

# TEST REPORT

EMC DIRECTIVE  
2004/108/EC

REPORT NO. : STDGZ-01723-E



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## TEST REPORT

### TABLE OF CONTENTS

<b>1</b>	<b>GENERAL INFORMATION</b>	<b>3</b>
1.1	DETAILS OF APPLICANT	3
1.2	DETAILS OF APPROVAL HOLDER	3
1.3	DESCRIPTION OF THE TEST ITEM	3
1.4	TEST CONCLUSION	3
<b>2</b>	<b>TEST RESULTS SUMMARY</b>	<b>4</b>
<b>3</b>	<b>TEST METHOD AND DATA</b>	<b>5</b>
3.1	CONDUCTED EMISSION MEASUREMENT	5
3.1.1	LIMITS	5
3.1.2	TEST METHOD	5
3.1.3	TEST CHART AND DATA	6
3.2	RADIATED EMISSION	10
3.2.1	LIMITS	10
3.2.2	TEST METHOD	10
3.2.3	TEST CHART AND DATA	11
3.3	HARMONICS CURRENT	13
3.3.1	LIMITS	13
3.3.2	TEST METHOD	13
3.3.3	TEST CHART AND DATA	14
3.4	ELECTROSTATIC DISCHARGE IMMUNITY	18
3.4.1	TEST METHOD	18
3.4.2	TEST DATA	20
3.5	RADIATED IMMUNITY	21
3.5.1	TEST METHOD	21



## **TEST REPORT**

3.5.2	TEST DATA	22
<b>3.6</b>	<b>ELECTRICAL FAST TRANSIENT/BURST IMMUNITY</b>	<b>23</b>
3.6.1	TEST METHOD	23
3.6.2	TEST DATA	24
<b>3.7</b>	<b>SURGE IMMUNITY</b>	<b>25</b>
3.7.1	TEST METHOD	25
3.7.2	TEST DATA	26
<b>3.8</b>	<b>RF CONDUCTED IMMUNITY</b>	<b>27</b>
3.8.1	TEST METHOD	27
3.8.2	TEST DATA	27
<b>3.9</b>	<b>POWER FREQUENCY MAGNETIC FIELD IMMUNITY</b>	<b>28</b>
3.9.1	TEST METHOD	28
3.9.2	TEST DATA	28
<b>3.10</b>	<b>VOLTAGE DIPS AND INTERRUPTION IMMUNITY</b>	<b>29</b>
3.10.1	TEST METHOD	29
3.10.2	TEST DATA	29
<b>3.11</b>	<b>LOW-FREQUENCY SIGNALS</b>	<b>30</b>
3.11.1	TEST METHOD	30
3.11.2	TEST DATA	30
<b>4</b>	<b>PHOTOS</b>	<b>31</b>



## TEST REPORT

### 1 GENERAL INFORMATION

#### 1.1 DETAILS OF APPLICANT

**Name :** NETION ELECTRONIC CO., LTD.  
**Address :** FANHU INDUSTRIAL PARK, LEPING TOWN, SANSHUI BOROUGH,  
FOSHAN CITY, GUANGDONG, CHINA  
**Telephone :** +86-0757-87360181  
**Fax :** +86-0757-87360189  
**Contact :** YANG JIHAN  
**Telephone :** +86-0757-87360181

#### 1.2 DETAILS OF APPROVAL HOLDER

**Name :** NETION ELECTRONIC CO., LTD.  
**Address :** FANHU INDUSTRIAL PARK, LEPING TOWN, SANSHUI BOROUGH,  
FOSHAN CITY, GUANGDONG, CHINA  
**Telephone :** +86-0757-87360181  
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**Contact :** YANG JIHAN  
**Telephone :** +86-0757-87360181

#### 1.3 DESCRIPTION OF THE TEST ITEM

**Name of product:** High-Frequency On-Line UPS (Digital Series)  
**Model No:** D6KS  
**Brand Name:** /  
**Technical Parameter:** AC 220V 50Hz

#### 1.4 TEST CONCLUSION

The submitted test sample complied with test standards as listed.

Tested by:

*Elvite Wu*

Date:

Nov 23, 2009



## TEST REPORT

### 2 TEST RESULTS SUMMARY

	<b>Test Emission / Immunity</b>	<b>Test Result</b>
Conducted Emission	EN 62040-2: 2006	Pass
Radiated Emission	EN 62040-2: 2006	Pass
Harmonics Current	EN 61000 - 3 - 2: 2006	Pass
Electrostatic Discharge Immunity	EN 62040-2: 2006 (EN 61000 - 4 - 2:2009)	Pass
Radiated Immunity	EN 62040-2: 2006 (EN 61000 - 4 - 3: 2006+A1:2008)	Pass
Electrical Fast Transient/Burst Immunity	EN 62040-2: 2006 (EN 61000 - 4 - 4: 2004)	Pass
Surge Immunity	EN 62040-2: 2006 (EN 61000 - 4 - 5: 2006)	Pass
RF continues conducted Immunity	EN 62040-2: 2006 (EN 61000 - 4 - 6: 2009)	Pass
Power Frequency Magnetic Field Immunity	EN 62040-2: 2006 (EN 61000 - 4 - 8: 2001)	Pass
Voltage dips and Interruptions Immunity	EN 62040-2: 2006 (EN 61000 - 4 - 11: 2004)	Pass
Low-frequency signals Immunity	EN 62040-2: 2006 (EN 61000 - 2 - 2: 2002)	Pass

## TEST REPORT

### 3 TEST METHOD AND DATA

#### 3.1 CONDUCTED EMISSION MEASUREMENT

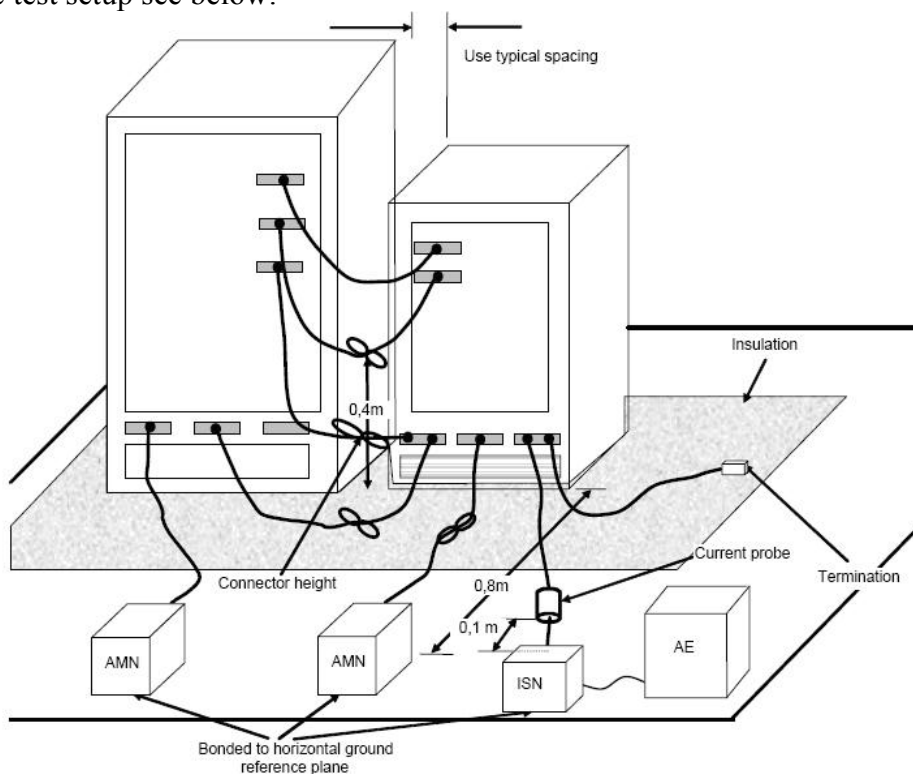
##### 3.1.1 LIMITS

FREQUENCY (MHz)	Quasi-peak (dB $\mu$ V)	Average (dB $\mu$ V)
0.15~0.5	66~56	56~46
0.50~5.0	56	46
5.0~30.0	60	50

**NOTE:** (1) The lower limit shall apply at the transition frequencies.  
 (2) The limit decreases in line with the logarithm of the frequency in the range of 0.15 ~0.50 MHz.  
 (3) An allowance of +14 dB is permitted for the output of the UPS.

