



EMC TEST REPORT

Client Name	Zhejiang lunci electronic technology co., LTD
Name of product	LC600A series vector frequency converter
Manufacturer	Zhejiang lunci electronic technology co., LTD
Trade mark & model	CHLC, LC600A3T0220G/0300P
Test sort	Entrusted Test



CCIC SOUTHERN ELECTRONIC PRODUCT TESTING (SHENZHEN) CO., LTD.

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**CCIC SOUTHERN ELECTRONIC PRODUCT TESTING (SHENZHEN)
CO., LTD.****TEST REPORT**

Name of sample	Zhejiang lunci electronic technology co., LTD		Trade mark	CHLC	
Manufacturer	Zhejiang lunci electronic technology co., LTD		Model/Type	LC600A3T0220G/0300P	
Client	Zhejiang lunci electronic technology co., LTD		Sampling method	Sent by Client	
Sampler	----		Amount of samples	----	
Sampling place	----		Quantity of samples	1PCS	
Production date	----	Sampling date	----	Application date	Aug. 24, 2015
Test date	Aug. 24, 2015 – Aug. 31, 2015		Environment condition	15~35°C 45~75%RH	
Sample description: Power supply: 380Vac 50Hz Input: 3PH AC 380V output: 3PH 45A 0-380Vac 0.1-600Hz Power: G-22KW/P-30KW					
Test item: Performance test, Radiated, radio-frequency, electromagnetic field immunity test, Electrical Fast Transient/burst (EFT) immunity test.					
Reference documents: EN 61800-3:2004+A1:2012 Adjustable speed electrical power drive systems – Part 3: EMC requirements and specific test methods Technical requirements					
Summary: The EMC tests were applied to the EUT according with the test standards. The EUT's performance complied with the above standards' requirements.					
Test conclusion: The EUT's performance complied with the requirement of the standards.					
Tested by: <u>Chen Weichang</u> Inspected by: <u>Zhu Qi</u> approved by: <u>Wu Lian</u>					
Date: Aug. 31, 2015		Date: Aug. 31, 2015		Date: Aug. 31, 2015	



Test Item : Performance test

Serial number	Test Project	Technical requirements	Test results
1	Appearance requirements☆	Requirements of appearance: Beauty, Flawless, Correct signs.	Pass
		Impossibility on loosening of connecting threads. Reliability on bonding.	Pass
2	Safety requirements☆	Insulation resistance $\geq 1M\Omega$;	$\geq 200M\Omega$
		Dielectric Strength Test: 2KV dielectric Strength Test need to be taken between main polarities and enclosure of EUT . Test time: 1min, No arcing or breakdown appears.	Pass
	Light load test☆	As Light load test, the Input voltage of EUT to the adaptation motor should be rated voltage, Test time: 10 mins	≥ 20 min
	Activation ability Test ☆	The EUT should soft start at rated voltage. Repeat five times.	Pass
	Positive and negative phase sequence test☆	EUT operate with light load at rated voltage. Press the phase reversal bottom, the EUT should invert the phase of output voltage to reverse the direction of motor moving. Repeat five times.	Pass
	Protection function test☆	Owens Over Current Protection, Over voltage and under voltage Protection, Thermal Protection, Protection function of thermal relay, etc.	Pass
	Brake Test☆	EUT supply power to Attached motors at rated input voltage. Press the stop bottom, the EUT should lock the movement of motor. Repeat three times continuously.	Pass



Test Item: Radiated, radio frequency electromagnetic field immunity

1. Test Conditions: Temperature: 22°C, Humidity: 56 %RH, Air pressure: 101kPa.

The electromagnetic environment didn't influence the test results.

2. Condition of EUT: During testing EUT under the normal work condition.

3. Test Standard: GB 12668.3-2012

4. Test Level: 80MHz~1000MHz, 3V/m, 80 % AM, 1kHz, 1% frequency step, 3s dwell time;

Required to meet the performance criteria A

5. Test Setup: according to requirement of the standard

6. Performance criteria:

Item	Acceptance (performance) criterion ^a		
	A	B	C
General system performance	No noticeable changes of the operating characteristic. Operating as intended, within specified tolerance	Noticeable changes (visible or audible) of the operating characteristic. Self-recoverable	Shutdown, changes in operating characteristics. Triggering of protective devices ^b Not self-recoverable
<p>a Acceptance criteria A, B, C – False starts are not acceptable. A false start is an unintended change from the logical state "STOPPED" which can make the motor run.</p> <p>b Acceptance criterion C – The function can be restored by operator intervention (manual reset). Opening of fuses is allowed for line-commutated converters operating in inverting mode.</p>			

7. Test Procedure:

- The frequency range is swept from 80 MHz to 1000MHz with the signal 80% amplitude modulated with a 1 kHz sine wave. The rate of sweep did not exceed 1.5×10^{-3} decade/s. Where the frequency range is swept incrementally, the step size was 1% of fundamental.
- The dwell time at each frequency shall be not less than the time necessary for the EUT to be able to respond.
- The test was performed with the EUT exposed to both vertically and horizontally polarized fields on each of the four sides.

8. Test Result

Frequency (MHz)	EUT Azimuth	Antenna Polarity	Field Strength (V/m)	Observation	Comply with Criterion
80-1000 MHz	0	V&H	3	Note(1)	A
80-1000 MHz	90	V&H	3	Note(1)	A
80-1000 MHz	180	V&H	3	Note(1)	A
80-1000 MHz	270	V&H	3	Note(1)	A

NOTE:

(1). The EUT continued to operate as intended. No degradation of performance was observed.

