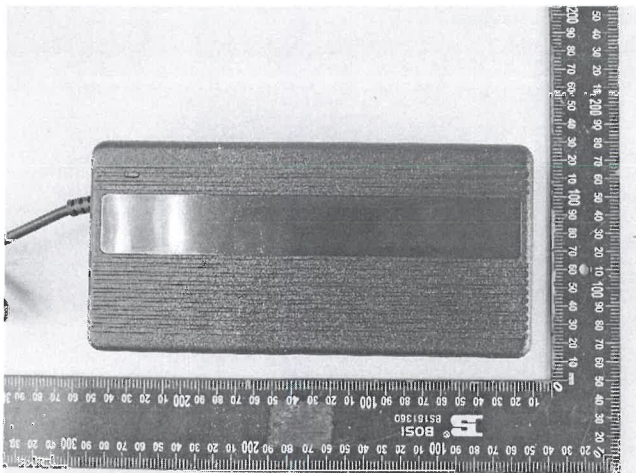


<b>Prüfbericht - Nr.:</b> <i>Test Report No.:</i>	50058943 001	<b>Auftrags-Nr.:</b> <i>Order No.:</i>	1160028606	Seite 1 von 27 Page 1 of 27
<b>Kunden-Referenz-Nr.:</b> <i>Client Reference No.:</i>	N/A	<b>Auftragsdatum:</b> <i>Order date:</i>	01.09.2016	
<b>Auftraggeber:</b> <i>Client:</i>	Wuxi Sans Electronic Co., Ltd. Industrial WuYi, DongGang Town Wuxi, Jiangsu P.R. China			
<b>Prüfgegenstand:</b> <i>Test item:</i>	Adapter			
<b>Bezeichnung / Typ-Nr.:</b> <i>Identification / Type No.:</i>	SSLC180V54.6			
<b>Auftrags-Inhalt:</b> <i>Order content:</i>	TÜV Rheinland – EMC Service			
<b>Prüfgrundlage:</b> <i>Test specification:</i>	EN 55014-1:2006+A1+A2 EN 55014-2:2015 EN 61000-3-3:2013 EN 61000-3-2:2014			
<b>Wareneingangsdatum:</b> <i>Date of receipt:</i>	05.09.2016			
<b>Prüfmuster-Nr.:</b> <i>Test sample No.:</i>	N/A			
<b>Prüfzeitraum:</b> <i>Testing period:</i>	30.09.2016-14.10.2016			
<b>Ort der Prüfung:</b> <i>Place of testing:</i>	Refer to section 1.1			
<b>Prüflaboratorium:</b> <i>Testing laboratory:</i>	TÜV Rheinland / CCIC (Ningbo) Co., Ltd.			
<b>Prüfergebnis*:</b> <i>Test result*:</i>	Pass			
<b>geprüft von/ tested by:</b>		<b>kontrolliert von/ reviewed by:</b>		
20.10.2016	Carrie Lei/PE	<i>Carrie Lei</i>	20.10.2016	Stone Hou/TC
<i>Date</i>	<i>Name/Position</i>	<i>Signature</i>	<i>Date</i>	<i>Name/Position</i>
				<i>Signature</i>
<b>Sonstiges/ Other:</b> Refer to next page for more information.				
<b>Zustand des Prüfgegenstandes bei Anlieferung:</b> <i>Condition of the test item at delivery:</i>		Prüfmuster vollständig und unbeschädigt <i>Test item complete and undamaged</i>		
*Legende:	1= Sehr gut	2 = gut	3= befriedigend	4= ausreichend
	P(ass) =entspricht o.g. Prüfgrundlage(n)	F(ail)= entspricht o.g. Prüfgrundlage(n)	N/A = nicht anwendbar	N/T =nicht getestet
Legend:	1= very good	2 = good	3= satisfactory	4= sufficient
	P(ass) = passed a.m. test specification(s)	F(ail)= failed a.m. test specification(s)	N/A = not applicable	N/T = not tested
<p><b>Dieser Prüfbericht bezieht sich nur auf das o.g. Prüfmuster und darf ohne Genehmigung der Prüfstelle nicht auszugsweise vervielfältigt werden. Dieser Bericht berechtigt nicht zur Verwendung eines Prüfzeichens.</b>  <i>This test report relates to the a. m. test sample. Without permission of the test center this test report is not permitted to be duplicated in extracts. This test report does not entitle to carry any safety mark on this or similar products.</i></p>				

V04

## TEST SUMMARY

4.1.1 HARMONICS ON AC MAINS

*Result:*

*Pass*

4.1.2 VOLTAGE CHANGES, VOLTAGE FLUCTUATIONS AND FLICKER ON AC MAINS

*Result:*

*Pass*

4.1.3 MAINS TERMINAL CONTINUOUS DISTURBANCE VOLTAGE

*Result:*

*Pass*

4.1.4 DISCONTINUOUS INTERFERENCE ON AC MAINS

*Result:*

*N.A*

4.2.1 DISTURBANCE POWER

*Result:*

*Pass*

4.2.2 RADIATED DISTURBANCE IN THE FREQUENCY RANGE FROM 30MHZ TO 1000MHZ

*Result:*

*Pass*

5.1.1 ELECTROSTATIC DISCHARGE

*Result:*

*Pass*

5.2.1 FAST TRANSIENTS ON AC POWER LINES

*Result:*

*Pass*

5.2.2 INJECTED CURRENT INTO AC POWER PORT

*Result:*

*Pass*

5.2.3 SURGES TO AC POWER PORT

*Result:*

*Pass*

5.2.4 VOLTAGE DIPS AND INTERRUPTIONS TO AC POWER PORT

*Result:*

*Pass*

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## 1 Test Sites

### 1.1 Test Facilities

Laboratory A: Ningbo Entry-Exit Inspection and Quarantine Bureau.  
Electrical Safety Testing Center for Optics & Electronics products  
(NOETC)