##### 3.1.2 TEST METHOD

The EUT shall be placed on a non-conductive table such that it is 0.1 m above the horizontal ground reference plane. The rear of the EUT shall be 0.4 m from the vertical ground reference plane. The V-network shall be 0.8 m away from the EUT, If the mains lead of the appliance under test is longer than necessary to be connected to the V-network the length of this lead in excess of 0.8 m shall be folded back and forth parallel to the lead so as to form a horizontal bundle with a length between 0.3 m and 0.4 m. The test setup see below:



## TEST REPORT

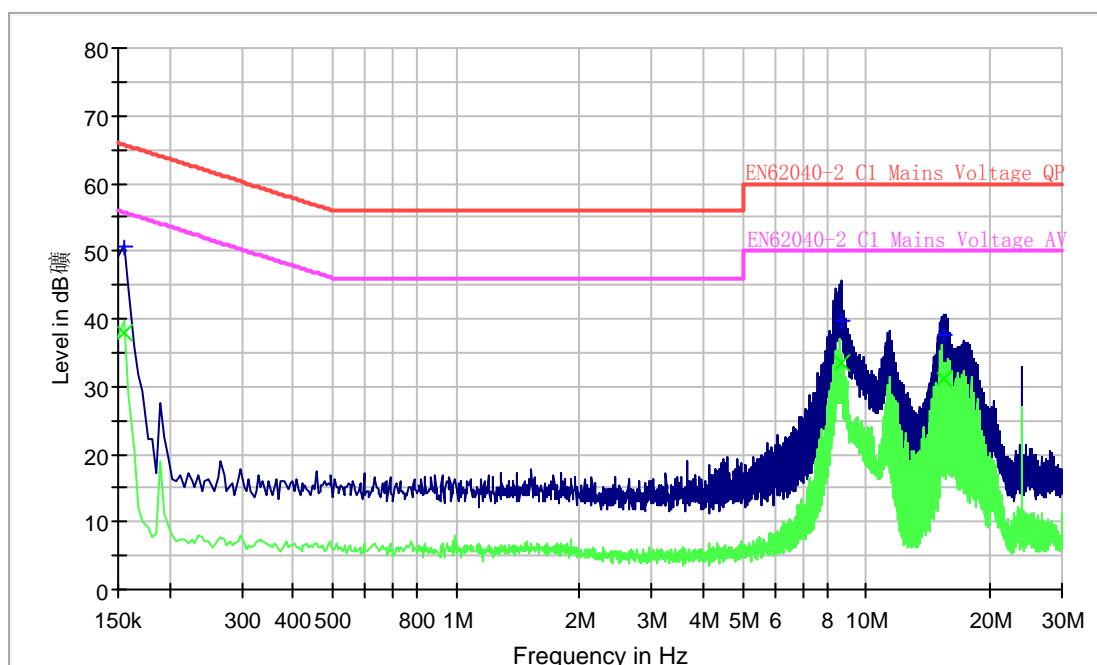
### 3.1.3 TEST CHART AND DATA

<b>Environmental Condition:</b>	Temperature: 23°C	Humidity: 48%	Pressure: 101kPa
<b>Power Supply:</b>	AC 230V 50Hz	<b>Test Mode:</b>	Normal Operation
<b>Tested By:</b>	Elite Wu	<b>Total Result:</b>	Pass

#### Test Data of AC Input interference voltage

**Port: L**

Voltage ESH2-Z5 PRE



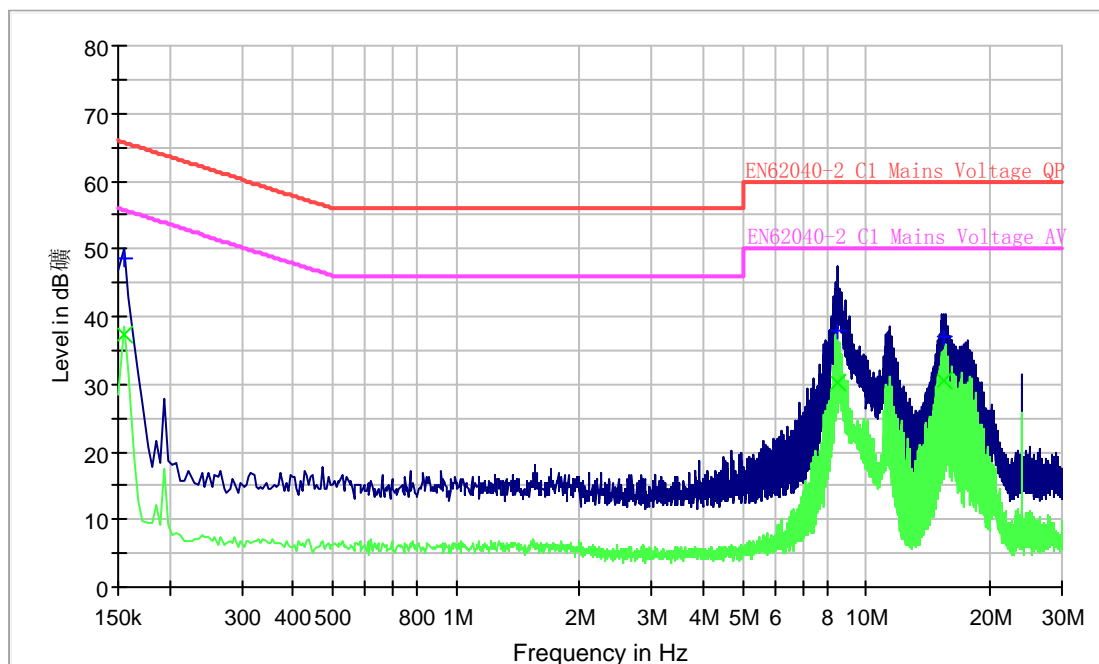
#### Detected Peaks:

Nr	Frequency (MHz)	QP Value (dBuV)	AVG Value (dBuV)	QP Limit (dBuV)	AVG Limit (dBuV)	Result
1	0.155	50.7	37.9	65.8	55.8	Pass
2	8.687	39.6	33.6	60.0	50.0	Pass
3	15.504	37.6	31.3	60.0	50.0	Pass

## TEST REPORT

**Port: N**

Voltage ESH2-Z5 PRE



**Detected Peaks:**

Nr	Frequency (MHz)	QP Value (dBuV)	AVG Value (dBuV)	QP Limit (dBuV)	AVG Limit (dBuV)	Result
1	0.155	48.5	37.3	65.8	55.8	Pass
2	8.516	37.8	30.2	60.0	50.0	Pass
3	15.392	37.0	30.5	60.0	50.0	Pass

