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TEST REPORT

Applicant: ZHEJIANG HECHUAN TECHNOLOGY CO., LTD

Address of Applicant: No. 9, Fucai Road, Longyou Industrial Zone, Quzhou City,

Zhejiang Province, P.R. China

Equipment Under Test (EUT)

Product Name: SERVO MOTOR

Brand Name:

Model No.: Please refer to page 6.

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

EN 61000-6-2:2005+AC:2005

Applicable standards: EN 61000-3-2:2014

EN 61000-3-3:2013

Date of sample receipt: August 26, 2019

Date of Test: August 26, 2019 To September 6, 2019

Date of report issued: September 6, 2019

Test Result: PASS *

*In the configuration tested, the EUT complied with the standards specified above.

Declaration of Conformity and compliance with all relevant EU Directives.

Authorized Signature

Cevin wong

Kevin Wang Laboratory Manager





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2 Version

Version No.	Date	Description
00	September 6, 2019	Original

Prepared By:

Project Engineer

Date:

Date:

September 6, 2019

Reviewed By:

-evin wondy

Reviewer

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4 Test Summary

Test Item	Test Requirement	Test Method	Class / Severity	Result
Radiated Emission	EN 61000-6-4	CISPR 11	Table 1	PASS
Conducted Emission	EN 61000-6-4	CISPR 11	Table 2	PASS
Harmonic Current Emission	EN 61000-3-2	EN 61000-3-2	Class A	PASS
Voltage Fluctuations and Flicker	EN 61000-3-3	EN 61000-3-3	Clause 5 of EN 61000-3-3	PASS
Electrostatic discharges	EN 61000-6-2	EN 61000-4-2	Contact ±4 kV Air ±8 kV	PASS
Radiated Immunity	EN 61000-6-2	EN 61000-4-3	10V/m, 80%, 1kHz Amp. Mod. 3V/m, 80%, 1kHz Amp. Mod. 1V/m, 80%, 1kHz Amp. Mod.	PASS
Electrical Fast Transients	EN 61000-6-2	EN 61000-4- 4	±2.0kV	PASS
Surges	EN 61000-6-2	EN 61000-4-5	1kV Line to Line 2kV Line to Ground	PASS
Conducted Immunity	EN 61000-6-2	EN 61000-4-6	10Vrms (emf), 80%, 1kHz Amp. Mod.	PASS
Voltage Dips and Interruptions	EN 61000-6-2	EN 61000-4-11	$0 \% U_T^*$ for 1per $40 \% U_T^*$ for 10per $70 \% U_T^*$ for 25per	PASS

Remark:

Pass: Comply with the essential requirements in the standard.

UT* is the nominal supply voltage.

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5 General Information

5.1 Client Information

Applicant:	ZHEJIANG HECHUAN TECHNOLOGY CO., LTD
Address of Applicant:	No. 9, Fucai Road, Longyou Industrial Zone, Quzhou City, Zhejiang
	Province, P.R. China
Manufacturer:	ZHEJIANG HECHUAN TECHNOLOGY CO., LTD
Address of Manufacturer:	No. 9, Fucai Road, Longyou Industrial Zone, Quzhou City, Zhejiang
	Province, P.R. China

5.2 General Description of E.U.T

Product Name:	SERVO MOTOR
Brand Name:	ドCF3 一 禾川股份 一
Model No.:	Please refer to page 6
Test Model No.:	SV-X3MH075A-N2LN
Dowar Supply:	Input :AC 220-240V, 1.1-10.4A, 0.2-2.3KW, 50/60Hz
Power Supply:	Output: AC 0-220V, 0.6-12.2A, 50W-2KW

5.3 Test mode

On mode:	Keep the EUT in the operation status.
----------	---------------------------------------

5.4 Description of Support Units

None.

5.5 Deviation from Standards

None.

5.6 Abnormalities from Standard Conditions

None.

5.7 Monitoring of EUT for All Immunity Test

Visual:	Monitor the EUT operating status.
Audio:	N/A



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Model No.:

