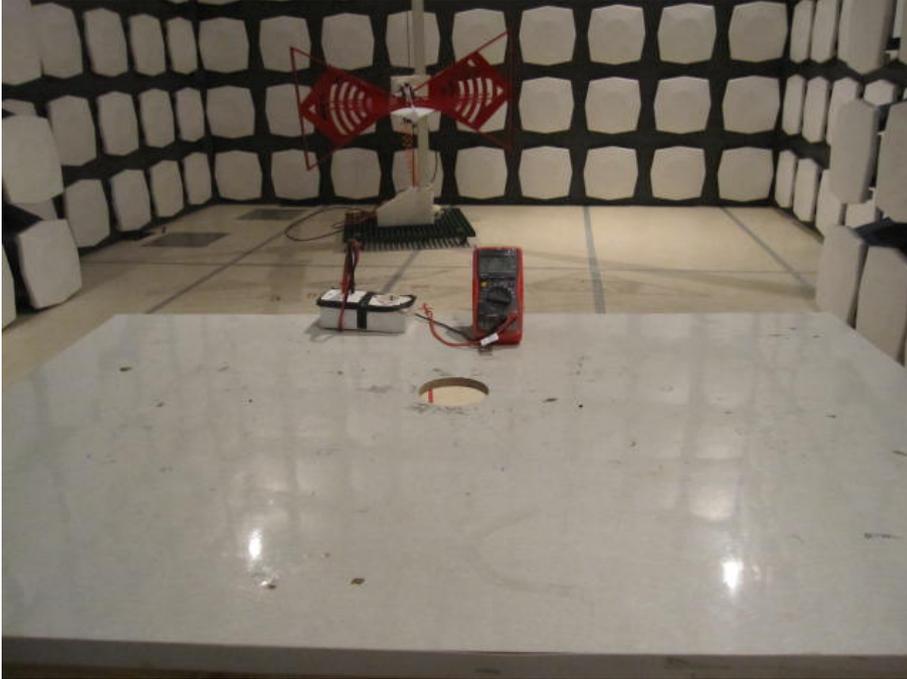
**Tested Port: Enclosure**

**Performance criterion: A**

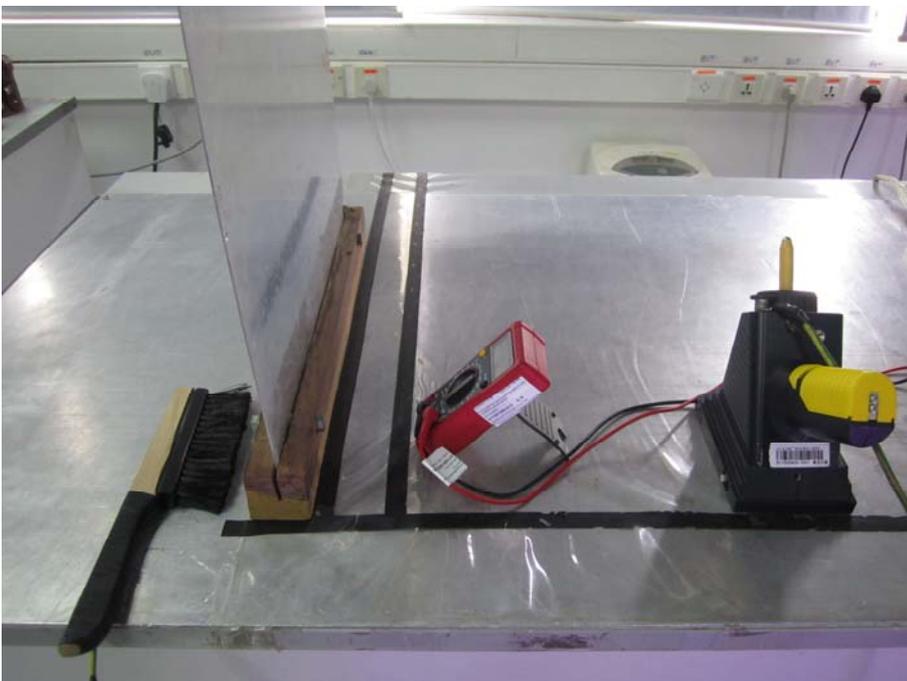
**Test Result: Not Applicable**

**8 Appendix I - Photos of test setup**

Radiated Emission



ESD Immunity



Radiated Electromagnetic Field Immunity



**9 Appendix II - Photos of EUT**



Photo 1: Overall view of AM-450 series



Photo 2: Rear view of AM-450 series



Photo 3: Internal view of AM-450 series



Photo 4: Inside view of AM-450 series



Photo 5: Overall view of other series



Photo 6: Rear view of other series



Photo 7: Inside view of other series



Photo 8: Inside view of other series



Photo 9: PCB view of other series

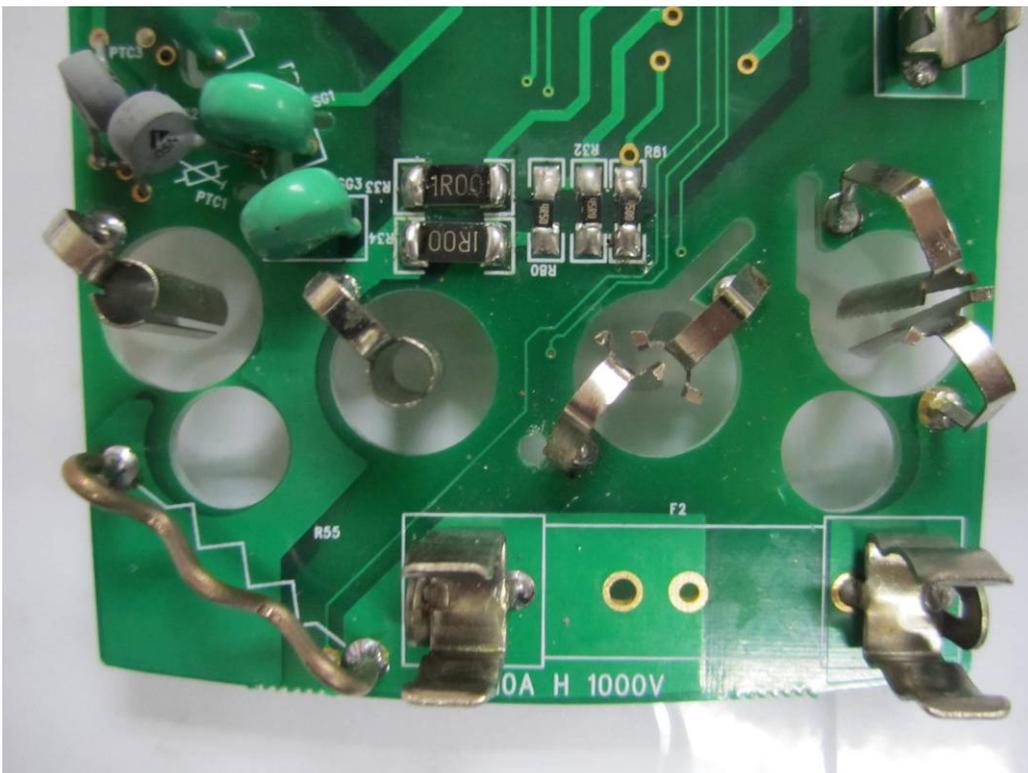


Photo 10: Terminals view of other series