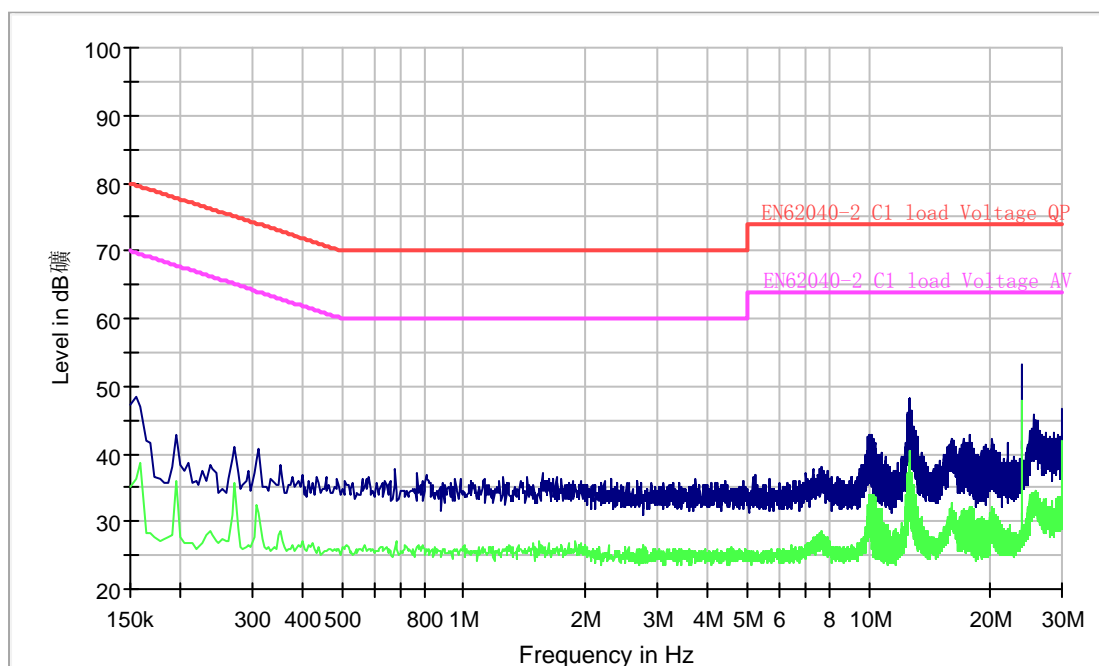


## TEST REPORT

### Test Data of AC Output interference voltage

**Port: L**

EN62040-2 Load Voltage Pre



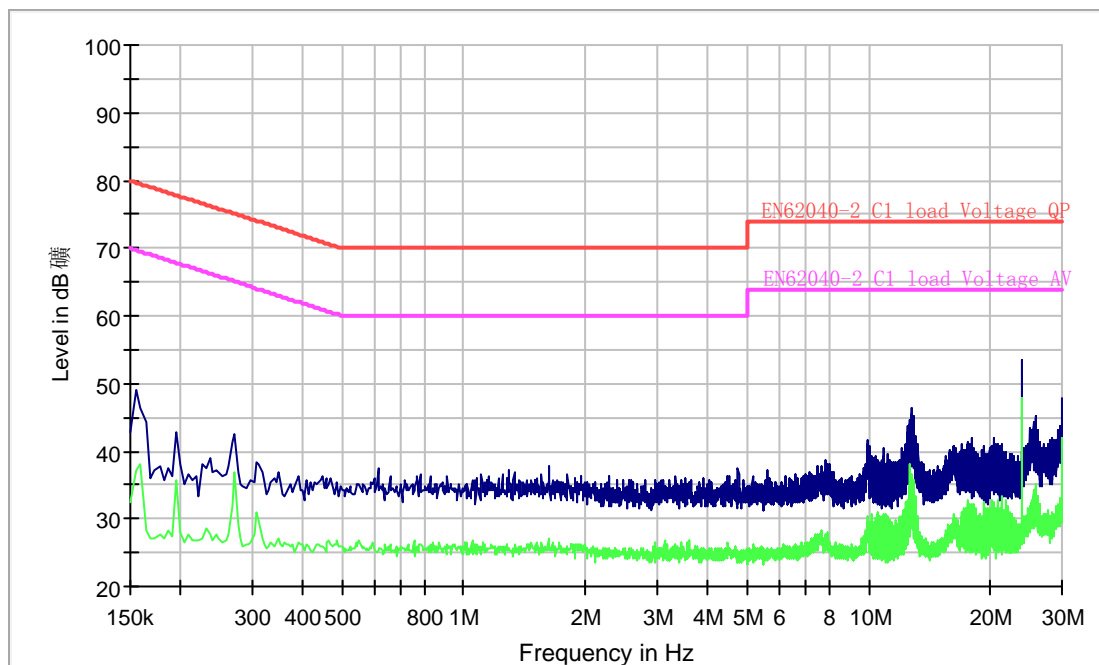
**Detected Peaks:**

Nr	Frequency (MHz)	QP Value (dBuV)	AVG Value (dBuV)	QP Limit (dBuV)	AVG Limit (dBuV)	Result
No Detected Peaks						

## TEST REPORT

**Port: N**

EN62040-2 Load Voltage Pre



**Detected Peaks:**

Nr	Frequency (MHz)	QP Value (dBuV)	AVG Value (dBuV)	QP Limit (dBuV)	AVG Limit (dBuV)	Result
No Detected Peaks						

## TEST REPORT

### 3.2 RADIATED EMISSION

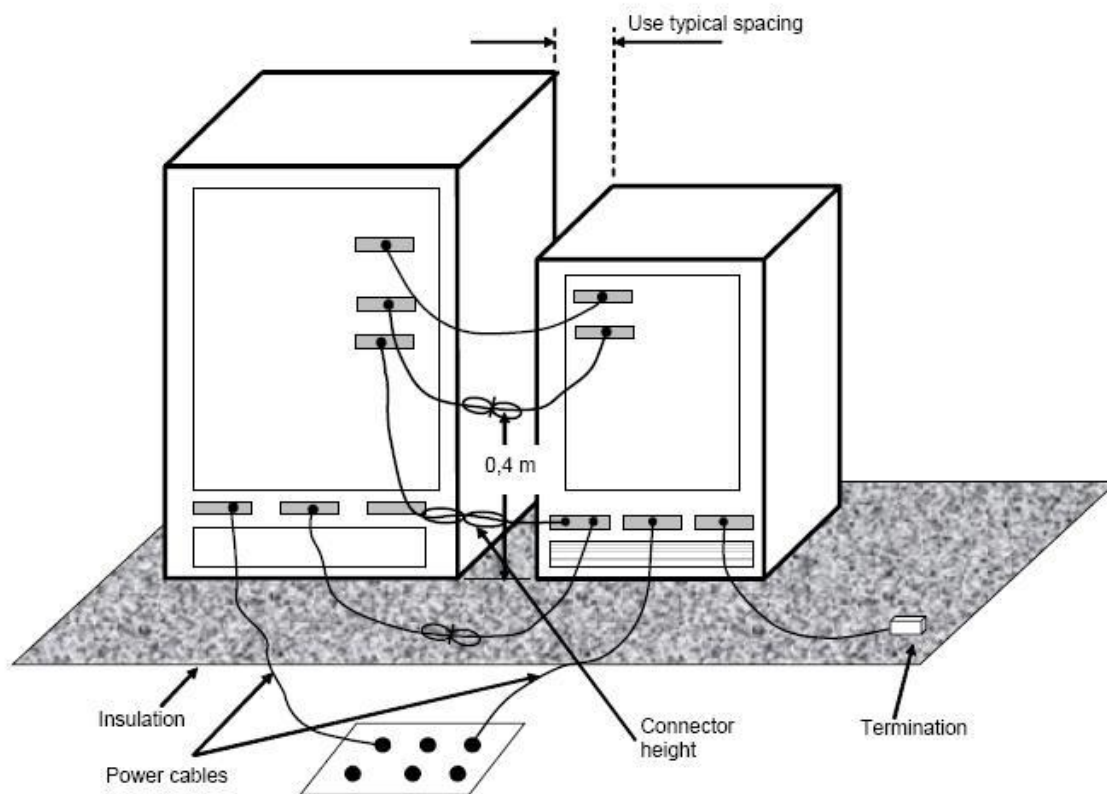
#### 3.2.1 LIMITS

FREQUENCY (MHz)	Quasi-peak(dBμV/m)
30~230	40
230~1000	47

**NOTE:** The lower limit shall apply at the transition frequencies.

#### 3.2.2 TEST METHOD

The EUT shall be placed on a non-conductive table such that it is 0.1m above the horizontal ground reference plane. If the mains input cable of the external power supply unit is greater than 0.8m, the external power supply unit shall be placed on the tabletop, with a nominal 0.1m separation from the host unit. If more than two units are present, the test arrangement shall be chosen that maintains as close as practical the 0.1m spacing between units unless they are normally located closer together. Intra-unit cables shall be draped over the back of the table. If a cable hangs closer than 0.4m from the horizontal ground plane (or floor), the excess shall be folded at the cable centre into a bundle no longer than 0.4m, such that the bundle is at least 0.4 m above the horizontal ground reference plane. The test setup see below:



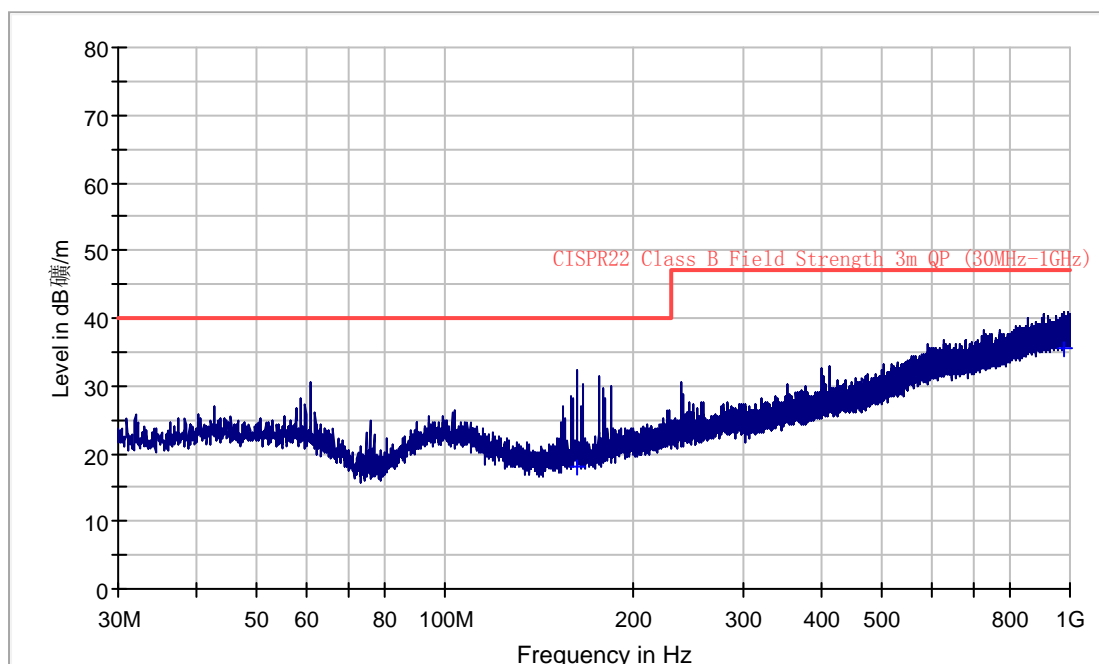
## TEST REPORT

### 3.2.3 TEST CHART AND DATA

<b>Environmental Condition:</b>	Temperature: 23℃	Humidity: 48%	Pressure: 101kPa
<b>Power Supply:</b>	AC 230V 50Hz	<b>Test Mode:</b>	Normal Operation
<b>Tested By:</b>	Elite Wu	<b>Total Result:</b>	Pass