**5-9 Zhufeng Road Ningbo Export Processing Zone, Beilun Ningbo,  
Zhejiang province, 315800, P. R. China**

The used test equipments of Laboratory are in accordance with CISPR 16-1 series standards for measurement of radio interference.

### 1.2 List of Test and Measurement Instruments

**Table 1: List of Test and Measurement Equipments of Laboratory A**

No.	Equipment	Model	Serial No.	Cal. due date
1	EMI test receiver	ESCI	100708	2017.04.28
2	Artificial mains network	ENV216	101022	2017.04.28
3	Absorbing clamp	ADS-Z21	100309	2017.04.28
4	Integrated measurement system	IMS	100012	2017.04.28
5	ESD generator	DITO	B07040	2017.04.28
6	Dip Surge Burst Test System	UCS500-M6B	V0746103125	2017.04.28
7	CDN	FCC-801-M2/M3-16A	7079	2017.04.28
8	6 dB Attenuator	75-A-FFN-06	141733	2017.04.28
9	Harmonics/flicker analyzer	DPA503	V0828104013	2017.04.28

## 2 General Product Information

### 2.1 Product Function and Intended Use

The EUT (equipment under test) is an ordinary Adapter for household and similar use. For the further information, refer to the user's manual.

### 2.2 Ratings and System Details

Rated voltage	:	AC 100-240V
Frequency	:	47-63Hz
Output voltage	:	54.6V
Output current	:	3.0A
Protection class	:	Class II

Other aspect:

Only the supply voltage range of AC 230V, voltage of general public power supply in EU countries, is considered in this test report. But still it is suggested to test also the 100V so that the customer can use the report in other counties.

Refer to the user's manual for further information.

### 2.3 Independent Operation Modes

The basic operation modes are: "On" or "Off".  
Refer to the user's manual for further information.

### 2.4 Noise Generating and Noise Suppressing Parts

Refer to the Circuit Diagram for further information.

### 2.5 Submitted Documents

Circuit diagram, PCB layout, labels and user's manual, etc

## **3 Test Set-up and Operation Modes**

### **3.1 Principle of Configuration Selection**

**Emission:** The equipment under test (EUT) was configured to measure its highest possible radiation level. The test conditions were adapted accordingly in reference to the instructions for use.

Refer to the related paragraph of this report.

**Immunity:** The equipment under test (EUT) was configured to have its highest possible susceptibility against the tested phenomena. The test conditions were adapted accordingly in reference to the instructions for use.

Refer to the related paragraph of this report.

### **3.2 Physical Configuration for Testing**

Refer to the related paragraph of this report.

### **3.3 Test Operation and Test Software**

Refer to the related paragraph of this report. No software was used.

### **3.4 Special Accessories and Auxiliary Equipment**

None.

### **3.5 Countermeasures to achieve EMC Compliance**

The tested sample contained noise suppression components as described in the circuit diagram. No special measure is employed to achieve the requirement.

## 4 Test Results EMISSION

### 4.1 Emission in the Frequency Range up to 30 MHz

#### 4.1.1 Harmonics on AC Mains

**Result:**

**Pass**

Date of testing : 2016.10.11  
Test procedure : EN 61000-3-2:2014  
Test duration : 2.5min  
Harmonic order : 2 – 40<sup>th</sup>  
Frequency range : 0 – 2kHz  
Test voltage : 230V, 50Hz

The harmonics on AC Mains in the frequency from 0 to 2 kHz were measured in accordance with EN 61000-3-2:2014.

The measurement was conducted with an automatic current harmonic analyzing system. This equipment is in compliance with the requirements of EN 61000-3-2:2014.

The results indicated in the following tables and figures were those measured and recorded by an automatic measuring system.

**Table 2: Harmonic currents measurement result**

Equipment category: Class A;

Power factor: 0.964; Active input power: 160.3W.

