

Bellaterra: November 5, 2014

File number: **14/31705760**

Petitioner's reference : **VECTOR MOTOR CONTROL
IBERICA, S.L.**

C./ Mar del Carib, 10
08130 Santa Perpetua de la
Mogoda BARCELONA

On its behalf:
Mr. Xavier Garcia

TEST REPORT

TEST REQUESTED

Standard conformity to:

EN 61800-3:2004 Adjustable speed electrical power drive systems — Part 3: EMC requirements and specific test methods.

INDEX

1. EQUIPMENT RECEIVED AND TESTED
 - 1.1. Test configuration
 - 1.2. Auxiliary and control equipment
 - 1.3. Input/Output wires
2. TESTING PROCEDURE
 - 2.1. Acceptance criteria for the immunity test
 - 2.2. Test procedures
 - 2.3. Measuring uncertainties
 - 2.4. Environmental conditions
3. RESULTS
4. ANNEXES
 - 4.1. Identification pictures
 - 4.2. Results Details

This document will not be reproduced otherwise than in full.
This is the first page of the document, which consists of 25 pages of which 17 are annexes.

1. EQUIPMENT RECEIVED AND TESTED

Equipment: Inverter (Power Conversion Device), Brand: LSIS, Model: LSLV0750S100-4, s/n: 5503909055A.

Test product reception:	10-09-2014
Test initial date:	15-09-2014
Test final date:	27-10-2014

1.1. Test configuration

Power Supply: AC 400V 50Hz 3Ph Without neutral.

Set-up: Tabletop for radiated tests (worst case); On floor for conducted tests.

Test exercise: Motor in forward motion, carrier frequency set to 3KHz, motor set to 50Hz. For radiated Immunity and Radiated Emissions, enclosure door closed.

Equipment size: 1000x800x400 mm. (complete enclosure).

Equipment defined category C3, 2^o Environment because the nominal current is 160A (75KW).

PDS intended to be used in industrial installations, so, it is supplied assembled in a metal enclosure with EMC filter, motor toroid ferrite and remote control cable ferrite.

As representative signal port is tested output for remote console by customer request.

1.2. Auxiliary and control equipment

Motor Beijing B.J 22kW

Motor ferrite VMC FS-4 with two turns.

Control cable ferrite: Würth Elektronik 74271132.

Enclosure: ETA 1000x800x400mm.

1.3. Input/Output wires

Motor shielded cable, 1.9m length.

Control cable 1.5m.

2. TESTING PROCEDURE

EMISSIONS TEST APPLICABLE STANDARDS
<p>Standard: EN 61800-3:2004 based on standards:</p> <p>Basic standard: CISPR 11:2003</p> <p><input checked="" type="checkbox"/> Radio-frequency radiated emissions (30 -1000 MHz) Class: C3, Table 18</p> <p>Note: Customer declares the equipment is class C3,</p> <ul style="list-style-type: none"> - This type of PDS is not intended to be used on a low-voltage public network which supplies domestic premises. - Radio frequency interference is expected if used on such a network. <p>The manufacturer shall provide a guide for installation and use, including recommended mitigation devices.</p>
<p>Basic standard: CISPR 11:2003</p> <p><input checked="" type="checkbox"/> Continuous conducted emissions (0,15-30 MHz) Class: C3, Table 17 for I>100A</p> <p>Note: Customer declares the equipment is class C3,</p> <ul style="list-style-type: none"> - This type of PDS is not intended to be used on a low-voltage public network which supplies domestic premises. - Radio frequency interference is expected if used on such a network. <p>The manufacturer shall provide a guide for installation and use, including recommended mitigation devices.</p> <ul style="list-style-type: none"> - Screened power motor cable not tested according (6.4.1.4. point).
<p>Basic standard: EN 61000-3-11:2000. EN 61000-3-3:2009</p> <p><input type="checkbox"/> Voltage fluctuations emissions</p> <p>Note: Test not applicable to C3 classified inverters.</p> <p>According 6.2.4.1 and 6.2.4.2 points:</p> <p>When PDS is included in equipment within the scope of 61000-3-11, the requirements of the standard apply to the complete equipment and not to the individual PDS. Voltage fluctuations depend upon the installation (responsibility of user/installer), and are also related with interharmonics immunity according EN 61000-2-4, that are tested for this PDS.</p>

Basic standard: EN 61000-3-12:2005

Harmonic current emissions

Class: A

Note: Test not applicable to C3 classified inverters.

The equipment phase current is >75A.

- According 6.2.3.3 point PDS intended to be installed in industrial networks, so B.4 annex is applicable, reference= rated current of the total installation (internal agreed power). Harmonics will be calculated for the complete installation.
- For category C3 the inverter is not intended to be connected to low-voltage systems interfacing with the public supply at the low-voltage level. According B.4.2 EN 61800-3:2004 point, it is recommended filtering whole installation.

Emissions Commutations notches

According: B.1.3.1 point

IMMUNITY TESTS APPLICABLE STANDARDS	
Standard: EN 61800-3:2004 based on standards:	
Basic standard: EN 61000-4-2:1995	
<input checked="" type="checkbox"/> Electrostatic discharges immunity	level AC: 8kV level DC: 4kV
Basic standard: EN 61000-4-3:2002.	
<input checked="" type="checkbox"/> Electromagnetic field immunity	Frequency range: 80MHz-1GHz Severity: 10 V/m Modulation: 80% AM 1kHz
Basic standard: EN 61000-4-4:1995+A1:2001+A2:2002.	
<input checked="" type="checkbox"/> Fast transients in burst immunity	
<input checked="" type="checkbox"/> Severity level in signal and control ports, and by ground terminal.	Severity: 2 kV
<input checked="" type="checkbox"/> Signal interfaces >3m.	Severity: 1 kV
<input checked="" type="checkbox"/> Severity level in I/O ports of DC and AC power supply.	Severity: 2 kV
Basic standard: EN 61000-4-5:1995	
<input checked="" type="checkbox"/> Surge transients immunity	
<input type="checkbox"/> Signal and control ports.	Common mode Severity: kV Differential mode Severity: kV
<input type="checkbox"/> DC supply ports.	Common mode Severity: kV Differential mode Severity: kV
<input checked="" type="checkbox"/> AC supply ports.	Common mode Severity: 2 kV Differential mode Severity: 1 kV
Note 1: Test performed because current load supplied is under nominal current.	
Note 2: Signal port is not for control process, so this test is not applicable.	
Basic standard: IEC-61000-4-6:2003.	
<input checked="" type="checkbox"/> Current injections immunity 150kHz-80MHz	
<input checked="" type="checkbox"/> Signal and control ports.	Severity: 10 V rms
<input checked="" type="checkbox"/> AC/DC supply, and access by ground terminal.	Severity: 10 V rms

