




## SHENZHEN SANPU INTELLIGENT TECHNOLOGY CO., LTD.

# CE LVD REPORT

Prepared For :	SHENZHEN SANPU INTELLIGENT TECHNOLOGY CO., LTD. 5 Floor, B3 Building, Huafengshiji Science Park, Nanchang Village, Xixiang Town, Baoan District, Shenzhen
Product Name:	WATERPROOF CONSTANT VOLTAGE SWITCHING POWER SUPPLY
Model :	CL150-W1V12, CL60-W1V5, CL60-W1V12, CL60-W1V24, CL60-W1V36, CL100-W1V12, CL100-W1V24, CL100-W1V36, CL150-W1V24, CL150-W1V36
Prepared By :	Shenzhen BST Technology Co., Ltd. Building No.23-24,Zhiheng Industrial Park,Guankouer Road, Nantou,Nanshan District,Shenzhen,Guangdong,China
Test Date:	Jun. 10- 21, 2016
Date of Report :	Jun. 21, 2016
Report No.:	BSTDG1606679580001SR-2



**LVD Report**  
**EN 61347-1 & EN 61347-2-13**  
**Lamp control gear**  
**Part 1: General and safety requirements**  
**Part 2: Particular requirements**  
**Section Thirteen – d.c. or a.c. supplied electronic controlgear for**  
**LED modules**

Testing laboratory .....	Shenzhen BST Technology Co.,Ltd.
Address .....	Building No.23-24,Zhiheng Industrial Park,Guankouer Road, Nantou,Nanshan District,Shenzhen,Guangdong,China
Testing location .....	Shenzhen BST Technology Co.,Ltd.
Applicant .....	SHENZHEN SANPU INTELLIGENT TECHNOLOGY CO., LTD.
Address .....	5 Floor, B3 Building, Huafengshiji Science Park, Nanchang Village, Xixiang Town, Baoan District, Shenzhen
Standard .....	EN 61347-1:2015 EN 61347-2-13:2014
Test Result .....	Compliance with EN 61347-1:2015 EN 61347-2-13:2014
Procedure deviation .....	N.A.
Non-standard test method .....	N.A.
Type of test object .....	WATERPROOF CONSTANT VOLTAGE SWITCHING POWER SUPPLY
Trademark .....	N.A.
Model/type reference .....	CL150-W1V12, CL60-W1V5, CL60-W1V12, CL60-W1V24, CL60-W1V36, CL100-W1V12, CL100-W1V24, CL100-W1V36, CL150-W1V24, CL150-W1V36
Rating .....	Input: 100-240VAC, 50/60Hz Output: +12V  12.5A, Max. Total power: 150W Max.
Manufacturer .....	SHENZHEN SANPU INTELLIGENT TECHNOLOGY CO., LTD.
Address .....	5 Floor, B3 Building, Huafengshiji Science Park, Nanchang Village, Xixiang Town, Baoan District, Shenzhen
Test item particulars :	
Operation condition .....	Continuous
Mass of equipment (Kg) .....	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 : Shenzhen BST Technology Co.,Ltd.

Building No.23-24,Zhiheng Industrial Park,  
Guankouer Road,Nantou,Nanshan District,  
Shenzhen,Guangdong,China

Test by :

*Janice Li*

Jun. 21, 2016

Signature

Date

Technician

Title

Review by :

*Apple Li*

Jun. 21, 2016

Signature

Date

Project Engineer

Title



Approved by :

