



# CE LVD TEST REPORT

For  
Tube LED Driver

Model No.: YT1022-22W, YT1022-20W, YT1022-18W,  
YT1022-16W, YT1022-12W, YT1022-10W

Applicant : SHENZHEN KEMINGXIN ELECTRONIC CO.,LTD  
2F Building C, Sanhe industrial Park, Yongxin street, Yingrenshi  
Community ,Baoan ,Shenzhen

Manufacturer : SHENZHEN KEMINGXIN ELECTRONIC CO.,LTD  
2F Building C, Sanhe industrial Park, Yongxin street, Yingrenshi  
Community ,Baoan ,Shenzhen

Issued By : Global-Standard Testing Service Co., Ltd.  
Room 1911-1914, Noble Plaza, Qian Jin 1st Road, Bao An  
district, Shenzhen, Guangdong, China.

Tel : +86 755 33863599

Email : [market@gstslab.com](mailto:market@gstslab.com)\*

Report Number : GST1405150290S

Issued Date : May 19, 2014

Date of Report : May 18, 2014

## Note:

1. The test data and result is based on the tested sample only.
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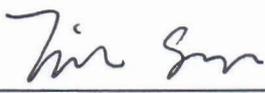
<b>Test Report</b> <b>EN 61347-1: 2008+A11:2011</b> <b>Luminaires — Part 1: General and safety requirements</b> <b>EN 61347-2-13:2006</b> <b>Particular requirements for d.c. or a.c. supplied electronic controlgear for LED modules</b>	
Report reference No. ....:	GST1405150290S
Testing laboratory .....	Global-Standard Testing Service Co., Ltd.
Location.....:	Room 1911-1914, Noble Plaza, Qian Jin 1st Road, Bao An district, Shenzhen, Guangdong, China.
Applicant.....:	SHENZHEN KEMINGXIN ELECTRONIC CO.,LTD
Address:.....:	2F Building C, Sanhe industrial Park, Yongxin street, Yingrenshi Community ,Baoan ,Shenzhen
Manufacturer.....:	SHENZHEN KEMINGXIN ELECTRONIC CO.,LTD
Address:.....:	2F Building C, Sanhe industrial Park, Yongxin street, Yingrenshi Community ,Baoan ,Shenzhen
Standards.....:	EN 61347-1:2008 + A11:2011 EN 61347-2-13:2006
Procedure deviation.....:	N/A
Non-standard test method.....:	N/A
Type of test equipment .....	Tube LED Driver
Trade mark.....:	科明芯
Model/Type designation.....:	YT1022-22W, YT1022-20W, YT1022-18W, YT1022-16W, YT1022-12W, YT1022-10W
Rating.....:	Input: AC100-240V, 50/60Hz, 22W Output: DC30-42V, 480mA
Test item particulars:	--
Operating Condition	Continuous
Tested for IT power systems	No
IT testing, phase-phase voltage (V)	N/A.
Protection against ingress of water	IP20

Possible test case verdicts :	
test case does not apply to the test object	N(/A.)
test object does meet the requirement	P(ass)
test object does not meet the requirement	F(ail)

Name and address of the testing laboratory :

Global-Standard Testing Service Co., Ltd.  
 Room 1911-1914, Noble Plaza, Qian Jin 1st Road, Bao An District,  
 Shenzhen, Guangdong, China.

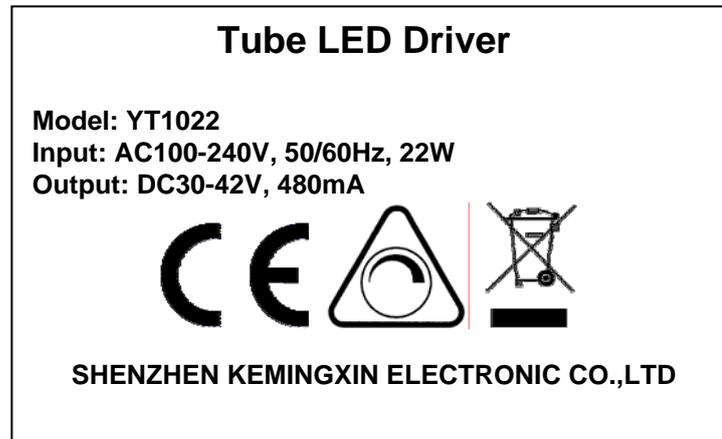
**Tested by** :  May 18, 2014  
 Signature Date  
Rita Liu / Engineer  
 Name/title

**Reviewed by** :  May 19, 2014  
 Signature Date  
Tim Sun / Supervisor  
 Name/title

**Approved by** :  May 19, 2014  
 Signature Date  
Kevin Liu / Manager  
 Name/title

<p><b>General remarks:</b></p> <p>Clause number between brackets refer to clauses in IEC 60598-1</p> <p>"(see remark #)" refers to a remark appended to the report.</p> <p>"(see appended table)" refers to a table appended to the report.</p> <p>Throughout this report a comma is used as the decimal separator.</p> <p>The test results presented in this report relate only to the object tested.</p> <p>This report shall not be reproduced except in full without the written approval of the testing laboratory.</p> <p>Unless otherwise specified, test are made under normal conditions at an ambient temperature within the range of 15°C to 35°C, RH45% to 75% and an air pressure of 860mbar of 1060mbar</p>	
<p><b>General remarks:</b></p> <p>The test results presented in this report relate only to the object tested.  This report shall not be reproduced, except in full, without the written approval of the Issuing testing laboratory.  "(See Enclosure #)" refers to additional information appended to the report.  "(See appended table)" refers to a table appended to the report.  Throughout this report a comma (point) is used as the decimal separator.</p> <p>Clause numbers between brackets refer to clauses in IEC 60598-1</p> <p>Tube LED Driver with different out current</p> <p>All tests were performed by model YT1022 Tube LED Driver to represent the other identical models.</p>	

Representative Label



Note: Due to similarity of the labels, only above label was listed.

- The above copy of marking plate as an example, All the other models will have the same marking plate except the model name and input rating only and other parameter

-The above markings are the minimum requirements required by the safety standard. For the final productions samples, the additional markings which do not give rise to misunderstanding may be added.