Basic standard: IEC/TR 61000-2-1:1990.	
<input checked="" type="checkbox"/> Voltage variations immunity	
<input checked="" type="checkbox"/> Short interruptions.	
<input checked="" type="checkbox"/> Voltage dips.	Depth 10% to 100% C crit.
Basic Standard: EN 61000-2-2:2002	
<input checked="" type="checkbox"/> Voltage deviations	
<input checked="" type="checkbox"/> Voltage deviations for second environment	Class 2, level $\pm 10\%$ A crit.
Basic Standard: EN 61000-2-4:2002	
<input checked="" type="checkbox"/> Harmonics (THD and individual harmonic orders)	Class: 3 and table C.1. for flicker. A criteria.
<input checked="" type="checkbox"/> Harmonics short term (<15s)	1.5 times the value of the permanent compatibility levels. B criteria.
<input checked="" type="checkbox"/> Voltage unbalance	Class: 3% negative sequence component. A criteria.
<input checked="" type="checkbox"/> Frequency variations	$\pm 4\%$. A crit.
<input checked="" type="checkbox"/> Frequency rate of change	$\pm 1\%/s$. A crit.
Basic Standard: EN 60146-1-1:1993	
<input checked="" type="checkbox"/> Immunity Commutation notches	Depth: 40%, Total are: 250 in percent degrees. B1 table.

2.1. Acceptance criteria for the immunity test

According to standard EN 61800-3:2004 section 5.1.1.

2.2. Test procedures

Radio-frequency radiated emissions: C5400277.

Continuous conducted emissions: C5400276.

Voltage fluctuations emissions and harmonic current emissions: C5400281.

Electrostatic discharges immunity: C5400282.

Electromagnetic field immunity: C5400285.

Fast transients in burst immunity: C5400283.

Surge transients immunity: C5400286.

Current injections immunity: C5400284.

Voltage variations immunity: C5400288.

2.3. Measuring uncertainties

- Radio-frequency radiated emissions: ± 4,3 dB.
- Continuous conducted emissions: ± 2,1 dB.
- Voltage fluctuations emissions: ± 0,8 dB.
- Harmonic current emissions: ± 0,8 dB.
- Electrostatic discharges immunity: ± 1,65 dB.
- Electromagnetic field immunity: ± 2,45 dB.
- Fast transients in burst immunity: ± 1,3 dB.
- Surge transients immunity: ± 1,3 dB.
- Current injections immunity: ± 1,7 dB.
- Voltage variations immunity: ± 0,8 dB.

In all cases, with a confidence level of 95%, k=2.

2.4. Environmental conditions

See results sheets.

3. RESULTS

PRODUCT		
Equipment: Inverter (Power Conversion Device), brand: LSIS, model: LSLV0750S100-4, serial number: 5503909055A		
EMISSION TESTING	RESULTS	
Radio-frequency radiated emissions.	Pass	Note 4
Continuous conducted emissions.	Pass	Note 1
Voltage fluctuations emissions.	No tested	--
Harmonic current emissions.	No tested	--
Emissions Commutations notches	Pass	Note 4
<p>1: The measured results are below the specified limits, but within the uncertainty interval. It is therefore not possible to state compliance based on the 95% level of confidence. However, the results indicate that compliance is more probable than non-compliance</p> <p>2: The measured results are above the specified limits, but within the uncertainty interval. It is therefore not possible to state compliance based on the 95% level of confidence. However, the results indicate that non-compliance is more probable than compliance</p> <p>3: The measured results are above the upper limit, even considering the half of the uncertainty interval.</p> <p>4: The measured results are within the limits, including the uncertainty interval.</p>		

IMMUNITY TESTING	RESULTS	
Electrostatic discharges immunity.	A	Criteria: B
Electromagnetic field immunity.	A	Criteria: A
Fast transients in burst immunity.	A	Criteria: B
Surge transients immunity.	A	Criteria: B
Current injections immunity.	A	Criteria: A
Voltage variations immunity.	C	Criteria: C
Voltage deviations immunity	A	Criteria: A
Harmonics (THD and individual harmonic orders)	A	Criteria: A
Harmonics short term (<15s)	A	Criteria: A
Voltage unbalance	A	Criteria: A
Frequency variations	A	Criteria: A
Frequency rate of change	A	Criteria: A
Commutation notches	Pass	Criteria: Pass
Operation criteria according to standard.		

José Manuel Suárez Román
 Technical Manager
 Electrical and Electronics
 LGAI Technological Center S.A.

The results refer only and exclusively to the sample, product or material delivered for testing in "Received Material" section above. The equipment has been tested under conditions stipulated by standard(s) quoted in this document.

Service Quality Assurance

Applus+, guarantees that this work has been made in accordance with our Quality and Sustainability System, fulfilling the contractual conditions and legal norms.