**Average harmonic current results**

Hn	I <sub>eff</sub> [A]	% of Limit	Limit [A]	Result
1	713.876E-3			
2	854.499E-6		1.080	PASS
3	56.415E-3	2.453	2.300	PASS
4	817.282E-6		0.430	PASS
5	15.306E-3	1.343	1.140	PASS
6	745.523E-6		0.300	PASS
7	13.255E-3	1.721	0.770	PASS
8	754.130E-6		0.230	PASS
9	10.403E-3	2.601	0.400	PASS
10	741.468E-6		0.184	PASS
11	8.466E-3	2.565	0.330	PASS
12	766.900E-6		0.153	PASS
13	6.741E-3	3.210	0.210	PASS
14	759.319E-6		0.131	PASS
15	6.603E-3	4.402	0.150	PASS
16	739.053E-6		0.115	PASS
17	4.396E-3		0.132	PASS
18	733.464E-6		0.102	PASS
19	4.288E-3		0.118	PASS
20	753.449E-6		0.092	PASS
21	2.830E-3		0.107	PASS
22	731.872E-6		0.084	PASS
23	3.021E-3		0.098	PASS
24	725.624E-6		0.077	PASS
25	2.399E-3		0.090	PASS
26	736.269E-6		0.071	PASS
27	1.863E-3		0.083	PASS
28	722.939E-6		0.066	PASS
29	1.369E-3		0.078	PASS
30	769.260E-6		0.061	PASS
31	1.311E-3		0.073	PASS
32	768.737E-6		0.058	PASS
33	1.866E-3		0.068	PASS
34	776.512E-6		0.054	PASS
35	1.022E-3		0.064	PASS
36	778.620E-6		0.051	PASS
37	1.564E-3		0.061	PASS
38	773.751E-6		0.048	PASS
39	2.098E-3		0.058	PASS
40	783.778E-6		0.046	PASS

Harmonic currents less than 0.6% of the input current measured under the test conditions, or less than 5 mA, whichever is greater, are disregarded.



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### Maximum harmonic current results

Hn	I <sub>eff</sub> [A]	% of Limit	Limit [A]	Result
1	718.822E-3			
2	1.068E-3		1.62	PASS
3	56.655E-3	1.642	3.45	PASS
4	931.819E-6		0.645	PASS
5	15.618E-3	0.913	1.710	PASS
6	876.672E-6		0.450	PASS
7	13.927E-3	1.206	1.155	PASS
8	871.111E-6		0.345	PASS
9	10.685E-3	1.781	0.600	PASS
10	892.762E-6		0.276	PASS
11	9.660E-3	1.952	0.495	PASS
12	890.217E-6		0.230	PASS
13	7.039E-3	2.235	0.315	PASS
14	919.505E-6		0.197	PASS
15	7.178E-3	3.190	0.225	PASS
16	870.295E-6		0.173	PASS
17	4.887E-3		0.199	PASS
18	867.015E-6		0.153	PASS
19	4.695E-3		0.178	PASS
20	976.505E-6		0.138	PASS
21	3.682E-3		0.161	PASS
22	892.726E-6		0.125	PASS
23	3.374E-3		0.147	PASS
24	840.198E-6		0.115	PASS
25	2.680E-3		0.135	PASS
26	838.761E-6		0.106	PASS
27	2.637E-3		0.125	PASS
28	846.015E-6		0.099	PASS
29	2.198E-3		0.116	PASS
30	901.752E-6		0.092	PASS
31	1.975E-3		0.109	PASS
32	899.710E-6		0.086	PASS
33	2.638E-3		0.102	PASS
34	884.983E-6		0.081	PASS
35	1.259E-3		0.096	PASS
36	893.116E-6		0.077	PASS
37	2.174E-3		0.091	PASS
38	875.901E-6		0.073	PASS
39	2.629E-3		0.087	PASS
40	923.652E-6		0.069	PASS

Harmonic currents less than 0.6% of the input current measured under the test conditions, or less than 5 mA, whichever is greater, are disregarded.

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#### 4.1.2 Voltage changes, voltage fluctuations and flicker on AC mains

**Result:**

**Pass**

Test procedure : EN 61000-3-3:2013

Due to the low power characteristic of the samples, they cannot produce voltage fluctuations and flicker exceeding the limits, thus all the samples are deemed to meet the requirements of EN 61000-3-3:2013 without actual testing.

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### 4.1.3 Mains Terminal Continuous Disturbance Voltage

<b>Result:</b>	<b>Pass</b>
----------------	-------------

Date of testing : 2016.09.30  
 Test procedure : EN 55014-1:2006+A1+A2 and CISPR 16-1 series standards  
 Frequency range : 0.15 – 30MHz  
 Kind of test site : EMC chamber

#### Test Setup

Input Voltage : AC 100-240V, 47-63Hz  
 Operational mode : ON  
 Artificial hand : No  
 Earthing : No

The measurement setup was made according to EN 55014-1:2006+A1+A2 in an EMC chamber.

The measurement equipment like test receiver, quasi-peak detector and Artificial Mains Network (AMN) are in compliance with CISPR 16-1 series standards. The tested object was operated under its rated voltage and its rated frequency. Prior to the measurements the test object operated about 15 minutes (warm-up) in order to stabilize its operating conditions and to ensure reliable measurement values.

Furthermore an internal calibration with the test receiver was conducted prior to each measurement.