Model No			
SV-X3MM005A-N2LN	SV-X3MA100A-N2LA	SV-X1MM005A-N2LN	SV-X1MA100A-N2LA
SV-X3MM005A-N2LA	SV-X3MA100A-B2LN	SV-X1MM005A-N2LA	SV-X1MA100A-B2LN
SV-X3MM005A-B2LN	SV-X3MA100A-B2LA	SV-X1MM005A-B2LN	SV-X1MA100A-B2LA
SV-X3MM005A-B2LA	SV-X3MM100A-N2LN	SV-X1MM005A-B2LA	SV-X1MM100A-N2LN
SV-X3MM010A-N2LN	SV-X3MM100A-N2LA	SV-X1MM010A-N2LN	SV-X1MM100A-N2LA
SV-X3MM010A-N2LA	SV-X3MM100A-B2LN	SV-X1MM010A-N2LA	SV-X1MM100A-B2LN
SV-X3MM010A-B2LN	SV-X3MM100A-B2LA	SV-X1MM010A-B2LN	SV-X1MM100A-B2LA
SV-X3MM010A-B2LA	SV-X3MH100A-N2LN	SV-X1MM010A-B2LA	SV-X1MH100A-N2LN
SV-X3MM020A-N2LN	SV-X3MH100A-N2LA	SV-X1MM020A-N2LN	SV-X1MH100A-N2LA
SV-X3MM020A-N2LA	SV-X3MH100A-B2LN	SV-X1MM020A-N2LA	SV-X1MH100A-B2LN
SV-X3MM020A-B2LN	SV-X3MH100A-B2LA	SV-X1MM020A-B2LN	SV-X1MH100A-B2LA
SV-X3MM020A-B2LA	SV-X3MA150A-N2LN	SV-X1MM020A-B2LA	SV-X1MA150A-N2LN
SV-X3MH020A-N2LN	SV-X3MA150A-N2LA	SV-X1MH020A-N2LN	SV-X1MA150A-N2LA
SV-X3MH020A-N2LA	SV-X3MA150A-B2LN	SV-X1MH020A-N2LA	SV-X1MA150A-B2LN
SV-X3MH020A-B2LN	SV-X3MA150A-B2LA	SV-X1MH020A-B2LN	SV-X1MA150A-B2LA
SV-X3MH020A-B2LA	SV-X3MM150A-N2LN	SV-X1MH020A-B2LA	SV-X1MM150A-N2LN
SV-X3MM040A-N2LN	SV-X3MM150A-N2LA	SV-X1MM040A-N2LN	SV-X1MM150A-N2LA
SV-X3MM040A-N2LA	SV-X3MM150A-B2LN	SV-X1MM040A-N2LA	SV-X1MM150A-B2LN
SV-X3MM040A-B2LN	SV-X3MM150A-B2LA	SV-X1MM040A-B2LN	SV-X1MM150A-B2LA
SV-X3MM040A-B2LA	SV-X3MH150A-N2LN	SV-X1MM040A-B2LA	SV-X1MH150A-N2LN
SV-X3MH040A-N2LN	SV-X3MH150A-N2LA	SV-X1MH040A-N2LN	SV-X1MH150A-N2LA
SV-X3MH040A-N2LA	SV-X3MH150A-B2LN	SV-X1MH040A-N2LA	SV-X1MH150A-B2LN
SV-X3MH040A-B2LN	SV-X3MH150A-B2LA	SV-X1MH040A-B2LN	SV-X1MH150A-B2LA
SV-X3MH040A-B2LA	SV-X3MA200A-N2LN	SV-X1MH040A-B2LA	SV-X1MA200A-N2LN
SV-X3MM075A-N2LN	SV-X3MA200A-N2LA	SV-X1MM075A-N2LN	SV-X1MA200A-N2LA
SV-X3MM075A-N2LA	SV-X3MA200A-B2LN	SV-X1MM075A-N2LA	SV-X1MA200A-B2LN
SV-X3MM075A-B2LN	SV-X3MA200A-B2LA	SV-X1MM075A-B2LN	SV-X1MA200A-B2LA
SV-X3MM075A-B2LA	SV-X3MM200A-N2LN	SV-X1MM075A-B2LA	SV-X1MM200A-N2LN
SV-X3MH075A-N2LN	SV-X3MM200A-N2LA	SV-X1MH075A-N2LN	SV-X1MM200A-N2LA
SV-X3MH075A-N2LA	SV-X3MM200A-B2LN	SV-X1MH075A-N2LA	SV-X1MM200A-B2LN
SV-X3MH075A-B2LN	SV-X3MM200A-B2LA	SV-X1MH075A-B2LN	SV-X1MM200A-B2LA
SV-X3MH075A-B2LA	SV-X3MH200A-N2LN	SV-X1MH075A-B2LA	SV-X1MH200A-N2LN
SV-X3MA100A-N2LN	SV-X3MH200A-N2LA	SV-X1MA100A-N2LN	SV-X1MH200A-N2LA
	SV-X3MH200A-B2LN		SV-X1MH200A-B2LN
	SV-X3MH200A-B2LA		SV-X1MH200A-B2LA
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Remark: All models are identical in the same PCB layout, interior structure and electrical circuits. The only differences are the model name and appearance color for commercial purpose.

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Test Instruments List

Radi	Radiated Emission:							
Item	Test Equipment	Manufacturer	Model No.	Inventory No.	Cal.Date (mm-dd-yy)	Cal.Due date (mm-dd-yy)		
1	3m Semi- Anechoic Chamber	ZhongYu Electron	9.0(L)*6.0(W)* 6.0(H)	GTS250	Jul. 3 2015	Jul. 2 2020		
2	Control Room	ZhongYu Electron	6.2(L)*2.5(W)* 2.4(H)	GTS251	N/A	N/A		
3	ESU EMI Test Receiver	R&S	ESU26	GTS203	Jun. 29 2019	Jun. 28 2020		
4	BiConiLog Antenna	SCHWARZBECK	VULB9163	GTS214	Jun. 29 2019	Jun. 28 2020		
5	Double-ridged horn antenna	SCHWARZBECK	9120D	GTS208	Jun. 29 2019	Jun. 28 2020		
6	RF Amplifier	HP	8347A	GTS204	Jun. 29 2019	Jun. 28 2020		
7	Broadband Preamplifier	SCHWARZBECK	BBV9718	GTS535	Jun. 29 2019	Jun. 28 2020		
8	EMI Test Software	AUDIX	E3	N/A	N/A	N/A		
9	Coaxial cable	GTS	N/A	GTS210	N/A	N/A		
10	Coaxial Cable	GTS	N/A	GTS211	N/A	N/A		
11	Thermo meter	KTJ	TA328	GTS256	Jun. 29 2019	Jun. 28 2020		