Within our improvement program we would be grateful if you would send us any commentary that you consider opportune, to the person in charge who signs this document, or to the Quality Manager of Applus+, in the following e-mail address: satisfaccion.cliente@applus.com

4. ANNEXES

4.1. Identification pictures

General view



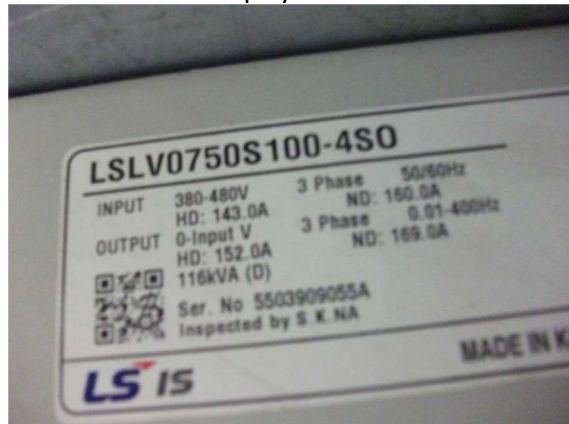
Frontal view.



Display detail.



Motor output ferrite.



PDS Identifier label.



Enclosure identifier label.



Control cable ferrite Würth Elektronik
742 711 32.



Console remote control.

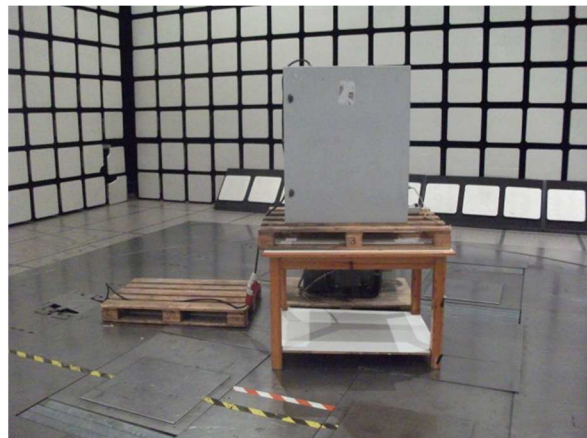
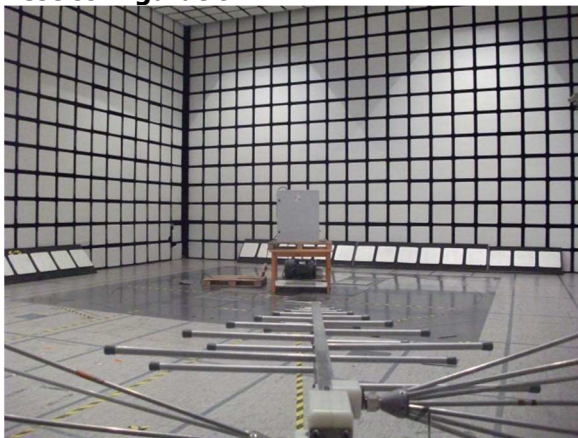


Auxiliar Equipment: Motor BEIJING type B.J
22kW s/n:10297FIJI.



Auxiliar Equipment: Motor BEIJING type B.J
22kW s/n:10297FIJI detailed plate.

Test configuration



Radio-frequency radiated emissions.



Continuous conducted emissions.



Voltage fluctuations emissions and harmonic current emissions.

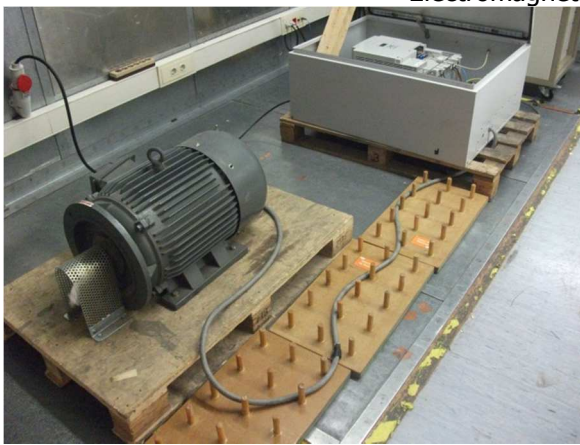
Surge Transients immunity.



Electrostatic discharges immunity.



Electromagnetic field immunity.



Current injections immunity.



Fast transients in burst immunity.