- the height of WEEE directive mark is at least 7mm height.

EN 61347-2-13			
Clause	Requirement+ Test	Result - Remark	Verd.

<b>1+4</b>	<b>SCOPE AND GENERAL REQUIREMENTS</b>		---
	Annex I applicable:		---
<b>6 (6)</b>	<b>CLASSIFICATION</b>		---
	Independent ballast	No	---
	Built-in ballast	Yes	---
	Integral ballast	No	---
(-)	SELV-equivalent or isolating controlgear	No	---
(-)	Auto-wound controlgear	No	---
(-)	Independent SELV controlgear	No	---
<b>7</b>	<b>MARKING</b>		---
7.1 (7.1)	Mandatory markings		---
	- mark of origin	No marking use	N
	- model number, type reference	YT1022	N
	- symbol for independent ballast, if applicable	The product is a Integral controlgear	N
	- correlation between interchangeable parts and ballast marked	No user replaceable parts in the product.	N
	- legend on the ballast		N
	- manufacturer's catalogue	See copy of marking plate.	N
	- rated supply voltage( V )	See copy of marking plate.	N
	- rated supply frequency (Hz)	See copy of marking plate.	N
	- rated supply current (A)	See copy of marking plate.	N
	- earthing symbol	Earthing symbol is marked on the label.	N
	- wiring diagram	Wiring diagram of terminal connection is provided in the instruction.	N
	- value of $t_c$	75°C	P
	- symbol for temperature declared	See copy of marking plate.	N
(-)	- for constant voltage types: rated output voltage		N
(-)	- for constant current types: rated output current and maximum output voltage		N

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Clause	Requirement+ Test	Result - Remark	Verd.
(-)	- If applicable: an indication that the control gear is suitable for operation with LED modules only		N
7.2 (7.1)	- information to be provided, if applicable		---
	- declaration on protection against accidental contact		N
	- cross-section of conductors (mm <sup>2</sup> ):		N
	- number, type and wattage of lamp(s)		N
(-)	- mention whether the controlgear has mains-connected windings		N
(-)	- mention that they are SELV-equivalent controlgear, if applicable		N
- (7.2)	Marking durable and legible		N
	Rubbing 15 s water, 15 s petroleum; marking legible		N
<b>8 (10)</b>	<b>PROTECTION AGAINST ACCIDENTAL CONTACT WITH LIVE PARTS</b>		---
- (10.1)	Lamp controlgear which do not rely upon the luminaire enclosure for protection against electric shock shall be sufficiently protected against accidental contact with live parts (see annex A) when installed as in normal use.		N
	Lamp controlgear relies upon the luminaire enclosure for protection		P
	Lacquer or enamel is not considered to be adequate protection or insulation for the purpose of this requirement.		P
	Adequate mechanical strength on parts providing protection		P
- (10.2)	Capacitors > 0,5 µF: voltage after 1 min (V): < 50 V:		P
8.1	For SELV-equivalent controlgear, the accessible parts shall be insulated from live parts by double or reinforced insulation	Input circuit is isolated from output circuit by double or reinforced insulation. See appended table 18(16) for detail. However, the controlgear is intended to be built-in, the insulation between live parts and accessible parts shall be evaluated during final system assembly.	P

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Clause	Requirement+ Test	Result - Remark	Verd.
8.2	Output circuits of SELV- or SELV equivalent control gear may have exposed terminals if		P
	- the rated output voltage for constant voltage control gear or maximum output voltage for constant current control gear under load does not exceed 25 V r.m.s.;		P
	- the no-load output voltage does not exceed 33 V r.m.s. and the peak does not exceed $33\sqrt{2}$ V		N
	Controlgear with a rated output voltage above 25 V shall have insulated terminals		N
	In the case of capacitors which are connected between SELV or SELV equivalent output and primary circuits, one capacitor Y1 or two capacitors Y2 in series with the same value specified and tested according to Tables 2 and 3 respectively of IEC 60384-14 are to be used		P
	Each capacitor shall comply with the requirements of 14.2 of IEC 60065		P
	If other components are necessary for bridging the separating transformer, Clause 14 of IEC 60065 shall apply		P
-(10.2)	Capacitors > 0,5 $\mu$ F: voltage after 1 min (V): < 50 V .....	0V after 1 min	P
<b>9 (8)</b>	<b>TERMINALS</b>		---
	Screw terminals: compliance with Section 14 of IEC 60598-1	Compliance checked. (See attachment table 1)	N
	Screwless terminals: compliance with section 15 of IEC 60598-1		P
<b>10 (9)</b>	<b>PROVISION FOR EARTHING</b>		<b>P</b>
	External metal parts connected to the earth-terminal:	Metal enclosure is reliably connected to protective earth.	P
	- compliance with 7.2.1 in IEC 60598-1		P
	Test with a current of 10 A between earthing terminal and each of the accessible metal parts; measured resistance ( $\Omega$ ) : < 0,5 $\Omega$ :		P
	Protective earth, symbol		N
	Terminal complying with clause 8 in Part 1		N
	Locked against loosening and not possible to loosen by hand		N

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Clause	Requirement+ Test	Result - Remark	Verd.
	Not possible to loosen clamping means unintentionally on screwless terminals		N
	Earthing via means of fixing		N
	Earthing terminal only used for the earthing of the control gear		N
	All parts of material minimizing the danger of electrolytic corrosion		N
	Made of brass or equivalent material		N
	Contact surface bare metal		N
	Conductors by tracks on printed circuit boards:		---
	- a.c. current of 25 A for 1 min between earthing terminal and accessible metal parts		P
	- compliance with clause 7.2.1 in IEC 60598-1		P
<b>11 (11)</b>	<b>MOISTURE RESISTANCE AND INSULATION</b>		---
	After storage 48 h at 91-98% relative humidity and 20-30 °C measuring of insulation resistance with d.c. 500 V ( MΩ): > 2 MΩ:		P
	≥2 MΩ for basic insulation.....:	Between different polarity measured: more than1000 MΩ	P
	≥4 MΩ for double or reinforced insulation.....:	Between live parts and output circuits measured: more than1000 MΩ, Between live parts and metal enclosure measured: more than1000 MΩ	P
(-)	For SELV-equivalent controlgear, the insulation between input and output terminals not bonded together shall be adequate	Input terminals are separated from output terminals by double or reinforced insulation	P
(-)	With double or reinforced insulation, the resistance shall be not less than 4 MΩ		P
<b>12 (12)</b>	<b>ELECTRIC STRENGTH</b>		<b>P</b>
	Immediately after clause 11 electric strength test for 1 min		<b>P</b>
	Working voltage ≤ 42 V, test voltage 500 V		N
	Working voltage > 42 V, test voltage (V): 2U + 1000 V:		P
	Reinforced insulation, test voltage (V) :		P
	No flashover or breakdown		P