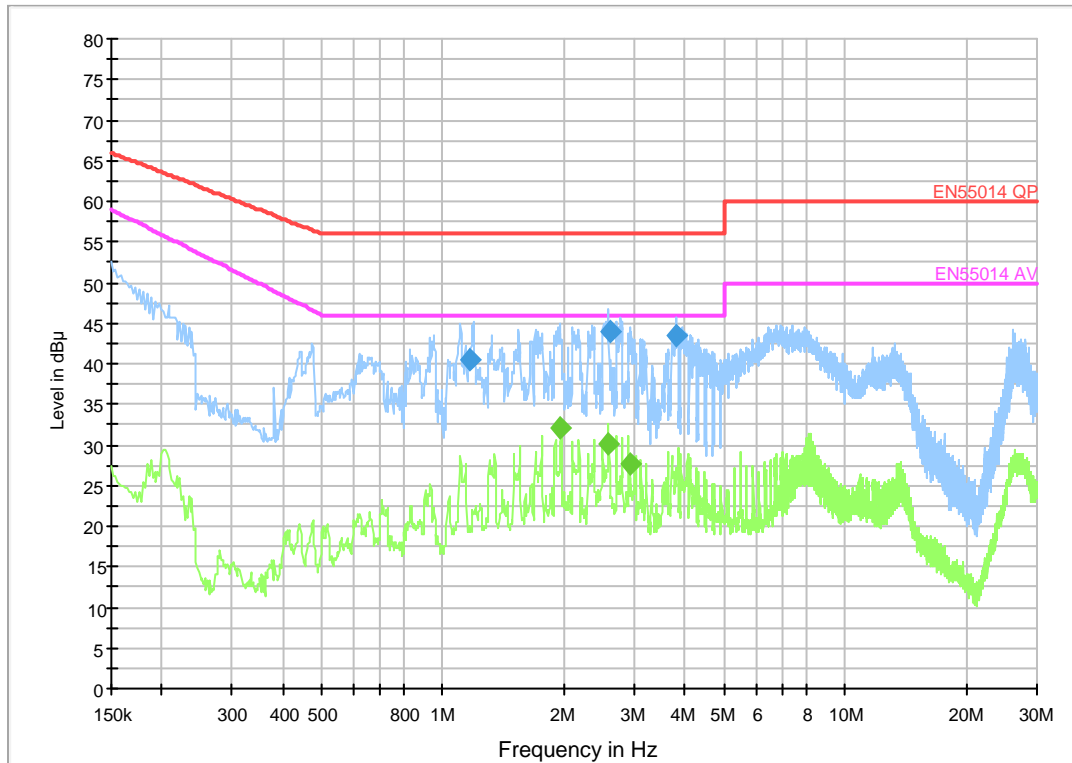
The tested object was set-up on a wooden table. The EUT was set 0.8m away from the AMN. The cord longer than necessary to be connected to the AMN was folded forth and back parallel so as to form a bundle with a length between 0.3m and 0.4m.

The Interference Voltage was determined according to clause 5 of EN 55014-1:2006+A1+A2 while measuring the line and neutral conductor by turns.

The following figures and tables were those measured by an automatic measuring system. Both Quasi Peak and Average Value were measured. Quasi-Peak and Average Value were measured and listed respectively where they had a maximum in previous scanning survey. In the Figures, the symbol “◆” with blue color means Quasi-Peak Value and the symbol “◆” with green color means Average Value which was measured in final measurement.

Figure 1: Spectral Diagrams, Conducted Emission, 150kHz - 30MHz, L

Voltage with 2-Line-LISN



### Final Result 1

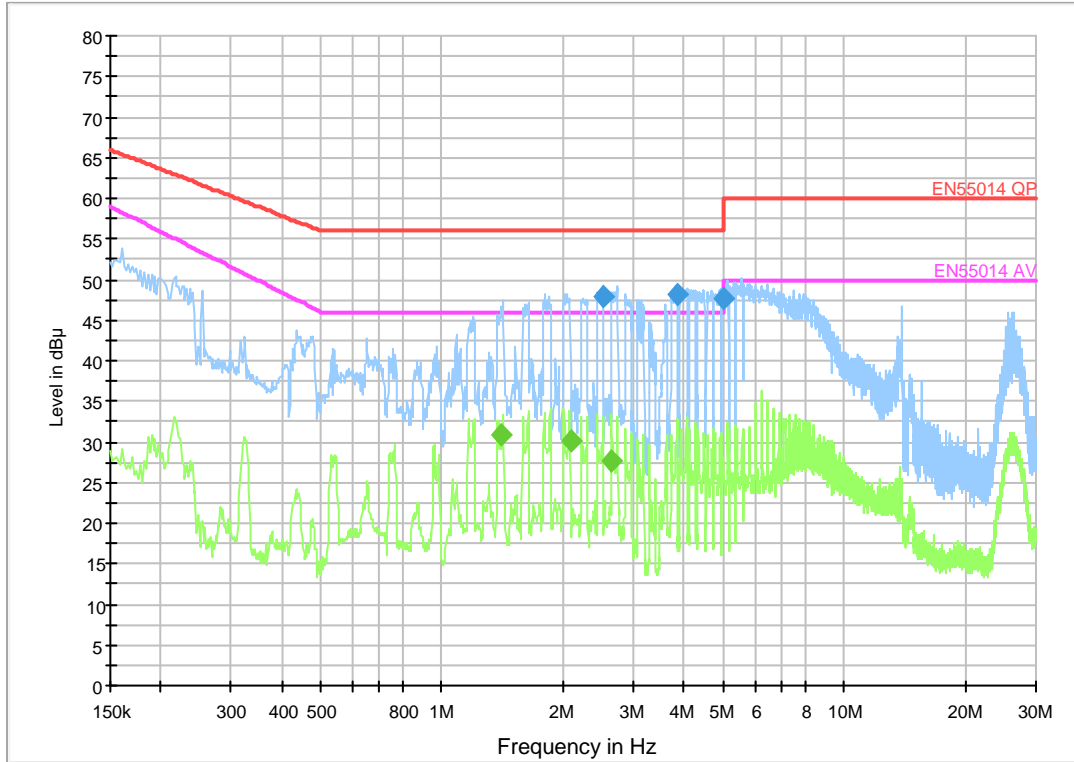
Frequency (MHz)	QuasiPeak (dB $\mu$ V)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dB $\mu$ V)	Comment
1.174000	40.4	1000.0	9.000	Off	L1	10.8	15.6	56.0	
2.593000	44.0	1000.0	9.000	Off	L1	10.8	12.0	56.0	
3.825000	43.4	1000.0	9.000	Off	L1	10.8	12.6	56.0	