Low frequency conducted immunity

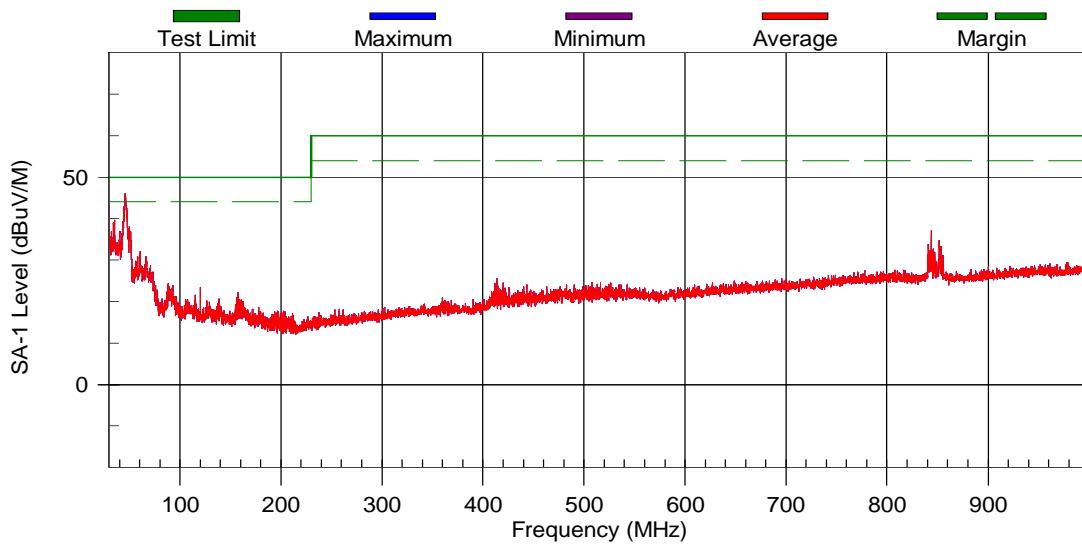
4.2. Results Details

RADIO-FREQUENCY RADIATED EMISSIONS					
Petitioner : VECTOR MOTOR CONTROL IBERICA, S.L.			Device under test: Inverter (Power Conversion Device)		
File number: 14/31705760			Brand: LSIS		
Procedure: C5400277			Model: LSLV0750S100-4		
Basic standard: CISPR 11:2003			Serial number: 5503909055A		
			Reception date: 10-09-2014		
Performance criteria according to: EN 61800-3:2004			Test type: Conformity	Temperature: 20,5 °C	
Technician: A.PLANS				Humidity: 56 %	
				Atm. Pressure: 1003 hPa	
Supervised:			DUT size: 1000x800x400 mm. (complete enclosure).		
Test date: 2014-10-10			Frequency range: 30MHz-1GHz		
Auxiliary equipment: Motor Beijing B.J 22kW Motor ferrite VMC FS-4 with two turns. Control cable ferrite: Würth Elektronik 74271132. Enclosure: ETA 1000x800x400mm.			DUT exercise: Motor in forward motion, carrier frequency set to 3KHz, motor set to 50Hz. For radiated Immunity and Radiated Emissions, enclosure door closed. Supply: AC 400V 50Hz 3Ph Without neutral.		
Input/ouput cable: Motor shielded cable, 1.9m length. Control cable 1.5m.					
EUT:	Class	Test Area	Distance	PreScan	Evaluation
Tabletop	C3	SAC 0	10 m	4 faces	Individual
RESULTS: Pass					
Identification		Emissions		Main emission source and type	
DUT: Device under test AUX: Auxiliary Devices SYS: DUT + AUX BB : Broad-band NB : Narrow-band QP: Quasi-peak		QP < Limit - I I=Uncertainty		EBP, BB	
Comments					

RADIO-FREQUENCY RADIATED EMISSIONS II	
Petitioner: VECTOR MOTOR CONTROL IBERICA, S.L.	Device under test: Inverter (Power Conversion Device)
File number: 14/31705760	Brand: LSIS
Procedure: C5400277	Model: LSLV0750S100-4
Basic standard: CISPR 11:2003	Serial number: 5503909055A
	Reception date: 10-09-2014

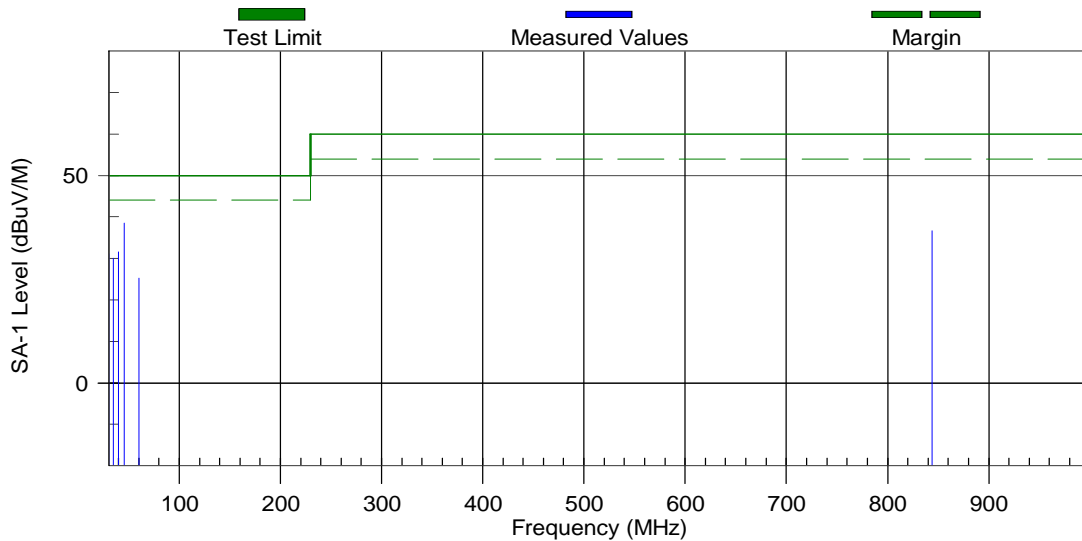
Prescan Test Results

VECTOR / LSLV0750S100-4 / 10-10-2014 / 10/10/2014 @ 8:25:42
(Corrected Data)



Final Test Results

VECTOR / LSLV0750S100-4 / 10-10-2014 / 10/10/2014 @ 9:35:28



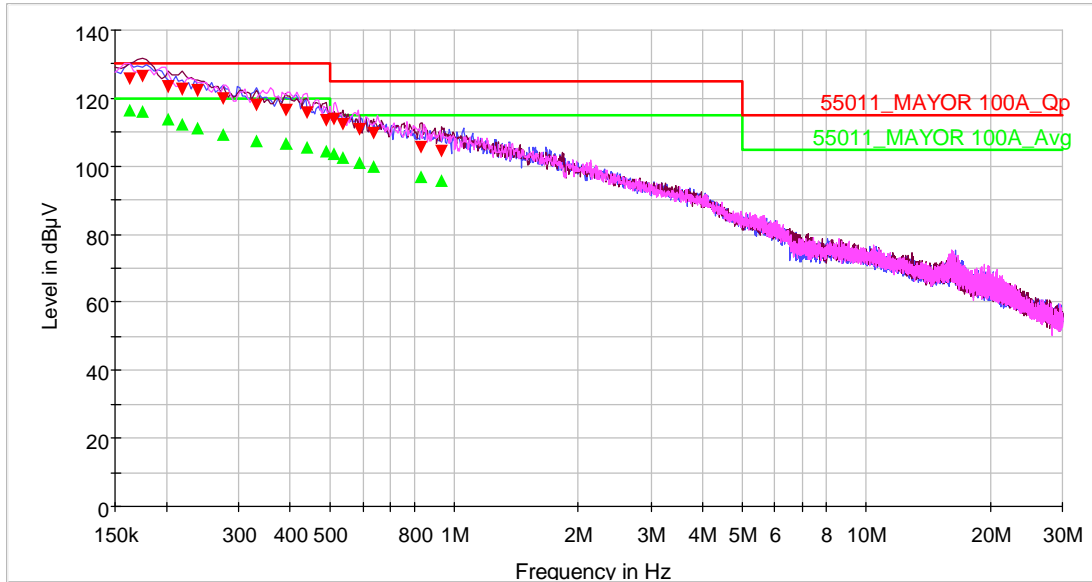
Comments:

RADIO-FREQUENCY RADIATED EMISSIONS II									
Petitioner: VECTOR MOTOR CONTROL IBERICA, S.L.					Device under test: Inverter (Power Conversion Device)				
File number: 14/31705760					Brand: LSIS				
Procedure: C5400277					Model: LSLV0750S100-4				
Basic standard: CISPR 11:2003					Serial number: 5503909055A				
					Reception date: 10-09-2014				
FINAL MEASURES									
Freq. (MHz)	Limit (dBuV/m)	Pol	Ht (cm)	Azm (deg)	Value (dBuV/m)	Corr. Value (dBuV/m)	Corr. Margin (dB)	Detector	Note
30.00	50.0	V	122	333	48.0	31.2	18.8	Qpk	BB
35.15	50.0	V	144	258	46.4	30.1	19.9	Qpk	BB
40.40	50.0	V	120	24	47.0	31.6	18.4	Qpk	BB
45.60	50.0	V	120	252	53.9	38.5	11.5	Qpk	BB
60.88	50.0	V	396	28	40.2	25.3	24.7	Qpk	BB
843.63	60.0	H	234	147	36.2	36.6	23.4	Qpk	BB/SPU
Comments:									

CONTINUOUS CONDUCTED EMISSIONS								
Petitioner: VECTOR MOTOR CONTROL IBERICA, S.L.	Device under test: Inverter (Power Conversion Device)							
File number: 14/31705760	Brand: LSIS							
Procedure: C5400276	Model: LSLV0750S100-4							
Basic standard: CISPR 11:2003	File number: 5503909055A							
	Reception date: 10-09-2014							
Performance criteria according to: EN 61800-3:2004	<table border="1"> <tr> <td>Test type: Conformity</td> <td>Temperature: 23,4</td> <td rowspan="3" style="vertical-align: middle;"> °C % hPa </td> </tr> <tr> <td>Technician: Pedro Moreno</td> <td>Humidity: 46,9</td> </tr> <tr> <td></td> <td>Atm. Pressure: 1001</td> </tr> </table>	Test type: Conformity	Temperature: 23,4	°C % hPa	Technician: Pedro Moreno	Humidity: 46,9		Atm. Pressure: 1001
Test type: Conformity		Temperature: 23,4	°C % hPa					
Technician: Pedro Moreno	Humidity: 46,9							
	Atm. Pressure: 1001							
Supervised:	DUT exercise: Motor in forward motion, carrier frequency set to 3KHz, motor set to 50Hz. For radiated Immunity and Radiated Emissions, enclosure door closed. Supply: AC 400V 50Hz 3Ph Without neutral. Test area: Faraday Chamber, FAC-1 Test disposition: Tabletop for radiated tests (worst case); On floor for conducted tests.							
Test date: 2014-10-10								
Equipment: Rohde Schwarz EMI receiver ESCS30								
Auxiliary equipment: Motor Beijing B.J 22kW Motor ferrite VMC FS-4 with two turns. Control cable ferrite: Würth Elektronik 74271132. Enclosure: ETA 1000x800x400mm.								
	Input/output cable Motor shielded cable, 1.9m length. Control cable 1.5m.							
CONTINUOUS CONDUCTED EMISSIONS								
Supply:								
Mains Supply:								
T. in power Supply: (dBµV)	Pass Vgp < lim QP ; Vavg < lim AVG							
Source and type of the most important emissions								
Source : Device under test	Type: Broad Band							
RESULTS: Pass								
Comments:								

CONTINUOUS CONDUCTED EMISSIONS II	
Petitioner: VECTOR MOTOR CONTROL IBERICA, S.L.	Device under test: Inverter (Power Conversion Device)
File number: 14/31705760	Brand: LSIS
Procedure: C5400276	Model: LSLV0750S100-4
Basic standard: CISPR 11:2003	Serial number: 5503909055A
	Reception date: 10-09-2014

AC MAINS PRESCAN



- 55011_MAYOR 100A_Avg
- 55011_MAYOR 100A_Qp
- L1 PK+_MAXH
- L2 PK+_MAXH
- L3 PK+_MAXH
- ▼ QuasiPeak-QPK (Single)
- ▲ Average-AVG (Single)