Jun. 21, 2016

Signature

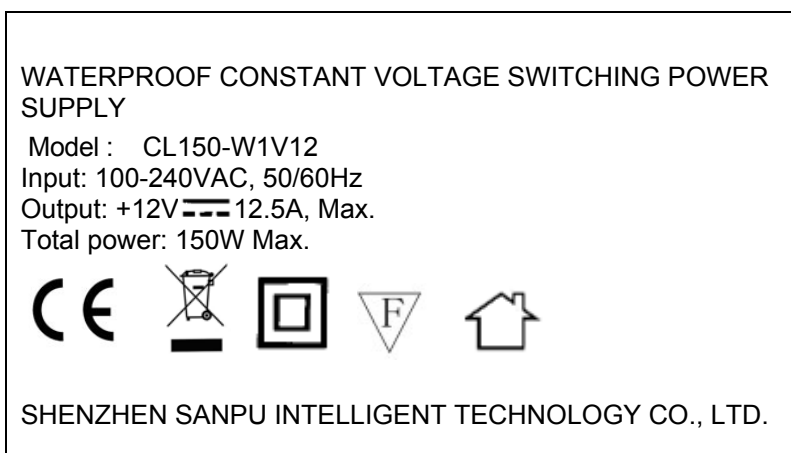
Date

Christina Deng/ Manager  
Name and Title



<b>General remarks:</b> "(see remark #)" refers to a remark appended to the report.  "(see appended table)" refers to a table appended to the report.  Throughout this report a comma is used as the decimal separator.  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 testing laboratory.	<b>Attached with:</b>  A. photo documentation  B.General product information:  The series products have the same circuit diagram, PCB layout and functionality. The differences are the model name and appearance, so, we select CL150-W1V12 to test.
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#### Artwork of Marking Label





EN 61347-1 & EN 61347-2-13			
Cl.	Requirement – Test	Result	Verdict
4 (-4)	GENERAL REQUIREMENT		P
	In normal use it operates without danger to the user or surrounding		P
	Independent controlgear be comply with EN60598-1 including the classification and marking requirements		P
5.	GENERAL NOTE ON TESTS		P
5.1	Type tests		P
5.2	Unless otherwise specified, ambient 10°C-30°C		P
5.3	Unless otherwise specified, type test is carried out on one sample		P
5.4	Be carried out in the order list, or specified in part2		P
5.5	Test in a test corner		P
5.6	d.c supplied ballasts permit use equal supply.	No d.c. supplied	N
6.	CLASSIFICATION		P
	Built-in		N
	Independent		P
	integral		N
7.	MARKING		P
7.1	Mandatory markings		P
	- items a), b), c), d), e), l) and k) of 7.1 of IEC 61347-1,		P
	a) mark of origin	See the label	P
	b) model number or type reference	See page 2	P
	c) symbol for independent lamp controlgear		N
	d) the correlation between replaceable and interchangeable parts be marked unambiguously		P
	e) rated supply voltage/voltage range, supply frequency and supply current	AC100-240V 50/60Hz	P
	l) value of t <sub>c</sub> .		P
	k) wiring diagram indication the position and	On the enclosure label	P



EN 61347-1 & EN 61347-2-13			
Cl.	Requirement – Test	Result	Verdict
	purpose of terminals.		
	– the symbol for earthing, as applicable;		P
	– for controllable ballasts, the control terminals shall be identified;		N
	– a declaration of the maximum working voltage (r.m.s.) according to 12.2 between		N
	– output terminals;		P
	-any output terminal and earth, if applicable.		P
7.2	Information to be provided, if applicable		P
	h) indication not rely upon the luminaire enclosure for protection against accidental contact with live parts.		N
	i) indication the terminal's cross-section of conductors		P
	j) lamp type and rated wattage /wattage range.	See manual	P

8(-10)	PROTECTION AGAINST ACCIDENTAL CONTACT WITH LIVE PARTS		P
8.1	For SELV-equivalent controlgear, the accessible parts shall be insulated from live parts by double or reinforced insulation.		P
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.;		N
	the no-load output voltage does not exceed 33 V r.m.s. and the peak does not exceed $33\sqrt{2}$ V.		P
	Compliance is checked by measuring the output voltage when steady conditions are established, the controlgear being connected to rated supply voltage and rated frequency. For the test under load, the controlgear is loaded with a resistance which would give rated output at rated output voltage.		P
	For controlgear with more than one rated supply voltage, the requirement is applicable for each of the rated supply voltages.		N
	Controlgear with a rated output voltage above 25 V shall have insulated terminals.		N