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Clause	Requirement+ Test	Result - Remark	Verd.
(-)	Insulation conditions of windings of separating transformers in SELV-equivalent control gear shall apply according to 14.3.2 of IEC 60065		P
<b>13 (13)</b>	<b>THERMAL ENDURANCE FOR WINDINGS</b>		---
	Not applicable		---
<b>14 (14)</b>	<b>FAULT CONDITIONS</b>		<b>P</b>
	When operated under fault conditions the ballast: - does not emit flames or molten material		P
	- does not produce flammable gases		P
	- protection against accidental contact not exceed the marked temperature value		P
	Thermally protected ballasts does not exceed the marked temperature value		P
	Fault conditions: capacitors resistors or inductors without proof of compliance with relevant specifications have been short-circuited or disconnected		P
(14.1)	Short-circuit of creepage distances and clearances if less than specified in clause 18 (except between live parts and accessible metal parts)		N
	Distances not printed boards provided with coating according to IEC 60664-3 is used		N
(14.2)	Short-circuit or interruption of semiconductor devices		P
(14.3)	Short-circuit across insulation consisting of lacquer, enamel or textile		N
(14.4)	Short-circuit across electrolytic capacitors	(see appended table)	P
	During the tests, a five-layer, tissue paper, where the test specimen is wrapped, does not ignite		P
(-)	In the case of controlgear provided with the marking of thermally protected controlgear, the requirements specified in Annex C shall be fulfilled		P
<b>15</b>	<b>TRANSFORMER HEATING</b>		---
	In SELV-equivalent controlgear, windings of separating transformers shall be tested according to 7.1 and 11.2 of IEC 60065		P
15.1	Normal operation		P

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Clause	Requirement+ Test	Result - Remark	Verd.
	For normal operation, the values in the second column of Table 3 of IEC 60065 shall apply		P
15.2	Abnormal operation		P
	For operation under abnormal conditions according to Clause 16 and fault conditions according to Clause 14 of this standard, the values in the third column of Table 3 of IEC 60065 shall apply		P
	Tests shall be made under conditions such that the controlgear is brought to $t_c$ , as reached under normal operation		P
	For moulded-in transformers specially prepared samples provided with thermocouples shall be submitted for testing		N
<b>16</b>	<b>ABNORMAL CONDITIONS</b>		---
	The controlgear shall not impair safety when operated under abnormal conditions. The short-circuit in 16.1 and 16.2 shall be applied with the length of the output cable of both, 20 cm and 200 cm, unless otherwise declared by the manufacturer		N
16.1	Controlgear which are of the constant voltage output type		---
	Compliance is checked by the following test at any voltage between 90 % and 110 % of the rated supply voltage		N
	a) No LED module is inserted		N
	b) Double the LED modules or equivalent load for which the controlgear is designed, connected in parallel to the output terminals		N
	c) The output terminals of the controlgear shall be short-circuited		N
	no defect impairing safety, nor shall any smoke or flammable gases be produced		N
16.2	Controlgear which are of the constant current output type		---
	The maximum output voltage shall not be exceeded		N
	Compliance is checked by the following test at any voltage between 90 % and 110 % of the rated supply voltage		N

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Clause	Requirement+ Test	Result - Remark	Verd.
	a) No LED modules are connected		N
	b) Double the LED modules or equivalent load for which the controlgear is designed, connected in series to the output terminals		N
	c) The output terminals of the controlgear shall be short-circuited		N
	No defect impairing safety, nor shall any smoke or flammable gases be produced		N
<b>17 (15)</b>	<b>CONSTRUCTION</b>		<b>P</b>
(15.1)	Wood, cotton, silk, paper and similar fibrous material shall not be used as insulation, unless impregnated		N
(15.2)	Printed circuits are permitted for internal connections		P
(-)	Socket-outlets in the output circuit shall not accept plugs complying with IEC 60083 and IEC 60906; neither shall it be possible to engage plugs accepted by socket-outlets in the output circuit with socket-outlets complying with IEC 60083 and IEC 60906		N
<b>18 (16)</b>	<b>CREEPAGE DISTANCES AND CLEARANCES</b>		---
	Creepage distances and clearances according to Table 3 and 4, as appropriate	See appended table	P
	Printed boards see clause 14		P
	Insulating lining of metallic enclosures		P
<b>19 (17)</b>	<b>SCREWS, CURRENT-CARRYING PARTS AND CONNECTIONS</b>		---
	Screws, current-carrying parts and connections in compliance with IEC 60598-1 (clause numbers between parentheses refer to IEC 60598-1)		P
(4.11)	Electrical connections		---
(4.11.1)	Contact pressure		P
(4.11.2)	Screws:		P
	- self-tapping screws		N
	- thread-cutting screws		P
	- at least two self-tapping screws		N
(4.11.3)	Screw locking:		---
	- spring washer		N
	- rivets		N