#### Horizontal Polarization

Rad. EM VULB9163 (30M-1GHz) PRE



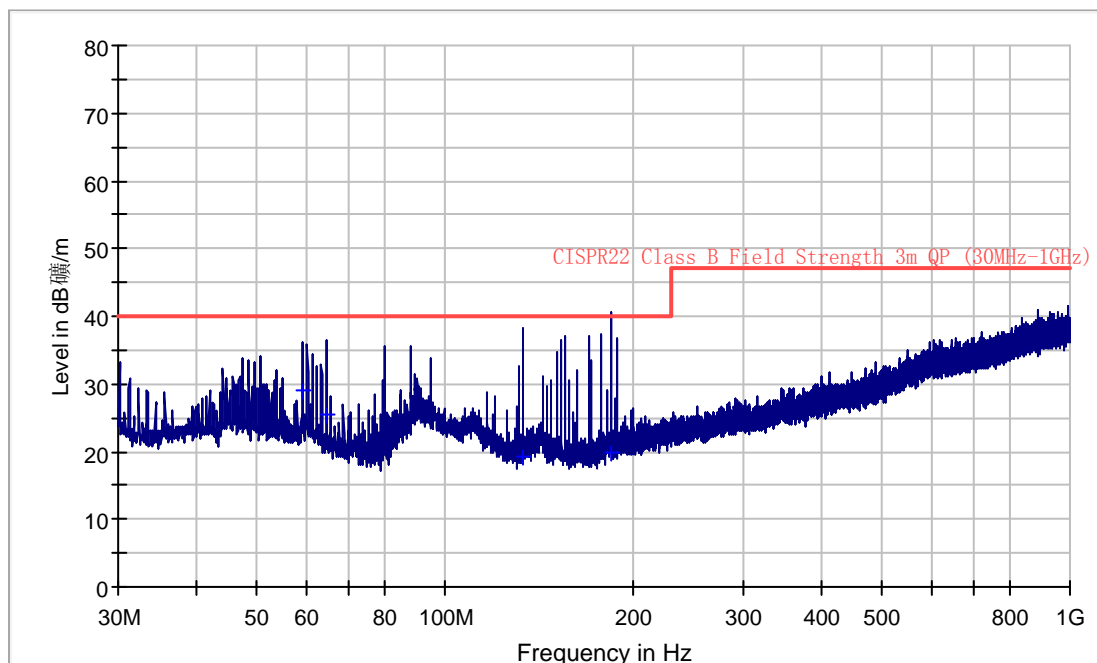
#### Detected Peaks:

Nr	Frequency (MHz)	QP Value (dBuV/m)	QP Limit (dBuV/m)	Result
1	162.84	18.0	40.0	Pass

## TEST REPORT

### Vertical Polarization

Rad. EM VULB9163 (30M-1GHz) PRE



### Detected Peaks:

Nr	Frequency (MHz)	QP Value (dBuV/m)	QP Limit (dBuV/m)	Result
1	59.160	29.1	40.0	Pass
2	64.500	25.4	40.0	Pass
3	133.560	19.2	40.0	Pass
4	184.380	19.8	40.0	Pass

## TEST REPORT

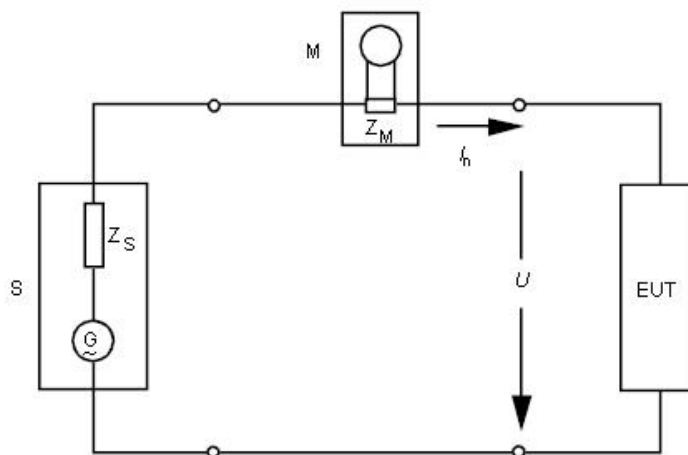
### 3.3 HARMONICS CURRENT

#### 3.3.1 LIMITS

Limits for Class A equipment	
Harmonic order (n)	Maximum permissible harmonic current (A)
<b>Odd harmonics</b>	
3	2.30
5	1.14
7	0.77
9	0.40
11	0.33
13	0.21
$15 \leq n \leq 39$	$0.15 * 15/n$
<b>Even harmonics</b>	
2	1.08
4	0.43
6	0.30
$8 \leq n \leq 40$	$0.23 * 8/n$

#### 3.3.2 TEST METHOD

The EUT setup shall be Simulated conditions of normal use and is tested with the equipment configured to its rated current. In this case, the equipment, if necessary, may be configured with its power supplies loaded with additional load (resistive) boards to simulate rated current conditions. The test circuit see below:



S power supply source  
 M measurement equipment  
 EUT equipment under test  
 U test voltage

$Z_M$  input impedance of measurement equipment  
 $Z_S$  internal impedance of the supply source  
 $I_n$  harmonic component of order n of the line current  
 G open-loop voltage of the supply source

## TEST REPORT

### 3.3.3 TEST CHART AND DATA

<b>Environmental Condition:</b>	Temperature: 23℃	Humidity: 48%	Pressure: 101kPa
<b>Power Supply:</b>	AC 230V 50Hz	<b>Test Mode:</b>	Normal Operation
<b>Tested By:</b>	Elite Wu	<b>Total Result:</b>	Pass

<i>Power and THD results - DS: 100</i>			
True power P:	-75.46W	Apparent power S:	198.4VA
Reactiv power Q:	183.5var	Power factor:	-0.380
THD (U):	0.001	THD (I):	0.576
Crest Factor (U):	1.414	Crest Factor (I):	2.143

## TEST REPORT

<i>Average harmonic current results</i>				
Hn	I <sub>eff</sub> [A]	% of Limit	Limit [A]	Result
1	748.999E-3			
2	12.424E-3	1.278	972.00E-3	PASS
3	224.464E-3	10.844	2.07	PASS
4	13.480E-3	3.483	387.00E-3	PASS
5	219.763E-3	21.419	1.03	PASS
6	11.795E-3	4.369	270.00E-3	PASS
7	156.846E-3	22.633	693.00E-3	PASS
8	11.437E-3	5.525	207.00E-3	PASS
9	185.379E-3	51.494	360.00E-3	PASS
10	9.667E-3	5.837	165.60E-3	PASS
11	112.209E-3	37.781	297.00E-3	PASS
12	8.236E-3	5.969	138.00E-3	PASS
13	88.536E-3	46.844	189.00E-3	PASS
14	6.927E-3	5.856	118.29E-3	PASS
15	45.407E-3	33.635	135.00E-3	PASS
16	5.861E-3	5.662	103.50E-3	PASS
17	52.151E-3	43.782	119.11E-3	PASS
18	4.900E-3	5.326	92.00E-3	PASS
19	32.830E-3	30.804	106.58E-3	PASS
20	4.506E-3	5.442	82.80E-3	PASS
21	51.716E-3	53.633	96.43E-3	PASS
22	5.239E-3	6.960	75.28E-3	PASS
23	30.590E-3	34.742	88.05E-3	PASS
24	4.276E-3	6.198	68.99E-3	PASS
25	20.247E-3	24.996	81.00E-3	PASS
26	4.097E-3	6.432	63.69E-3	PASS
27	20.374E-3	27.167	75.00E-3	PASS
28	4.234E-3	7.160	59.14E-3	PASS
29	17.879E-3	25.604	69.83E-3	PASS
30	3.818E-3	6.917	55.20E-3	PASS
31	13.580E-3	20.790	65.32E-3	PASS
32	4.205E-3	8.126	51.75E-3	PASS
33	19.503E-3	31.784	61.36E-3	PASS
34	4.360E-3	8.951	48.71E-3	PASS
35	18.446E-3	31.881	57.86E-3	PASS
36	4.392E-3	9.549	46.00E-3	PASS
37	12.146E-3	22.193	54.73E-3	PASS
38	4.557E-3	10.457	43.58E-3	PASS
39	10.877E-3	20.949	51.92E-3	PASS
40	3.966E-3	9.581	41.40E-3	PASS