EN 61347-1 & EN 61347-2-13			
Cl.	Requirement – Test	Result	Verdict
9	TERMINALS		P
	The requirements of Clause 8 of IEC 61347-1 apply.		P
10	PROVISIONS FOR PROTECTIVE EARTHING		P
	The requirements of Clause 9 of IEC 61347-1 apply.		P
11(-11)	MOISTURE RESISTANCE AND INSULATION		P
	The requirements of Clause 11 of IEC 61347-1 apply, together with the following additional requirements:	95%RH, 25°C, 48Hrs	P
	For SELV-equivalent controlgear, the insulation between input and output terminals not bonded together shall be adequate.		P
	With double or reinforced insulation, the resistance shall be not less than 4 MΩ.		P
12(-12)	ELECTRIC STRENGTH		P
	The requirements of Clause 12 of IEC 61347-1 apply, together with the following additional requirement:		P
	Insulation conditions of windings of separating transformers in SELV-equivalent control gear shall apply according to 14.3.2 of IEC 60065.		P
13	THERMAL ENDURANCE TEST FOR WINDINGS OF BALLASTS		N
	The requirements of Clause 13 of IEC 61347-1 are not applicable.		N
14	FAULT CONDITIONS		P
	The requirements of Clause 14 of IEC 61347-1 apply, together with the following additional requirements:	See table 14	P
	In the case of controlgear provided with the marking $\nabla$ , the requirements specified in Annex C shall be fulfilled.		N





EN 61347-1 & EN 61347-2-13			
Cl.	Requirement – Test	Result	Verdict
15	TRANSFORMER HEATING		P
	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
	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
	The values of the temperature rise in Table 3 of IEC 60065, second and third column, are based on a maximum ambient temperature of 35 °C. Because the test will be made with the case temperature at t <sub>C</sub> , the relevant ambient temperature shall be measured and the values in Table 3 changed respectively. If these temperature rises are higher than those allowed by the class of the relevant insulating material, the nature of the material is the governing factor. The permissible temperature rises are based on the recommendations in IEC 60085. The materials quoted in Table 3 of IEC 60065 are shown only as examples. If materials other than those listed in IEC 60085 are used, the maximum temperatures shall not exceed those which have proved to be satisfactory.		P
	Tests shall be made under conditions such that the controlgear is brought to t <sub>C</sub> , as reached under normal operation.		P
16	ABNORMAL CONDITIONS		P
	The controlgear shall not impair safety when operated under abnormal conditions. The shortcircuit 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.		P



EN 61347-1 & EN 61347-2-13			
Cl.	Requirement – Test	Result	Verdict
16.1	Controlgear which are of the constant voltage output type	DC12V	P
	Compliance is checked by the following test at any voltage between 90 % and 110 % of the rated supply voltage.		P
	Each of the following conditions shall be applied with the controlgear operating according to the manufacturer.s instructions (including heatsinks, if specified) for 1 h.		P
	a) No LED module is inserted. If the controlgear is designed with multiple output circuits, each pair of corresponding output terminals for connecting a LED module shall be opened.		P
	b) Double the LED modules or equivalent load for which the controlgear is designed, connected in parallel to the output terminals.		P
	c) The output terminals of the controlgear shall be short-circuited. If the controlgear is designed with multiple output circuits, each pair of corresponding output terminals for connecting a LED module shall be short-circuited in turn.		P
16.2	Controlgear which are of the constant current output type		N
	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
	Each of the following conditions shall be applied with the controlgear operating according to the manufacturer.s instructions (including heatsinks, if specified) for 1 h.		N
	a) No LED modules are connected. If the controlgear is designed with multiple output circuits, each pair of corresponding output terminals for connecting a LED module shall be opened in turn and then all opened simultaneously.		N
	b) Double the LED modules or equivalent load for which the controlgear is designed,		N