Con	Conducted Emission						
Item	Test Equipment	Manufacturer	Model No.	Inventory No.	Cal.Date (mm-dd-yy)	Cal.Due date (mm-dd-yy)	
1	Shielding Room	ZhongYu Electron	7.3(L)x3.1(W)x2.9(H)	GTS252	May.16 2015	May.15 2020	
2	EMI Test Receiver	R&S	ESCI 7	GTS552	Jun. 29 2019	Jun. 28 2020	
3	Pulse Limiter	R&S	ESH3-Z2	GTS224	Jun. 29 2019	Jun. 28 2020	
4	Coaxial Switch	ANRITSU CORP	MP59B	GTS225	Jun. 29 2019	Jun. 28 2020	
5	Artificial Mains Network	SCHWARZBECK MESS	NSLK8127	GTS226	Jun. 29 2019	Jun. 28 2020	
6	Coaxial Cable	GTS	N/A	GTS227	N/A	N/A	
7	EMI Test Software	AUDIX	E3	N/A	N/A	N/A	
8	Thermo meter	KTJ	TA328	GTS233	Jun. 29 2019	Jun. 28 2020	
9	ISN	EMTEST	FCC-TLISN-T8-02	GTS563	Jun. 29 2019	Jun. 28 2020	

EFT,	EFT, Surge, Voltage dips and Interruption:							
Item	Test Equipment	Manufacturer	Model No.	Inventory No.	Cal.Date (mm-dd-yy)	Cal.Due date (mm-dd-yy)		
1	EMTEST system	EMTEST	UCS500N	GTS239	Jun. 29 2019	Jun. 28 2020		
2	Thermo meter	KTJ	TA328	GTS233	Jun. 29 2019	Jun. 28 2020		
3	Capacitive Clamp	EMTEST	HFK	GTS557	Jun. 29 2019	Jun. 28 2020		



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ESD	ESD:							
Item	Test Equipment	Manufacturer	Model No.	Inventory No.	Cal.Date (mm-dd-yy)	Cal.Due date (mm-dd-yy)		
1	ESD Simulator	KIKUSUI	KES4021A	GTS242	Jun. 29 2019	Jun. 28 2020		
2	Thermo meter	KTJ	TA328	GTS243	Jun. 29 2019	Jun. 28 2020		

Harmonic/ Flicker:						
Item	Test Equipment	Manufacturer	Model No.	Inventory No.	Cal.Date (mm-dd-yy)	Cal.Due date (mm-dd-yy)
1	HARMONIC/FLICKER ANALYZER	KIKUSUI	KHA1000	GTS235	Jun. 29 2019	Jun. 28 2020
2	AC POWER SUPPLY	KIKUSUI	PCR4000LE	GTS236	Jun. 29 2019	Jun. 28 2020
3	LINE IMPEDANCE NETWORK	KIKUSUI	LIN1020JF	GTS237	Jun. 29 2019	Jun. 28 2020
4	Thermo meter	KTJ	TA328	GTS256	Jun. 29 2019	Jun. 28 2020

Cond	Conducted Immunity:						
Item	Test Equipment	Manufacturer	Model No.	Inventory No.	Cal.Date (mm-dd-yy)	Cal.Due date (mm-dd-yy)	
1	Signal Generator	SCHLODER	CDG-6000-25	GTS553	Jun. 29 2019	Jun. 28 2020	
2	CDN	SCHLODER	CDN-M2+3	GTS554	Jun. 29 2019	Jun. 28 2020	
3	EM-Clapm	SCHLODER	EMCL-20	GTS555	Jun. 29 2019	Jun. 28 2020	
4	ATT	SCHLODER	ATT-6DB-100	GTS556	Jun. 29 2019	Jun. 28 2020	

Radia	Radiated Immunity:						
Item	Test Equipment	Manufacturer	Model No.	Serial NO.	Cal.Date (mm-dd-yy)	Cal.Due Date (mm-dd-yy)	
1	Signal Generator	Rohde & Schwarz	SMT03	100059	Jan. 16 2019	Jan. 15 2020	
2	Power Amplifier	AR	150W1000	300999	Jan. 16 2019	Jan. 15 2020	
3	Power Amplifier	AR	25S1G4AM1	305993	Jan. 16 2019	Jan. 15 2020	
4	Power Amplifier	AR	150A220M6	305965	Jan. 16 2019	Jan. 15 2020	
5	Broadband antenna	CHASE	CBL6111C	2576	Jan. 16 2019	Jan. 15 2020	
6	Horn Antenna	AR	AT4002A	2783	Jan. 16 2019	Jan. 15 2020	