### Final Result 2

Frequency (MHz)	CAverage (dB $\mu$ V)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dB $\mu$ V)	Comment
1.954000	32.0	1000.0	9.000	Off	L1	10.9	14.0	46.0	
2.573000	30.2	1000.0	9.000	Off	L1	10.8	15.8	46.0	
2.910000	27.7	1000.0	9.000	Off	L1	10.8	18.3	46.0	

Figure 2: Spectral Diagrams, Conducted Emission, 150kHz - 30MHz, N

Voltage with 2-Line-LISN



Final Result 1

Frequency (MHz)	QuasiPeak (dB $\mu$ V)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dB $\mu$ V)	Comment
2.510000	48.0	1000.0	9.000	Off	N	10.8	8.0	56.0	
3.841000	48.1	1000.0	9.000	Off	N	10.8	7.9	56.0	
4.997000	47.7	1000.0	9.000	Off	N	10.8	8.3	56.0	

Final Result 2

Frequency (MHz)	CAverage (dB $\mu$ V)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dB $\mu$ V)	Comment
1.403000	31.0	1000.0	9.000	Off	N	10.7	15.0	46.0	
2.098000	30.1	1000.0	9.000	Off	N	10.8	15.9	46.0	
2.637000	27.7	1000.0	9.000	Off	N	10.8	18.3	46.0	

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#### 4.1.4 Discontinuous Interference on AC Mains

<b>Result:</b>	N.A
----------------	-----

## 4.2 Emission in the Frequency Range above 30 MHz

### 4.2.1 Disturbance Power

<b>Result:</b>	<b>Pass</b>
----------------	-------------

Date of testing	: 2016.09.30
Port	: Mains
Basic Standard	: EN 55014-1:2006+A1+A2
Frequency Range	: 30 – 300MHz
Limit	: EN 55014-1:2006+A1+A2, clause 4.1.2, Household appliance

#### Test Setup

Input Voltage	: AC 100-240V, 47-63Hz
Operational mode	: ON
Earthing	: NO

#### Measuring configuration and description

The measurement setup was made according to EN 55014-1:2006+A1+A2.

The measurement equipment like test receivers and absorption clamp are in compliance with CISPR 16-1 series standards. The test object has been operated by its rated voltage. Prior to the measurements the test objects operated about 10 minutes (warm-up) in order to stabilize their operating conditions and to ensure reliable measurement values.

Furthermore an internal calibration with the test receiver was conducted prior to each measurement.

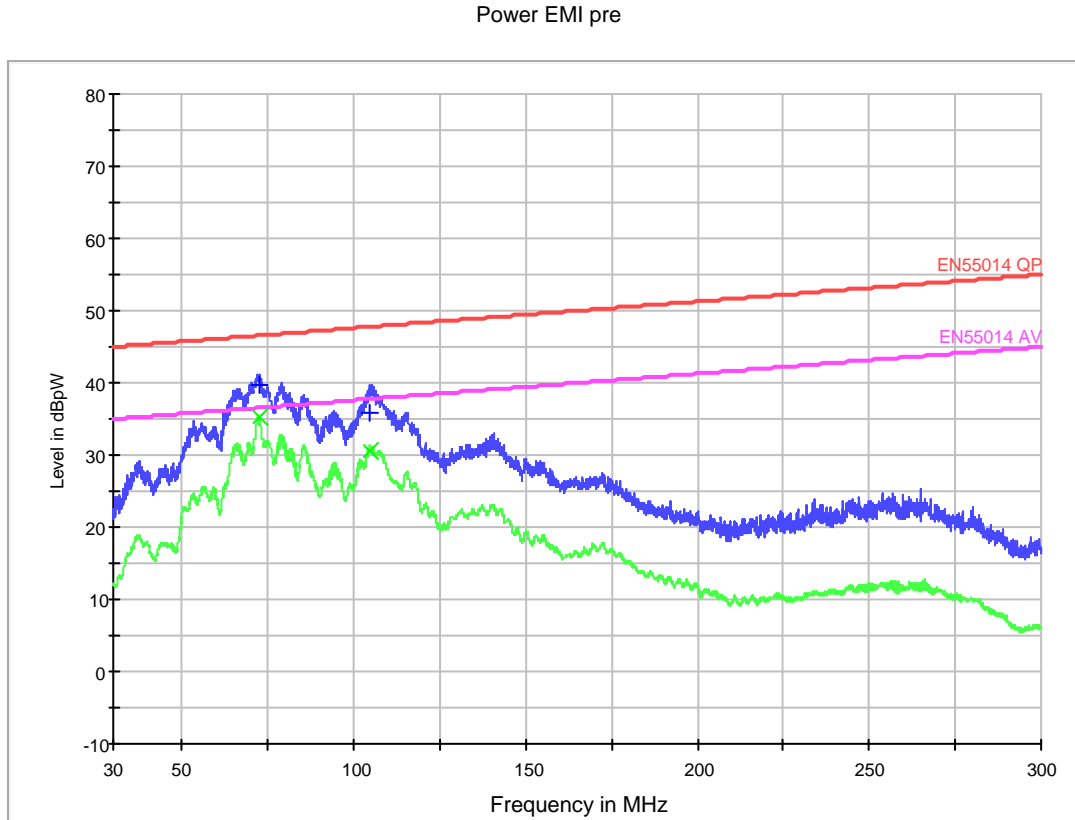
Before measurement, a survey was made to determine in which state the maximum disturbance was obtained. And the measurement was made in the state the maximum disturbance was obtained.