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## TEST REPORT

<i>Maximum harmonic current results</i>				
Hn	I <sub>eff</sub> [A]	% of Limit	Limit [A]	Result
1	756.539E-3			
2	15.331E-3	0.710	2.16	PASS
3	230.944E-3	5.021	4.60	PASS
4	15.934E-3	1.853	860.00E-3	PASS
5	228.621E-3	10.027	2.28	PASS
6	14.149E-3	2.358	600.00E-3	PASS
7	170.682E-3	11.083	1.54	PASS
8	13.657E-3	2.969	460.00E-3	PASS
9	197.080E-3	24.635	800.00E-3	PASS
10	11.902E-3	3.234	368.00E-3	PASS
11	116.830E-3	17.701	660.00E-3	PASS
12	9.406E-3	3.067	306.66E-3	PASS
13	94.390E-3	22.474	420.00E-3	PASS
14	8.065E-3	3.068	262.86E-3	PASS
15	50.266E-3	16.755	300.00E-3	PASS
16	6.618E-3	2.878	230.00E-3	PASS
17	57.841E-3	21.852	264.70E-3	PASS
18	6.716E-3	3.285	204.44E-3	PASS
19	44.213E-3	18.668	236.84E-3	PASS
20	5.973E-3	3.246	184.00E-3	PASS
21	69.810E-3	32.579	214.28E-3	PASS
22	7.286E-3	4.356	167.28E-3	PASS
23	41.701E-3	21.313	195.66E-3	PASS
24	5.370E-3	3.503	153.32E-3	PASS
25	25.113E-3	13.952	180.00E-3	PASS
26	5.176E-3	3.657	141.54E-3	PASS
27	25.746E-3	15.448	166.66E-3	PASS
28	4.757E-3	3.620	131.42E-3	PASS
29	21.125E-3	13.613	155.18E-3	PASS
30	5.059E-3	4.125	122.66E-3	PASS
31	36.470E-3	25.124	145.16E-3	PASS
32	5.331E-3	4.636	115.00E-3	PASS
33	35.660E-3	26.151	136.36E-3	PASS
34	5.549E-3	5.127	108.24E-3	PASS
35	22.125E-3	17.207	128.58E-3	PASS
36	6.452E-3	6.312	102.22E-3	PASS
37	28.892E-3	23.756	121.62E-3	PASS
38	5.390E-3	5.566	96.84E-3	PASS
39	23.016E-3	19.948	115.38E-3	PASS
40	5.741E-3	6.240	92.00E-3	PASS



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## TEST REPORT

<i>Harmonic current results - DS: 100</i>				
Hn	I <sub>eff</sub> [A]	% of Limit	Limit [A]	Result
1	745.468E-3			
2	10.839E-3	1.004	1.08	PASS
3	222.154E-3	9.659	2.30	PASS
4	12.287E-3	2.857	430.00E-3	PASS
5	220.608E-3	19.352	1.14	PASS
6	10.929E-3	3.643	300.00E-3	PASS
7	162.090E-3	21.051	770.00E-3	PASS
8	11.200E-3	4.869	230.00E-3	PASS
9	188.961E-3	47.240	400.00E-3	PASS
10	9.307E-3	5.058	184.00E-3	PASS
11	109.643E-3	33.225	330.00E-3	PASS
12	8.372E-3	5.460	153.33E-3	PASS
13	84.846E-3	40.403	210.00E-3	PASS
14	7.029E-3	5.348	131.43E-3	PASS
15	46.733E-3	31.155	150.00E-3	PASS
16	6.292E-3	5.472	115.00E-3	PASS
17	51.080E-3	38.595	132.35E-3	PASS
18	4.936E-3	4.829	102.22E-3	PASS
19	30.595E-3	25.836	118.42E-3	PASS
20	4.190E-3	4.554	92.00E-3	PASS
21	49.741E-3	46.426	107.14E-3	PASS
22	5.359E-3	6.407	83.64E-3	PASS
23	29.325E-3	29.975	97.83E-3	PASS
24	4.310E-3	5.622	76.66E-3	PASS
25	19.846E-3	22.052	90.00E-3	PASS
26	4.011E-3	5.668	70.77E-3	PASS
27	21.797E-3	26.157	83.33E-3	PASS
28	4.351E-3	6.622	65.71E-3	PASS
29	19.302E-3	24.877	77.59E-3	PASS
30	3.911E-3	6.377	61.33E-3	PASS
31	7.852E-3	10.819	72.58E-3	PASS
32	4.235E-3	7.365	57.50E-3	PASS
33	15.892E-3	23.308	68.18E-3	PASS
34	4.435E-3	8.195	54.12E-3	PASS
35	19.845E-3	30.868	64.29E-3	PASS
36	4.638E-3	9.075	51.11E-3	PASS
37	10.294E-3	16.928	60.81E-3	PASS
38	4.347E-3	8.978	48.42E-3	PASS
39	9.132E-3	15.829	57.69E-3	PASS
40	3.885E-3	8.446	46.00E-3	PASS



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## **TEST REPORT**

### **3.4 ELECTROSTATIC DISCHARGE IMMUNITY**

#### **3.4.1 TEST METHOD**

The configuration consisted of a wooden table 0.1m high standing on the Ground Reference Plane. A Horizontal Coupling Plane (1.6m x 0.8m) was placed on the table and attached to the GRP by means of a cable with 940k $\Omega$  total impedance. The EUT was located 0.1m minimum from all side of the **Horizontal Coupling Plane (HCP)** and **Vertical Coupling Plane (VCP)**, and its cables were placed on the HCP and isolated by an insulating support of 0.5mm thickness. A distance of 1m minimum was provided between the EUT and the walls of the laboratory and any other metallic structure. The discharges shall be applied in two ways:

a) Contact discharges to the conductive surfaces and coupling planes:

The EUT shall be exposed to at least 20 discharges at each test points, 10 each at negative and positive polarity. One of the test points shall be subjected to the center of the front edge of the **HCP** and **VCP**. Test shall be performed at a maximum repetition rate of one discharge per second.

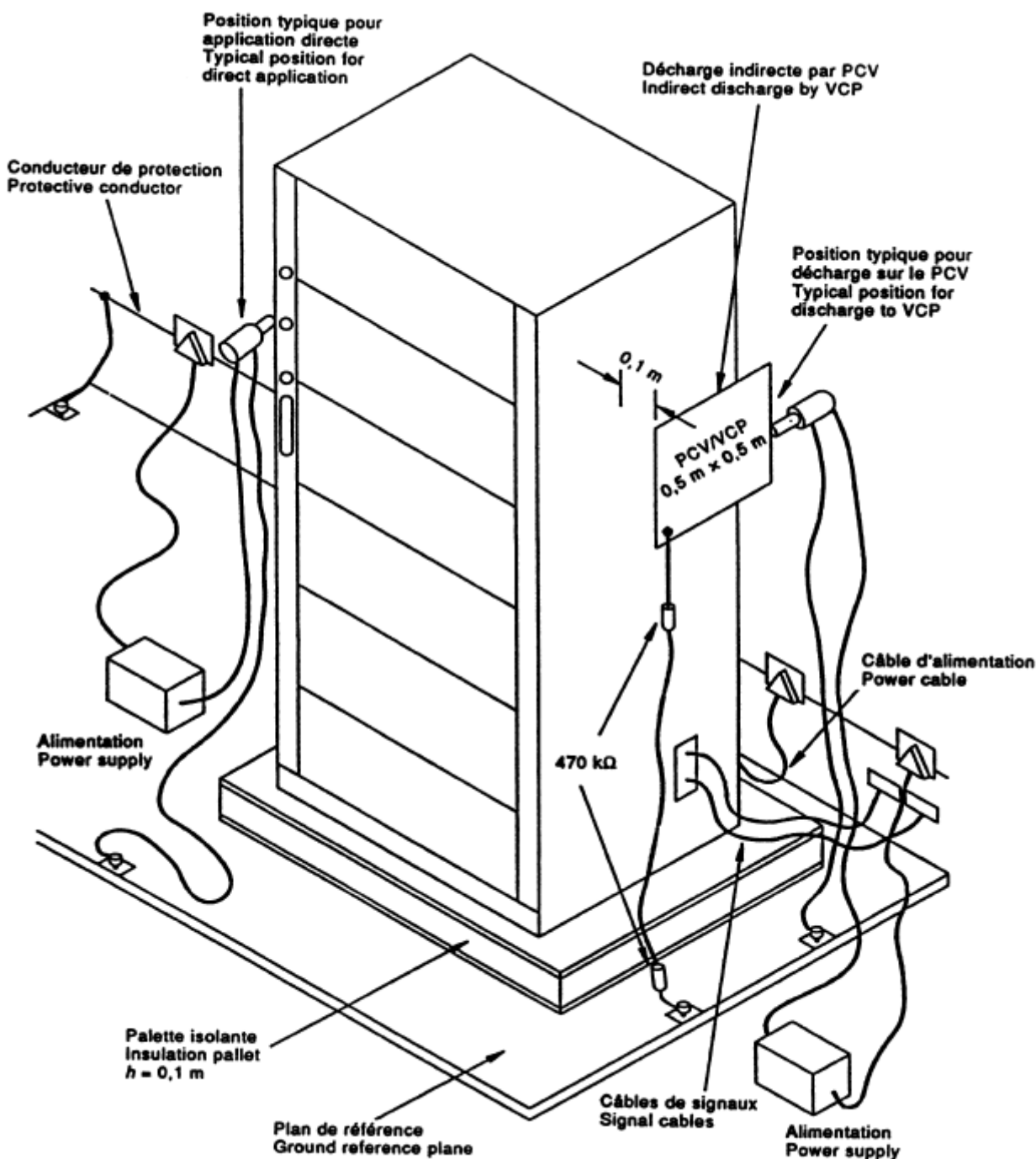
b) Air discharges at slots and apertures and insulating surfaces:

On those parts of the EUT where it is not possible to perform contact discharge testing, the equipment should be investigated to identify user accessible points where breakdown may occur. Such points are tested using the air discharge method. This investigation should be restricted to those area normally handled by the user. A minimum of 20 single air discharges(10 at negative polarity and 10 at positive polarity.) shall be applied to the selected test point for each such area.