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7 Emission Test Results

7.1 Radiated Emission

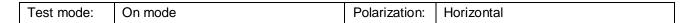
Toot Dogwinsment	EN 64000 C S		=			
Test Requirement:	EN 61000-6-2					
Test Method:	CISPR 11					
Test Frequency Range:	30MHz to 1GHz	30MHz to 1GHz				
Measurement Distance:	3m	3m				
Limit:	Frequency	Limit (dBµV/m @3m)	Value			
	30MHz-230MHz	50.00	Quasi-peak			
	230MHz-1GHz	57.00	Quasi-peak			
Test setup:	Antenna Tower Antenna Tower Ground Reference Plane Test Receiver Test Receiver Controlles					
Test Procedure:	 The radiated emissions test was conducted in a semi-anechoic chamber. The tabletop EUT was placed upon a non-metallic table 0.8m above the ground reference plane. And for floor-standing arrangement, the EUT was placed on the horizontal ground reference plane, but separated from metallic contact with the ground reference plane by 0.1m of insulation. Before final measurements of radiated emissions, a pre-scan was performed in the spectrum mode with the peak detector to find out the maximum emissions spectrum plots of the EUT. The frequencies of maximum emission were determined in the final radiated emissions measurement. At each frequency, the EUT was rotated 360°, and the antenna was raised and lowered from 1 to 4 meters in order to determine the maximum disturbance. 					
Test environment:	antenna polarization. Temp.: 25 °C Hu	umid.: 52% Pre	ess.: 1 012mbar			
	Temp 25 C	<u></u>				
Measurement Record:	Uncertainty: ± 4.50dB					
Test Instruments:	Refer to section 6 for details					
Test mode:	Refer to section 5.3 for details					
Test results:	Pass					

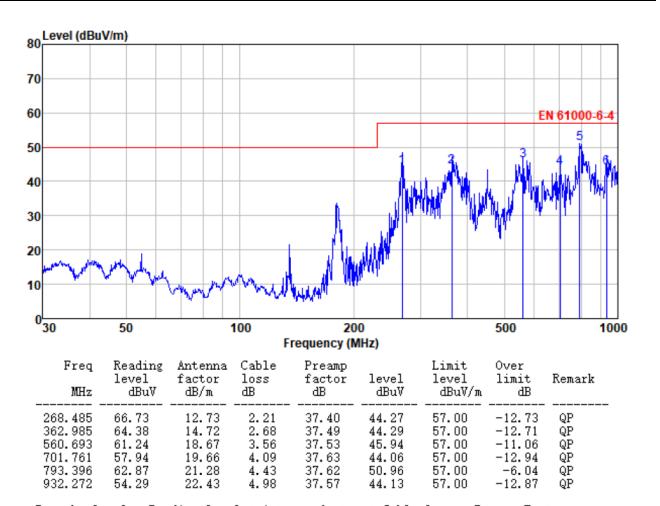
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Measurement Data





Remarks: level = Reading level + Antenna factor + Cable loss - Preamp Factor

972.337

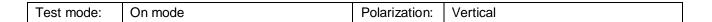
58.74

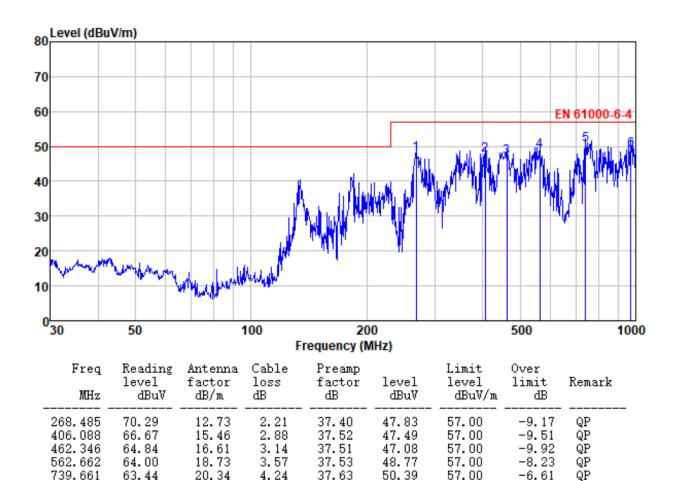
22.59

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Remarks: level = Reading level + Antenna factor + Cable loss - Preamp Factor

37.53

48.92

57.00

-8.08

QP

5.12

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7.2 Conducted Emission

Test Requirement:	EN 61000-6-4				
Test Method:	CISPR 11				
Test Frequency Range:	150kHz to 30MHz				
Limit:	Fraguanov rango (MHz)	L	Limit (dBμV)		
	Frequency range (MHz)	Quasi-peak	Average		
	0.15 - 0.50	79	66		
	0.50 - 30	73	60		
Test setup:	Reference Plane				
	AUX Filter AC power Equipment EUT Test table/Insulation plane Remark E U T Equipment Under Test LISN Line Impedence Stabilization Network Test table height-0.8m				
Test procedure:	 The EUT was placed 0.4 meters from the conducting wall of shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). The LISN provide 50Ω/50μH of coupling impedance for the measuring instrument. Both lines of the power mains connected to the EUT were checked for maximum conducted interference. The frequency range from 150 kHz to 30MHz was searched. Emission levels over 10dB under the prescribed limits are not 				
Test environment:	reported. Temp.: 24 °C Humid	.: 51%	Press.: 1012mbar		
Measurement Record:	Uncertainty: ±3.45dB				
Test Instruments:	Refer to section 6 for details				
Test mode:	Refer to section 5.3 for details				
Test results:	Pass				