EN 61347-1 & EN 61347-2-13			
Cl.	Requirement – Test	Result	Verdict
	connected in series to the output terminals.		
	c) The output terminals of the controlgear shall be short-circuited.  If the controlgear is designed with multiple output circuits, each pair of corresponding output terminals for connecting a LED module shall be short-circuited in turn.		N
17(-15)	CONSTRUCTION		P
	The requirements of Clause 15 of IEC 61347-1 apply, together with the following additional requirement.		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.	No socket-outlets	N
	Compliance is checked by inspection and by manual test.		N
18(-16)	CREEPAGE DISTANCES AND CLEARANCES		P
	Unless otherwise specified in Clause 14, the requirements of clause 16 of IEC 61347-1 apply.		P
19	SCREWS, CURRENT-CARRYING PARTS AND CONNECTIONS		P
	The requirements of Clause 17 of IEC 61347-1 apply.		P
20(-18)	RESISTANCE TO HEAT, FIRE AND TRACKING		P
	The requirements of Clause 18 of IEC 61347-1 apply.		P
21	RESISTANCE TO CORROSION		P
	The requirements of Clause 19 of IEC 61347-1 apply.		P



EN 61347-1 & EN 61347-2-13			
Clause	Requirement - Test	Result - Remark	Verdict
ANNEX A	TEST TO ESTABLISH WHETHER A CONDUCTIVE PART IS A LIVE PART WHICH MAY CAUSE AN ELECTRIC SHOCK		P
	The requirements of annex A of IEC 61347-1 apply.		P
Annex B	PARTICULAR REQUIREMENTS FOR THERMALLY PROTECTED LAMP CONTROLGEAR		N
	The requirements of Annex B of IEC 61347-1 are not applicable.		N
Annex C	PARTICULAR REQUIREMENTS FOR ELECTRONIC LAMP CONTROLGEAR WITH MEANS OF PROTECTION AGAINST OVERHEATING		P
	The requirements of Annex C of IEC 61347-1 apply.		P
Annex D	REQUIREMENTS FOR CARRYING OUT THE HEATING TESTS OF THERMALLY PROTECTED LAMP CONTROLGEAR		P
	The requirements of Annex D of IEC 61347-1 apply.		P
Annex E	USE OF CONSTANT S OTHER THAN 4 500 IN TW TESTS		N
	The requirements of Annex E of IEC 61347-1 apply only for windings of 50 Hz/60 Hz.		N
Annex F	DRAUGHT-PROOF ENCLOSURE		P
	The requirements of Annex F of IEC 61347-1 apply.		P
Annex G	EXPLANATION OF THE DERIVATION OF THE VALUES OF PULSE VOLTAGES		N
	The requirements of Annex G of IEC 61347-1 are not applicable.		N
Annex H	TESTS		P
	The requirements of Annex H of IEC 61347-1 apply.		P



EN 61347-1 & EN 61347-2-13			
Clause	Requirement - Test		Verdict
Annex I	GENERAL (BUILDING IN CONTROLGEAR)		N
	This annex applies to independent controlgear for use as SELV supply for class III luminaires of 25 A maximum.		N
I.3.1	According to their protection against electric shock		P
	- class I controlgear		P
	- class II controlgear.		N
I.3.2	According to the short-circuit or open circuit protection or protection against abnormal use		P
	a) non-inherently short circuit proof controlgear;		N
	b) non-inherently open circuit proof controlgear;		N
	c) inherently short circuit proof controlgear;		P
	d) inherently open circuit proof controlgear;		P
	e) fail-safe controlgear;		P
	f) non-short-circuit proof controlgear;		N
	g) non-open-circuit proof controlgear.		N
	Tests for controlgear, classified according to b), d) and g) shall be carried out like the tests for controlgear, classified according to a), c) and f), but with the condition of "no load".		P
I.5	PROTECTION AGAINST ELECTRIC SHOCK		P
	Compliance is checked by inspection.		P
I.6	HEATING		P
I.6.1	Controlgear and their supports shall not attain excessive temperature in normal use.		P
I.6.3	Tests		P
	When applicable (see I.6.1), the active parts of the controlgear (magnetic core and windings) are subjected to the following cycling test, each cycle consisting of a heat run, a moisture treatment and a vibration test. Measurements are made after each cycle.  The number of specimens shall be as indicated in Clause 5 (three additional specimens). The		P