9. Test Conclusion:

The EUT's performance complied with the above standard.

**Test Item: Electrical fast transient/burst (EFT) immunity**

1. Test Conditions: Temperature: 23°C, Humidity: 58 %RH, Air pressure: 101kPa.

The electromagnetic environment didn't influence the test results.

2. Condition of EUT: During testing EUT under the normal work condition.

3. Test Standard: EN 61547:2009

4. Test Level: a.c. power port, +/-2kV, Required to meet the performance criteria B

5. Test Setup: according to requirement of the standard

6. Performance criteria:

Item	Acceptance (performance) criterion ^a		
	A	B	C
General system performance	No noticeable changes of the operating characteristic. Operating as intended, within specified tolerance	Noticeable changes (visible or audible) of the operating characteristic. Self-recoverable	Shutdown, changes in operating characteristics. Triggering of protective devices ^b Not self-recoverable
<p>a Acceptance criteria A, B, C – False starts are not acceptable. A false start is an unintended change from the logical state "STOPPED" which can make the motor run.</p> <p>b Acceptance criterion C – The function can be restored by operator intervention (manual reset). Opening of fuses is allowed for line-commutated converters operating in inverting mode.</p>			

7. Test Procedure:

- The EUT was tested with 2000 volt discharges to the AC power input leads.
- Both positive and negative polarity discharges were applied.
- The duration time of each test sequential was 1 minute.
- The transient/burst waveform was in accordance with IEC 61000-4-4, 5/50ns.

8. Test Result:

Test Point	Polarity	Voltage (kV)	Observation	Criterion
a.c. Power Port	+/-	2	Note (1)	A

Note:

- The EUT continued to operate as intended. No degradation of performance was observed.

9. Test Conclusion:

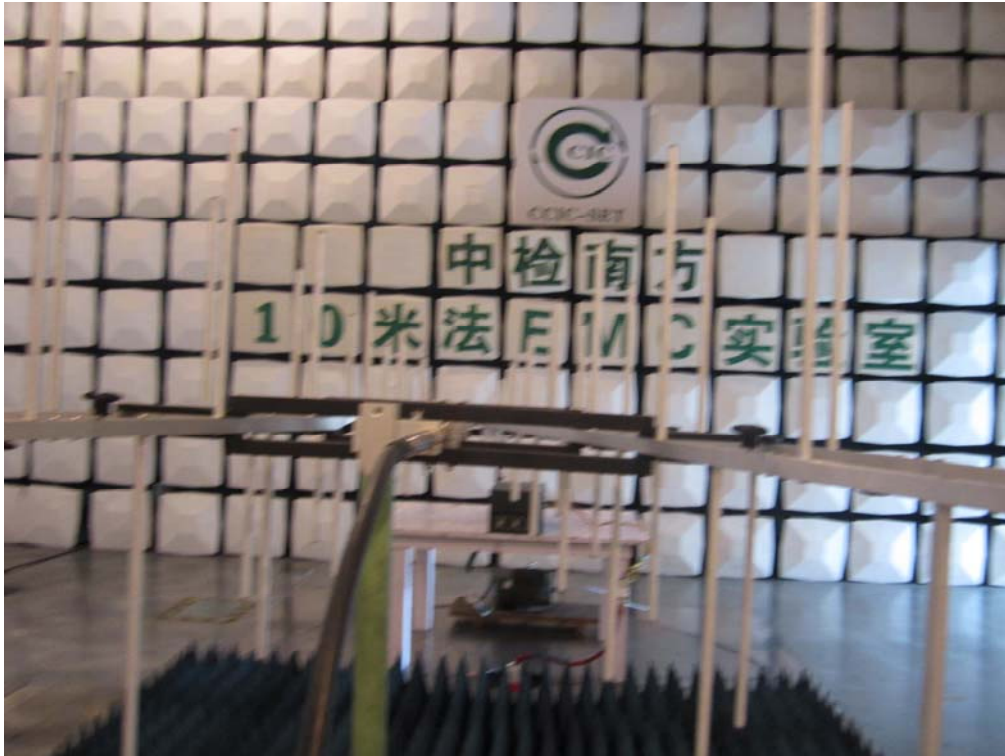
The EUT's performance complied with the above standard.

Photographs of the EUT



Photographs of the Test Configuration

Radiated, radio frequency electromagnetic field immunity



Electrical fast transient/burst (EFT) immunity/ Surge immunity





List of Equipments Used

Description	Manufacturer	Model No.	Calibration Due Date	Serial No.
Signal Generator	AR	SMB100A	2016.07.09	A141002004
Power Amplifier	AR	80RF1000-250	2017.10.31	A140901925
EMS Antenna	AR	AT1080	2017.06.10	A0304249
EFT/Surge Test System	EM TEST	UCS500N7.7	2016.06.10	A130201094
	EM TEST	CNI503B9.3	2016.06.10	A130201095
Anechoic Chamber	Albatross	SAC-10MAC	2016.06.23	A0802520
CDN	HAEFELY	FP-EFT32.1	/	A0304269
AC LOW OHM TESTER	JAPAN KIKUSUI	TOS6100	/	A9811083

NOTE: Equipments listed above have been calibrated and are in the period of validation.



声 明

STATEMENT

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