FINAL MEASURES

Frequency (MHz)	Quasi-Peak (dBµV)	Limit - QPK (dBµV)	Margin - QPK (dB)	Average (dBµV)	Limit - AVG (dBµV)	Margin - AVG (dB)	Meas. Time (ms)	Band width (kHz)	Line	PE	Cor. (dB)
0.162	125.8	130.0	4.2	116.5	120.0	3.5	20000.	9.000	L2	GN	10.2
0.174	126.5	130.0	3.5	116.1	120.0	3.9	20000.	9.000	L2	GN	10.2
0.202	123.3	130.0	6.7	113.8	120.0	6.2	20000.	9.000	L2	GN	10.2
0.218	122.5	130.0	7.5	112.4	120.0	7.6	20000.	9.000	L2	GN	10.2
0.238	122.1	130.0	7.9	111.2	120.0	8.8	20000.	9.000	L2	GN	10.2
0.274	120.0	130.0	10.0	109.4	120.0	10.6	20000.	9.000	L2	GN	10.2
0.330	117.9	130.0	12.1	107.5	120.0	12.5	20000.	9.000	L2	GN	10.2
0.390	116.4	130.0	13.6	106.9	120.0	13.1	20000.	9.000	L2	GN	10.2
0.438	115.7	130.0	14.3	105.7	120.0	14.3	20000.	9.000	L2	GN	10.2
0.486	113.6	130.0	16.4	104.3	120.0	15.7	20000.	9.000	L2	GN	10.2
0.510	113.7	125.0	11.3	103.6	115.0	11.4	20000.	9.000	L2	GN	10.3
0.534	112.5	125.0	12.5	102.5	115.0	12.5	20000.	9.000	L2	GN	10.3
0.590	110.8	125.0	14.2	101.0	115.0	14.0	20000.	9.000	L2	GN	10.3
0.634	109.6	125.0	15.4	99.8	115.0	15.2	20000.	9.000	L2	GN	10.3
0.830	105.5	125.0	19.5	97.0	115.0	18.0	20000.	9.000	L2	GN	10.3
0.934	104.5	125.0	20.5	95.7	115.0	19.3	20000.	9.000	L2	GN	10.3

ELECTROSTATIC DISCHARGE IMMUNITY							
Petitioner: VECTOR MOTOR CONTROL IBERICA, S.L.				Device under test: Inverter (Power Conversion Device)			
File number: 14/31705760				Brand: LSIS			
Procedure: C5400281				Model: LSLV0750S100-4			
Basic standard: EN 61000-4-2:1995				Serial number: 5503909055A			
Performance criteria according to: EN 61800-3:2004				Reception date: 10-09-201410-09-2014			
Criteria: B				Test type: Conformity		Temperature: 23.7 °C	
Technician: Juan Carlos Parrilla						Humidity: 36.0 %	
Supervised:						Atm. Pressure: 1009 hPa	
Test date: 2014-10-27				DUT exercise: Motor in forward motion, carrier frequency set to 3KHz, motor set to 50Hz. For radiated Immunity and Radiated Emissions, enclosure door closed.			
Equipment: Schaffner NSG 438				Supply: AC 400V 50Hz 3Ph Without neutral.			
Auxiliary equipment: Motor Beijing B.J 22kW Motor ferrite VMC FS-4 with two turns. Control cable ferrite: Würth Elektronik 74271132. Enclosure: ETA 1000x800x400mm.				Test disposition: Tabletop for radiated tests (worst case); On floor for conducted tests.			
DC- Air Contact, sharp tip				IH- Horizontal coupling, Sharp tip.			
AC- Air Contact, round tip				IV- Vertical coupling, Sharp tip.			
Test Level	Level	Discharges		Pol +/-	Application point	Results	Comments
		Nº	Type				
1	4 kV	25	IV	+ -	FRONT 0°	A	
2	4 kV	25	IV	+ -	LEFT 90°	A	
3	4 kV	25	IV	+ -	REAR 180°	A	
4	4 kV	25	IV	+ -	RIGHT 270°	A	
5	4 kV	25	DC	+ -	ENCLOSURE	A	
6	4 kV	25	DC	+ -	GROUND SCREWS	A	
7	4 kV	25	DC	+ -	HEATERS GRID	A	
8	2,4,8 kV	25	AC	+ -	PUSH BOTTONS	A	*
9	2,4,8 kV	25	AC	+ -	DISPLAY	A	*
10	2,4,8 kV	25	AC	+ -	AC, MOTOR AND CONSOLE CABLES	A	*
Comments: *Not discharges.							

ELECTROMAGNETIC FIELD IMMUNITY			
Petitioner: VECTOR MOTOR CONTROL IBERICA, S.L.		Device under test: Inverter (Power Conversion Device)	
File number: 14/31705760		Brand: LSIS	
Procedure: C5400285		Model: LSLV0750S100-4	
Basic standard: EN 61000-4-3:2002.		Serial number: 5503909055A	
		Reception date: 10-09-2014	
Performance criteria according to: EN 61800-3:2004		Test type: Conformity	Temperature: 21,3 °C Humidity: 58,9 % Atm. Pressure: 1007 hPa
Criteria: A			
Technician: J.J.Permas		DUT exercise:	
Supervised:		Motor in forward motion, carrier frequency set to 3KHz, motor set to 50Hz. For radiated Immunity and Radiated Emissions, enclosure door closed.	
Test date: 10-09-2014/2014-10-10		Supply: AC 400V 50Hz 3Ph Without neutral.	
Test area: Cámara semianecoica, SAC-0		Test disposition: Tabletop for radiated tests (worst case); On floor for conducted tests.	
DUT size: 1000x800x400 mm. (complete enclosure).			
Auxiliary equipment: Motor Beijing B.J 22kW Motor ferrite VMC FS-4 with two turns. Control cable ferrite: Würth Elektronik 74271132. Enclosure: ETA 1000x800x400mm.		Input/output cables: Motor shielded cable, 1.9m length. Control cable 1.5m.	
Frequency range		80 – 1GHz	
Severity		10 V/m	
Antenna type		Logoperiodic	
Frequency step		1%	
Dwell time		3Sec	
Modulation		80% AM 1 KHz	
Dist. DUT/antenna		3m	
Polarization		H	V
FACE	FRONTAL 0°	A (*)	A
	LEFT 90°	A	A
	REAR180°	A	A
	RIGHT 270°	A	A
Points of calibrated field: L=0,5m : <input checked="" type="checkbox"/> L=0,5m : 16 (80MHz-1GHz) // <input checked="" type="checkbox"/> L=0,5m : 4 (1GHz-2.7GHz)			
<input checked="" type="checkbox"/> 0,3	<input checked="" type="checkbox"/> 1,3	<input checked="" type="checkbox"/> 2,3	<input checked="" type="checkbox"/> 3,3
RESULTS: A			
Comments:			
<input checked="" type="checkbox"/> 0,2	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/> 1,2	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/> 2,2	<input checked="" type="checkbox"/> 3,2
(*) OVERHEAD (motor stops) 489MHz-499MHz frontal at 0 degrees horizontal polarization (with the door closed not fail)			
<input checked="" type="checkbox"/> 0,1	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/> 1,1	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/> 2,1	<input checked="" type="checkbox"/> 3,1
<input checked="" type="checkbox"/> 0,0	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/> 1,0	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/> 2,0	<input checked="" type="checkbox"/> 3,0
Field checking: <input checked="" type="checkbox"/> <input checked="" type="checkbox"/>			