The test setup see below:



## TEST REPORT



## TEST REPORT

### 3.4.2 TEST DATA

<b>Environmental Condition:</b>	Temperature: 23℃	Humidity: 48%	Pressure: 101kPa
<b>Power Supply:</b>	AC 230V 50Hz	<b>Test Mode:</b>	Normal Operation
<b>Tested By:</b>	Elite Wu	<b>Total Result:</b>	Pass

Test point	Test level (kV)	Air (A) Contact (C)	Required Criterion	Performance Criterion	Result
Non-conductive Enclosure	±8	A	B	A	Pass
Key	±8	A	B	A	Pass
LED	±8	A	B	A	Pass
Conductive Enclosure	±4	C	B	A	Pass
VCP	±4	C	B	A	Pass

**Note:** 1.For indirect discharge: VCP=Vertical Coupling Plane  
 2. There was no change compared with initial operation during and after the test.

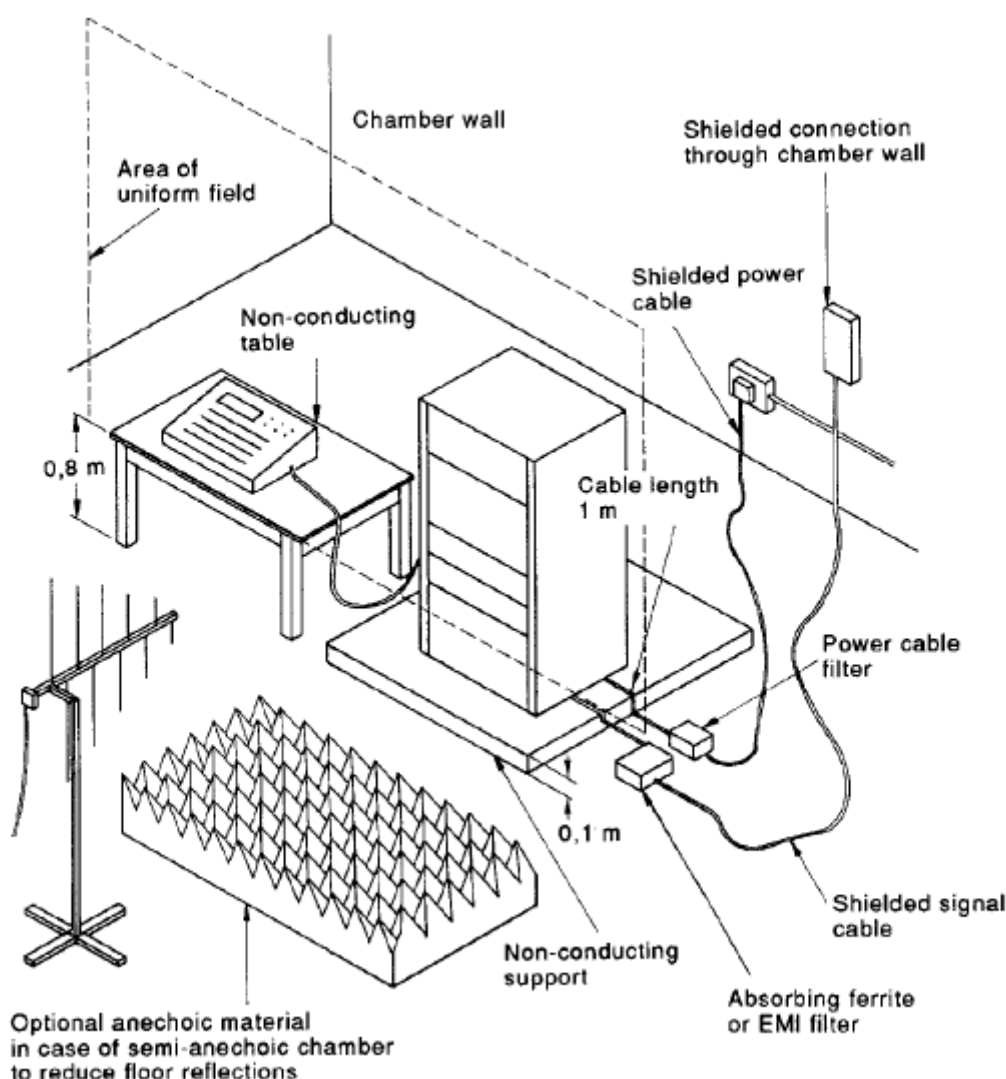
## TEST REPORT

### 3.5 RADIATED IMMUNITY

#### 3.5.1 TEST METHOD

The EUT shall be placed on a non-conductive table such that it is 0.1m high, and should be performed in a configuration as close as possible to the installed case. The wiring was left exposed to the electromagnetic field for a distance of 1m from the EUT.

The test setup see below:



## TEST REPORT

### 3.5.2 TEST DATA

<b>Environmental Condition:</b>	Temperature: 23℃	Humidity: 48%	Pressure: 101kPa
<b>Power Supply:</b>	AC 230V 50Hz	<b>Test Mode:</b>	Normal Operation
<b>Tested By:</b>	Elite Wu	<b>Total Result:</b>	Pass

Frequency Range	Test Level	Sides of EUT	Required Criterion	Performance Criterion	Result
80MHz~1GHz	3V/m	Front	A	A	Pass
		Rear	A	A	Pass
		Left	A	A	Pass
		Right	A	A	Pass

**Note:** There was no change compared with initial operation during and after the test.

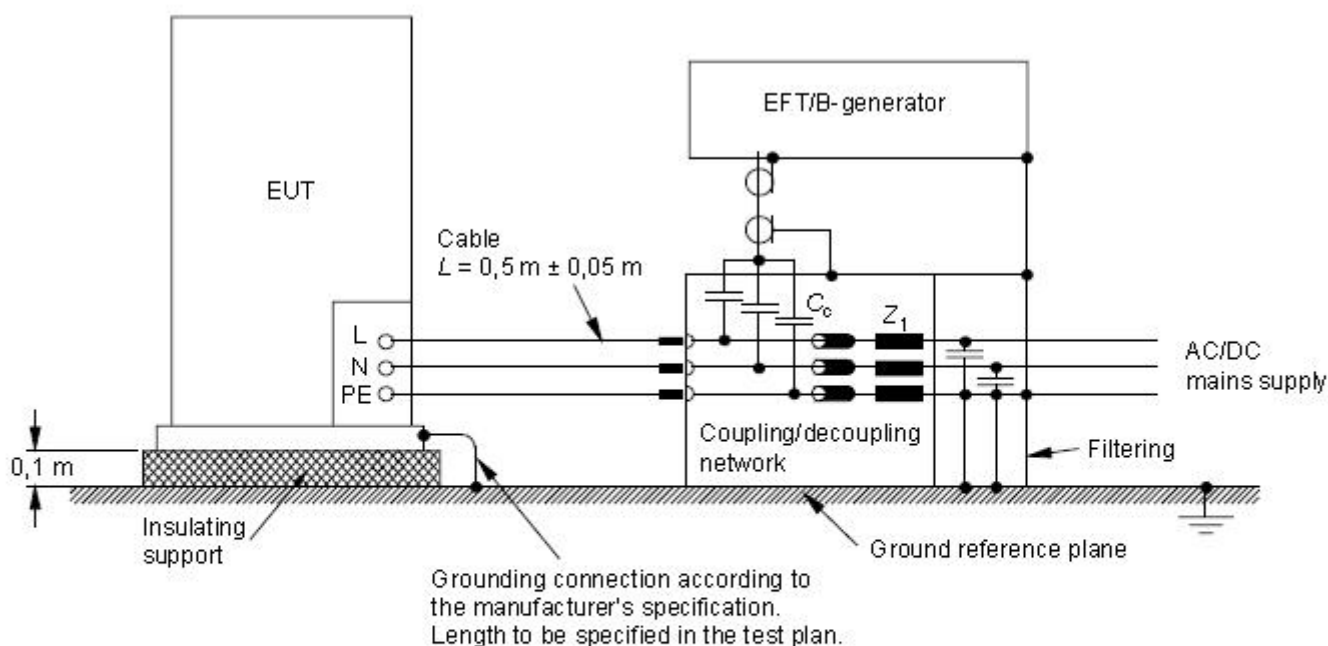
## TEST REPORT

### 3.6 ELECTRICAL FAST TRANSIENT/BURST IMMUNITY

#### 3.6.1 TEST METHOD

The EUT, whether stationary floor-mounted or table top, and equipment designed to be mounted in other configurations, shall be placed on a ground reference plane and shall be insulated from it by an insulating support  $0.1 \text{ m} \pm 0.01 \text{ m}$  thick. All cables to the EUT shall be placed on the insulation support  $0.1 \text{ m}$  above the ground reference plane. Cables not subject to electrical fast transients shall be routed as far as possible from the cable under test to minimize the coupling between the cables. The minimum distance between the EUT and all other conductive structures (e.g. the walls of a shielded room), except the ground reference plane shall be more than  $0.5 \text{ m}$ . The ground reference plane shall project beyond the EUT by at least  $0.1 \text{ m}$  on all sides.