The tested object was set-up on a wooden bench.

The Disturbance Power was determined according to clause 6 of EN 55014-1:2006+A1+A2. The length of power cord of EUT plus that of the extension cord was 6.0m.

The measurement was performed by operating the EUT in normal operation mode. The figures and tables below were those measured in the operation mode. Both Quasi Peak and Average Value were measured. In final measurement, by moving the absorption clamp along the power supply cord and the extension-power cord from the test object, Quasi-Peak and Average Value were measured and listed respectively where they had a maximum in previous scanning survey. In the Figures, the symbol “+” with blue colour means Quasi-Peak Value and the symbol “x” with green colour means Average Value which was measured in final measurement.

Figure 3: Spectral Diagrams, Power Disturbance, Mains, 30–300MHz



### Limit and Margin-AV

Frequency (MHz)	QuasiPeak (dBpW)	Average (dBpW)	Meas. Time (ms)	Bandwidth (kHz)	Slide bar position (cm)	Corr. (dB)	Margin - AVG (dB)	Limit - AVG (dBpW)	Comment
72.420000	39.6	35.3	1000.0	120.000	0.00	7.5	1.2	36.6	
104.760000	35.8	30.7	1000.0	120.000	0.00	6.5	7.1	37.8	

### Limit and Margin-QP

Frequency (MHz)	QuasiPeak (dBpW)	Average (dBpW)	Meas. Time (ms)	Bandwidth (kHz)	Slide bar position (cm)	Corr. (dB)	Margin - QPK (dB)	Limit - QPK (dBpW)	Comment
72.420000	39.6	35.3	1000.0	120.000	0.00	7.5	7.0	46.6	
104.760000	35.8	30.7	1000.0	120.000	0.00	6.5	12.0	47.8	



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#### 4.2.2 Radiated Disturbance in the Frequency Range from 30MHz to 1000MHz

**Result:**

**Pass**

Port : Enclosure  
Basic Standard : EN 55014-1:2006+A1+A2 and CISPR16-2-3  
Frequency Range : 30 –1000MHz  
Limit : EN 55014-1:2006+A1+A2, clause 4.1.2.2, Table 3.

According to a) of clause 4.1.2.3.2 of EN 55014-1:2006+A1+A2:

“Appliances are deemed to comply in the frequency range from 300MHz to 1000MHz if both of the following conditions (1) and 2)) are fulfilled:”

- 1): all emission readings from the equipment under test shall be lower than the applicable limits (Table 2a) reduced by the margin (Table 2b);
- 2): the maximum clock frequency shall be less than 30MHz.

Because the EUT meets the two conditions mentioned above, the EUT is deemed to meet the radiated requirements without actual testing.

## 5 Test Results I M M U N I T Y

According to the electrical characteristics above and EN 55014-2:2015, the EUT belongs to category II equipment .

“Category II: mains powered motor operated appliances, tools, heating appliances and similar electric apparatus (for example – UV radiators, IR radiators and microwave ovens) containing electronic control circuitry with no internal clock frequency or oscillator frequency higher than 15MHz.”

During the immunity tests, the EUT was operated under conditions specified by clause 3.1 of this report.

Performance 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 permissible loss of performance) specified by the manufacturer, when the apparatus is used as intended.

Performance 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 permissible loss of performance) specified by the manufacturer, when the apparatus is used as intended. During the test, degradation of performance is allowed.

Performance 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 instructions for use.

Date of testing: 2016.09.30-2016.10.14

**Room temperature** : 20-25°C  
**Relative Humidity** : 45-55%

## 5.1 Enclosure

### 5.1.1 Electrostatic Discharge

**Result:**

**Pass**

The immunity against electrostatic discharge was tested in accordance with EN 55014-2:2015. Test setup and ESD-Generator are according to EN 61000-4-2 which is specified by EN 55014-2:2015.

The EUT is placed on 0,8m wood table above the ground plane. And the minimum distance between the EUT and all other conductive structures except the ground plane beneath the EUT is more than 0,5m.