FAST TRANSIENTS IN BURST IMMUNITY					
Petitioner: VECTOR MOTOR CONTROL IBERICA, S.L.			Device under test: Inverter (Power Conversion Device)		
File number: 14/31705760			Brand: LSIS		
Procedure: C5400283			Model: LSLV0750S100-4		
Basic standard: EN 61000-4-4:1995+A1:2001+A2:2002.			Serial number: 5503909055A		
Performance criteria according to: EN 61800-3:2004			Reception date: 10-09-2014		
Criteria: B			Test type: Conformity	Temperature: 25.5 °C	
Technician: Juan Carlos Parrilla				Humidity: 59.2 %	
Supervised:				Atm. Pressure: 1008 hPa	
Test date: 2014-10-19			DUT exercise: Motor in forward motion, carrier frequency set to 3KHz, motor set to 50Hz. For radiated Immunity and Radiated Emissions, enclosure door closed.		
Equipment: Generador Schaffner NSG 2025-8			Supply: AC 400V 50Hz 3Ph Without neutral.		
Auxiliary equipment: Motor Beijing B.J 22kW Motor ferrite VMC FS-4 with two turns. Control cable ferrite: Würth Elektronik 74271132. Enclosure: ETA 1000x800x400mm.			Test disposition: Tabletop for radiated tests (worst case); On floor for conducted tests.		
			Input/output cables: Motor shielded cable, 1.9m length. Control cable 1.5m.		
Test ports	Application	Severity (kV)	Duration	Results	Comments
AC supply	Clamp	+2	2 min	A	*
		-2	2 min	A	
Motor	Clamp	+1	2 min	A	*
		-1	2 min	A	
I/O lines	Clamp	+1	2 min	A	*
		-1	2 min	A	
Comments: *Measures performed motor running mode and standby mode.					

SURGE TRANSIENTS IMMUNITY (1,2/50)									
Petitioner: VECTOR MOTOR CONTROL IBERICA, S.L.					Device under test: Inverter (Power Conversion Device)				
File number: 14/31705760					Brand: LSIS				
Procedure: C5400281					Model: LSLV0750S100-4				
Basic standard: EN 61000-4-5:1995					Serial number: 5503909055A				
Performance criteria according to: EN 61800-3:2004					Test type: Conformity		Temperature: 24,3/23,4 °C		
Criteria: B							Humidity: 49,1/43,5 %		
Technician: Pedro Moreno / Andreu Tey							Atm. Pressure: 1000/998 hPa		
Supervised:					DUT exercise:				
Test date: 2014-10-22/2014-10-23					Motor in forward motion, carrier frequency set to 3KHz, motor set to 50Hz. For radiated Immunity and Radiated Emissions, enclosure door closed.				
Equipment: HAEFELY PCD130					Supply: AC 400V 50Hz 3Ph Without neutral.				
Auxiliary equipment: Motor Beijing B.J 22kW Motor ferrite VMC FS-4 with two turns. Control cable ferrite: Würth Elektronik 74271132. Enclosure: ETA 1000x800x400mm.					Test disposition: Tabletop for radiated tests (worst case); On floor for conducted tests.				
					Input/output cables: Motor shielded cable, 1.9m length. Control cable 1.5m.				
Application	Zo	Line	Phase	Severity (kV)	n° Pulses		Results		Comments
					+	-	Polarity +	Polarity -	
AC supply									
Line to line	2	L1 / L2	0	1	5	5	A	A	
			90	1	5	5	A	A	
			180	1	5	5	A	A	
			270	1	5	5	A	A	
Line to line	12	L1 / L3	0	1	5	5	A	A	
			90	1	5	5	A	A	
			180	1	5	5	A	A	
			270	1	5	5	A	A	
Line to line	12	L2 / L3	2	1	5	5	A	A	
			90	1	5	5	A	A	
			180	1	5	5	A	A	
			270	1	5	5	A	A	
Comments:									

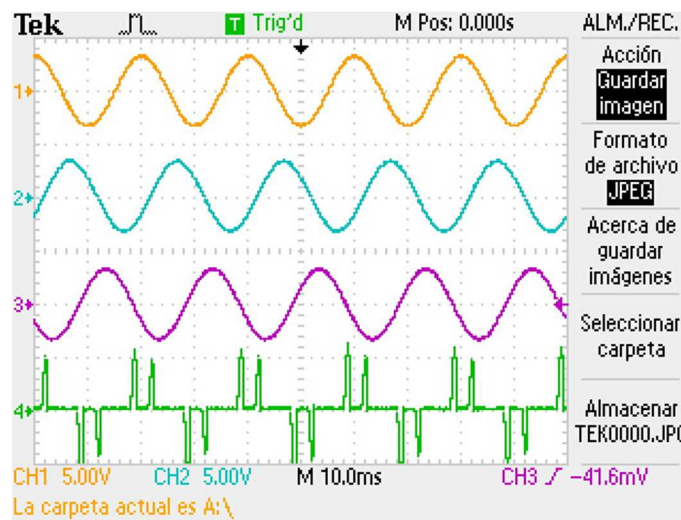
SURGE TRANSIENTS IMMUNITY (1,2/50) II									
Petitioner: VECTOR MOTOR CONTROL IBERICA, S.L.					Device under test: Inverter (Power Conversion Device)				
File number: 14/31705760					Brand: LSIS				
Procedure: C5400281					Model: LSLV0750S100-4				
Basic standard: EN 61000-4-5:1995					Serial number: 5503909055A				
					Reception date: 10-09-2014				
Application	Zo	Line	Phase (°)	Severity (kV)	n° Pulses		Results		Comments
					+	-	Polarity +	Polarity -	
AC supply									
Line to ground	2	L1 / E	0	2	5	5	A	A	
			90	2	5	5	A	A	
			180	2	5	5	A	A	
			270	2	5	5	A	A	
Line to ground	12	L2 / E	0	2	5	5	A	A	
			90	2	5	5	A	A	
			180	2	5	5	A	A	
			270	2	5	5	A	A	
Line to ground	12	L3 / E	2	2	5	5	A	A	
			90	2	5	5	A	A	
			180	2	5	5	A	A	
			270	2	5	5	A	A	
Comments:									