EN 61347-1 & EN 61347-2-13			
Clause	Requirement - Test	Result - Remark	Verdict
	specimens shall be subjected to 10 test cycles.		
I.6.3.2	Moisture treatment		P
	The specimens are submitted for two days (48 h) to a moisture treatment according to Clause 11 of IEC 61347-1.		P
I.6.3.3	Vibration test		P
	With the axis of the windings vertical, the specimens are submitted for 1 h to a vibration test, exerting a maximum acceleration of 1,5 g at rated supply frequency.		P
I.7	SHORT-CIRCUIT AND OVERLOAD PROTECTION		P
I.7.2	Inherently short-circuit proof controlgear are tested by short-circuiting the output windings until steady-state conditions are reached.		P
I.7.3	Non-inherently short-circuit proof controlgear are tested as indicated in I.7.3.1 to I.7.3.5.		P
I.8	INSULATION RESISTANCE AND STRENGTH		P
I.8.1	The insulation resistance and the strength of controlgear shall be adequate.		P
I.8.2	Insulation resistance		P
I.8.3	Electric strength		P
I.9	CONSTRUCTION		P
I.9	Components		N
I.10.1	Socket-outlets in the output circuit shall not accept plugs complying with IEC 60083 and IEC 60906-1, 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 60906-1.		N
	Compliance is checked by inspection and by manual test.		N
I.11	Creepage distance and clearances		P



Annex 1	Critical components				P
object/part No.	manufacturer/ trademark	type/model	technical data	standard	mark(s) of conformity
electrolytic capacitor	Various	Various	180UF/400V; 450V $\pm$ 20%105 $^{\circ}$ C; $\Phi$ 18X40mm	--	Tested with appliance
electrolytic capacitor	Various	Various	47uF/50V; $\pm$ 20%105 $^{\circ}$ C $\Phi$ 6.3*12mmLOWESR	--	Tested with appliance
electrolytic capacitor	Various	Various	1500UF/16V; $\pm$ 20%; 10*20mmLOWSER	--	Tested with appliance
electrolytic capacitor	Various	Various	1000uF/16V;10*16mm ; 105 $^{\circ}$ C;LOWESR	--	Tested with appliance
X-capacitors	Various	Various	334/275V;P=15mm; 18*14.6*8	--	VDE
X-capacitors	Various	Various	224/275V;P=15mm; 18*12*6	--	VDE
Y-capacitors	Various	Various	222M/400V;P=10MM	--	VDE
Y-capacitors	Various	Various	103K/2KV, P=5MM	--	VDE
IC	Various	Various	LD7575;SOP-8	--	Tested with appliance
IC	Various	Various	431;AN-A40V; $\pm$ 0.4%; SOT-23	--	Tested with appliance
Optocoupler	Various	817C	DIP-4P	--	VDE
MOS tube	Various	TSF12N65	12A/650V, TO-220F	--	Tested with appliance
Transformer	Various	PQ3520		--	Tested with appliance
Fuse	Various	Various	T5A/250V	--	VDE
PCB	Various	Various	PS150W VER4.1 150*94.4*1.6MM	--	UL
Termial block	Various	Various	450V	--	CE



EN 61347-1 & EN 61347-2-13			
Clause	Requirement - Test	Result - Remark	Verdict

Table 7.2	Durability of marking test			P
Location	Checked by	Time	Result	
External enclosure	Water	15s	No any curling and still legibility	
External enclosure	Petroleum spirit	15s	No any curling and still legibility	