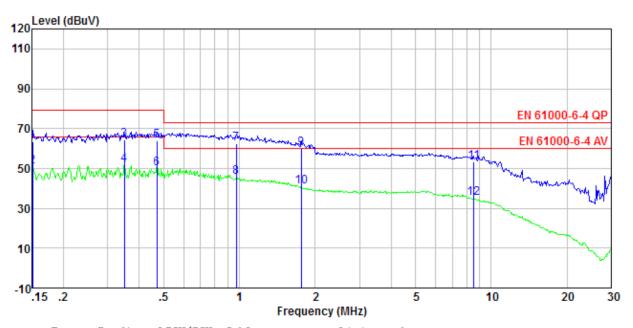
Email :ebo@ebotest.com Web :www.ebotest.com

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Measurement Data

L

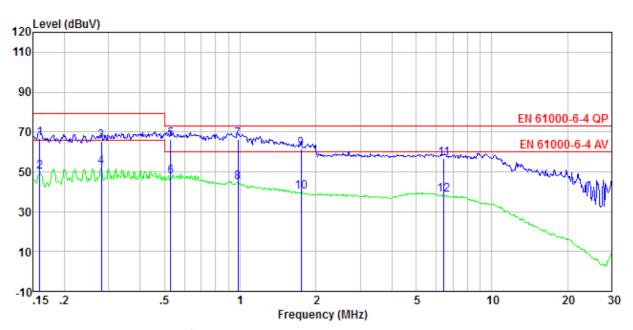


Freq MHz	Reading level dBuV	LISN/ISN factor dB/m	Cable loss dB	Level dBuV	Limit level dBuV	Over limit dB	Remark
0. 15 0. 15 0. 35 0. 35 0. 47 0. 47 0. 97 1. 76 1. 76 8. 55 8. 55	62.76 50.35 64.02 51.19 63.24 49.67 62.07 45.09 59.86 40.54 52.77 34.94	0. 40 0. 40 0. 37 0. 37 0. 32 0. 32 0. 21 0. 21 0. 20 0. 20 0. 20	0.07 0.07 0.10 0.10 0.11 0.11 0.15 0.15 0.17 0.17 0.19	63. 23 50. 82 64. 49 51. 66 63. 67 50. 10 62. 43 45. 45 60. 23 40. 91 53. 16 35. 33	79.00 66.00 79.00 66.00 79.00 66.00 73.00 60.00 73.00 60.00	-15.77 -15.18 -14.51 -14.34 -15.33 -15.90 -10.57 -14.55 -12.77 -19.09 -19.84 -24.67	QP Average
3.00							

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N:



 Freq MHz	Reading level dBuV	LISN/ISN factor dB/m	Cable loss dB	Level dBuV	Limit level dBuV	Over limit dB	Remark
0.16	66.32	0.40	0.08	66.80	79.00	-12.20	QP
0.16	49.69	0.40	0.08	50.17	66.00	-15.83	Average
0.28	64.81	0.40	0.10	65.31	79.00	-13.69	QP
0.28	51.75	0.40	0.10	52.25	66.00	-13.75	Average
0.53	65.74	0.31	0.11	66.16	73.00	-6.84	QP
0.53	47.05	0.31	0.11	47.47	60.00	-12.53	Average
0.98	65.87	0.20	0.15	66.22	73.00	-6.78	QP
0.98	44.25	0.20	0.15	44.60	60.00	-15.40	Average
1.74	60.94	0.20	0.17	61.31	73.00	-11.69	QP
1.74	39.58	0.20	0.17	39.95	60.00	-20.05	Average
6.45	56.19	0.20	0.18	56.57	73.00	-16.43	QP
6.45	38.17	0.20	0.18	38.55	60.00	-21.45	Average

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7.3 Harmonics Test Results

Test Requirement:	EN 61000-3-2	EN 61000-3-2				
Test Method:	EN 61000-3-2	EN 61000-3-2				
Frequency range:	100Hz to 2kHz	100Hz to 2kHz				
Measurement Time:	2.5 min					
Class/Severity:	Class A					
Detector:	As per EN 61000-3-3	As per EN 61000-3-3				
Test environment:	Temp.: 24°C	Humid.: 51%	Press.: 1012mbar			
Test Instruments:	Refer to section 6 for details					
Test mode:	Refer to section 5.3 for details					
Test results:	Passed					

7.4 Flicker Test Result

Test Requirement:	EN 61000-3-3				
Test Method:	EN 61000-3-3				
Class/Severity:	Clause 5 of EN 61000-3-3				
Measurement Time:	10 min				
Detector:	As per EN 61000-3-3				
Test environment:	Temp.: 24°C	Humid.: 51%	Press.: 1012mbar		
Test Instruments:	Refer to section 6 for de	tails			
Test mode:	Refer to section 5.3 for details				
Test results:	Passed	Passed			

Measurement Data

	EUT values	Limit	Result
Pst	0.042	1.00	PASS
Plt	0.044	0.65	PASS
Dc[%]	0.000	3.30	PASS
Dmax %]	0.099	4.00	PASS
Dt [s]	0.000	0.50	PASS

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8 Immunity Test Results

8.1 Performance Criteria Description in EN 61000-6-2

Criterion A:	The apparatus shall continue to operate as intended during and after the test. No degradation of performance or loss of function is allowed below a performance level specified by the manufacturer, when the apparatus 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, either of these may be derived from the product description and documentation and what the user may reasonably expect from the apparatus if used as intended.
Criterion B:	The apparatus shall continue to operate as intended after the test. No degradation of performance or loss of function is allowed below a performance level specified by the manufacturer, when the apparatus is used as intended. The performance level may be replaced by a permissible loss of performance. During the test, degradation of performance is however allowed. 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, either of these may be derived from the product description and documentation and 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.