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Clause	Requirement+ Test	Result - Remark	Verd.
(4.11.4)	Material of current-carrying parts	Copper	P
(4.11.5)	No contact to wood		N
(4.12)	Mechanical connections and glands		P
(4.12.1)	Mechanical stress		P
	Screws not made of soft metal		N
	Screws of insulating material		N
	Torque test: part; torque (Nm)		N
	Torque test: part; torque (Nm)		N
	Torque test: part; torque (Nm)		N
(4.12.2)	Screw diameter < 3mm screwed into metal		P
(4.12.3)	Void		---
(4.12.4)	Locked connections		P
(4.12.5)	Screwed glands: force (N)		N
<b>20 (18)</b>	<b>RESISTANCE TO HEAT, FIRE AND TRACKING</b>		---
(18.1)	Parts of insulating material retaining live parts in position, ball-pressure test:		---
	- part; test temperature (°C)	Transformer bobbin: 125°C	P
	- part; test temperature (°C)	PCB: 125°C	P
(18.2)	Printed boards in accordance with IEC 60249-1, 4.3		P
(18.3)	External parts of insulating material preventing electric shock glow-wire test 650 °C		N
(18.4)	Parts of insulating material retaining live parts in position, needle-flame test 10 s:		N
	- flame extinguished within 30 s	Transformer bobbin, PCB	N
	- no flaming drops igniting tissue paper		N
(18.5)	Tracking test		N
<b>21 (19)</b>	<b>RESISTANCE TO CORROSION</b>		---
	Rust protection:		---
	- 10% solution of ammonium chloride in water		P
	- adequate varnish on the outer surface		P
<b>-(20)</b>	<b>NO-LOAD OUTPUT VOLTAGE</b>		N
	No load output voltage not differ more than 10% from rated voltage		N

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Clause	Requirement+ Test	Result - Remark	Verd.

14	TABLE: TESTS OF FAULT CONDITIONS			P
Part	Simulated fault			Hazard
--	Fault condition	Result		--
--	--	Time	Observation	--
D1	Short-circuit	1S	Fuse open	NO
CX1	Short-circuit	1S	Fuse open	NO
Q1 G-S	Short-circuit	10 min	Normal working	NO
Q1 D-S	Short-circuit	1S	Fuse open Q1, fuse damage	NO
Q1 D-G	Short-circuit	1S	Fuse open Q1, fuse damage	NO
T1 Sec.	Short-circuit	10 min	Unit short down coverable	NO
T1 Pri.	Short-circuit	10 min	Unit short down coverable	NO
CE1	Short-circuit	10 min	Unit short down coverable	NO
CE2	Short-circuit	10 min	Unit short down coverable	NO
Output	Short-circuit	10 min	Unit short down coverable	NO

18 (16)	TABLE: creepage distances and clearances						P
	Minimum distances for a.c. (50/60 Hz) sinusoidal voltages						P
RMS working voltage (V) not exceeding	50	150	250	440	690	1000	
1 minimum distances between live parts of different polarity. Specify the value measured.	---	---	---	Cr=6.0 mm Cl=6.0 mm	---	---	
2 minimum distances between live parts and accessible parts which are permanently fixed to the ballast, including screws or devices for fixing covers or fixing the ballast to its support. Specify the value measured.	---	---	---	---	---	---	
- required creepage distances (mm), insulation PTI $\geq$ 600	---	---	---	4.1	---	---	
- required creepage distances (mm), insulation PTI < 600	---	---	---	4.1	---	---	
- required clearances (mm)	---	---	---	4.1	---	---	
3 minimum distances between live parts and a flat supporting surface or a loose metal cover, if any, if the construction does not ensure that the values under 2 above are maintained under the most unfavourable circumstances	---	---	---	Cr>8.2 mm Cl>8.2 mm	---	---	
- required clearances (mm)	---	---	---	8	---	---	

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Clause	Requirement+ Test	Result - Remark	Verd.

Minimum distances for non-sinusoidal pulse voltages							N
rated pulse voltage (peak kV)	2,0	2,5	3,0	4,0	5,0	6,0	8,0
required minimum distances, clearances (mm)	1,0	1,5	2	3	4	5,5	8
Specify the value measured	---	---	---	---	---	---	---
rated pulse voltage (peak kV)	10	12	15	20	25	30	40
required minimum distances, clearances (mm)	11	14	18	25	33	40	60
Specify the value measured	---	---	---	---	---	---	---
rated pulse voltage (peak kV)	50	60	80	100	---	---	---
required minimum distances, clearances (mm)	75	90	130	170	---	---	---
Specify the value measured	---	---	---	---	---	---	---
<b>18 (16)</b>	<b>TABLE: creepage distances and clearances</b>						<b>P</b>
	Minimum distances for a.c. (50/60 Hz) sinusoidal voltages						P
RMS working voltage (V) not exceeding	50	150	250	440	690	1000	
1 minimum distances between live parts of different polarity. Specify the value measured.	---	---	---	Cr=6.0 mm Cl=6.0 mm	---	---	---
2 minimum distances between live parts and accessible parts which are permanently fixed to the ballast, including screws or devices for fixing covers or fixing the ballast to its support. Specify the value measured.	---	---	---	---	---	---	---
- required creepage distances (mm), insulation PTI $\geq$ 600	---	---	---	8.2	---	---	---
- required creepage distances (mm), insulation PTI < 600	---	---	---	8.2	---	---	---
- required clearances (mm)	---	---	---	8.2	---	---	---
3 minimum distances between live parts and a flat supporting surface or a loose metal cover, if any, if the construction does not ensure that the values under 2 above are maintained under the most unfavourable circumstances	---	---	---	Cr>8.2 mm Cl>8.2 mm	---	---	---
- required clearances (mm)	---	---	---	8	---	---	---
Minimum distances for non-sinusoidal pulse voltages							N
rated pulse voltage (peak kV)	2,0	2,5	3,0	4,0	5,0	6,0	8,0
required minimum distances, clearances (mm)	1,0	1,5	2	3	4	5,5	8
Specify the value measured	---	---	---	---	---	---	---
rated pulse voltage (peak kV)	10	12	15	20	25	30	40
required minimum distances, clearances (mm)	11	14	18	25	33	40	60

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Clause	Requirement+ Test	Result - Remark	Verd.

Specify the value measured	---	---	---	---	---	---	---
rated pulse voltage (peak kV)	50	60	80	100	---	---	---
required minimum distances, clearances (mm)	75	90	130	170	---	---	---
Specify the value measured	---	---	---	---	---	---	---

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Clause	Requirement+ Test	Result - Remark	Verd.