Table 11	Humidity test				P
Test condition:		Temperature	Relative Humidity	Duration	Breakdown (Y/N)
		25°C	93%	48 hours	N
Test points		Measured insulation			Limited insulation
Between	To				
L	N	>100MΩ			2MΩ
Input	Output	>100MΩ			4MΩ
Live parts	Enclosure	>100MΩ			4MΩ

Table 12	Electric strength			P
Test points		Test voltage	Results	
Between	To			
Input	Output	3710Vac	No breakdown	
Line	Neutral	1480Vac	No breakdown	
Live parts	Enclosure	3710Vac	No breakdown	

Table 14	Tests of fault conditions			P
Part	Simulated fault	Test result		Hazard
X cap	S-C	F1 opened immediately		No
C1	S-C	Unit shut down, No damaged. No hazards.		No
Y cap	S-C	Normal working		No
D6	S-C	Unit shut down, No damaged. No hazards.		No
T1 8-9	S-C	Unit shut down, No damaged. No hazards.		No
T1 8-10	S-C	Unit shut down, No damaged. No hazards.		No





EN 61347-1 & EN 61347-2-13						
Clause	Requirement - Test			Result - Remark		Verdict

Table 15	Heating test					P
	test voltage (V) :	90	264			—
maximum temperature T of part/at::		T (°C)				allowed T <sub>max</sub> (°C)
Terminal block		42.3	44.7			125
Fuse		43.2	46.2			110
capacitor		47.7	46.3			125
transformer		60.5	61.2			110
PCB		53.2	55.8			130
Enclosure		42.2	43.3			75
Ambient		25.0	25.0			--

Table 16	Abnormal conditions		P
Fault condition (for output)	Test result		Hazard
No lamp is inserted	Not operate		No
Double the number of lamps	No defect impairing safety		No
Output s-c	No defect impairing safety		No

Table 18	Creepage distances and clearances					
	Minimum distances for 240Va.c. (50/60Hz) sinusoidal voltages					
RMS working voltage (V) not exceeding	50	150	250	500	750	1000
1 minimum distances between live parts of different polarity. Specify the value measured.	--	--	X	--	--	--
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 ≥ 600	0,6	1,4	1,7	3	4	5,5
- required creepage distances (mm), insulation PTI < 600	1,2	1,6	<b>2,5</b>	5	8	10
Between two terminals of fuse link: 2.7mm						
Between different polarity of L, N under input terminal: 3.5mm						
- required clearances (mm)	0,2	1,4	<b>1,7</b>	3	4	5,5



EN 61347-1 & EN 61347-2-13								
Clause	Requirement - Test			Result - Remark			Verdict	
Between two terminals of fuse link: 2.7mm								
Between different polarity of L, N under input terminal: 3.5mm								
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	--	--	--	--	--	--	
	- required clearances (mm)	2	3,2	3,6	4,8	6	8	
	Minimum distances for non-sinusoidal pulse voltages							
	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	--	--	--	--	--	--	--

Table 20(18.1)	Ball-pressure tests for thermoplastics			P
	Limited impression diameter (mm)	$\leq 2$ mm		---
Part	Test temperature (°C)		Impression diameter (mm)	
PCB	125		0.71	

Table 20(18.2)	Glow wire test			P
Part	Test temperature (°C)		Result	
PCB	650		Any flame or glowing extinguish within 30s	