The test setup see below:



#### Components

PE	protective earth
N	neutral
L	phase
$Z_1$	decoupling inductive
$C_c$	coupling capacitor



## TEST REPORT

### 3.6.2 TEST DATA

<b>Environmental Condition:</b>	Temperature: 23℃	Humidity: 48%	Pressure: 101kPa
<b>Power Supply:</b>	AC 230V 50Hz	<b>Test Mode:</b>	Normal Operation
<b>Tested By:</b>	Elite Wu	<b>Total Result:</b>	Pass

Test Point	Test Level (kV)	Required Criterion	Performance Criterion	Result
L	±1	B	A	Pass
N	±1	B	A	Pass
PE	±1	B	A	Pass
L-N-PE	±1	B	A	Pass

**Note:** There was no change compared with initial operation during and after the test.

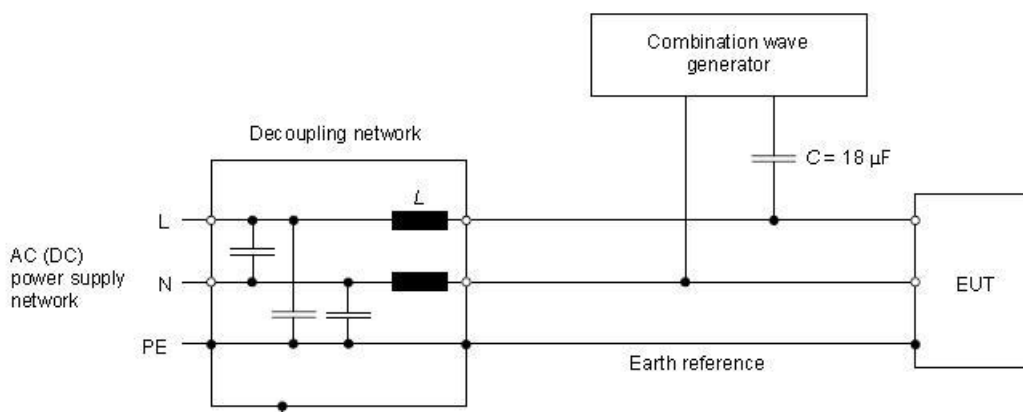
## TEST REPORT

### 3.7 SURGE IMMUNITY

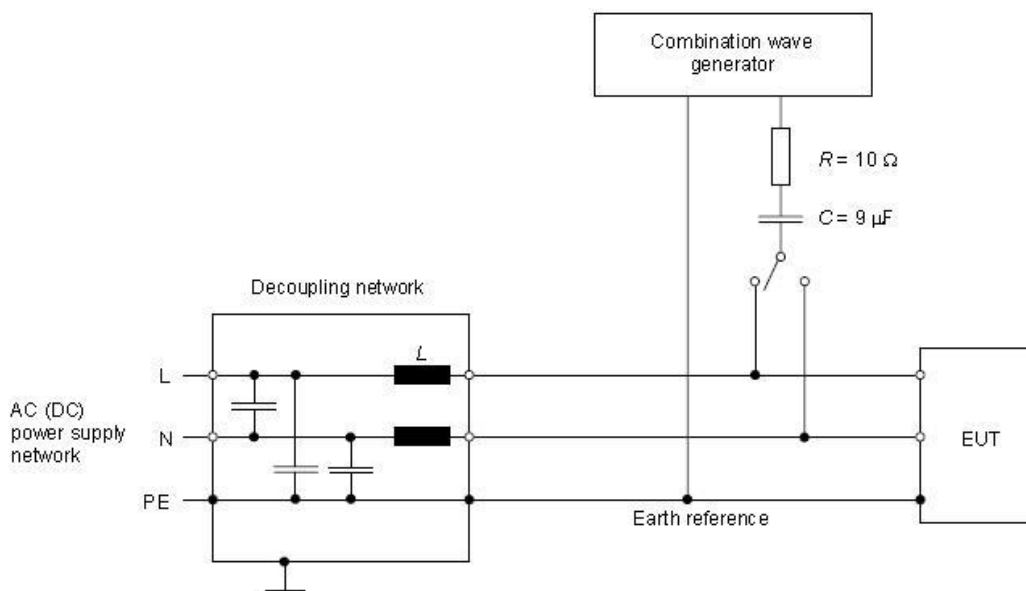
#### 3.7.1 TEST METHOD

The surge is 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. The power cord between the EUT and the coupling/decoupling networks was shorter than 2 meters in length.

The test setup see below:



**Example of test setup for capacitive coupling on a.c./d.c. lines;  
line-to-line coupling**



**Example of test setup for capacitive coupling on a.c./d.c. lines;  
line-to-ground coupling**

## TEST REPORT

### 3.7.2 TEST DATA

<b>Environmental Condition:</b>	Temperature: 23°C	Humidity: 48%	Pressure: 101kPa
<b>Power Supply:</b>	AC 230V 50Hz	<b>Test Mode:</b>	Normal Operation
<b>Tested By:</b>	Elite Wu	<b>Total Result:</b>	Pass

Test Point	Test Level (kV)	Required Criterion	Performance Criterion	Result
L-N	±1	B	A	Pass
L-PE	±2	B	A	Pass
N-PE	±2	B	A	Pass

**Note:** There was no change compared with initial operation during and after the test.

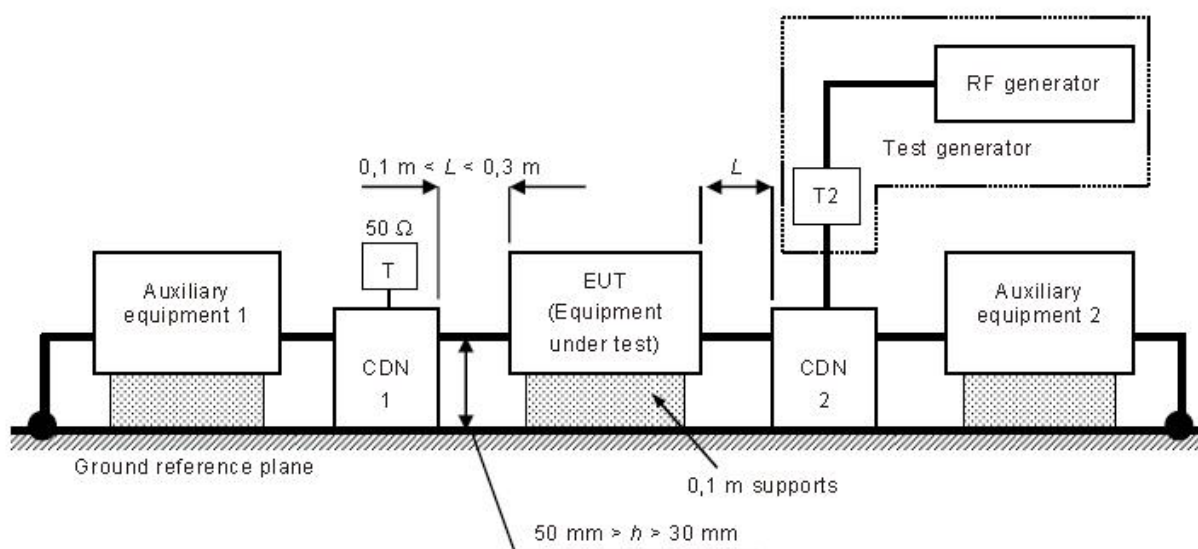
## TEST REPORT

### 3.8 RF CONDUCTED IMMUNITY

#### 3.8.1 TEST METHOD

The EUT is placed on an insulating support of 0.1 m height above a ground reference plane. All relevant cables shall be provided with the appropriate coupling and decoupling devices at a distance between 0.1 m and 0.3 m from the projected geometry of the EUT on the ground reference plane. Testing with the signal levels established during the setting process, and with the disturbance signal 80 % amplitude modulated with a 1 kHz sine wave. The step size shall be 1 % of the preceding frequency value. The dwell time of the amplitude modulated carrier at each frequency shall not be less than the time necessary for the EUT to be exercised and to respond, but shall in no case be less than 0.5 s. The sensitive frequencies shall be analyzed separately.