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8.2 Electrostatic Discharge

Test Requirement:	EN 61000-6-2			
Test Method:	EN 61000-4-2			
Discharge Voltage:	Contact Discharge:±4kV			
	Air Discharge: ±8kV			
	HCP/VCP:±4kV			
Polarity:	Positive & Negative			
Number of Discharge:	Minimum 10 times at each test point.			
Discharge Mode:	Single Discharge			
Discharge Period:	1 second minimum			
Performance Criterion:	В			
Test setup:	Electrostatic Discharge EUT VCP(0.5m*0.5m) 470K chm Non-Conducted Table A70K chm Ground Reference Plane			

Test Procedure:

Air discharge:

The test was applied on non-conductive surfaces of EUT. The round discharge tip of the discharge electrode was approached as fast as possible to touch the EUT. After each discharge, the discharge electrode was removed from the EUT. The generator was re-triggered for a new single discharge and repeated 10 times for each pre-selected test point. This procedure was repeated until all the air discharge completed

Contact Discharge:

The test was applied on conductive surfaces of EUT. the generator was re-triggered for a new single discharge and repeated 10 times for each pre-selected test point. the tip of the discharge electrode was touch the EUT before the discharge switch was operated.

Indirect discharge for horizontal coupling plane

At least 10 single discharges shall be applied at the front edge of each HCP opposite the centre point of each unit of the EUT and 0.1m from the front of the EUT. The long axis of the discharge electrode shall be in the plane of the HCP and perpendicular to its front edge during the discharge.

Consideration should be given to exposing all sides of the EUT.

Indirect discharge for vertical coupling plane

At least 10 single discharges were applied to the center of one vertical

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	edge of the coupling plane. The coupling plane, of dimensions 0.5m X 0.5m, was placed parallel to, and positioned at a distance of 0.1m from the EUT. Discharges were applied to the coupling plane, with this plane in sufficient different positions that the four faces of the EUT are completely illuminated.			
Test environment:	Temp.: 24 °C Humid.: 51% Press.: 1012mbar			
Test mode:	Refer to section 6 for details			
Test Instruments:	Refer to section 5.3 for details			
Test results:	Passed			

Measurement Reco	rd:								
Tost points:	I: Metal shell								
Test points:	II: Seams	II: Seams							
Direct discharge	•								
Discharge			Observations						
Voltage (KV)	Type of discharge	Test points	(Performance Criterion)	Result					
± 4	Contact	I	A	Pass					
± 8	Air	II	A	Pass					
Indirect discharge									
Discharge	Type of discharge	Test points	Observation	Result					
Voltage (KV)	i ype or discharge	rest points	Performance	Result					
± 1	HCP-Bottom/Top/	Edge of the HCP	А	Pass					
± 4	Front/Back/Left/Right	Euge of the HCP	A	F d 5 5					
± 1	VCP-Front/Back	Center of the VCP	А	Pass					
± 4	/Left/Right	Center of the VCP	A	F a 5 5					

Remark:

A: No degradation in performance of the EUT was observed.

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8.3 Radiated Immunity

0.5 Radiated Illinianity	
Test Requirement:	EN 61000-6-2
Test Method:	EN 61000-4-3
Frequency range:	80MHz to 1GHz, 1.4GHz to 2GHz, 2.0 GHz to 2.7GHz
Test Level:	10 V/m, 3V/m, 1V/m
Modulation:	80%, 1kHz Amplitude Modulation
Performance Criterion:	A
Test setup:	Ground Reference Plane Generator Antenna Tower Antenna Tower Amplifier
Test Procedure:	 For table-top equipment, the EUT was placed in the chamber on a non-conductive table 0.8m high. For arrangement of floor-standing equipment, the EUT was mounted on a non-conductive support 0.1m above the supporting plane. For human body-mounted equipment, the EUT may be tested in the same manner as table top items. If possible, a minimum of 1 m of cable is exposed to the electromagnetic field. Excess length of cables interconnecting units of the EUT shall be bundled low-inductively in the approximate center of the cable to form a bundle 30 cm to 40 cm in length.
	3. The EUT was initially placed with one face coincident with the calibration plane. The EUT face being illuminated was contained within the UFA (Uniform Field Area).
	4. The frequency ranges to be considered were swept with the signal modulated and pausing to adjust the RF signal level or to switch oscillators and antennas as necessary. Were the frequency range was swept incrementally, the step size was not exceed 1 % of the preceding frequency value.
	5. The dwell time of the amplitude modulated carrier at each frequency was not be less than the time necessary for the EUT to be exercised and to respond, and was not less than 0,5 s.
	6. The test normally was performed with the generating antenna facing each side of the EUT.
	7. The polarization of the field generated by each antenna necessitates testing each selected side twice, once with the antenna positioned vertically and again with the antenna positioned horizontally.
	8. The EUT was performed in a configuration to actual installation

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	conditions, a video camera and/or a audio monitor were used to monitor the performance of the EUT.				
Test environment:	Temp.: 25°C Humid.: 52% Press.: 1012mbar				
Test Instruments:	Refer to section 6 for details				
Test mode:	Refer to section 5.3 for details				
Test results:	Passed				