## **ANNEX A:**

### **Photo-documentation**



Photo 1 Overview

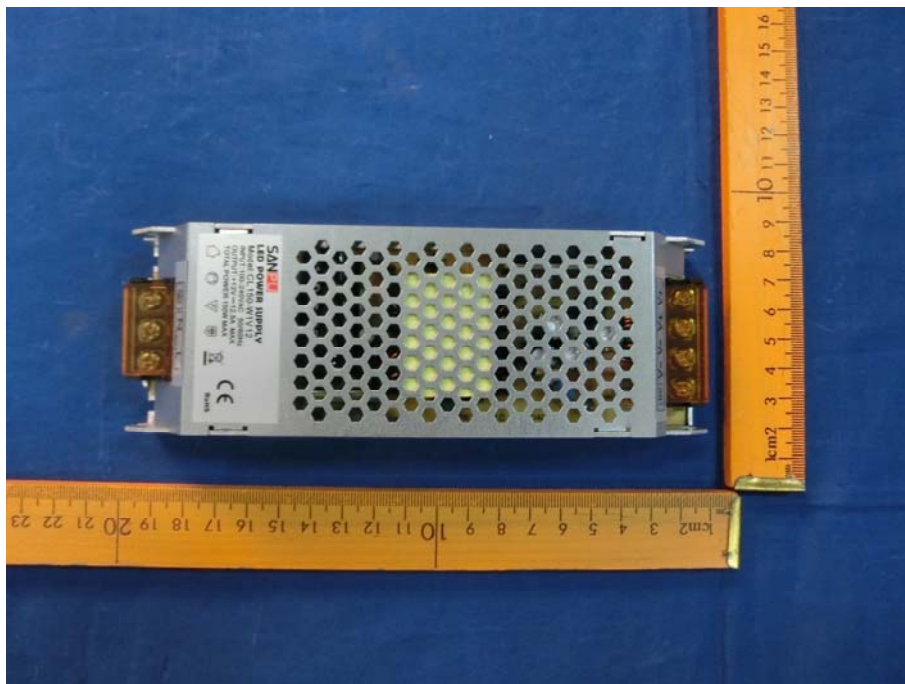


Photo 2 Overview

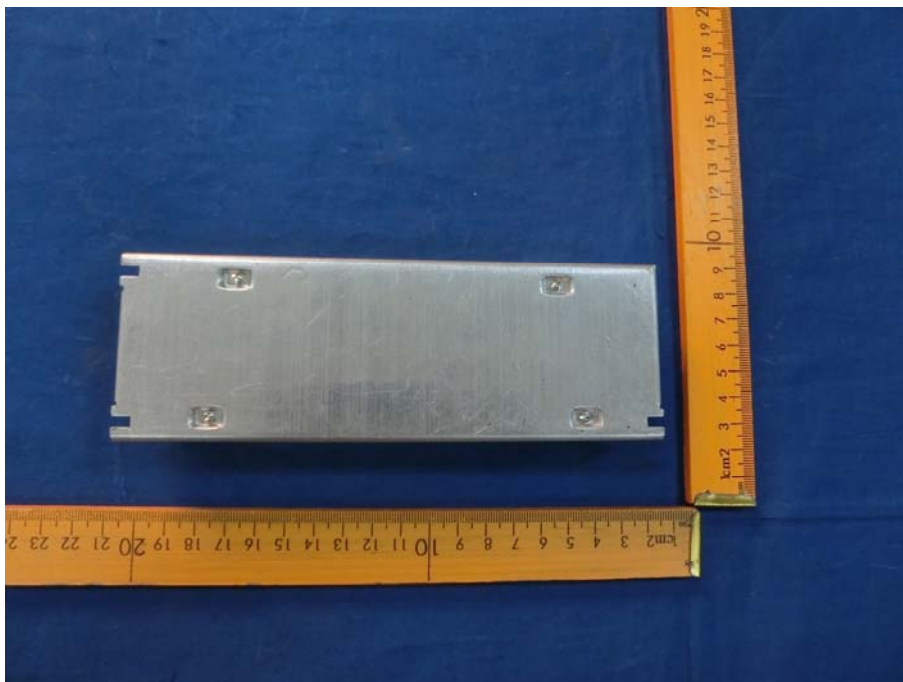
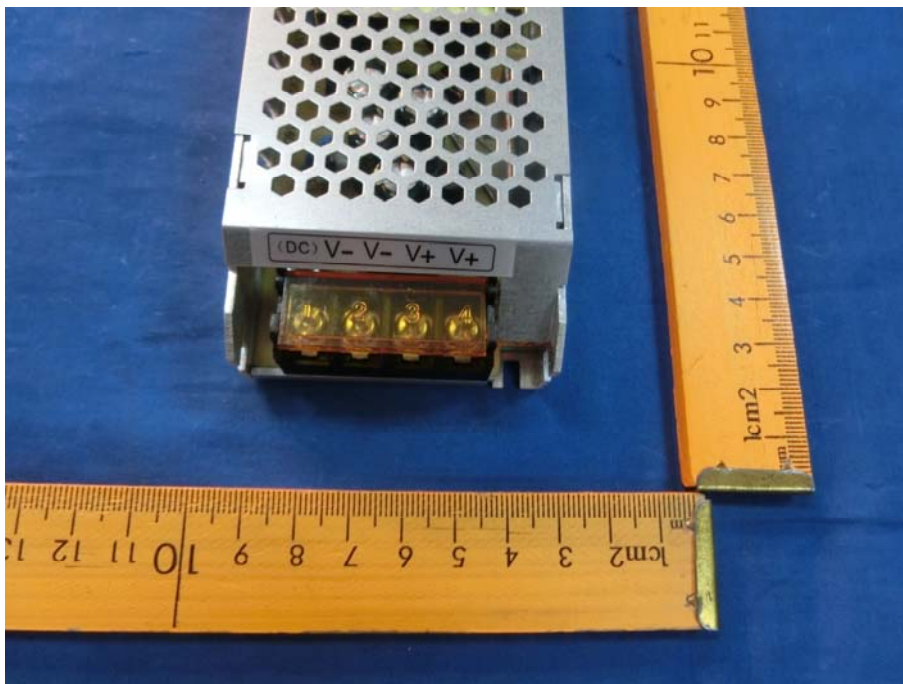




