



SHENZHEN HUATONGWEI INTERNATIONAL INSPECTION Co., Ltd.

## Test Verification of Conformity

Certificate No.: CTE15060049

R/C: 19621

Issued Date: Mar 2, 2017

In accordance with the following Applicable Directives:

**2014/30/EU**

**Electromagnetic Compatibility**

The equipment, as described herewith, was tested pursuant to applicable test procedure and complies with the requirements of:

**EN 61000-6-2: 2005**

**EN 61000-6-4: 2007+A1: 2011**

**EN 61000-3-2: 2014**

**EN 61000-3-3: 2013**

The test results are traceable to the international or national standards.

**Applicant:** Kinco Electric (Shenzhen) Ltd.

Building 1, No.6 Langshan 1st Rd, Hi-tech Park North, Nanshan, Shenzhen, China. (518057)

**Manufacturer:** Kinco Electric (Shenzhen) Ltd.

Building 1, No.6 Langshan 1st Rd, Hi-tech Park North, Nanshan, Shenzhen, China. (518057)

**EUT Name:** Stepping Motor Drive

**Model number:** 2CM880

**Listed Model(s):** XCMXXX-X

**Laboratory:** Shenzhen Huatongwei International Inspection Co., Ltd.

Hongfa Hi-tech Industrial Park, Genyu Road, Tianliao, Gongming, Shenzhen, Guangdong, China

Tel: 86-755-26748078 Fax: 86-755-26748089

Http: //www.szhtw.com.cn E-mail: cs@szhtw.com.cn



**Note:**

The certification is only valid for the equipment and configuration described, in conjunction with the test data detailed above.

The CE mark as shown beside can be used, under the responsibility of the manufacturer, after completion of an EC Directive of Conformity and compliance with all relevant EC Directive.

For and on behalf of  
Shenzhen Huatongwei International Inspection Co., Ltd.

Authorized by:





## TEST REPORT

**EN 61000-6-4: 2007+A1: 2011**

**Electromagnetic compatibility (EMC) -- Part 6-4: Generic standards - Emission standard for industrial environments**

**EN 61000-6-2: 2005**

**Electromagnetic compatibility (EMC) -- Part 6-2: Generic standards - Immunity for industrial environments**

**Report Reference No.** ..... : **TRE15040049 R/C: 19621**

Compiled by

(printed name+signature) ..... : Stellar Xu

*Stellar Xu*

Supervised by

(printed name+signature) ..... : LuoRin

*LuoRin*

Approved by

(printed name+signature) ..... : Tony Jiang

*Tony Jiang*

Date of issue ..... : Apr 28, 2015

**Testing Laboratory Name** ..... : **Shenzhen Huatongwei International Inspection Co., Ltd**

Address ..... : Keji Nan No.12 Road, Hi-tech Park, Shenzhen, China

Testing location/ procedure ..... : Full application of Harmonised standards   
 Partial application of Harmonised standards   
 Other standard testing methods

**Applicant's name** ..... : **Kinco Electric (Shenzhen) Ltd.**

Address ..... : Building 1, No.6 Langshan 1st Rd, Hi-tech Park North, Nanshan, Shenzhen, China. (518057)

**Test specification:**

Standard ..... : **EN 61000-6-2: 2005    EN 61000-6-4: 2007+A1: 2011**  
**EN 61000-3-2: 2014**  
**EN 61000-3-3: 2013**

**Test Report Form No.** ..... : HTWEMCCE\_1B

TRF Originator ..... : Shenzhen Huatongwei International Inspection CO., Ltd

Master TRF ..... : Dated 2014-06

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**Test item description** ..... : Stepping Motor Drive

Manufacturer ..... : Kinco Electric (Shenzhen) Ltd.

Trademark ..... : Kinco

Model/Type reference ..... : 2CM880

Listed models ..... : XCMXXX-X

Ratings ..... : DC 24~70V

Result ..... : **Positive**

**Report version information:**

**Revised date: 2017-03-02 Clause 2.3.**

### EMC -- TEST REPORT

<b>Test Report No. :</b>	<b>TRE15040049</b>	Apr 28, 2015
		Date of issue

Equipment under Test : Stepping Motor Drive

Model /Type : 2CM880

Listed Models : XCMXXX-X

**Applicant** : Kinco Electric (Shenzhen) Ltd.

Address : Building 1, No.6 Langshan 1st Rd, Hi-tech Park North, Nanshan, Shenzhen, China. (518057)

**Manufacturer** : Kinco Electric (Shenzhen) Ltd.

Address : Building 1, No.6 Langshan 1st Rd, Hi-tech Park North, Nanshan, Shenzhen, China. (518057)

<b>Test Result</b> according to the standards on page 4:	<b>Positive</b>
--	-----------------

The test report merely corresponds to the test sample.  
It is not permitted to copy extracts of these test result without the written permission of the test laboratory.

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## **1. TEST STANDARDS**

The tests were performed according to following standards:

[EN 61000-6-2: 2005](#) Electromagnetic compatibility (EMC) -- Part 6-2: Generic standards - Immunity for industrial environments

[EN 61000-6-4: 2007+A1: 2011](#) Electromagnetic compatibility (EMC) -- Part 6-4: Generic standards - Emission standard for industrial environments

[EN 61000-3-2: 2014](#) Electromagnetic compatibility (EMC) -- Part 3-2: Limits - Limits for harmonic current emissions (equipment input current up to and including 16 A per phase)

[EN 61000-3-3: 2013](#) Electromagnetic compatibility (EMC) -- Part 3-3: Limits - Limitation of voltage changes, voltage fluctuations and flicker in public low-voltage supply systems, for equipment with rated current  $\leq 16$  A per phase and not subject to conditional connection

**2. SUMMARY**

**2.1. General Remarks**

Date of receipt of test sample : Apr 10, 2015  
 Testing commenced on : Apr 15, 2015  
 Testing concluded on : Apr 25, 2015

**2.2. Equipment Under Test**

**Power supply system utilised**

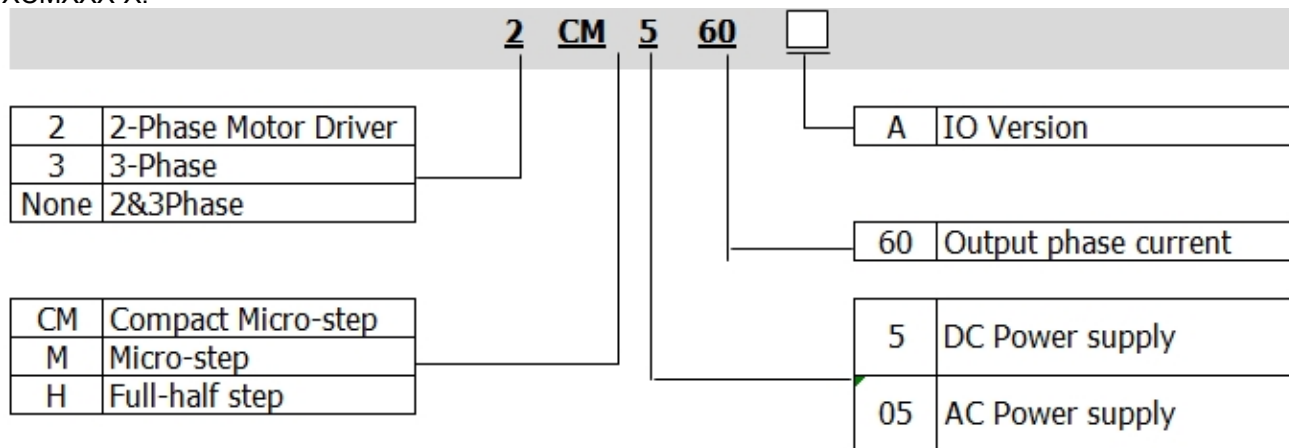
Power supply voltage :  230V / 50 Hz  115V / 60Hz  
 12 V DC  24 V DC  
 Other (specified in blank below) \_\_\_\_\_

**2.3. Short description of the Equipment under Test (EUT)**

On the original test Report NO. TRE15060049, update the Electromagnetic Compatibility Directive. Therefore no tests are performed on the models. About the detailed test data please refer to the original report.

The EUT is a Stepping Motor Drive. The listed models hardware is the same, just different software.

XCMXXX-X:



Serial number: Prototype

**2.4. EUT operation mode**

The equipment under test was operated during the measurement under the following conditions:

Test program (customer specific)

Emissions tests.....: According to EN 61000-6-4, searching for the highest disturbance.

Immunity tests.....: According to EN 61000-6-2 , searching for the highest susceptibility.

Harmonic current.....: According to EN 61000-3-2, searching for the highest disturbance.

Voltage fluctuation.....: According to EN 61000-3-3, searching for the highest disturbance.

---

## 2.5. EUT configuration

The following peripheral devices and interface cables were connected during the measurement:

■ - supplied by the manufacturer

o - supplied by the lab

■ EMI filter

M/N : TY440S-16FT

Manufacturer : TYZE ELECTRONICS

■ POWER SUPPLY MODULE

M/N : P110-65

Manufacturer : Kinco

■ MOTOR

M/N : 2S86Q-03080

Manufacturer : Kinco

## 2.6. Performance level

The test results shall be classified in terms of the loss of function or degradation of performance of the equipment under test relative to a performance criteria defined by its manufacturer or the requestor of the test, or agreed between the manufacturer and the purchaser of the product. Examples of functions defined by the manufacturer to be evaluated during testing include, but are not limited to, the following:

- essential operational modes and states;
- tests of all peripheral access(hard disks, floppy disks, printers, keyboard, mouse, etc.);
- quality of software execution
- quality of data display and transmission
- quality of speech transmission

**Definition related to the performance level:**

- based on the used product standard
- o based on the declaration of the manufacturer, requestor or purchaser

### **Criterion A:**

The apparatus shall continue to operate as intended without operator intervention. No degradation of performance or loss of function is allowed below a performance level specified by the manufacturer when the equipment is used as intended. The performance level may be replaced by a permissible loss of performance. 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 by what the user may reasonably expect from the equipment if used as intended.

### **Criterion B:**

After the test, the equipment shall continue to operate as intended without operator intervention. 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, 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 instructions for use.

### **3. TEST ENVIRONMENT**

#### **3.1. Address of the test laboratory**

Shenzhen Huatongwei International Inspection Co., Ltd.  
Hongfa Hi-tech Industrial Park, Genyu Road, Tianliao, Gongming, Shenzhen, Guangdong, China  
Phone: 86-755-26748019 Fax: 86-755-26748089

#### **3.2. Test Facility**

The test facility is recognized, certified, or accredited by the following organizations:

##### **CNAS-Lab Code: L1225**

Shenzhen Huatongwei International Inspection Co., Ltd. has been assessed and proved to be in compliance with CNAS-CL01 Accreditation Criteria for Testing and Calibration Laboratories (identical to ISO/IEC 17025: 2005 General Requirements) for the Competence of Testing and Calibration Laboratories, Date of Registration: February 28, 2015. Valid time is until February 27, 2018.