The reference ground plane is an aluminium sheet of 0.25mm minimum thickness. The reference ground plane is connected to the protective earth. The size of the ground plane is 2m × 2m.

A horizontal coupling plane (HCP), 1.6m × 0.8m, is placed on the table and isolated from the EUT and cables by an insulating support 0.5mm thick. Vertical coupling plane (VCP) of dimensions 0.5m × 0.5m is placed parallel to and positioned at a distance of 0.1m from the EUT.

Charge voltage : ±4.0kV (Contact Discharge), ±8.0kV (Air Discharge)  
 Polarity : positive / negative  
 Number of discharges : ≥10  
 Performance criteria : B

**Table 3: ESD, Positive / Negative Polarity**

Position	Kind of Discharge	Result	Remarks
Nonmetal Enclosure	Air discharge ±8kV	Pass	No change of output parameter
Coupling plane (Both HCP and VCP)	Contact discharge ±4kV	Pass	No change of output parameter

## 5.2 Input and Output AC Power Ports

### 5.2.1 Fast Transients on AC Power Lines

**Result:**

**Pass**

The immunity against fast transients on AC power lines was tested in accordance to EN 55014-2:2015. Test setup and the fast transient noise generator are according to EN 61000-4-4 which is specified by EN 55014-2:2015.

The EUT is placed on 0.1m wood table above the ground plane. And the minimum distance between the EUT and all other conductive structures except the ground reference plane is more than 0.5m.

The length between the coupling device and the EUT is less than 1m. The cord length more than 1m, the excess length of the cable shall gathered into a flat coil with a 0,4m diameter, and situated at a distance of 0,1m above the ground reference plane.

The reference ground plane is an aluminium sheet of 0.25mm minimum thickness. The reference ground plane is connected to the protective earth. The size of the ground plane is 2m × 2m.

Test Voltage	: 1kV
Polarity	: negative/positive
Repetition frequency	: 5kHz
Test duration	: ≥120sec
Tr/Tn	: 5ns/50ns
Performance criteria	: B

**Table 4: Burst, AC Power lines, Positive and Negative Polarity**

Coupling Method: Direct Injection		
Coupling Port	Test Voltage / Result	Remark
AC mains: L1 (L), L2 (N), --	±1000V      Pass	No change of output parameter

### 5.2.2 Injected Current into AC Power Port

**Result:**

**Pass**

The immunity against injected current into AC power port was tested according to EN 55014-2:2015 in a shielded room. The Test setup and the test generator are according to EN 61000-4-6 which is specified by EN 55014-2:2015.

The EUT is placed on 0,1m wood table above the ground plane. And the minimum distance between the EUT and all other conductive structures except the reference ground plane is more than 0.5m.

The EUT comprised a single unit. The coupling and decoupling networks were inserted on the power supply connection. The coupling and decoupling networks was placed on the ground reference plane, making direct contact with it at about 0.1-0.3 meter from EUT. The cable between EUT and CDN is as short as possible and not bundled nor wrapped. The height of cable between the EUT and the coupling and decoupling networks above the ground reference plane was 50mm.

Voltage Level	: 3V(rms)(unmodulated)
Environmental phenomena	: r.f. current, common mode, 1kHz, 80% AM
Source impedance	: 150 Ω
Frequency range	: 0.15 - 230 MHz
Sweeping rate	: $\leq 1,5 \times 10^{-3}$ decades/s
Performance criteria	: A

**Table 5: Injected current, AC Power Port**

Coupling Port	Coupling Method:	Result	Remark
AC mains: L1 (L), L2 (N), --	CDN M-2	Pass	No change of output parameter

### 5.2.3 Surges to AC Power Port

<b>Result:</b>	<b>Pass</b>
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The immunity against surges to AC power port was tested in accordance to EN 55014-2:2015. Test setup and the Combination Wave Generator (CWG) are according to EN 61000-4-5 which is specified by EN 55014-2:2015.

Open-circuit Test Voltage	: 1kV (phase to neutral)
Tr/Tn	: 1.2/50µs (open-circuit voltage) 8/20µs (short-circuit current)
Test numbers	: 5 positive and 5 negative pulses
Test angle	: 90° and 270°
Repetition rate	: 1 surge/min
Performance criteria	: B

**Table 6: Surges to AC Power lines, positive/negative**

Line	Tested voltage/coupling phase	Result	Remarks
Phase to neutral	+1.0kV, $+\pi/2$ (5 times) -1.0kV, $-\pi/2$ (5 times)	Pass	No change of output parameter

### 5.2.4 Voltage dips and interruptions to AC Power Port

<b>Result:</b>	<b>Pass</b>
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The immunity against voltage dips and interruptions to AC power port was tested in accordance to EN 55014-2:2015. Test setup and the test generator are according to EN 61000-4-11 which is specified by EN 55014-2:2015. The EUT was placed directly on the table of aluminum.

Performance criteria	:	C	
Test level (in % UT) and	:	0	0.5/0.5 periods(50/60Hz)
duration (in periods of the		40	10/12 periods(50/60Hz)
rated frequency)		70	25/30 periods(50/60Hz)

**Table 7: Test condition and Test Result for Voltage dips and Short interruptions**

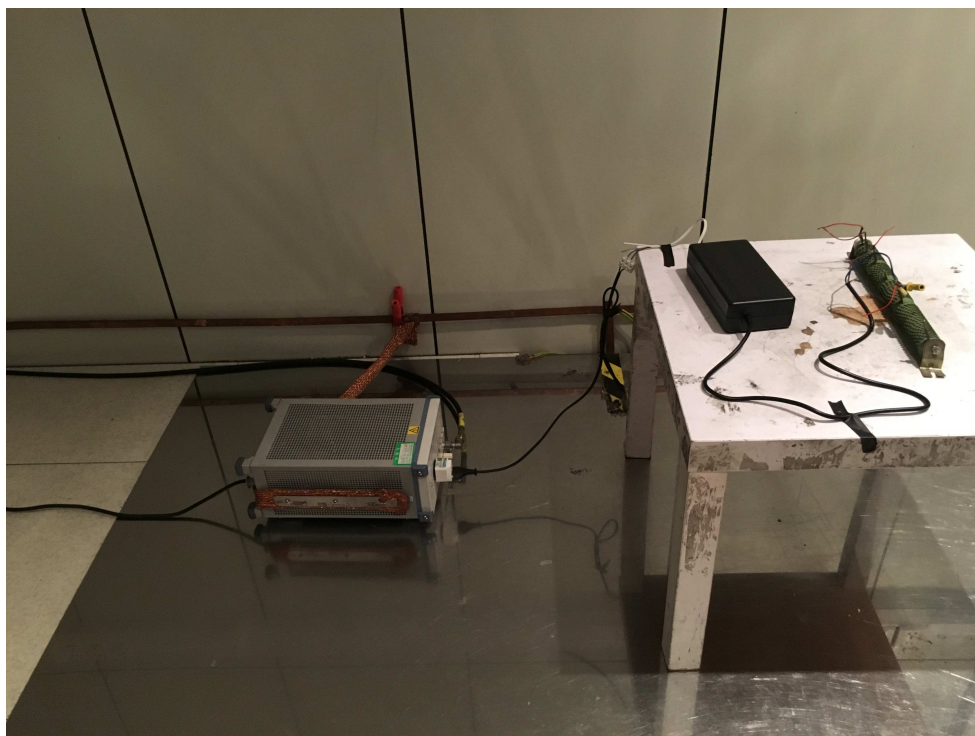
Test level (in % UT)	Duration	Performance criteria	Result	Remarks
0	0.5/0.5	C	Pass	No change of output parameter
40	10/12	C	Pass	No change of output parameter
70	25/30	C	Pass	No change of output parameter

## 6 Photographs of the Test Set-Up

**Photograph 1: Set-up for Harmonics**



**Photograph 2: Set-up for Disturbance Voltage**

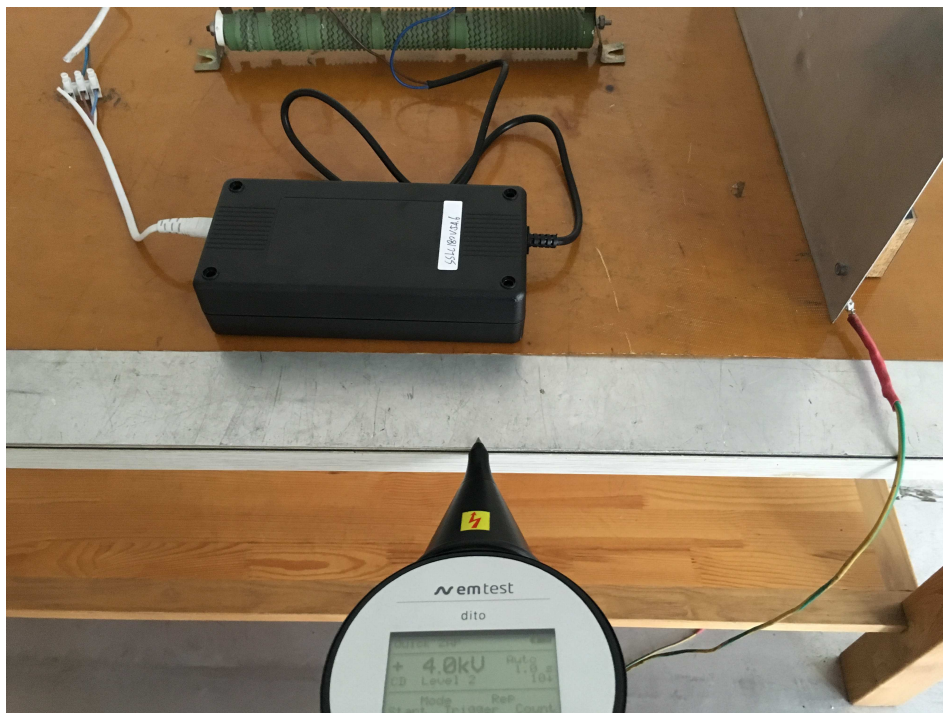




**Photograph 3: Set-up for Disturbance Power**



**Photograph 4: Set-up for ESD**



**Photograph 5: Set-up for EFT, Surges and Voltage Dips**



**Photograph 6: Set-up for Injected Current**



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