The test setup see below:



#### 3.8.2 TEST DATA

<b>Environmental Condition:</b>	Temperature: 23°C	Humidity: 48%	Pressure: 101kPa
<b>Power Supply:</b>	AC 230V 50Hz	<b>Test Mode:</b>	Normal Operation
<b>Tested By:</b>	Elite Wu	<b>Total Result:</b>	Pass

Cable	Frequency Band (MHz)	Field Strength (Vrms)	Required Criterion	Performance Criterion	Result
AC mains	0.15 ~ 80	3	A	A	Pass

**Note:** There was no change compared with initial operation during and after the test.

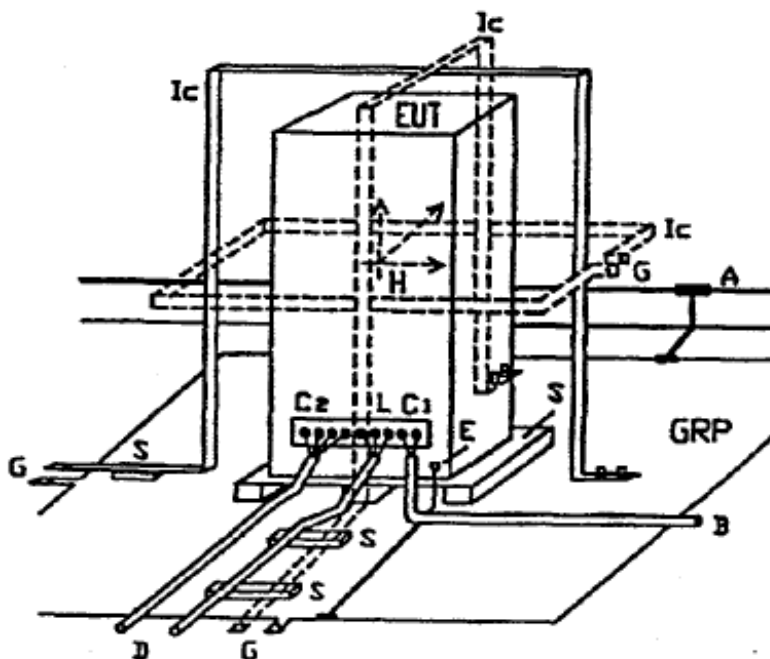
## TEST REPORT

### 3.9 POWER FREQUENCY MAGNETIC FIELD IMMUNITY

#### 3.9.1 TEST METHOD

The EUT is placed on the ground reference plane with the interposition of a 0.1m thickness insulating support. The EUT cabinets shall be connected to the safety earth directly on the GRP via the earth terminal of the EUT. The cables supplied or recommended by the equipment manufacturer shall be used. In absence of any recommendation, unshielded cables shall be adopted, of a type appropriate for the signals involved. All cables shall be exposed to the magnetic field for 1m of their length.

The test setup see below:



#### 3.9.2 TEST DATA

<b>Environmental Condition:</b>	Temperature: 23°C	Humidity: 48%	Pressure: 101kPa
<b>Power Supply:</b>	AC 230V 50Hz	<b>Test Mode:</b>	Normal Operation
<b>Tested By:</b>	Elite Wu	<b>Total Result:</b>	Pass

Test port	Frequency	Magnetic field strength	Required Criterion	Performance Criterion	Result
Enclosure	50Hz	10A/m	A	A	Pass

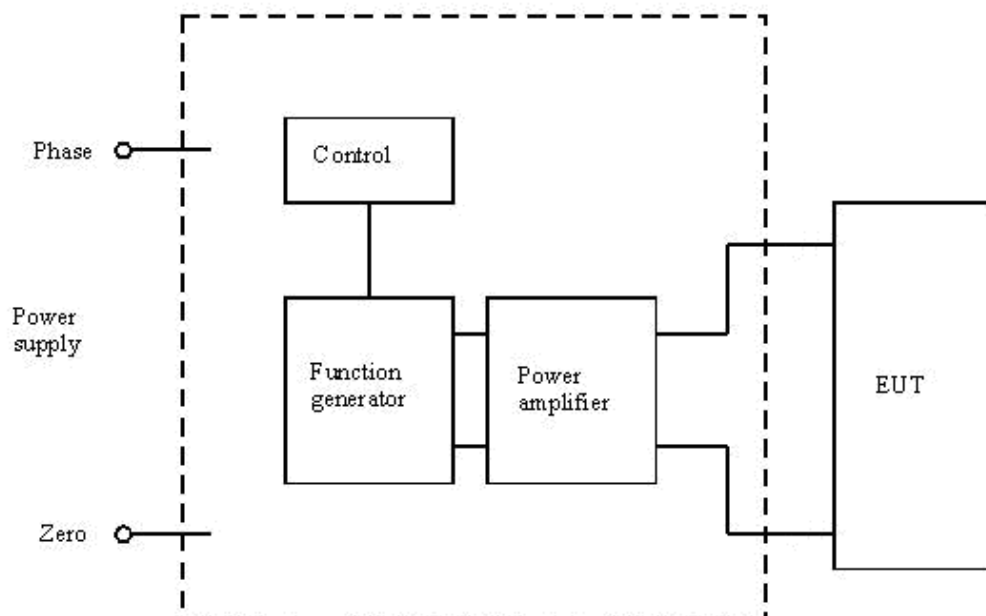
**Note:** There was no change compared with initial operation during and after the test.

## TEST REPORT

### 3.10 VOLTAGE DIPS AND INTERRUPTION IMMUNITY

#### 3.10.1 TEST METHOD

The test shall be performed with the EUT connected to the test generator with the shortest power supply cable as specified by the EUT manufacturer. If no cable length is specified, it shall be the shortest possible length suitable to the application of the EUT. The test setup see below:



#### 3.10.2 TEST DATA

<b>Environmental Condition:</b>	Temperature: 23°C	Humidity: 48%	Pressure: 101kPa
<b>Power Supply:</b>	AC 230V 50Hz	<b>Test Mode:</b>	Normal Operation
<b>Tested By:</b>	Elite Wu	<b>Total Result:</b>	Pass

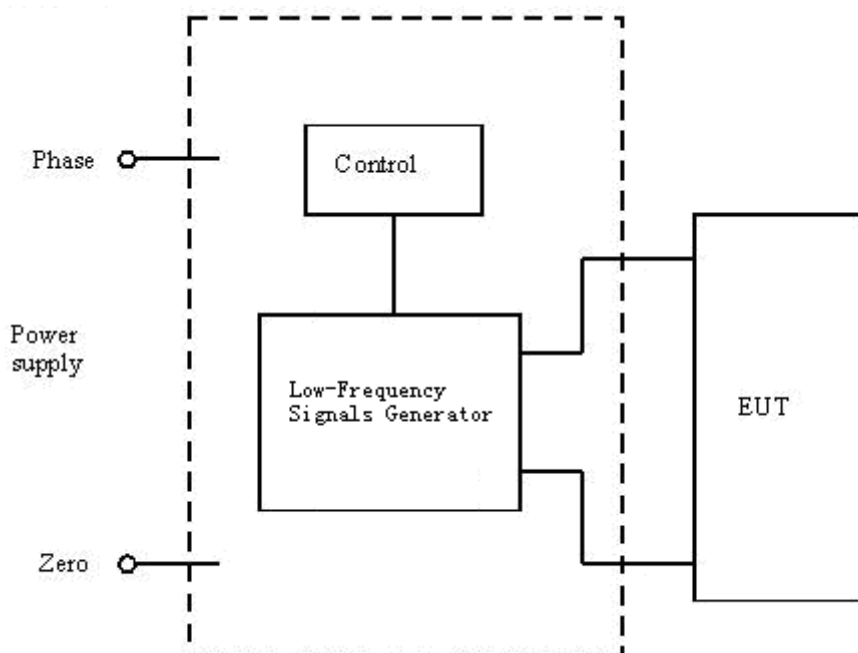
Reduction of supply voltage of	Voltage in %	Duration in parts of period (in ms)	Required Criterion	Performance Criterion	Result
>95%	0%	0.5 (10 ms)	B	B	Pass
30 %	70%	25 (500 ms)	C	C	Pass
Interruption(>95%)	0%	250(5000 ms)	C	C	Pass

## TEST REPORT

### 3.11 LOW-FREQUENCY SIGNALS

#### 3.11.1 TEST METHOD

The test shall be performed with the EUT connected to the test generator with the shortest power supply cable as specified by the EUT manufacturer. The test as a minimum shall be performed with a single sinusoidal disturbing voltage of 10 V, at a frequency which is slowly varied from 140 Hz to 360 Hz. Use can be made of a series injection circuit where the mains supplies 50/60Hz power and the amplifier delivers only the harmonics. The test setup see below:



#### 3.11.2 TEST DATA

<b>Environmental Condition:</b>	Temperature: 23°C	Humidity: 48%	Pressure: 101kPa
<b>Power Supply:</b>	AC 230V 50Hz	<b>Test Mode:</b>	Normal Operation
<b>Tested By:</b>	Elite Wu	<b>Total Result:</b>	Pass

Cable	Frequency Band (Hz)	Disturbing Voltage (V)	Required Criterion	Performance Criterion	Result
AC mains	140 ~ 360	10	A	A	Pass

**Note:** There was no change compared with initial operation during and after the test.

## TEST REPORT

### 4 PHOTOS

Product Photos:



\*\*\*\*\*End of Report\*\*\*\*\*