Photo 3 Overview

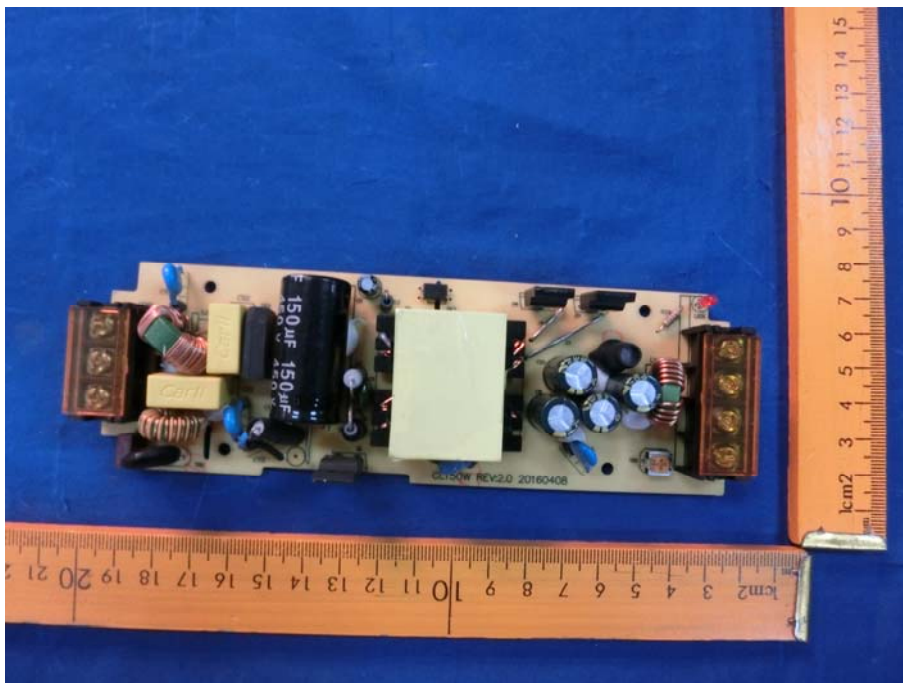


Photo 4 Overview





**Photo 5 Overview**



**Photo 6 Overview**