**Tables**

<b>components</b>	<b>P</b>
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TABLE	List of critical components and materials			
Component	manufacturers / trademark	Type / model	Value / rating	Approval/ Reference
PCB	Shenzhen New Pingtai Circuit Board Co Ltd	PT-M	V-0, 130°C	UL
Fuse (FS1)	--	--	T2A, 250VAC	VDE
X -Capacitor (CA1)	Tenta Electric Industrial Co. Ltd.	MEX	Max. 0.47uF, 275VAC, 40/100/21/C,X2 type	VDE
Heat-shrinkable tub	Changyuan Electronics (Shenzhen) CoLtd	CB-HFT	VW-1, 600V, 125°C	UL
Inductor (L1,L2&L4)	SHENZHEN KEMINGXIN ELECTRONIC CO.,LTD	2424-1	Class B, 130°C	Tested with appliance
- Magnet wire	Shantou Shengang Electrical Industrial Co Ltd	UEW/130	130	UL
Transformer (T1)	SHENZHEN KEMINGXIN ELECTRONIC CO.,LTD	3535-1	Class B, 130°C	Tested in the equipment
- Bobbin	Chang Chun Plastics Co Ltd	T373J	Phenolic, V-0, min.thickness 1.0mm , 150 degree C	UL
-Primary lead wire	Dong Guan Yida Industrial Co Ltd	*UEW/130	130 degree C	UL
-Secondary triple wire	Furukawa Electric Co., Ltd	TEX-E	130°C	VDE
-Insulation tape	Jingjiang Yahua	PZ, CT	130°C	UL
-Tube	Fluo Tech Industries Co Ltd	TFT	200°C	UL
-Varnis	Hang Cheung Petrochemical Ltd	8562(a)	155°C	UL

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Clause	Requirement+ Test	Result - Remark	Verd.

temperature (°C) of part	Clause 12.4 – normal				Clause 12.5 – abnormal	
	test 1	test 2	test 3	limit	test 4	limit
Fuse surface		63.7		90		
Winding of L1		64.8		130		
CX1 surface (CX1)		67.0		110		
PCB near D1		66.2		130		
E-cap surface (C1)		72.0		105		
Primary winding of T1		82.8		130		
Secondary winding of T1		81.7		130		
Bobbin of T1		79.6		130		
PCB under T1		72.5		130		
E-cap surface (CE1)		79.2		105		
E-cap surface (CE2)		87.1		130		
Internal surface of sensor box (near Transformer)		51.4		75		
External surface of sensor Lens(near Transformer)		46.9		75		
Ambient		26.6		---		

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Clause	Requirement+ Test	Result - Remark	Verd.

	<b>screw terminals (part of the luminaire)</b>		<b>N/A</b>
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(14)	<b>SCREW TERMINALS</b>		<b>N/A</b>
(14.2)	Type of terminal .....	Cross	—
	Rated current (A) .....		—
(14.3.2.1)	One or more conductors		N/A
(14.3.2.2)	Special preparation		N/A
(14.3.2.3)	Terminal size		N/A
	Cross-sectional area (mm <sup>2</sup> ) .....		N/A
(14.3.3)	Conductor space (mm) .....		N/A
(14.4)	Mechanical tests		N/A
(14.4.1)	Minimum distance		N/A
(14.4.2)	Cannot slip out		N/A
(14.4.3)	Special preparation		N/A
(14.4.4)	Nominal diameter of thread (metric ISO thread).....		N/A
	External wiring		N/A
	No soft metal		N/A
(14.4.5)	Corrosion		N/A
(14.4.6)	Nominal diameter of thread (mm) .....		N/A
	Torque (Nm).....		N/A
(14.4.7)	Between metal surfaces		N/A
	Lug terminal		N/A
	Mantle terminal		N/A
	Pull test; pull (N).....		N/A
(14.4.8)	Without undue damage		N/A

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Clause	Requirement+ Test	Result - Remark	Verd.

	<b>screwless terminals (part of the luminaire)</b>		<b>N/A</b>
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(15)	SCREWLESS TERMINALS		N/A
(15.2)	Type of terminal.....:		—
	Rated current (A).....:		—
(15.3.1)	Material		N/A
(15.3.2)	Clamping		N/A
(15.3.3)	Stop		N/A
(15.3.4)	Unprepared conductors		N/A
(15.3.5)	Pressure on insulating material		N/A
(15.3.6)	Clear connection method		N/A
(15.3.7)	Clamping independently		N/A
(15.3.8)	Fixed in position		N/A
(15.3.10)	Conductor size		N/A
	Type of conductor		N/A
(15.5.1)	Terminals internal wiring		N/A
(15.5.1.1)	Pull test spring-type terminals (4 N, 4 samples).....:		N/A
(15.5.1.2)	Pull test pin or tab terminals (4 N, 4 samples).....:		N/A
	Insertion force not exceeding 50 N		N/A
(15.5.2)	Permanent connections: pull-off test (20 N)		N/A
(15.6)	Electrical tests		N/A
	Voltage drop (mV) after 1 h (4 samples).....:		N/A
	Voltage drop of two inseparable joints		N/A
	Number of cycles .....		—
	Voltage drop (mV) after 10th alt. 25th cycle (4 samples).....:		N/A
	Voltage drop (mV) after 50th alt. 100th cycle (4 samples).....:		N/A
	After ageing, voltage drop (mV) after 10th alt. 25th cycle (4 samples) .....		N/A
	After ageing, voltage drop (mV) after 50th alt. 100th cycle (4 samples) .....		N/A
(15.7)	Terminals external wiring		N/A
	Terminal size and rating		N/A
(15.8.1)	Pull test spring-type terminals or welded connections (4 samples); pull (N) .....		N/A
	Pull test pin or tab terminals (4 samples); pull (N) .....		N/A

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Clause	Requirement+ Test	Result - Remark	Verd.

(15.9)	Contact resistance test		N/A
	Voltage drop (mV) after 1 h		N/A

terminal	1	2	3	4	5	6	7	8	9	10
voltage drop (mV)										
	Voltage drop of two inseparable joints									N/A
	Voltage drop after 10th alt. 25th cycle									N/A
	Max. allowed voltage drop (mV) .....									—
terminal	1	2	3	4	5	6	7	8	9	10
voltage drop (mV)										
	Voltage drop after 50th alt. 100th cycle									N/A
	Max. allowed voltage drop (mV) .....									—
terminal	1	2	3	4	5	6	7	8	9	10
voltage drop (mV)										
	Continued ageing: voltage drop after 10th alt. 25th cycle									N/A
	Max. allowed voltage drop (mV) .....									—
terminal	1	2	3	4	5	6	7	8	9	10
voltage drop (mV)										
	Continued ageing: voltage drop after 50th alt. 100th cycle									N/A
	Max. allowed voltage drop (mV) .....									—
terminal	1	2	3	4	5	6	7	8	9	10
voltage drop (mV)										

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Clause	Requirement+ Test	Result - Remark	Verd.