##### **FCC-Registration No.: 662850&317478**

Shenzhen Huatongwei International Inspection Co., Ltd. EMC Laboratory has been registered and fully described in a report filed with the FCC (Federal Communications Commission). The acceptance letter from the FCC is maintained in our files. Registration 662850, Renewal date Jul. 01, 2012, valid time is until Jun. 01, 2015. Registration 317478, Renewal date Jul. 18, 2014, valid time is until Jul. 18, 2017.

##### **IC-Registration No.: 5377A&5377B**

The 3 m Alternate Test Site of Shenzhen Huatongwei International Inspection Co., Ltd. has been registered by Certification and Engineering Bureau of Industry Canada for the performance of radiated measurements with Registration No. 5377A on Dec. 31, 2013, valid time is until Dec. 31, 2016.

##### **ACA**

Shenzhen Huatongwei International Inspection Co., Ltd. EMC Laboratory can also perform testing for the Australian C-Tick mark as a result of our A2LA accreditation.

##### **VCCI**

Radiated disturbance above 1GHz measurement of Shenzhen Huatongwei International Inspection Co., Ltd. has been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: G-20007. Date of Registration: Sept. 13, 2016. Valid time is until Sept. 12, 2019.

Main Ports Conducted Interference Measurement of Shenzhen Huatongwei International Inspection Co., Ltd. Has been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: C-20001. Date of Registration: Sept. 13, 2016. Valid time is until Sept. 12, 2019.

Telecommunication Ports Conducted Interference Measurement of Shenzhen Huatongwei International Inspection Co., Ltd. has been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: T-20001. Date of Registration: Oct 18, 2016. Valid time is until Oct 17, 2019.

The 3m Semi-anechoic chamber (9.1m×6.4m×6.0m) of Shenzhen Huatongwei International Inspection Co., Ltd. has been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.:R-4398. Date of Registration: Nov 21, 2016. Valid time is until Nov 20, 2019.



### 3.3. Environmental conditions

During the measurement the environmental conditions were within the listed ranges:

Temperature:	<u>22-25 ° C</u>
Humidity:	<u>40-54 %</u>
Atmospheric pressure:	<u>950-1050mbar</u>

### 3.4. Test Description

Emission Measurement		
Radiated Emission	EN 61000-6-4: 2007+A1:2011	PASS
Conducted Disturbance	EN 61000-6-4: 2007+A1:2011	PASS
Harmonic Current	EN 61000-3-2: 2014	PASS
Voltage Fluctuation and Flicker	EN 61000-3-3: 2013	PASS
Immunity Measurement		
Electrostatic Discharge	EN 61000-6-2: 2005 EN 61000-4-2: 2009	PASS
RF Field Strength Susceptibility	EN 61000-6-2: 2005 EN 61000-4-3: 2006+A1:2008+A2:2010	PASS
Electrical Fast Transient/Burst Test	EN 61000-6-2: 2005 EN 61000-4-4: 2012	PASS
Surge Test	EN 61000-6-2: 2005 EN 61000-4-5: 2014	PASS
Conducted Susceptibility Test	EN 61000-6-2: 2005 EN 61000-4-6: 2014	PASS
Power Frequency Magnetic Field Susceptibility Test	EN 61000-6-2: 2005 EN 61000-4-8: 2010	PASS
Voltage Dips and Interruptions Test	EN 61000-6-2: 2005 EN 61000-4-11: 2004	PASS

Note: The measurement uncertainty is not included in the test result.

### 3.5. Statement of the measurement uncertainty

The data and results referenced in this document are true and accurate. The reader is cautioned that there may be errors within the calibration limits of the equipment and facilities. The measurement uncertainty was calculated for all measurements listed in this test report acc. to CISPR 16 - 4 „Specification for radio disturbance and immunity measuring apparatus and methods – Part 4: Uncertainty in EMC Measurements“ and is documented in the Shenzhen Huatongwei International Inspection Co., Ltd quality system acc. to DIN EN ISO/IEC 17025. Furthermore, component and process variability of devices similar to that tested may result in additional deviation. The manufacturer has the sole responsibility of continued compliance of the device.

Hereafter the best measurement capability for Shenzhen Huatongwei laboratory is reported:

Test	Range	Measurement Uncertainty	Notes
Radiated Emission	30~1000MHz	4.65dB	(1)
Conducted Disturbance	0.15~30MHz	3.35dB	(1)

(1) This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

### 3.6. Equipments Used during the Test

Radiated Emission						
Item	Test Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
1	Ultra-Broadband Antenna	R&S	HL562	100015	6/12/2013	6/11/2016
2	Emi Test Receiver	R&S	ESI 26	100009	10/31/2014	11/1/2015
3	Pre-Amplifier	CD	PAP-0102	12004	10/31/2014	11/1/2015
4	Turntable	ETS	2088	2149	N/A	N/A
5	Antenna Mast	ETS	2075	2346	N/A	N/A
6	Test Software	R&S	ES-K1	N/A	N/A	N/A

Conducted Disturbance						
Item	Test Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
1	EMI Test Receiver	R&S	ESCI	100106	10/31/2014	11/1/2015
2	Artificial Mains	R&S	ESH2-Z5	100028	10/31/2014	11/1/2015
3	Pulse Limiter	R&S	ESH3-Z2	100044	10/31/2014	11/1/2015
4	Test Software	R&S	ES-K1	N/A	N/A	N/A

Harmonic Current						
Item	Test Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
1	Purified Power Source	CALIFORNIA INSTRUMENTS	HFS500	54513	10/31/2014	11/1/2015
2	Harmonic And Flicker Analyzer	EM TEST	DPA503S1	0500-10	10/31/2014	11/1/2015
3	Test Software	EM TEST	DPA	/	NA	NA

Voltage Fluctuation and Flicker						
Item	Test Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
1	Purified Power Source	CALIFORNIA INSTRUMENTS	HFS500	54513	10/31/2014	11/1/2015
2	Harmonic And Flicker Analyzer	EM TEST	DPA503S1	0500-10	10/31/2014	11/1/2015
3	Test Software	EM TEST	DPA	/	NA	NA

Electrostatic Discharge						
Item	Test Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
1	ESD Simulator	EM TEST	DITO	0301-04	11/22/2014	11/21/2015

Electrical Fast Transient/Burst						
Item	Test Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
1	Ultra Compact Simulator	EM TEST	UCS500M6	0500-19	10/31/2014	11/1/2015
2	Test Software	EM TEST	ISM IEC	/	NA	NA

RF Field Strength Susceptibility						
Item	Test Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
1	Signal Generator	IFR	2032	203002/100	10/31/2014	11/1/2015
2	Amplifier	AR	150W1000	301584	10/31/2014	11/1/2015
3	Dual Directional Coupler	AR	DC6080	301508	10/31/2014	11/1/2015
4	Power Head	AR	PH2000	301193	10/31/2014	11/1/2015
5	Power Meter	AR	PM2002	302799	10/31/2014	11/1/2015
6	Transmit Antenna	AR	AT1080	28570	10/31/2014	11/1/2015
7	Power Amplifier	AR	25S1G4A	0325511	10/31/2014	11/1/2015
8	Dual Directional Coupler	AR	DC7144A	0325100	10/31/2014	11/1/2015
9	Microwave Horn Antenna	AR	AT4002A	0324848	10/31/2014	11/1/2015

10	Test Software	AR	SW1004	/	NA	NA
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## Surge

Item	Test Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
1	Ultra Compact Simulator	EM TEST	UCS500M6	0500-19	10/31/2014	11/1/2015
2	Test Software	EM TEST	ISM IEC	/	NA	NA

## Conducted Susceptibility

Item	Test Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
1	Signal Generator	IFR	2023A	202304/060	10/31/2014	11/1/2015
2	Amplifier	AR	75A250	302205	10/31/2014	11/1/2015
3	Dual Directional Coupler	AR	DC2600	302389	10/31/2014	11/1/2015
4	6db Attenuator	EMTEST	ATT6/75	0010230A	10/31/2014	11/1/2015
5	CDN	EMTEST	CDN M3/32A	5100103200 23	10/31/2014	11/1/2015
6	Test Software	AR	SW1004	/	NA	NA

## Voltage Dips and Interruptions

Item	Test Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
1	Purified Power Source	CALIFORNIA INSTRUMENTS	HFS500	54513	10/31/2014	11/1/2015
2	Test Software	CALIFORNIA INSTRUMENTS	CIGUII-5001iX	/	NA	NA

## Power Frequency Magnetic Field Susceptibility

Item	Test Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
1	Ultra Compact Simulator	EM TEST	UCS500M6	202304/060	10/31/2014	11/1/2015
2	Motor Driven Voltage Transformer	EM TEST	MV2616	302205	10/31/2014	11/1/2015
3	Current Transformer	EM TEST	MC2630	302389	10/31/2014	11/1/2015
4	Magnetic Coil	EM TEST	MS100	0010230A	10/31/2014	11/1/2015
5	Test Software	EM TEST	ISM IEC	/	NA	NA

## **4. TEST CONDITIONS AND RESULTS**

### **4.1. Radiated Emission**

For test instruments and accessories used see section 3.6.

#### **4.1.1. Description of the test location**

Test location: Shielded room No. 4

#### **4.1.2. Limits of disturbance(Class A)**

<b>Frequency (MHz)</b>	<b>Distance (Meters)</b>	<b>Field Strengths Limits (dB<math>\mu</math>V/m)</b>
30 ~ 230	3	50
230 ~ 1000	3	57

Note: (1) The tighter limit shall apply at the edge between two frequency bands.

(2) Distance refers to the distance in meters between the test instrument antenna and the closest point of any part of the E.U.T.

#### **4.1.3. Description of the test set-up**

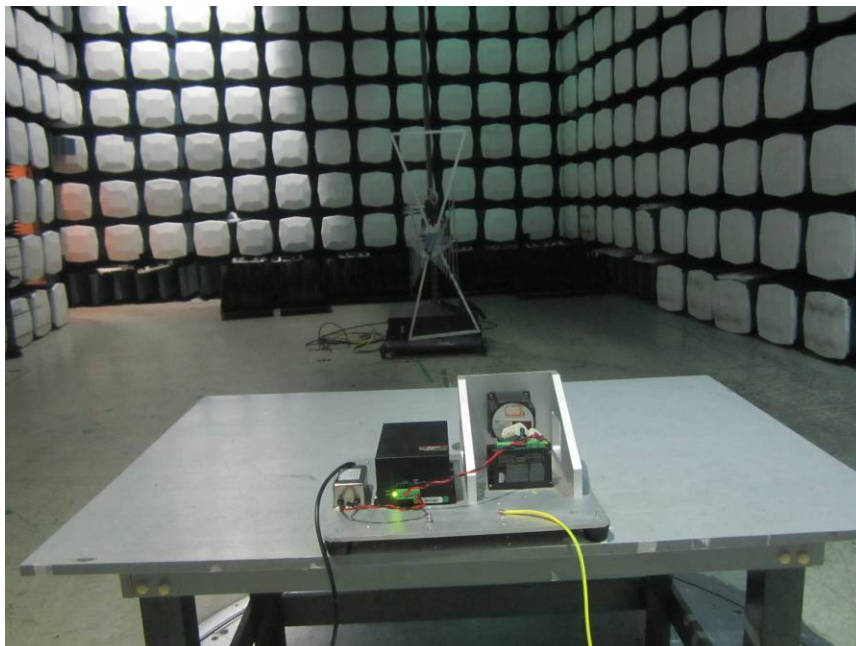
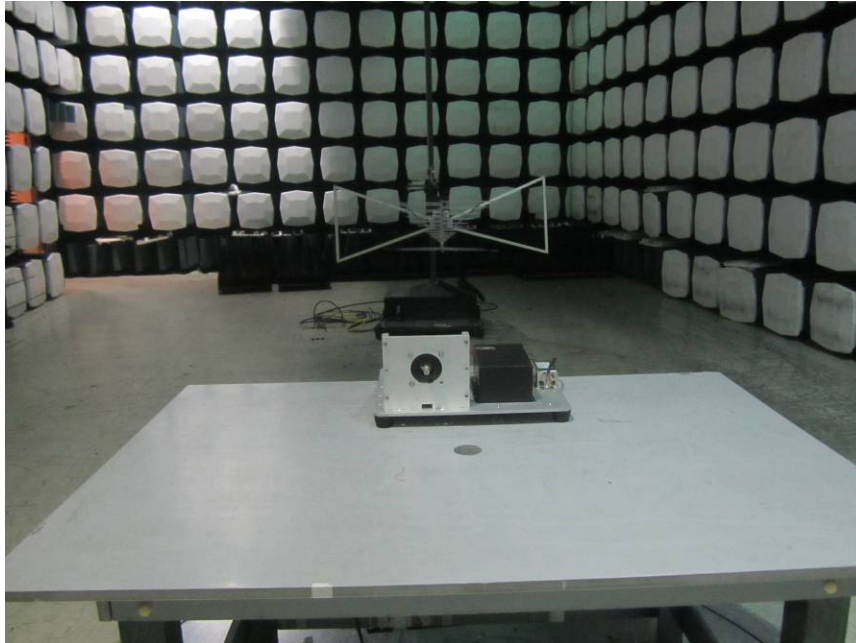
##### **4.1.3.1. Operating Condition**

The EUT is turned on during the test, and the results of the maximum emanation are recorded.

##### **4.1.1.1. Test Configuration and Procedure**

EUT is tested in Semi-Anechoic Chamber. EUT is placed on a nonmetal table which is 0.8 meter above a grounded turntable. The turntable can rotate 360 degrees to determine the azimuth of the maximum emission level. EUT is set 3 meters away from the center of receiving antenna, and the antenna can move up and down from 1 to 4 meter to find out the maximum emission level. Both horizontal and vertical polarizations of the antenna are set on the test.

4.1.3.2. Photos of the test set-up



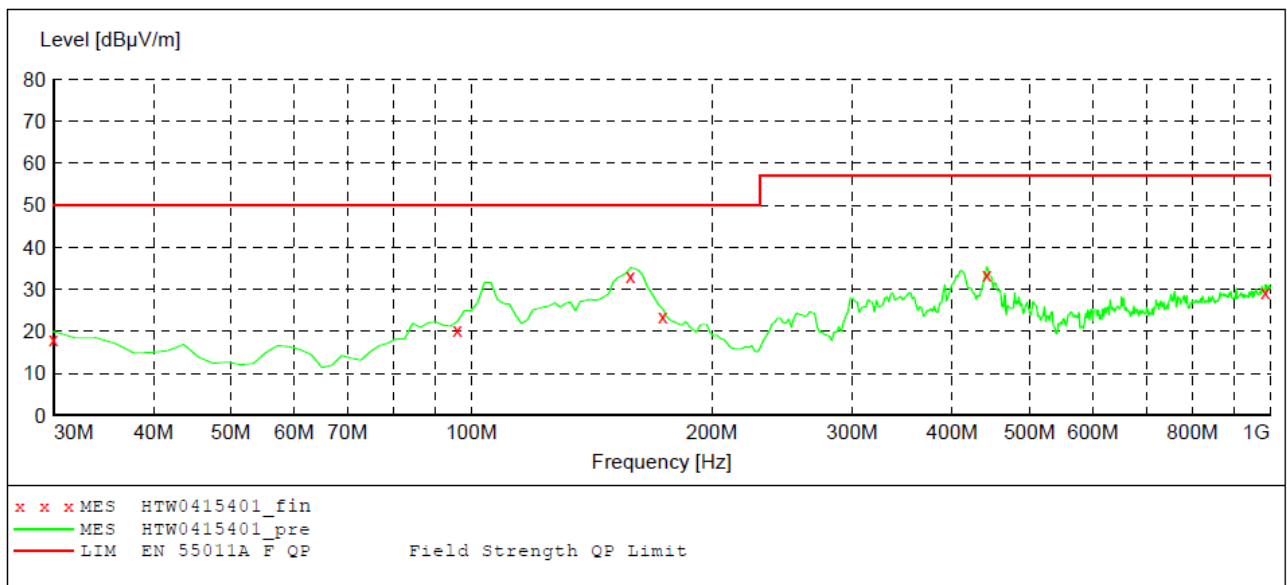
4.1.2. Test result

The requirements are **Fulfilled**

Band Width: 120kHz

Frequency Range: 30MHz to 1000MHz

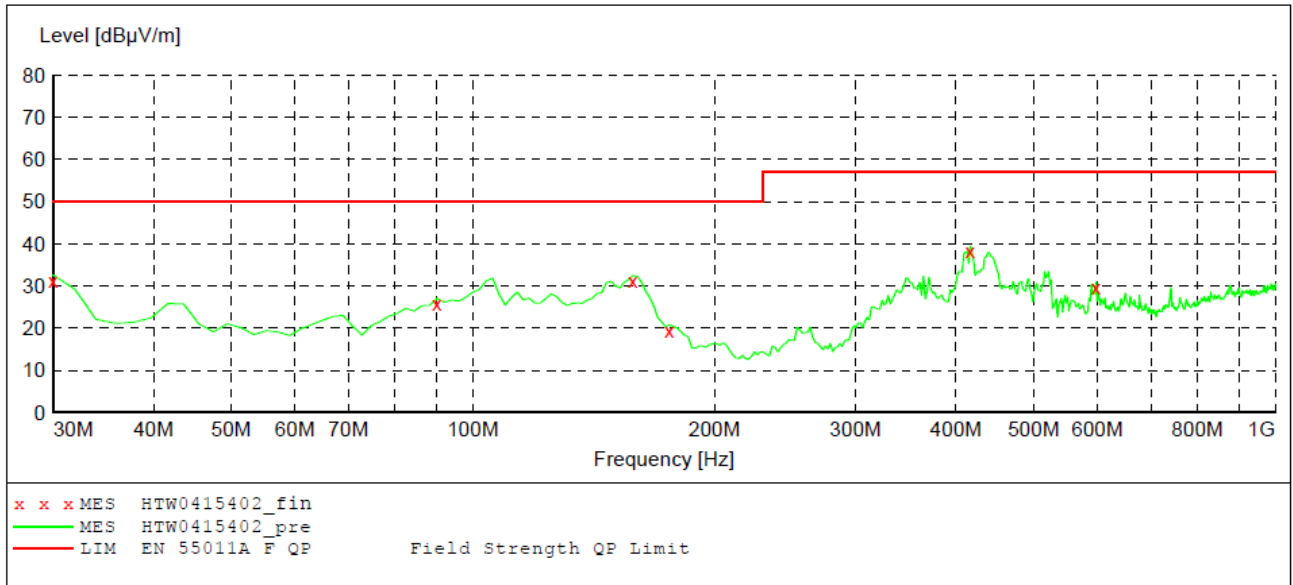
**Remarks:** The limits are kept. For detailed results, please see the following page(s).  
Margin=Limit-Level, Level=read values+transducer, Transducer=Antenna Factor+Pre-Amplifier Factor+Cable loss



**MEASUREMENT RESULT: "HTW0415401\_fin"**

4/15/2015 10:19AM

Frequency MHz	Level dBµV/m	Transd dB	Limit dBµV/m	Margin dB	Det.	Height cm	Azimuth deg	Polarization
30.000000	20.00	-10.0	50.0	30.0	QP	300.0	226.00	HORIZONTAL
96.092184	22.40	-18.5	50.0	27.6	QP	300.0	190.00	HORIZONTAL
158.296593	35.20	-21.3	50.0	14.8	QP	300.0	226.00	HORIZONTAL
173.847695	25.30	-21.3	50.0	24.7	QP	300.0	221.00	HORIZONTAL
442.104208	35.40	-13.1	57.0	21.6	QP	100.0	322.00	HORIZONTAL
986.392786	31.10	-3.2	57.0	25.9	QP	300.0	118.00	HORIZONTAL



**MEASUREMENT RESULT: "HTW0415402\_fin"**

4/15/2015 10:31AM

Frequency MHz	Level dBµV/m	Transd dB	Limit dBµV/m	Margin dB	Det.	Height cm	Azimuth deg	Polarization
30.000000	32.60	-10.0	50.0	17.4	QP	100.0	109.00	VERTICAL
90.260521	27.00	-18.8	50.0	23.0	QP	100.0	94.00	VERTICAL
158.296593	32.50	-21.3	50.0	17.5	QP	100.0	89.00	VERTICAL
175.791583	20.80	-21.0	50.0	29.2	QP	100.0	99.00	VERTICAL
416.833667	39.50	-13.4	57.0	17.5	QP	100.0	197.00	VERTICAL
597.615230	31.00	-10.7	57.0	26.0	QP	100.0	99.00	VERTICAL



## 4.2. Conducted disturbance

For test instruments and accessories used see section 3.6.

### 4.2.1. Description of the test location

Test location: Shielded room No.3

### 4.2.2. Limits of disturbance

Limit of conducted disturbance at the mains ports(Class A)

Frequency Range (MHz)	Limits (dBuV)	
	Quasi-Peak	Average
0.150~0.500	79	66
0.5000~30.000	73	60

Note: (1) The tighter limit shall apply at the edge between two frequency bands.

### 4.2.3. Description of the test set-up

#### 4.2.3.1. Operating Condition

The EUT is turned on during the test, and the results of the maximum emanation are recorded.

#### 4.2.3.2. Test Configuration and Procedure

For the main ports:

EUT is placed on a nonmetal table which is 0.8 meter above the grounded reference plane. Connect the power line of the EUT to the LISN which is connected to receiver by coaxial line, then disturbance signals of the neutral line and live line can be detected by the receiver.

## 4.2.3.3. Photo of the test set-up



## 4.2.2. Test result

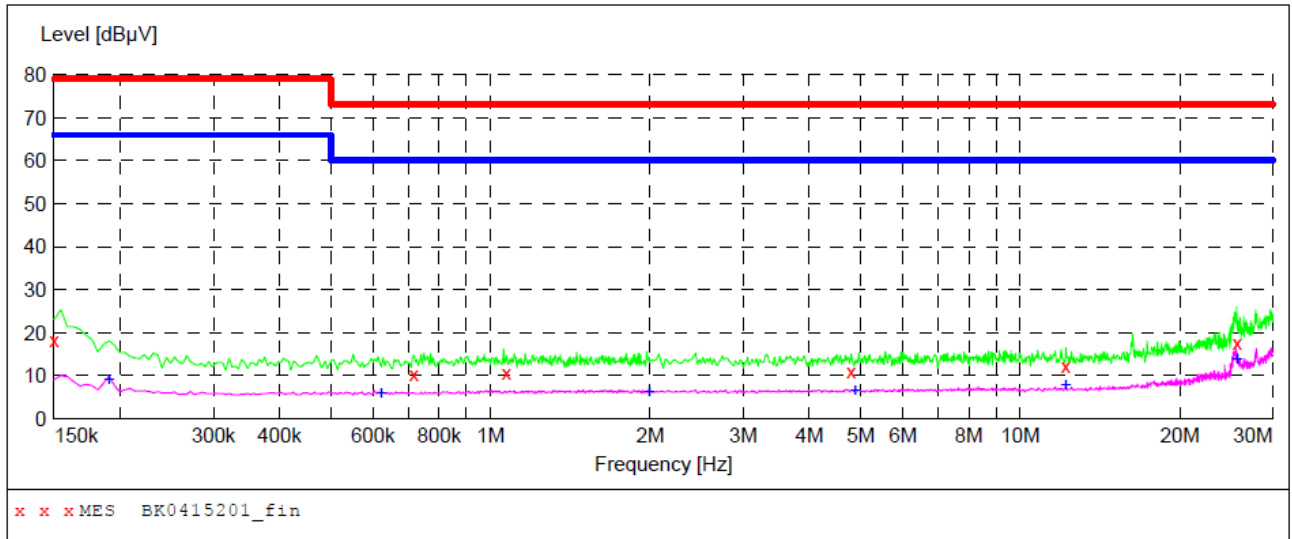
The requirements are **Fulfilled**

Band Width: 9kHz

Frequency Range: 150kHz to 30MHz

**Remarks:** The limits are kept. For detailed results, please see the following page(s).  
Margin=Limit-Level, Level=read values+transducer, Transducer=Insertion loss of LISN+  
Cable loss+Insertion loss of Pulse limiter

---



**MEASUREMENT RESULT: "BK0415201\_fin"**

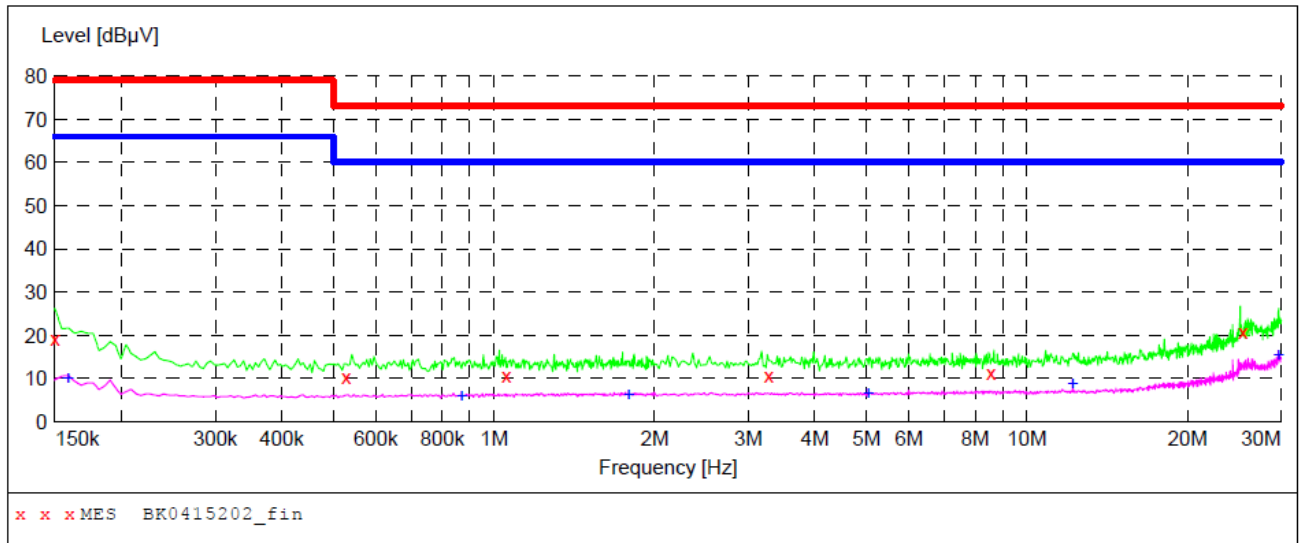
4/15/2015 9:50AM

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.150000	18.20	10.2	79	60.8	QP	L1	GND
0.717000	10.40	10.4	73	62.6	QP	L1	GND
1.072500	10.70	10.7	73	62.3	QP	L1	GND
4.800000	11.00	10.9	73	62.0	QP	L1	GND
12.200000	12.40	11.2	73	60.6	QP	L1	GND
25.700000	17.70	11.6	73	55.3	QP	L1	GND

**MEASUREMENT RESULT: "BK0415201\_fin2"**

4/15/2015 9:50AM

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.190500	9.00	10.2	66	57.0	AV	L1	GND
0.622500	5.90	10.4	60	54.1	AV	L1	GND
1.995000	6.30	10.8	60	53.7	AV	L1	GND
4.880000	6.50	10.9	60	53.5	AV	L1	GND
12.200000	7.80	11.2	60	52.2	AV	L1	GND
25.700000	14.00	11.6	60	46.0	AV	L1	GND



**MEASUREMENT RESULT: "BK0415202\_fin"**

4/15/2015 9:58AM

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.150000	19.20	10.2	79	59.8	QP	N	GND
0.528000	10.30	10.4	73	62.7	QP	N	GND
1.054500	10.60	10.7	73	62.4	QP	N	GND
3.280000	10.80	10.8	73	62.2	QP	N	GND
8.580000	11.30	11.1	73	61.7	QP	N	GND
25.450000	20.90	11.6	73	52.1	QP	N	GND

**MEASUREMENT RESULT: "BK0415202\_fin2"**

4/15/2015 9:58AM

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.159000	10.00	10.2	66	56.0	AV	N	GND
0.870000	6.00	10.5	60	54.0	AV	N	GND
1.788000	6.40	10.8	60	53.6	AV	N	GND
5.040000	6.50	10.9	60	53.5	AV	N	GND
12.200000	8.70	11.2	60	51.3	AV	N	GND
29.700000	15.50	11.7	60	44.5	AV	N	GND

### 4.3. Harmonic current

For test instruments and accessories used see section 3.6.

#### 4.3.1. Description of the test location

Test location: Shielded room No. 2

#### 4.3.2. Limits of harmonic current

Test configuration and procedure see clause 7.1 of standard EN 61000-3-2: 2014

#### 4.3.3. Description of the test set-up

##### 4.3.3.1 Operating Condition

The EUT is turned on during the test, and the results of the maximum emanation are recorded.

##### 4.3.3.2 Test Configuration and Procedure

Test configuration and procedure see clause 6.2.2 and Appendix C of standard EN 61000-3-2: 2014.

##### 4.3.3.3 Photo of the test set-up



#### 4.3.4. Test result

The test results are **passed**

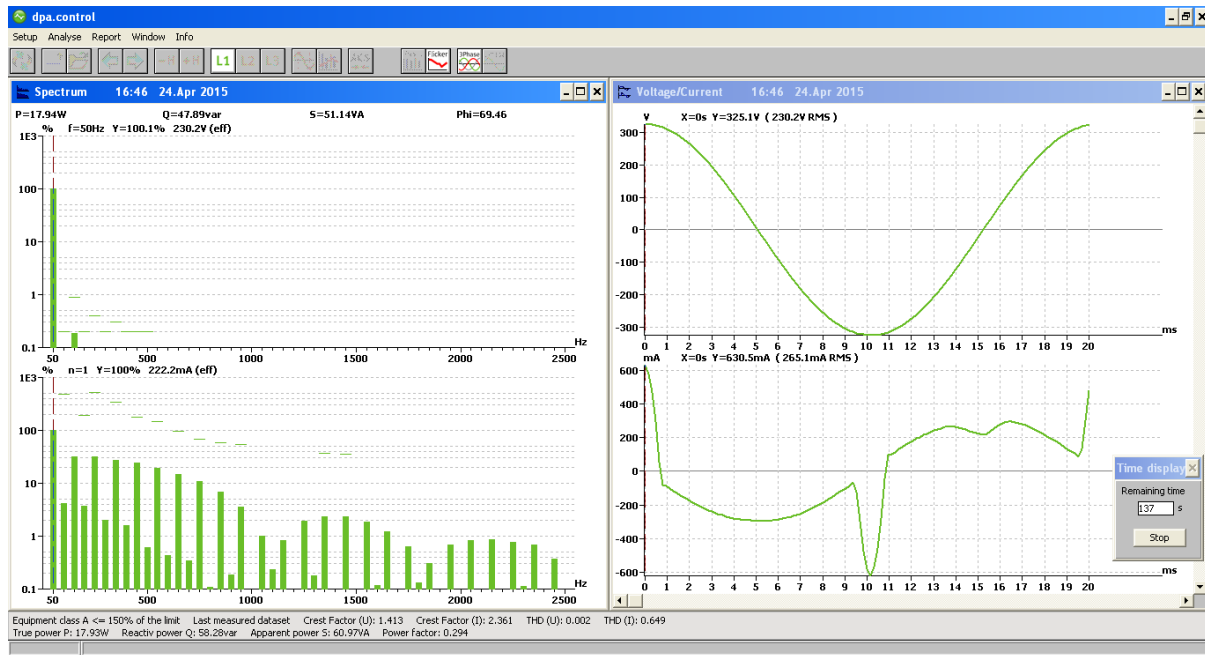
**Remarks:** The limits are kept. For detailed results, please see the following page(s).

## Test Report of HTW

Standard used:	EN/IEC 61000-3-2 Ed.3 Quasi-stationary Equipment class A <= 150% of the limit
Observation time:	150s
Windows width:	10 periods - (EN/IEC 61000-4-7 Edition 2002 + A1:2009)
Customer:	Kinco Electric (Shenzhen) Ltd.
Mains supply voltage:	AC 230V/50Hz
Ambient Temperature:	23°C
Humidity:	51%
Barometric Pressure:	1017mbar
E. U. T.:	Stepping Motor Drive M/N:3CM880
Date of test:	16:42 24.Apr 2015
Tester:	Shine

### Test Result

E. U. T.:	PASS
Power Source:	PASS



**E. U. T. Result*****Check harmonics 2..40 [exception odd 21..39]:*****Harmonic(s) > 150%:**

Order (n): None

**Harmonic(s) with average > 100%:**

Order (n): None

***Check odd harmonics 21..39:*****All Partial Odd Harmonics below partial limits.****Harmonic(s) > 150%:**

Order (n): None

**Harmonic(s) with average > 150%:**

Order (n): None

**Power Source Result****First dataset out of limit:**

DS (time): None

**Harmonic(s) out of limit:**

Order (n): None

**Average harmonic current results**

Hn	I <sub>eff</sub> [A]	% of Limit	Limit [A]	Result
1	221.878E-3			
2	8.877E-3	0.822	1.08	PASS
3	70.648E-3	3.072	2.30	PASS
4	9.074E-3	2.110	430.00E-3	PASS
5	71.323E-3	6.256	1.14	PASS
6	4.062E-3			PASS
7	60.293E-3	7.830	770.00E-3	PASS
8	4.320E-3			PASS
9	53.163E-3	13.291	400.00E-3	PASS
10	1.425E-3			PASS
11	43.121E-3	13.067	330.00E-3	PASS
12	1.545E-3			PASS
13	33.067E-3	15.746	210.00E-3	PASS
14	879.792E-6			PASS
15	23.868E-3	15.912	150.00E-3	PASS
16	510.286E-6			PASS
17	15.056E-3	11.376	132.35E-3	PASS
18	548.387E-6			PASS
19	7.985E-3	6.743	118.42E-3	PASS
20	303.418E-6			PASS
21	2.280E-3			PASS
22	542.317E-6			PASS
23	1.803E-3			PASS
24	306.263E-6			PASS
25	4.105E-3			PASS
26	543.093E-6			PASS
27	5.213E-3	4.171	124.99E-3	PASS
28	325.531E-6			PASS
29	5.155E-3	4.430	116.39E-3	PASS
30	298.305E-6			PASS
31	4.209E-3			PASS
32	361.051E-6			PASS
33	2.743E-3			PASS
34	212.142E-6			PASS
35	1.476E-3			PASS
36	241.099E-6			PASS
37	702.515E-6			PASS
38	220.044E-6			PASS
39	1.426E-3			PASS
40	269.886E-6			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.



**Maximum harmonic current results**

Hn	I <sub>eff</sub> [A]	% of Limit	Limit [A]	Result
1	223.062E-3			
2	10.259E-3	0.633	1.62	PASS
3	70.940E-3	2.056	3.45	PASS
4	9.812E-3	1.521	645.00E-3	PASS
5	71.560E-3	4.185	1.71	PASS
6	5.127E-3	1.139	450.00E-3	PASS
7	60.472E-3	5.236	1.15	PASS
8	4.953E-3			PASS
9	53.345E-3	8.891	600.00E-3	PASS
10	1.798E-3			PASS
11	43.240E-3	8.735	495.00E-3	PASS
12	1.986E-3			PASS
13	33.183E-3	10.534	315.00E-3	PASS
14	1.301E-3			PASS
15	23.955E-3	10.646	225.00E-3	PASS
16	728.781E-6			PASS
17	15.129E-3	7.621	198.52E-3	PASS
18	706.539E-6			PASS
19	8.091E-3	4.555	177.63E-3	PASS
20	372.033E-6			PASS
21	2.407E-3			PASS
22	702.583E-6			PASS
23	1.913E-3			PASS
24	400.898E-6			PASS
25	4.219E-3			PASS
26	746.927E-6			PASS
27	5.298E-3	4.238	124.99E-3	PASS
28	455.900E-6			PASS
29	5.266E-3	4.525	116.39E-3	PASS
30	423.654E-6			PASS
31	4.315E-3			PASS
32	466.456E-6			PASS
33	2.826E-3			PASS
34	257.529E-6			PASS
35	1.566E-3			PASS
36	377.175E-6			PASS
37	767.006E-6			PASS
38	283.671E-6			PASS
39	1.476E-3			PASS
40	414.145E-6			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.

**Maximum harmonic voltage results**

Hn	Ueff [V]	Ueff [%]	Limit [%]	Result
1	230.16	100.068		
2	147.23E-3	0.064	0.2	PASS
3	426.12E-3	0.185	0.9	PASS
4	54.11E-3	0.024	0.2	PASS
5	16.24E-3	0.007	0.4	PASS
6	43.84E-3	0.019	0.2	PASS
7	44.47E-3	0.019	0.3	PASS
8	21.23E-3	0.009	0.2	PASS
9	24.72E-3	0.011	0.2	PASS
10	21.71E-3	0.009	0.2	PASS
11	26.78E-3	0.012	0.1	PASS
12	14.29E-3	0.006	0.1	PASS
13	33.60E-3	0.015	0.1	PASS
14	16.06E-3	0.007	0.1	PASS
15	21.39E-3	0.009	0.1	PASS
16	16.59E-3	0.007	0.1	PASS
17	26.81E-3	0.012	0.1	PASS
18	14.69E-3	0.006	0.1	PASS
19	13.55E-3	0.006	0.1	PASS
20	14.80E-3	0.006	0.1	PASS
21	16.82E-3	0.007	0.1	PASS
22	12.88E-3	0.006	0.1	PASS
23	10.41E-3	0.005	0.1	PASS
24	8.74E-3	0.004	0.1	PASS
25	12.50E-3	0.005	0.1	PASS
26	14.67E-3	0.006	0.1	PASS
27	16.35E-3	0.007	0.1	PASS
28	13.50E-3	0.006	0.1	PASS
29	14.55E-3	0.006	0.1	PASS
30	11.39E-3	0.005	0.1	PASS
31	14.19E-3	0.006	0.1	PASS
32	11.75E-3	0.005	0.1	PASS
33	9.58E-3	0.004	0.1	PASS
34	7.11E-3	0.003	0.1	PASS
35	9.30E-3	0.004	0.1	PASS
36	8.91E-3	0.004	0.1	PASS
37	7.32E-3	0.003	0.1	PASS
38	6.21E-3	0.003	0.1	PASS
39	11.08E-3	0.005	0.1	PASS
40	11.35E-3	0.005	0.1	PASS

## 4.4. Voltage Fluctuation and Flicker

For test instruments and accessories used see section 3.6.

### 4.4.1. Description of the test location

Test location: Shielded room No. 2

### 4.4.2 Limits of voltage fluctuation and flicker

Test configuration and procedure see clause 5 of standard EN 61000-3-3: 2013.

### 4.4.3 Description of the test set-up

#### 4.4.3.1. Operating Condition

The EUT is turned on during the test, and the results of the maximum emanation are recorded.

#### 4.4.3.2. Test Configuration and Procedure

Test configuration and procedure see clause 6 and Annex A or Annex B of standard EN 61000-3-3: 2013.

#### 4.4.3.3. Photo of the test set-up



### 4.4.4 Test result

The requirements are **Fulfilled**

**Remarks:** The limits are kept. For detailed results, please see the following page(s).

**Test Report of HTW**

Standard used:	EN 61000-3-3 Flicker
Short time (Pst):	10 mins
Observation time:	120 mins (12 Flicker measurements)
Customer:	Kinco Electric (Shenzhen) Ltd.
Flickermeter:	AC 230V / 50Hz
E. U. T.:	Stepping Motor Drive M/N:3CM880
Date of test:	16:52 24.Apr 2015
Tester:	Shine

Test Result	PASS
-------------	------

**Maximum Flicker results**

	EUT values	Limit	Result
Pst	0.970	1.00	PASS
Plt	0.558	0.65	PASS
dc [%]	0.124	3.30	PASS
dmax [%]	1.008	4.00	PASS
dt [s]	0.000	0.50	PASS

**Detail Flicker data**

Flicker measurement 1	EUT values	Limit	Result
Pst	0.784	1.00	PASS
dc [%]	0.124	3.30	PASS
dmax [%]	1.302	4.00	PASS
dt [s]	0.000	0.50	PASS

Flicker measurement 2	EUT values	Limit	Result
Pst	0.902	1.00	PASS
dc [%]	0.000	3.30	PASS
dmax [%]	1.064	4.00	PASS
dt [s]	0.000	0.50	PASS

Flicker measurement 3	EUT values	Limit	Result
Pst	0.878	1.00	PASS
dc [%]	0.000	3.30	PASS
dmax [%]	1.413	4.00	PASS
dt [s]	0.000	0.50	PASS

Flicker measurement 4	EUT values	Limit	Result
Pst	0.749	1.00	PASS
dc [%]	0.000	3.30	PASS
dmax [%]	1.324	4.00	PASS
dt [s]	0.000	0.50	PASS

Flicker measurement 5	EUT values	Limit	Result
Pst	0.884	1.00	PASS
dc [%]	0.000	3.30	PASS
dmax [%]	1.310	4.00	PASS
dt [s]	0.000	0.50	PASS

Flicker measurement 6	EUT values	Limit	Result
Pst	0.898	1.00	PASS
dc [%]	0.000	3.30	PASS
dmax [%]	1.314	4.00	PASS
dt [s]	0.000	0.50	PASS

Flicker measurement 7	EUT values	Limit	Result
Pst	0.970	1.00	PASS
dc [%]	0.000	3.30	PASS
dmax [%]	1.342	4.00	PASS
dt [s]	0.000	0.50	PASS

Flicker measurement 8	EUT values	Limit	Result
Pst	0.838	1.00	PASS
dc [%]	0.000	3.30	PASS
dmax [%]	1.323	4.00	PASS
dt [s]	0.000	0.50	PASS

Flicker measurement 9	EUT values	Limit	Result
Pst	0.909	1.00	PASS
dc [%]	0.000	3.30	PASS
dmax [%]	1.306	4.00	PASS
dt [s]	0.000	0.50	PASS

Flicker measurement 10	EUT values	Limit	Result
Pst	0.864	1.00	PASS
dc [%]	0.000	3.30	PASS
dmax [%]	1.327	4.00	PASS
dt [s]	0.000	0.50	PASS

Flicker measurement 11	EUT values	Limit	Result
Pst	0.793	1.00	PASS
dc [%]	0.000	3.30	PASS
dmax [%]	1.424	4.00	PASS
dt [s]	0.000	0.50	PASS

Flicker measurement 12	EUT values	Limit	Result
Pst	0.768	1.00	PASS
dc [%]	0.000	3.30	PASS
dmax [%]	1.311	4.00	PASS
dt [s]	0.000	0.50	PASS

## 4.5. Electrostatic discharge

For test instruments and accessories used see section 3.6.

### 4.5.1. Description of the test location and date

Test location: Shielded room No.1

Date of test: Apr 20, 2015

Operator: Shine

### 4.5.2. Severity levels of electrostatic discharge

4.5.2.1. Severity level: Contact Discharge at  $\pm 4\text{kV}$  Air Discharge at  $\pm 8\text{kV}$

Level	Test Voltage Contact Discharge (KV)	Test Voltage Air Discharge (KV)
1	2	2
2	4	4
3	6	8
4	8	15
X	Special	Special

4.5.2.2. Performance criterion: **B**

### 4.5.2. Description of the test set-up

#### 4.5.3.1. Operating Condition

The EUT is turned on during the test, and the results of the maximum susceptible results are recorded.

#### 4.5.3.1. Test Configuration and Procedure

Air Discharge:

- This test is done on a non-conductive surfaces. The round discharge tip of the Electrostatic Discharge simulator shall be approached as fast as possible then to touch the EUT. After each discharge, the simulator shall be removed from the EUT. The simulator is then re-triggered for a new single discharge and repeated 10 times for each pre-selected test point. This procedure shall be repeated until all the air discharge completed

Contact Discharge:

- All the procedure shall be same as air discharge, except using the acute discharge tip. The top end of the Electrostatic Discharge simulator is touch the EUT all the time when the simulator is re-triggered for a new single discharge and repeated 10 times for each pre-selected test point.

Indirect Discharge:

- The vertical coupling plane(VCP) is placed 0.1m away from EUT. The top end of Electrostatic Discharge simulator should aim at the center of one border of the VCP for at least 10 times discharge.
- The top end of Electrostatic Discharge simulator should place at the point 0.1m away from EUT on the horizontal coupling plane(HCP). At least 10 times discharge should be done for every pre-selected point around EUT.

Record any performance degradation of the EUT during the test and judge the test result according to performance criterion.

4.5.3.2. Photo of the test set-up



4.5.2. Test specification:

- Contact discharge voltage:
  - 2 kV
  - 4 kV
- Air discharge voltage:
  - 2 kV
  - 4 kV
  - 8 kV
- Number of discharges:
  - 10
  - 25
- Type of discharge:
  - Direct discharge
    - Air discharge
    - Contact discharge
  - Indirect discharge
    - Contact discharge
- Polarity:
  - Positive
  - Negative
- Discharge location:
  - see photo documentation of the test set-up
  - all external locations accessible by hand
  - horizontal coupling plane (HCP)
  - vertical coupling plane (VCP)

4.5.3. Test result

The requirements are **Fulfilled**

Performance Criterion: **B**

**Remarks:** During the test, the EUT has no loss of function or performance.



## 4.6. Radiated, radio-frequency, electromagnetic field

For test instruments and accessories used see section 3.6.

### 4.6.1. Description of the test location and date

Test location: Shielded room No.4

Date of test: Apr 20, 2015

Operator: Shine

### 4.6.2. Severity levels of radiated, radio-frequency, electromagnetic field

4.6.2.1. Severity level: 10 V/m, 3 V/m, 1 V/m.

Level	Field Strength (V/m)
1.	1
2.	3
3.	10
X	Special

4.6.2.2. Performance criterion: A

### 4.6.2. Description of the test set-up

4.6.3.1. Operating Condition

The EUT is turned on during the test, and the results of the maximum susceptible results are recorded.

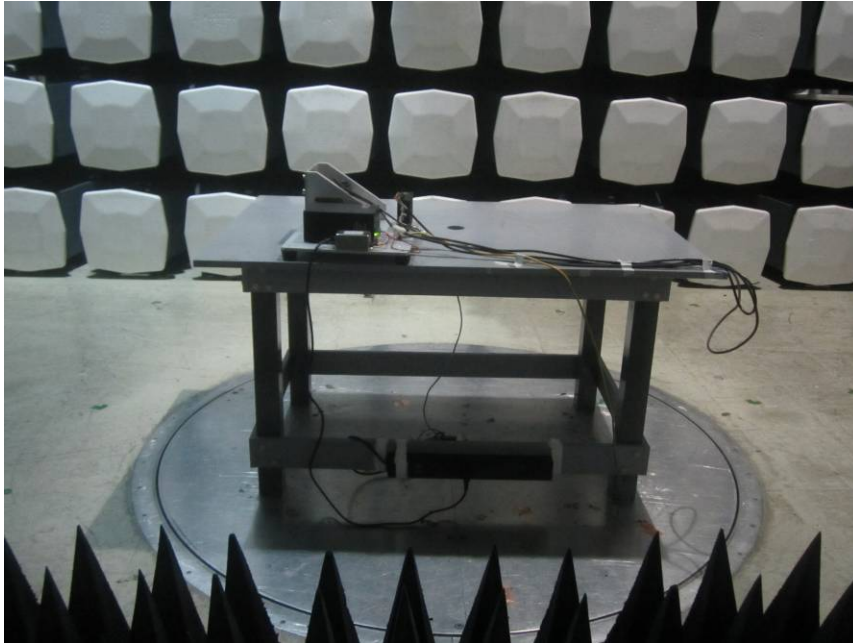
4.6.3.1. Test Configuration and Procedure

EUT and its auxiliary instrument are placed on a turntable which is 0.8 meter above ground. The center of the transmitting antenna mounted on an antenna mast is set 3 meter away from the EUT. During the test, each of the four sides of EUT will face the transmitting antenna with the turntable cycled. Both horizontal and vertical polarization of the antenna are set on test and measured individually.

In order to judge the performance of the EUT, a set of monitor system is used.

Record any performance degradation of the EUT during the test and judge the test result according to performance criterion.

## 4.6.3.2. Photo of the test set-up



## 4.6.2. Test specification:

<u>Frequency range:</u>	■ 80 MHz to 1000 MHz
<u>Field strength:</u>	■ 10 V/m
<u>Frequency range:</u>	■ 1400 MHz to 2000 MHz
<u>Field strength:</u>	■ 3 V/m
<u>Frequency range:</u>	■ 2000 MHz to 2700 MHz
<u>Field strength:</u>	■ 1 V/m
<u>EUT - antenna separation:</u>	■ 3 m
<u>Modulation:</u>	■ AM: 80 % ■ sinusoidal 1000Hz
<u>Frequency step:</u>	■ 1 % with 1s dwell time
<u>Antenna polarisation:</u>	■ horizontal                      ■ vertical

## 4.6.3. Test result

The requirements are **Fulfilled**Performance Criterion: **A****Remarks:** During the test, the EUT has no loss of function or performance.

## 4.7. Electrical fast transients / Burst

For test instruments and accessories used see section 3.6.

### 4.7.1. Description of the test location and date

Test location: Shielded room No.1

Date of test: Apr 20, 2015

Operator: Shine

### 4.7.2. Severity levels of electrical fast transients / Burst

4.7.2.1. Severity level:  $\pm 2000\text{V}$  for AC power supply lines

Open circuit output test voltage and repetition rate of the impulses				
Level	On power port, PE		On I/O signal, data and control ports	
	V peak(KV)	Repetition rate (KHz)	Voltage peak	Repetition rate (KHz)
1.	0.5	5 or 100	0.25	5 or 100
2.	1	5 or 100	0.5	5 or 100
3.	2	5 or 100	1	5 or 100
4.	4	5 or 100	2	5 or 100
X	Special	Special	Special	Special

4.7.2.2. Performance criterion: **B**

### 4.7.2. Description of the test set-up

4.7.3.1. Operating Condition

The EUT is turned on during the test, and the results of the maximum susceptible results are recorded.

4.7.3.1. Test Requirements

EUT and its simulators shall be placed 0.1m high above the ground reference plane which is a minimum 1m\*1m with minimum 0.65mm thickness. This reference ground plane shall project beyond the EUT by at least 0.1m on all sides and the minimum distance between EUT and all other conductive structure, except the ground plane beneath the EUT, shall be more than 0.5m.

4.7.3.2. Test Configuration and Procedure

For AC power input lines:

—EUT is connected to coupling/decoupling network which couples the EFT signal to power input lines. During the test, both polarities of the test voltage should be applied and the duration of the test can't be less than 1mins.

Record any performance degradation of the EUT during the test and judge the test result according to performance criterion.

## 4.7.3.2. Photo of the test set-up



## 4.7.2. Test specification:

<u>Coupling network:</u>	<input checked="" type="checkbox"/> 0.5 kV	<input checked="" type="checkbox"/> 1 kV	<input checked="" type="checkbox"/> 2 kV
<u>Coupling clamp:</u>	<input type="checkbox"/> 0.5 kV	<input type="checkbox"/> 1 kV	
<u>Burst frequency:</u>	<input checked="" type="checkbox"/> 5.0 kHz		
<u>Coupling duration:</u>	<input checked="" type="checkbox"/> 60 s		
<u>Polarity:</u>	<input checked="" type="checkbox"/> positive	<input checked="" type="checkbox"/> negative	

## 4.7.3. Coupling points

Cable description: AC power line: L, N, PE, L-N, L-PE, N-PE, L-N-PE

Screening:	<input type="checkbox"/> screened	<input checked="" type="checkbox"/> unshielded
Status:	<input type="checkbox"/> passive	<input checked="" type="checkbox"/> active
Signal transmission:	<input checked="" type="checkbox"/> analogue	<input type="checkbox"/> digital
Length:	<input checked="" type="checkbox"/> 1.5 m	

## 4.7.4. Test result

The requirements are **Fulfilled**

Performance Criterion: **B**

**Remarks:** During the test, the EUT has no loss of function or performance.

## 4.8. Surge

For test instruments and accessories used see section 3.6.

### 4.8.1. Description of the test location and date

Test location: Shielded room No.1

Date of test: Apr 20, 2015

Operator: Shine

### 4.8.2. Severity levels of surge

4.8.2.1. Severity level: Line to line: 1kV, line to earth: 2kV

Level	Test Voltage (KV)
1	0.5
2	1.0
3	2.0
4	4.0
*	Special

4.8.2.2. Performance Criterion: **B**

### 4.8.2. Description of the test set-up

4.8.3.1. Operating Condition

The EUT is turned on during the test, and the results of the maximum susceptible results are recorded.

4.8.3.1. Test Configuration and Procedure

For AC power input ports

In this test, the 1.2/50us & 8/20us surge generator must be used for AC power ports. The voltage for line to line 1KV and line to earth are 2KV. At least 5 positive and 5 negative (polarity) surge signal with a maximum 1/min repetition rate are injected to AC power lines from 4 different phase angle (0°, 90°, 180°, 270°) during the test.

4.8.3.2. Photo of the test set-up



4.8.2. Test specification:

AC Port Pulse amplitude-Power line sym:     0.5 kV     1 kV     2 kV     4 kV  
Source impedance: 2 Ω + 18μF)

Pulse amplitude-Power line unsym:         0.5 kV     1 kV     2 kV     4 kV  
Source impedance:(12 Ω + 9μF)

Number of surges:                                 5 Surges/Phase angle

Repetition rate:                                  60 s

Polarity:     positive                                 negative

4.8.1. Coupling points

Cable description:                                AC power line: L-N, N-PE, L-PE, L-N-PE

Screening:                                          screened                                 unscreened  
 Status:     passive                                  active  
 Signal transmission:                             analogue                                 digital  
 Length:     1.0 m

4.8.2. Test result

The requirements are **Fulfilled**

Performance Criterion: **B**

**Remarks:**        During the test, the EUT has no loss of function or performance.

## 4.9. Conducted disturbances induced by radio-frequency fields

For test instruments and accessories used see section 3.6.

### 4.9.1. Description of the test location and date

Test location: Shielded room No.2

Date of test: Apr 17, 2015

Operator: Shine

### 4.9.2. Severity levels of conducted disturbances induced by radio-frequency fields discharge

4.9.2.1. Severity Level: 10V

Level	Field Strength (V)
1.	1
2.	3
3.	10
X	Special

4.9.2.2. Performance Criterion: A

### 4.9.3. Description of the test set-up

4.9.3.1. Operating Condition

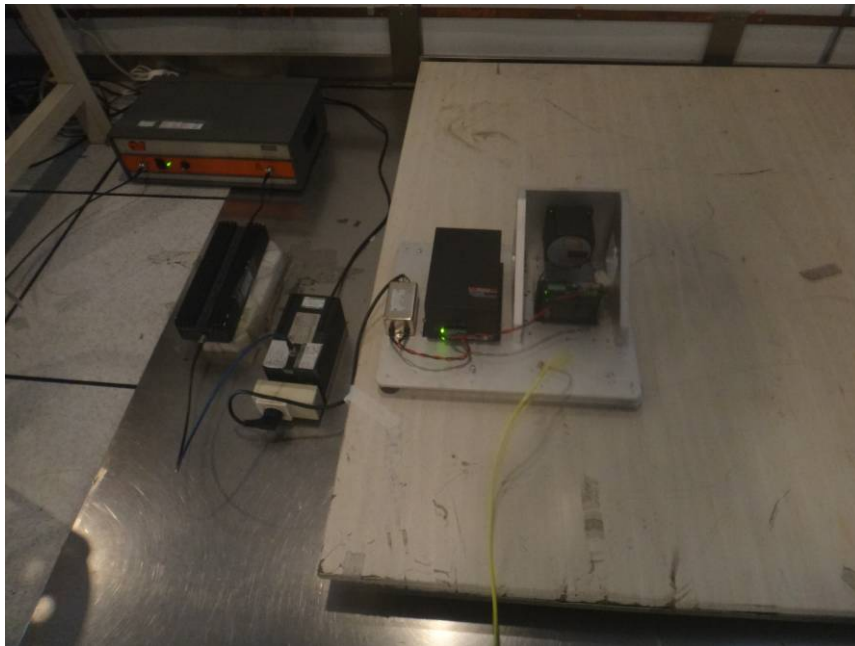
The EUT is turned on during the test, and the results of the maximum susceptible results are recorded.

4.9.3.1. Test Configuration and Procedure

EUT is placed on an insulating support of 0.1m high above a ground reference plane. It must be 0.3m away the CDN (coupling and decoupling network) of which the bottom is made of metallic material and placed directly on the ground plane. Cables between CDN and EUT are as short as possible, and their height above the ground reference plane shall be between 30 and 50 mm (where possible). The disturbance signal amplified by amplifier is injected to EUT through CDN.

Record any performance degradation of the EUT during the test and judge the test result according to performance criterion.

4.9.3.2. Photo of the test set-up



4.9.4. Test specification:

- Frequency range: ■ 0.15 MHz to 80 MHz
- Test voltage: ■ 10 V
- Modulation: ■ AM: 80 %  
■ sinusoidal 1000Hz
- Frequency step: ■ 1 % with 1 s dwell time

4.9.5. Coupling points

- Cable description : AC Power line,
- Screening: o screened ■ unscreened
- Status: o passive ■ active
- Signal transmission: ■ analogue o digital
- Length: ■ 1.0 m

4.9.6. Test result

The requirements are **Fulfilled**

Performance Criterion: **A**

**Remarks:** During the test, the EUT has no loss of function or performance.



## 4.10. Magnetic Field Immunity

For test instruments and accessories used see section 3.6.

### 4.10.1. Description of the test location and date

Test location: Shielded room No.1

Date of test: Apr 17, 2015

Operator: Shine

### 4.10.2. Severity levels of magnetic field immunity

4.10.3.1. Severity Level: 30A/m

Level	Magnetic Field Strength (A/m)
1	1
2	3
3	10
4	30
5	100
X.	Special

### 4.10.3. Description of the test set-up

4.10.3.2. Operating Condition

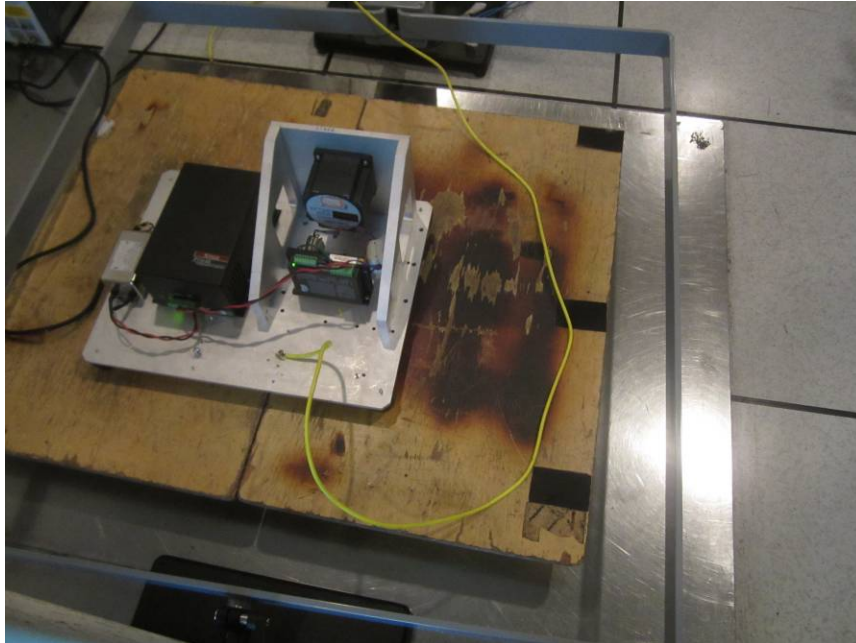
The EUT is turned on during the test, and the results of the maximum susceptibility are recorded.

4.10.3.3. Test Configuration and Procedure:

EUT is placed on an insulating support of 0.1m high above a table of 0.8m high. There is a minimum 1m\*1m ground metallic plane put on this table. EUT is put in the center of the magnetic coil then three orientations of the magnetic coil, X, Y and Z, shall be rotated in order to expose the EUT to the difference polarization magnetic field.

Record any performance degradation of the EUT during the test and judge the test result according to performance criterion.

## 4.10.3.4. Photo of the test set-up

**4.10.2. Test specification:**

Test frequency:                                   ■ 50 Hz   ■ 60 Hz

Continuous field:                               ■ 30A/m

Test duration:                                   ■ 5 m

Antenna factor:                                 0.917 A/m

Axis:   ■ x-axis                                   ■ y-axis                                   ■ z-axis

**4.10.3. Test result**The requirements are **Fulfilled**Performance Criterion: **A****Remarks:**     During the test, the EUT has no loss of function or performance.

## 4.11 Voltage Dips and Interruptions

For test instruments and accessories used see section 3.6.

### 4.11.1 Description of the test location and date

Test location: Shielded room No.1

Date of test: Apr 17, 2015

Operator: Shine

### 4.11.2 Severity levels of voltage dips and interruptions

Test Level (%Ut)	Voltage Dip And Short Interruptions (%Ut)	Performance Criterion	Duration (In Period)	Phase angle (°)
0	100	B	0.5	0°, 45°, 90°, 135°, 180°, 225°, 270°, 315°
70	30	C	25	0°, 45°, 90°, 135°, 180°, 225°, 270°, 315°
0	100	C	250	0°, 45°, 90°, 135°, 180°, 225°, 270°, 315°

### 4.11.3 Description of the test set-up

#### 4.11.3.1 Operating Condition

The EUT is turned on during the test, and the results of the maximum susceptibility are recorded.

#### 4.11.3.2 Test Configuration and Procedure

EUT is connected to the simulator according to the setup outline of 12.3. When conducting the test level of 0.5 period duration, make sure that it shall start at the phase angle of 0° and 180°

## 4.11.3.3 Photo of the test set-up



## 4.11.4 Test specification:

<u>Nominal Mains Voltage (<math>V_N</math>):</u>	■ 230 V AC
<u>Number of voltage fluctuations:</u>	■ 3
<u>Level of reduction(dip) / duration:</u>	■ 100 % / 10ms      ■ 30 % / 500ms
<u>Nominal Mains Voltage (<math>V_N</math>):</u>	■ 230 V AC
<u>Number of Interruptions:</u>	■ 3
<u>Duration of the Interruption:</u>	■ 5000 ms

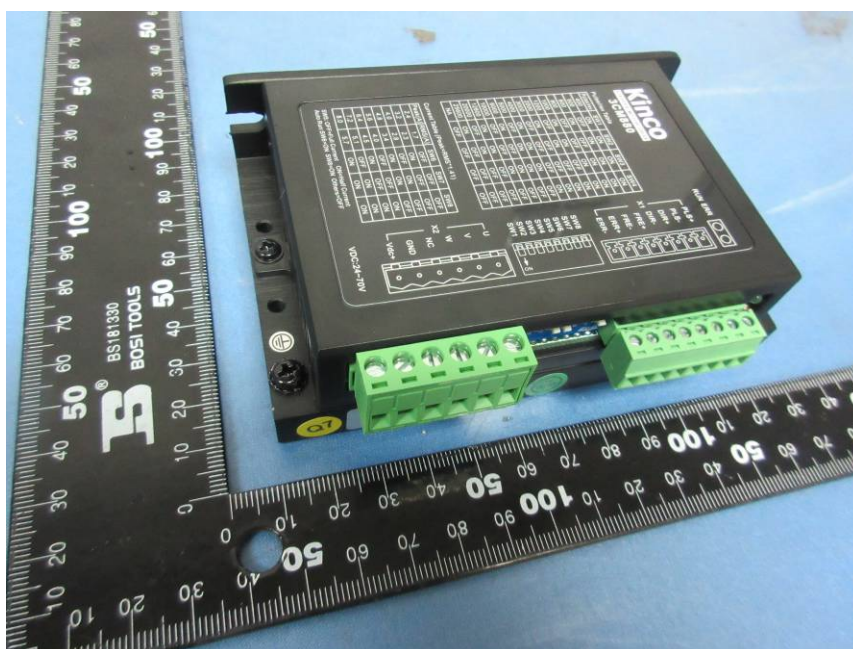
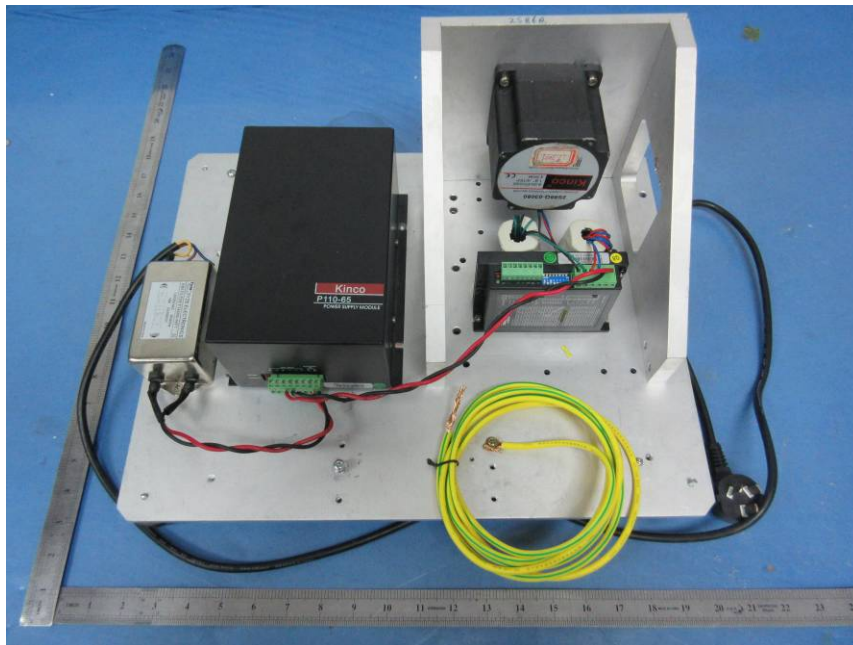
## 4.11.5 Test result

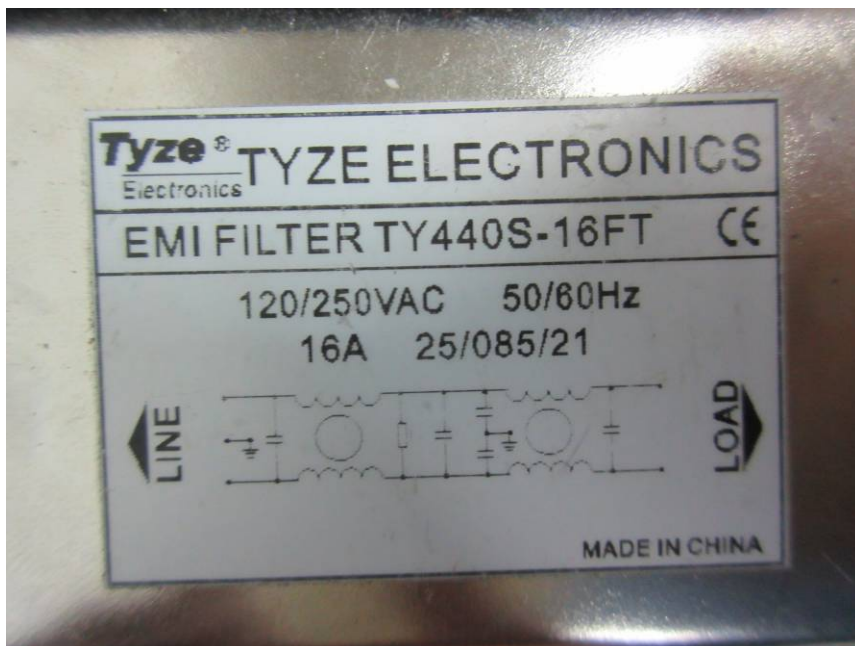
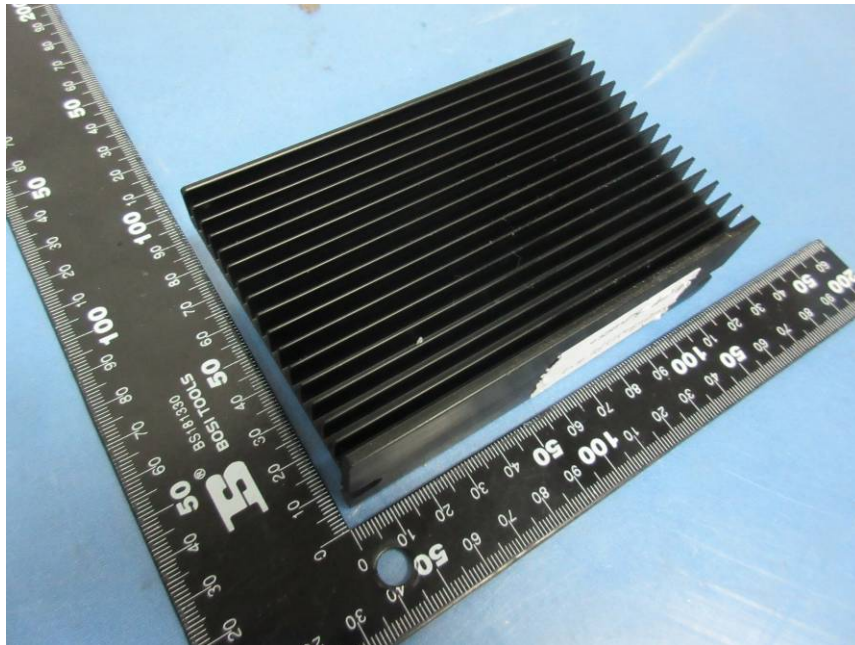
The requirements are **Fulfilled**  
Performance Criterion **See section 4.11.2**

**Remarks:** During the test no deviation was detected to the selected operation mode(s).

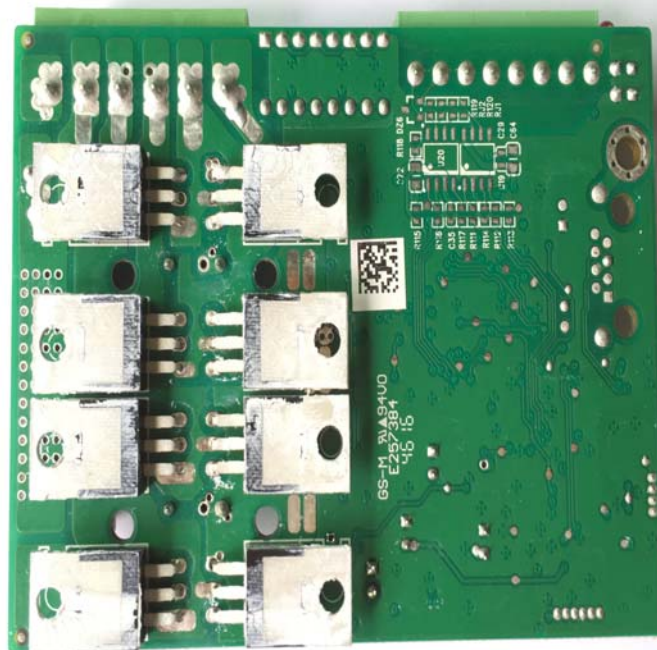
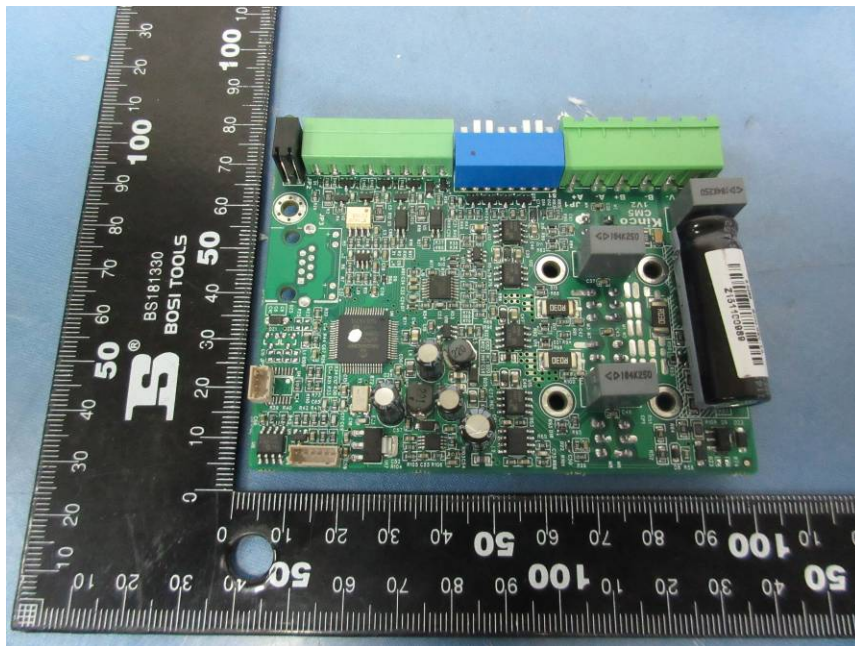
## 5. EXTERNAL AND INTERNAL PHOTOS OF THE EUT

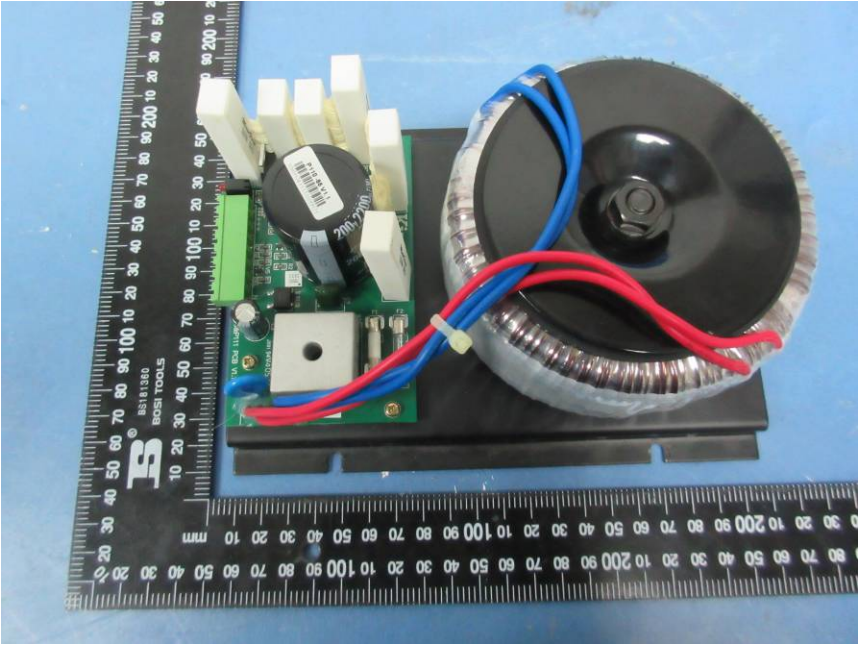
### 5.1. External photos of the EUT





### 5.2. Internal photos of the EUT





..... End Of Report.....