Measurement Record:

Frequency	Level (V/m)	EUT Face	Dwell time	Observations	Result
		Front		А	Pass
		Back		А	Pass
00MH- 40H-	3	Left	20	А	Pass
80MHz-1GHz	3	Right	2s	А	Pass
		Тор		А	Pass
		Underside		А	Pass
		Front		А	Pass
	3	Back	2s	А	Pass
1.4GHz-2GHz		Left		А	Pass
1.4GHZ-2GHZ		Right		А	Pass
		Тор		А	Pass
		Underside		А	Pass
		Front		А	Pass
		Back		А	Pass
2GHz-2.7GHz	1	Left	20	А	Pass
2GH2-2./GH2	ı	Right	2s	А	Pass
		Тор		А	Pass
		Underside		А	Pass

Remarks:

A: No degradation in the performance of the E.U.T. was observed.

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8.4 Electrical Fast Transients

Tool Donn's service	FN 04000 0 0			
Test Requirement:	EN 61000-6-2			
Test Method:	EN 61000-4-4			
Test Level:	2.0kV			
Polarity:	Positive & Negative			
Repetition Frequency:	5kHz			
Burst Period:	300ms			
Test Duration:	2 minute per level & polarity			
Performance Criterion:	В			
Test setup:	EMC Tester FUT 10cm Non-conducted table Ground Reference Plane			
Test Procedure:	The EUT and its simulators were placed on the ground reference plane and were insulated from it by a wood support 0.1m + 0.01m thick. The ground reference plane was 1m*1m metallic sheet with 0.65mm minimum thickness.			
	2. This reference ground plane was 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 was more than 0.5m.			
	3. All cables to the EUT was placed on the wood support, cables not subject to EFT/B was routed as far as possible from the cable under test to minimize the coupling between the cables.			
	4. The length of power lines between the coupling device and the EUT is 0.5m			
	5. The EUT is connected to the power mains through a coupling device that directly couples the EFT/B interference signal.			
	6. Test on Signal Ports, Telecommunication Ports and Control Ports: The EUT interference signal is through a coupling clamp device couples to the signal and control lines of the EUT with burst noise for 2 minutes.			
	7. Test on power supply ports: The EUT is connected to the power mains through a coupling device that directly couples the EFT/B interference signal.			
	Each of the Line and Neutral conductors is impressed with burst noise for 2 minutes.			
	The length of the signal and power lines between the coupling device and the EUT is 0.5m			



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Test environment:	Temp.: 26 °C	Humid.: 54%	Press.: 1012mbar	
Test Instruments:	Refer to section 6 for details			
Test mode:	Refer to section 5.3 for details			
Test results:	Passed			

Measurement Record:

Lead under Test	Level (kV)	Coupling Direct/Clamp	Observations (Performance Criterion)	Result
L	± 2.0	Direct	A	Pass
N	± 2.0	Direct	Α	Pass
L-N	± 2.0	Direct	А	Pass
PE	± 2.0	Direct	Α	Pass
L-PE	± 2.0	Direct	А	Pass
N-PE	± 2.0	Direct	A	Pass

Remark:

A: No degradation in the performance of the E.U.T. was observed.

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8.5 Surges

Test Requirement:	EN 61000-6-2				
Test Method:	EN 61000-4-5				
Test Level:	1kV line to line: Differential mode				
	2kV line to earth: Common mode				
Polarity:	Positive & Negative				
Generator source	2Ω (line-line coupling)				
impedance:	12Ω (line-earth coupling)				
Test signal specification:	Rise time=1.2us, Duration time=50us;				
	Test Interval: 60s between each surge;				
No. of surges:	5 positive, 5 negative at 0°, 90°, 180°, 270°.				
Performance Criterion:	Criterion B				
Test setup:	BOCM Non-conducted table Ground Reference Plane Ground Reference Plane				
Test Procedure:	 For line-to-line coupling mode, provide a 1kV 1.2/50us voltage surge (at open-circuit condition) and 8/20us current surge to EUT selected points, and for active line / neutral lines to ground are same except test level is 2kV. At least 5 positive and 5 negative (polarity) tests with a maximum 1/min repetition rate are applied during test. Different phase angles are done individually. Record the EUT operating situation during compliance test and decide the EUT immunity criterion for above each test. 				
Test environment:	Temp.: 26 °C Humid.: 53% Press.: 1012mbar				
Test Instruments:	Refer to section 6 for details				
Test mode:	Refer to section 5.3 for details				
Test results:	Pass				



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Measurement Record:

Location	Level(kV)	Pulse No Surge Interval		Phase(deg)	Observations (Performance Criterion)
L-PE	± 2 kV	5	60s	0, 90, 180, 270	А
N- PE	± 2 kV	5	60s	0, 90, 180, 270	А
L-N	± 1 kV	5	60s	0, 90, 180, 270	А

Remark:

A: No degradation in the performance of the E.U.T. was observed.

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8.6 Conducted Immunity

Test Requirement:	EN 61000-6-2				
Test Method:	EN 61000-4-6				
Frequency range:	0.15MHz to 80MHz				
Test Level:	10V rms				
Modulation:	80%, 1kHz Amplitude Modulation				
Performance Criterion:	A				
Test setup:	Shielding Room Signal Generator Power Amplifier Fixed Pad CND EUT Insulating Support 10cm Ground Reference Plane Ground Reference Plane				
Test Procedure:	 Let the EUT work in test mode and test it. The EUT are placed on an insulating support 0.1m high above a ground reference plane. CDN (coupling and decoupling device) is placedon the ground plane about 0.3m from EUT. Cables between CDN andEUT 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 described below is injected to EUT through CDN. The EUT operates within its operational mode(s) under intendedclimatic conditions after power on. The frequency range is swept from 0.150MHz to 80MHz using 3Vsignal level, and with the disturbance signal 80% amplitude modulatedwith a 1kHz sine wave. The rate of sweep shall notexceed 1.5*10-3decades/s. Where thefrequency is swept incrementally; thestep size shall not exceed 1% ofthe start and thereafter 1% of the preceding frequency value. Recording the EUT operating situation during compliance testing anddecide the EUT immunity criterion. 				
Test environment:	Temp.: 24 °C Humid.: 51% Press.: 1012mbar				
Test Instruments:	Refer to section 6 for details				
Test mode:	Refer to section 5.3 for details				
Test results:	Passed				



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Measurement Record:

Frequency	Injected Position	Test Level	Modulation	Step Size	Dwell Time	Observations (Performance Criterion)
150kHz to 80MHz	AC Main	10Vrms	80%, 1kHz Amp. Mod.	1%	2s	Α

Remark:

A: No loss of function was observed.

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8.7 Voltage Dips and Voltage Interruptions

Test Requirement:	EN 61000-6-2			
Test Method:	EN 61000-4-11			
No. of Dips /Interruptions:	3 per Level			
	0% of UT for 1 Periods: C;			
Performance Criterion:	40% of UT for 10 Periods: C;			
	70% of UT for 25 Periods: C;			
Test setup:	EMC Tester EUT 10cm Non-conducted table Ground Reference Plane Ground Reference Plane			
Test Procedure:	 The EUT and test generator were setup as shown on above setup photo. The interruptions are introduced at selected phase angles with specified duration. Record any degradation of performance. 			
Test environment:	Temp.: 26 °C Humid.: 53% Press.: 1012mbar			
Test Instruments:	Refer to section 6 for details			
Test mode:	Refer to section 5.3 for details			
Test results:	Passed			



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Measurement Record:

Test Level %	Duration	Phase angle	No of dropout	Observations
U _T	(Periods)		No or dropout	(Performance Criterion)
0	1	0°, 90°, 180°, 270°	3	Α
40	10	0°, 90°, 180°, 270°	3	A
70	25	0°, 90°, 180°, 270°	3	В

Remark:

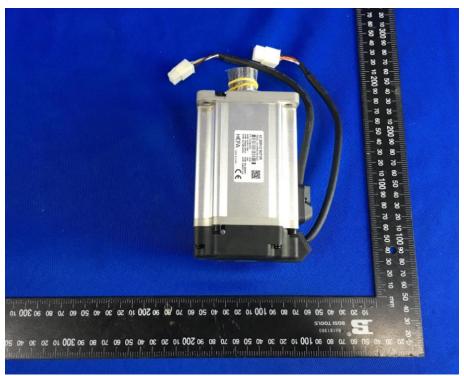
A: No loss of function was observed.

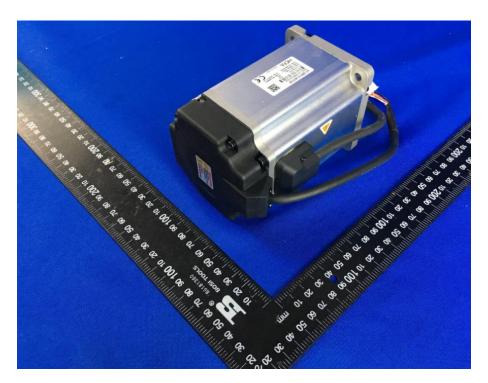
B: Dips to 0%, Duration 250P, EUT stopped operation, but it can be resumed by itself after test.

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9 Photographs of the EUT





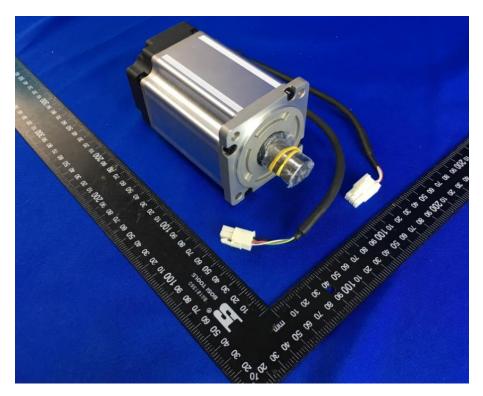


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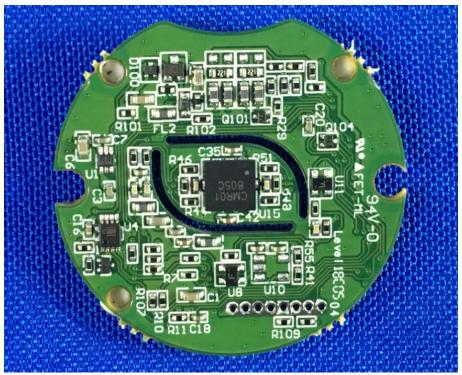


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