## ANNEX

<b>A</b>	<b>ANNEX A (NORMATIVE), TEST TO ESTABLISH WHETHER A CONDUCTIVE PART IS A LIVE PART WHICH MAY CAUSE AN ELECTRIC SHOCK</b>		<b>P</b>
A.1	The current flowing between the part concerned and earth is measured and does not exceed 0,7 mA (peak) or 2 mA d.c. ....	0.24mA	P
	For frequencies above 1 kHz, the limit does not exceed 70 mA (peak).....		N/A
	The voltage between the part concerned and any accessible part is measured and does not exceed 34 V (peak) .....	12V	P

<b>C</b>	<b>ANNEX C – PARTICULAR REQUIREMENTS FOR CONVERTORS WITH MEANS OF PROTECTION AGAINST OVERHEATING</b>		<b>N/A</b>
<b>C3</b>	<b>GENERAL REQUIREMENTS</b>		<b>N/A</b>
C3.1	Thermal protection means integral with the convertor, protected against mechanical damage	No such parts	N/A
	Renewable only by means of a tool		N/A
	If function depending on polarity, for cord-connected equipment protection means in both leads		N/A
	Thermal links comply with EN 60691		N/A
	Electrical controls comply with EN 60730-2-3		N/A
C3.2	No risk of fire by breaking (clause C7)		<b>N/A</b>
<b>C5</b>	<b>CLASSIFICATION</b>		<b>N/A</b>
	a) automatic resetting type		N/A
	b) manual resetting type		N/A
	c) non-renewable, non-resetting type		N/A
	d) renewable, non-resetting type		N/A
	e) other type of thermal protection; description .....		N/A
<b>C6</b>	<b>MARKING</b>		<b>N/A</b>
C6.1	Symbol for temperature declared thermally protected ballasts		N/A
C6.2	Declaration of the type of protection provided		N/A
<b>C7</b>	<b>LIMITATION OF HEATING</b>		<b>N/A</b>
C7.1	Preselection test		N/A
	Test sample placed for at least 12 h in an oven having temperature ( $t_c - 5$ ) K		N/A
	No operation of the protection device		N/A
C7.2	Functioning of protection means		N/A
	Normal operation of the sample in a test enclosure according to Annex D at an ambient temperature such that ( $t_c + 0; -5$ ) °C is obtained		N/A
	No operation of the protection device		N/A
	Introducing of the most onerous test condition determined during test of clause 14		N/A

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Clause	Requirement+ Test	Result - Remark	Verd.

	Output of windings connected to the mains supply short-circuited, and other part of the convertor operated under normal conditions		N/A
	Increasing of the current through the windings continuously until operation of the protection means		N/A
	Continuous measuring of the highest surface temperature		N/A
	Ballasts according to C5 a) or C5 e) operated until stable conditions are achieved		N/A
	Automatic-resetting thermal protectors working 3 times		N/A
	Ballasts according to C5 b) working 6 times		N/A
	Ballasts according to C5 c) and C5) d) working once		N/A
	Highest temperature does not exceed the marked value		N/A
	Any overshoot of 10% over the marked value within 15 min		N/A

<b>E</b>	<b>ANNEX E – USE OF CONSTANT S OTHER THAN 4500 IN <math>t_w</math> TESTS</b>	<b>N/A</b>
E1	Constant S claimed	N/A
	Claimed test method	N/A
E2	Procedure A	N/A
	Adequate data provided by the manufacturer	N/A
	The inverse of the slope is greater than or equal to the claimed value of S	N/A
	Compliance with the failure criteria for procedure B	N/A
E3	Procedure B	N/A
	Claimed value of $T_1$	N/A
	Claimed value of $T_2$	N/A
	Endurance test carried out at:	N/A
	$T_1$ (7 samples)	N/A
	$T_2$ (7 samples)	N/A
	Duration of test calculated from equation (2)	N/A
	$T_1$	N/A
	$T_2$	N/A
	During the test: - No open circuit - No breakdown in insulation	N/A
	The claimed constant S is deemed to be verified	N/A

<b>F</b>	<b>ANNEX F - DRAUGHT-PROOF ENCLOSURE</b>	<b>P</b>
	Draught-proof enclosure in accordance with the description	P
	Dimensions of the enclosure	P
	Other design; description	P

<b>H</b>	<b>ANNEX H - TESTS</b>	<b>P</b>
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Clause	Requirement+ Test	Result - Remark	Verd.
	All tests performed in accordance with the advise given in Annex H, if applicable		P
<b>I</b>	<b>ANNEX I - PARTICULAR ADDITIONAL REQUIREMENTS FOR INDEPENDENT SELV D.C. OR A.C. SUPPLIED ELECTRONIC CONTROLGEAR FOR LED MODULES</b>		<b>P</b>
I.3	Classification		P
I.3.1	Class I		N/A
	Class II		P
I.3.2	Non inherently short-circuit proof convertor		N/A
	Inherently short-circuit proof convertor		P
	Fail safe convertor		N/A
	Non short-circuit proof convertor		N/A
I.4	Marking		P
	Adequate symbols are used		P
I.5	Protection against electric shock		P
I.5.1	No connection between output winding and body		N/A
	No connection between output winding and protective earthing circuit		N/A
I.5.2	Input and output circuits electrically separated from each other		P
I.5.2.1	Insulation between input and output winding of the HF-transformer consists of double or reinforced insulation		P
	Class II: insulation between input/output and body consists of double or reinforced insulation		P
	Class I: insulation between input and body consists of basic and between output and body supplementary insulation		N/A
I.5.2.2	Insulation between input and output winding via the core consists of double or reinforced insulation		P
	Insulation between cord and windings of the HD-transformer consists of basic insulation		N/A
I.5.2.3	Serrated tape, additional layer		N/A
I.5.2.4	Class I convertor for fixed connection provided with basic insulation plus protective screening comply with the following conditions:		N/A
	a) Insulation between the input winding and the protective screen complies with the requirements for basic insulation		N/A
	b) Insulation between the protective screen and the output winding complies with the requirements for basic insulation		N/A
	c) Metal screen consists of a metal foil or of a wire wound screen		N/A
	d) Metal screen so arranged that both edges cannot simultaneously touch a magnetic core		N/A

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Clause	Requirement+ Test	Result - Remark	Verd.
	e) Metal screen and its lead-out wire have a cross-section sufficient to ensure that an overload device will open the circuit before the screen is destroyed		N/A
	f) Lead-out wire sufficiently fixed to the metal screen		N/A
I.5.2.5	Last turn of each winding of the transformer retained by positive means		P
	Impregnated winding		P
	Winding held together by means of insulating material		P
I.5.3	Components bridging between input and output circuit		P
I.5.3.1	Used capacitors and resistors comply with 8.2		N/A
I.5.3.2	Used opto-couplers		P
I.6	Heating		P
I.6.1	No excessive temperatures in normal use		P
	Used material classified as Class _____	Class B	P
	Stated value of $t_a$ _____	40 degreeC	P
I.6.2	Upri: 1.06 time supply rated voltage		P
	Determined temperature rises in windings: - Primary: K - Limit max: K - Secondary: K - Limit max: K - Ambient: 40 degreeC		P
	After the test:		P
	- no connections have worked loose		P
	- no reduction of creepage distances and clearances		P
	- no flow of sealing compound		P
	- no operation of protecting devices		P
	- electric strength test between input and output windings		P
I.6.3	Cycling test (10 cycles):		N/A
I.6.3.1	- heat run at 115 K		N/A
I.6.3.2	- moisture treatment 48 h		N/A
I.6.3.3	- vibration test 1 h; 1,5 g		N/A
I.6.3.4	After the tests:		N/A
	- insulation resistance		N/A
	- dielectric strength test at 35 % of specified value; test voltage _____ V		N/A
	- Current or the ohmic component does not deviates by more than 30 %		N/A
I.7	Short-circuit and overload protection		P
I.7.1	Upri: 1.06 times rated voltage or 0.94 and 1.06 times rated supply voltage - used voltage 254.4V		P

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Clause	Requirement+ Test	Result - Remark	Verd.
I.7.2 I.7.3 I.7.3.1 I.7.3.2 I.7.3.3 I.7.3.4 I.7.3.5 I.7.4	Determined temperature rise in windings and on other parts:		P
	- test according to Clause                      Clause 15		P
	- Primary winding                                      69.6K		P
	- Limit max    150K		P
	- Secondary winding                                  69.6K		P
	- Limit max    150K		P
	- External enclosure                                 62.6K		P
	- Limit max    70K		P
	- Supports    58.2K		P
	- Limit max    70K		P
I.7.5	Fail-safe convertors		P
I.7.5.1	- U <sub>pri</sub> : 1.06 times rated supply voltage....254.4V:		P
	- I <sub>sec</sub> : 1.5 times rated output current A:		P
	- time until steady-state conditions t <sub>1</sub> (h) .....		P
	- time until failure t <sub>2</sub> (h): ≤ t <sub>1</sub> ; ≤ 5 h.....		N/A
I.7.5.2	During the test:		P
	- no flames, molten material, etc.		P
	- temperature rise of enclosure ≤ 150 K		P
	- temperature rise of plywood support ≤ 100 K		P
	After the test:		P
	- electric strength (test voltage; 35 % of specified value); no flashover or breakdown for primary-to-secondary and for primary-to-body		P
	- live parts not accessible by test finger through holes of enclosure		P
I.8	Insulation resistance and electric strength		P
I.8.1	Conditioned 48 h between 91 % and 95 %		P
I.8.2	Adequate insulation (500 V d.c. for 1 min) between:		P
	Live parts and the body -for basic insulation not less than 2 MΩ .....		N/A
	Live parts and the body -for reinforced insulation not less than 4 MΩ .....		P
	Input- and output circuits not less than 5 MΩ .....		P
	Metal parts of class II convertors which are separated from live parts by basic insulation only and the body not less than 5 MΩ .....		N/A
	Metal foil in contact with the inner and outer surfaces of enclosures of insulating material not less than 2 MΩ .....		N/A
I.8.3	Electric strength test:		P
	1) Between live parts of input circuits and live parts of output circuits .....		P

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Clause	Requirement+ Test	Result - Remark	Verd.

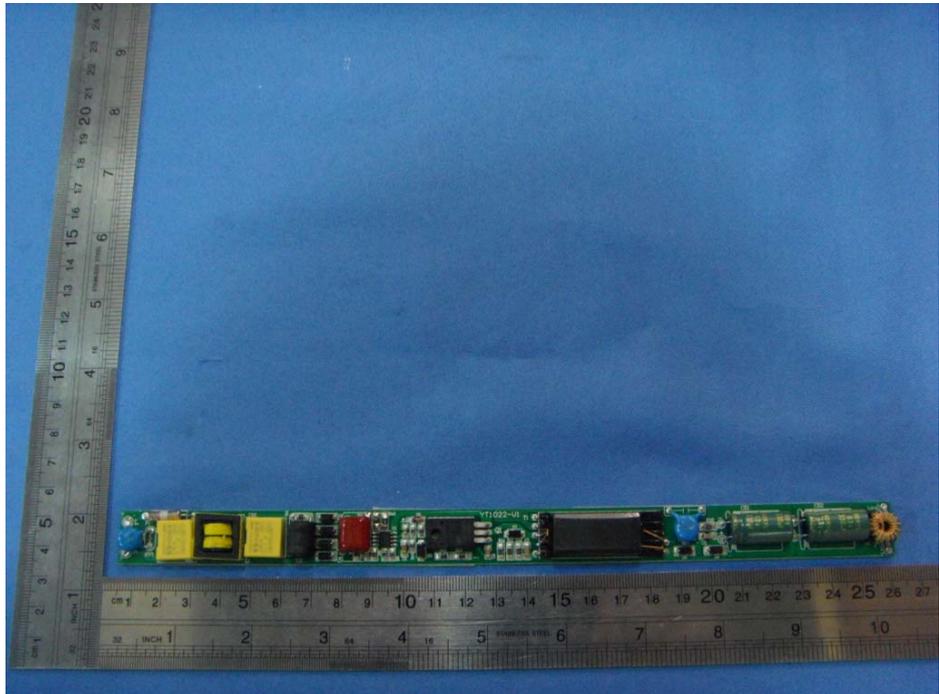
	2) Over basic or supplementary insulation between:		N/A
	a) live parts which are or may become of different polarity .....		N/A
	b) live parts and body if intended to be connected to protective earth .....		N/A
	c) accessible metal parts and a metal rod of the same diameter as the flexible cable or cord .....		N/A
	d) live parts and an intermediate metal part .....		N/A
	e) intermediate metal parts and the body .....		N/A
	3) Over reinforced insulation between the body and live parts .....		P
	No flashover or breakdown occurred		P
I.9	Construction		P
I.9.1	Comply with all requirements		P
I.9.2	The distance between input and output terminals shall not be less than 25 mm .....		P
I.10	Components		P
I.10.1	Socket-outlets in the output circuit does not accept plugs complying with IEC 60083 and IEC 60906-1		N/A
I.10.2	Self-resetting devices shall not be used unless it is certain that there will be no hazards		N/A
	Compliance is checked by connecting the convertor for 48 h at 1.06 times the rated voltage with the output short-circuited		N/A
I.11	Creepage distances and clearances		P
	1. Insulation between input and output circuits:		P
	a) measured values $\geq$ specified values (mm) .....	Primary to secondary circuit under transformer on PCB (Reinforced): 8.2 mm > specified value 8.0mm	P
	b) measured values $\geq$ specified values (mm) .....	core to secondary pins inside transformer (Reinforced): 8.2 mm > specified value 8.0mm	P
	c) measured values $\geq$ specified values (mm) .....	Primary to accessible surface (Reinforced): 8.2 mm > specified value 8.0mm	P
	2. Insulation between adjacent input circuits: measured values $\geq$ specified values (mm) .....	L to N before fuse F1: 3.0 mm > specified value 3.0mm	N/A
	2. Insulation between adjacent output circuits: measured values $\geq$ specified values (mm) .....		N/A
	3. Insulation between terminals for external connection:		N/A
	a) measured values $\geq$ specified values (mm) .....		N/A
	b) measured values $\geq$ specified values (mm) .....		N/A
	c) measured values $\geq$ specified values (mm) .....		N/A
	4. Basic or supplementary insulation:		P
	a) measured values $\geq$ specified values (mm) .....	L to N before fuse F1: 4.1 mm > specified value 4.0mm	P
	b) measured values $\geq$ specified values (mm) .....		P
	c) measured values $\geq$ specified values (mm) .....		N/A

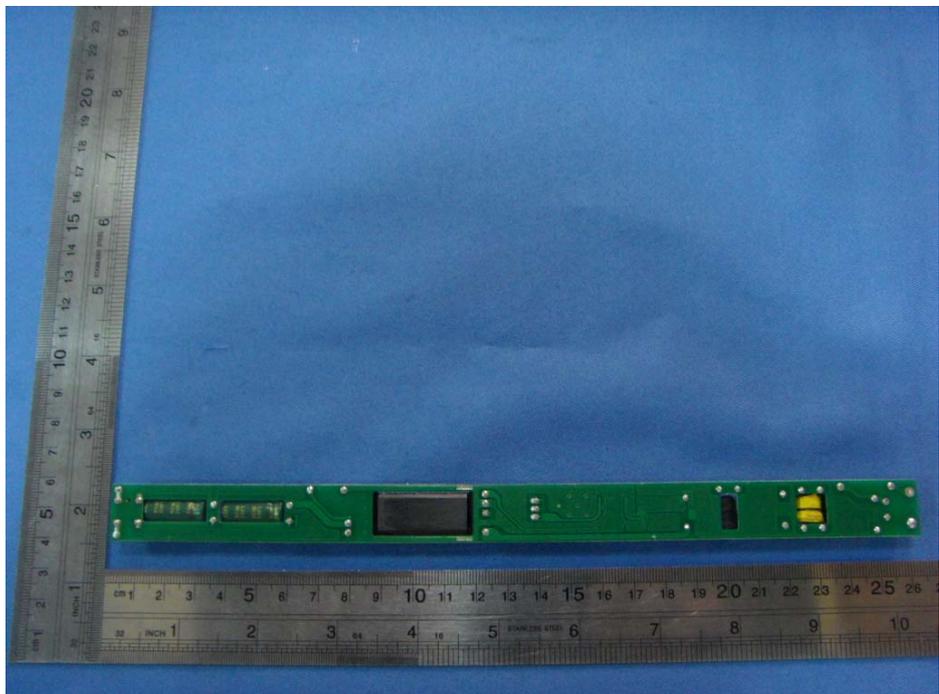


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Clause	Requirement+ Test	Result - Remark	Verd.

	5. Reinforced insulation: measured values $\geq$ specified values (mm) .....		P
	6. Distanse through insulation:		N/A
	a) measured values $\geq$ specified values (mm) .....		N/A
	b) measured values $\geq$ specified values (mm) .....		N/A
	c) measured values $\geq$ specified values (mm) .....		N/A
	d) measured values $\geq$ specified values (mm) .....		N/A

Photo Documents

<p>Photo 1</p> <p>View:</p> <p><input checked="" type="checkbox"/> Front</p> <p><input type="checkbox"/> Rear</p> <p><input type="checkbox"/> Right side</p> <p><input type="checkbox"/> Left side</p> <p><input type="checkbox"/> Top</p> <p><input type="checkbox"/> Bottom</p> <p><input type="checkbox"/> Internal</p>	
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<p>Photo 2</p> <p>View:</p> <p><input type="checkbox"/> Front</p> <p><input type="checkbox"/> Rear</p> <p><input type="checkbox"/> Right side</p> <p><input type="checkbox"/> Left side</p> <p><input type="checkbox"/> Top</p> <p><input checked="" type="checkbox"/> Bottom</p> <p><input type="checkbox"/> Internal</p>	
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--The end--