CURRENT INJECTIONS IMMUNITY				
Petitioner: VECTOR MOTOR CONTROL IBERICA, S.L.		Device under test: Inverter (Power Conversion Device)		
File number: 14/31705760		Brand: LSIS		
Procedure: C5400284		Model: LSLV0750S100-4		
Basic standard: IEC-61000-4-6:2003.		Serial number: 5503909055A		
		Reception date: 10-09-2014		
Performance criteria according to: EN 61800-3:2004		Type test Conformity	Temperature: 23,2 °C	
Criteria: A			Humidity: 47,8 %	
Technician: Pedro Moreno			Atm. Pressure: 1001 hPa	
Supervised:		DUT exercise: Motor in forward motion, carrier frequency set to 3KHz, motor set to 50Hz. For radiated Immunity and Radiated Emissions, enclosure door closed.		
Test date: 2014-10-16		Supply: AC 400V 50Hz 3Ph Without neutral.		
Auxiliary equipment: Motor Beijing B.J 22kW Motor ferrite VMC FS-4 with two turns. Control cable ferrite: Würth Elektronik 74271132. Enclosure: ETA 1000x800x400mm.		Test disposition: Tabletop for radiated tests (worst case); On floor for conducted tests.		
DUT size: 1000x800x400 mm. (complete enclosure).		Input/output cables: Motor shielded cable, 1.9m length. Control cable 1.5m.		
Level de Severity: 10 V rms		Part of a system?: Si		
Frequency range: 150 kHz - 80 MHz		Dwell time: 3s		
Modulation: 80% AM 1 Hz		Increase: 1%		
CDN	Severity (V)	Application point	Results	Comments
M4	10	AC supply	A	Standby and run modes
CLAMP	10	Motor	A	Standby and run modes
CLAMP	10	I/O lines	A	Standby and run modes
Comments:				

LOW FREQUENCY DISTURBANCES		
Petitioner: VECTOR MOTOR CONTROL IBERICA, S.L.	Device under test: Inverter (Power Conversion Device)	
File Nº: 14/31705760	Brand: LSIS	
Procedure: -	Model: LSLV0750S100-4	
Basic Standard: IEC/TR 61000-2-1:1990 EN 61000-2-2:2002 EN 61000-2-4:2002 EN 60146-1-1:1993	Serial number: 5503909055A Reception date: 10-09-2014	
Performance criteria according to: EN 61800-3:2004	Conformity	Temperature: 23,5 °C
Criteria: According to standard		Humidity: 43,6 %
Technician: Andreu Tey		Atm. Pressure: 998 hPa
Supervised: Test date: 2014-10-24	DUT exercise: Motor in forward motion, carrier frequency set to 3KHz, motor set to 50Hz. For radiated Immunity and Radiated Emissions, enclosure door closed.	
Equipment: Spitzenberger+Spies EMV E 10000/PAS	Supply: AC 400V 50Hz 3Ph Without neutral.	
Auxiliary equipment: Motor Beijing B.J 22kW Motor ferrite VMC FS-3 with two turns. Control cable ferrite: Würth Elektronik 74271132. Enclosure: ETA 1000x800x400mm.	Test disposition: Tabletop for radiated tests (worst case); On floor for conducted tests. Input/Output cables: Motor shielded cable, 1.9m length. Control cable 1.5m.	
TEST DESCRIPTION		
	CRITERIA	RESULT
IEC/TR 61000-2-1:1990		
Voltage variations; Depth 10% to 100%.	C	C
EN 61000-2-2:2002		
Voltage deviations; Class 2, level ±10% .	A	A
EN 61000-2-4:2002		
Harmonics (THD and individual harmonic orders): Class 3.	A	A
Harmonics short term (<15s); 1.5 times the value of the permanent compatibility levels.	A	A
Harmonics C.1 table (flicker compatibility).	A	A
Voltage unbalance; Class: 3 negative sequence component.	A	A
Frequency variations; ± 2% and ± 4%. A criteria.	A	A
Frequency rate of change; ± 2% and ± 4%, A criteria.	A	A
EN 60146-1-1:1993		
Commutation notches ; Depth 40%, total area 250 in% degrees for 2º Environment.		
Immunity Result.	A	A
Emissions (see page 26 graph).	PASS	PASS
Comments:		
Industrial network equipment under 1000V.		

LOW FREQUENCY DISTURBANCES II	
Petitioner: VECTOR MOTOR CONTROL IBERICA, S.L.	Device under test: Inverter (Power Conversion Device)
File Nº: 14/31705760	Brand: LSIS
Procedure: -	Model: LSLV0750S100-4
Basic Standard: IEC/TR 61000-2-1:1990 EN 61000-2-2:2002 EN 61000-2-4:2002 EN 60146-1-1:1993	Serial number: 5503909055A
	Reception date: 10-09-2014

Commutation notches Emissions



Not observed Commutation notches Emissions (See voltage graphs).

Comments: