

Testing Report

Sample: Street light

Client: R&D Center

Category: Contract Testing

Zopoise Technology (ZhuZhou) Co., Ltd.

Statement

- i. Report without "special seal for testing report" or "official seal of testing lab" is invalid.
- ii. Report without signature of inspector, reviewer, approver is invalid.
- iii. Report modified without signature is invalid.
- iv. Once objection to testing report, it should be within 15 days from the date of receipt of the report.

Once beyond the time limit, there will be not accepted.

- v. Report is only responsible for samples.
- vi. Without permission of the lab, this report shall not be arbitrarily change or part of the reference.
- vii. Right of interpretation is owned by the testing center.

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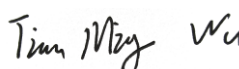
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Testing Report

Sample Name	Street light	Model	ZPS-ZD667-75W ZPS-ZD667-120W ZPS-ZD667-150W ZPS-ZD667-200W
		Logo	/
Client	R&D Center	Testing category	Contract Testing
Manufacturer	Zopoise	Sample Quantity	12 pcs
Deliverer	Chen Jian Xiang	Sample number	ZPS-19121010-01~12
Application date	2019-12-10	Testing date	2019-12-10~2020-03-21
Report category	EMC ☒ Safety ☒ Environment ☒ Optical ☒		
Testing Standard	UL1598-2018; UL8750-2018; LM-79-08; FCC Part 15B; ANSI C62.41.2-2002; GB/T 2423.1-2008; GB/T 2423.2-2008; GB/T 2423.3-2016; GB/T 2423.22-2012; GB/T 24825-2009; GB/T 4857.10-2005; GB/T 4857.5-1992; GB/T 2423.17-2008; GB/T 16422.3-2014; IEEE Std 1789™-2015; Product specification		
Testing Items	Photoelectric performance; Ripple current; Start-up time; Electric strength; Provision for earthing; Suspension loading; Thermal test; IPX6 test; Humidity test; Pull test; Torque tests on screw; Creepage distances and clearances; Conduction emission; Radiated emission; Surge; Low temperature start-up; High temperature operation; Steady damp-heat; Thermal shock; On/off test; Random vibration; Drop test; Salt mist; UV test		
Testing Results	See testing results		
Note	Testing results only responsible for the samples		
Tested by:  Date: 2020-03-24		Reviewed by:  Date: 2020-03-24	
		Approved by:  Date: 2020-03-24	

Test Results

No.	Test item	Test standard	Test conditions	Test results	Verdict
1	Photoelectric performance	LM-79-08	Input: 120V/60Hz	See Annex 1~4	P
2	Ripple current	IEEE Std 1789™-2015	Input: 120V/277V 60Hz Limit: ≤10%	Ripple percent: 09#:4.61% 10#:4.64% 11#:1.96% 12#:5.82% Meet the product specification	P
3	Start-up time	Product specification	Input: 120V 60Hz Limit: ≤1s	Start-up time: 09#:320ms 10#:664ms 11#:552ms 12#:588ms Meet the product specification	P
4	Electric strength	UL 1598-2018	Part: (L/N) to earthing enclosure Test Voltage: 1554Vac /Duration:1min	No flashover and breakdown observed	P
5	Provision for earthing	UL 1598-2018	Part: Between E terminal and earthing Enclosure Test current: 30A Duration: 2min Limit: ≤0.1Ω	09#: 0.040 Ω 10#: 0.090 Ω 11#: 0.030 Ω 12#: 0.040 Ω	P
6	Suspension loading	UL1598-2018	Installation: Slipfitter; Arm; Trunnion Luminaire weight: 5.42 kg Loading weight: 16.26 kg Duration: 1h	No obvious deformation observed, no safety hazard	P
7	Thermal test	UL 1598-2018	Input: 120V/60Hz ta:40℃	See Annex 5~9	P
8	IPX6 test	UL1598-2018	Jet distance: 3.0m Flow rate: 100L/min±5% Duration: 3min After test,Electric strength applied	No water enter the enclosure and can pass the electric strength test	P
9	Humidity test	UL8750-2018	Temperature and Humidity: 32℃88%RH Duration: 168h	No water enter the enclosure and can pass the electric strength test	P

10	Pull test	UL1598-2018	Part: Supply cord Cross-sectional area: 3x1.0mm ² Pull force: 156N Number: 1min Displacement limit: ≤1.6mm	Conductor displacement: 1.0 mm Meet the standard requirements	P
11	Torque tests on screws	UL1598-2018	Part/Torque: 1.2 Nm Tighten and loosen screws and nuts 5 times	After test,no damage observed.	P
12	Creepage distances and clearances	UL1598-2018	LED module:290V Input voltage: 120-277V Limit: (Cr 3mm; Cl 1.5mm)	Live part – metal enclosure Cr: 3.1mm Cl: 3.1mm	P
13	Conduction emission	CISPR 15:2018	Input: 120V/60Hz	Meet the standard requirements See Annex 10	P
14	Radiated emission	CISPR 15:2018	Input:120V/60Hz Frequency Range:30~1000MHz Antenna direction: Horizontal direction and Vertical direction	Meet the standard requirements See Annex 11	P
15	Surge	IEC 61547-2009	Input: 120V/60Hz Test voltage: L-N10kV; L/N-G 10kV Waveform: 1.2/50us	Performance criterion A See Annex 12	P
16	Low temperature start-up	GB/T 2423.1-2008	Temperature: -40℃ Input: 120V/277V 60Hz Cycle setting: on :1min, off :19min Cycle number: 20 次	Sample can be started up normally. After test, the appearance and shape are normal and can keep normal operation.	P
17	High temperature operation	GB/T 2423.2-2008	Temperature: 50℃ Input: 120V 60Hz Duration: 500h	During and after the test, the appearance and shape of the sample are normal and sample keep normal operation	P
18	Steady damp-heat	GB/T 2423.3-2016	Temperature and Humidity: 40℃ 93± 3%RH Input: 120V 60Hz, 6h On, 6h Off	During and after the test, the appearance and shape of the sample are normal and sample keep normal operation.	P
19	Thermal shock	GB/T 2423.22-2012	Temperature: -40℃ 0.5h / 70℃ 0.5h Sample status: No electricity Cycle: 500h	After test, the appearance and shape are normal and can keep normal operation.	P
20	On/off test	GB/T 24823-2017	Input: 120V/60Hz On-Off set: 30s on, 30s off Cycle: 25000	After test, the appearance and shape are normal and can keep normal operation.	P

21	Random vibration	GB/T 4857.23-2012	Frequency range: 10Hz □55Hz□10Hz Amplitude: 0.35mm Scanning rate: 1oct / min Duration: 30min	No damage of the package, normal appearance, sample keep working normally	P
22	Drop test	ISO 2248-1985	Drop Height: 800mm Drop time: 10 times One corner Three edges Six faces Dimensions : 745*360*185mm Package weight: 8.247kg	No breakage to the package The product keep working Normally	P
23	Salt mist	GB/T 2423.17-2008	Test solution: $5 \pm 1\%$ Temperature: $35 \pm 2^{\circ}\text{C}$ PH value: 6.5~7.2 Duration: 240h	No rust observed	P
24	UV test	GB/T 16422.3-2014	Cycle settings: 8 h drying, $60 \pm 3^{\circ}\text{C}$, radiation leakage 4 h condensation, $50 \pm 3^{\circ}\text{C}$, no radiation leakageDuration: 240h	No cracking and yellowing observed	P
25	Vibration test (shock) ZPS-ZD667-150W	GB/T 24827-2015	Installation method: Wall mounting Frequency: 16 Hz Acceleration: 3.0g Duration: 100000 times shock Condition: Normal installation	No cracking and deformation of the bracket observed, no loosening components.	P
26	Vibration test (shock) ZPS-ZD667-200W	GB/T 24827-2015	Installation method: Wall mounting; Pole mounting; Bracket mounting Frequency: 16 Hz Acceleration: 3.0g Duration: 100000 times shock Condition: Normal installation	No cracking and deformation of the bracket observed, no loosening components.	P
Note	/				

Note: “N” —Not applicable; “P” — Pass;
“F” — Failed; “—” — Not need to verdict.

Annex 1 Photoelectric performance

Serial No.	Testing items	Testing data (01#)	Testing data (01#)	Testing data (02#)	Testing data (02#)	Requirement	Verdict
1	Input voltage (V)	120	277	120	277	AC 120-277	—
2	Input current (A)	0.624	0.288	0.628	0.297	—	—
3	Power (W)	74.8	72.9	74.9	73.2	75W $\pm$ 10%	P
4	Power Factor	0.997	0.910	0.910	0.888	Regular Edition $\geq$ 0.9 Light control plate $\geq$ 0.7	P
5	Flux (lm)	10906	10913	10806	10819	10000lm (-10%)	P
6	Lumens (lm/W)	145.88	148.75	144.18	147.81	$\geq$ 126	P
7	CCT (K)	5006	5008	3859	3861	3985 $\pm$ 275 5028 $\pm$ 275	P
8	CRI	73.0	73.0	73.1	73.1	$\geq$ 70	P
9	SDCM	0.8	0.8	2.8	2.8	$\leq$ 5	P
Note	01# Regular Edition; 02# With NEMA light sensor						

Note: “N” —Not applicable; “P” — Pass;
“F” — Failed; “—” — Not need to verdict.

Annex 2 Photoelectric performance

Serial No.	Testing items	Testing data (03#)	Testing data (03#)	Testing data (04#)	Testing data (04#)	Requirement	Verdict
1	Input voltage (V)	120	277	120	277	AC 120-277	—
2	Input current (A)	0.993	0.450	1.012	0.509	—	—
3	Power (W)	118.4	114.9	120.1	118.7	120W $\pm$ 10%	P
4	Power Factor	0.997	0.921	0.993	0.840	Regular Edition $\geq$ 0.9 Light control plate $\geq$ 0.7	P
5	Flux (lm)	16976	17041	16713	17254	15000lm (-10%)	P
6	Lumens (lm/W)	143.42	148.34	139.12	145.39	$\geq$ 126	P
7	CCT (K)	5040	5046	3864	3867	3985 $\pm$ 275 5028 $\pm$ 275	P
8	CRI	73.3	73.4	73.2	73.2	$\geq$ 70	P
9	SDCM	0.8	0.9	2.7	2.3	$\leq$ 5	P
Note	03# Regular Edition; 04# With NEMA light sensor						

Note: “N” —Not applicable; “P” — Pass;
“F” — Failed; “—” — Not need to verdict.

Annex 3 Photoelectric performance

Serial No.	Testing items	Testing data (05#)	Testing data (05#)	Testing data (06#)	Testing data (06#)	Requirement	Verdict
1	Input voltage (V)	120	277	120	277	AC 120-277	—
2	Input current (A)	1.229	0.541	1.262	0.601	—	—
3	Power (W)	146.5	141.4	150.0	146.6	150W $\pm$ 10% 200W $\pm$ 10%	P
4	Power Factor	0.998	0.942	0.995	0.879	Regular Edition $\geq$ 0.9 Light control plate $\geq$ 0.7	P
5	Flux (lm)	20357	20358	20674	21080	20000lm (-10%)	P
6	Lumens (lm/W)	138.95	144.01	137.87	143.8	>126	P
7	CCT (K)	5075	5077	3865	3868	3985 $\pm$ 275 5028 $\pm$ 275	P
8	CRI	73.8	73.9	73.2	73.2	$\geq$ 70	P
9	SDCM	1.3	1.4	2.7	2.3	<5	P
Note	05# Regular Edition; 06# With NEMA light sensor						

Note: “N” —Not applicable; “P” — Pass;
“F” — Failed; “—” — Not need to verdict.

Annex 4 Photoelectric performance

Serial No.	Testing items	Testing data (07#)	Testing data (07#)	Testing data (08#)	Testing data (08#)	Requirement	Verdict
1	Input voltage (V)	120	277	120	277	AC 120-277	—
2	Input current (A)	1.623	0.722	1.708	0.800	—	—
3	Power (W)	193.0	189.0	202.6	200.7	200W $\pm$ 10%	P
4	Power Factor	0.998	0.944	0.996	0.905	Regular Edition $\geq$ 0.9 Light control plate $\geq$ 0.7	P
5	Flux (lm)	27398	27491	28395	29268	26000lm (-10%)	P
6	Lumens (lm/W)	141.93	145.44	140.16	145.81	$\geq$ 126	P
7	CCT (K)	5030	5035	3847	3858	3985 $\pm$ 275 5028 $\pm$ 275	P
8	CRI	73.4	73.5	73.1	73.3	$\geq$ 70	P
9	SDCM	1	1.1	3.1	2.8	$\leq$ 5	P
Note	07# Regular Edition; 08# With NEMA light sensor						

Note: “N” —Not applicable; “P” — Pass;
“F” — Failed; “—” — Not need to verdict.

Annex 5 Thermal test

	temperature measurements, thermal tests of Section 12					P	
	Type reference	ZPS-ZD667-75W			—		
	Lamp used.....	LED Light source			—		
	Lamp control gear used	LED Driver			—		
	Mounting position of luminaire	As normal use			—		
	Supply wattage (W)	76.3W			—		
	Supply current (A).....	0.636A			—		
	Calculated power factor	0.990			—		
	Table: measured temperatures corrected for ta 40 °C					P	
	- abnormal operating mode.....	—			—		
	- test 1: rated voltage	120V 60Hz			—		
	- test 2: 1,06 times rated voltage or 1,05 times rated wattage	—			—		
	- test 3: Load on wiring to socket-outlet, 1,06 times voltage or 1,05 times wattage	—			—		
	- test 4: 1,1 times rated voltage or 1,05 times rated wattage.....	—			—		
temperature (°C)		Clause 12.4 – normal			Clause 12.5 – abnormal		
of part		test 1	test 2	test 3	Limit	test 4	Limit
LF2		71.3	—	—	125	—	—
BD1		61.8	—	—	125	—	—
CX2		73.3	—	—	105	—	—
C14		71.0	—	—	105	—	—
C117		72.6	—	—	105	—	—
C102		67.2	—	—	105	—	—
LED driver tc		72.4	—	—	90	—	—
C4		71.2	—	—	105	—	—
C1		62.9	—	—	105	—	—
CX4		61.4	—	—	105	—	—
L101		74.0	—	—	125	—	—
LED pin		85.9	—	—	130	—	—
LED driver cavity		66.3	—	—	Ref	—	—
Ambient temperature		40	—	—	Ref	—	—

Annex 6 Thermal test

		temperature measurements, thermal tests of Section 12					P
	Type reference	ZPS-ZD667-120W					—
	Lamp used	LED Light source					—
	Lamp control gear used	LED Driver					—
	Mounting position of luminaire	As normal use					—
	Supply wattage (W)	122.3W					—
	Supply current (A).....	1.024A					—
	Calculated power factor	0.995					—
	Table: measured temperatures corrected for ta 40 °C						P
	- abnormal operating mode.....	—					—
	- test 1: rated voltage	120V 60Hz					—
	- test 2: 1,06 times rated voltage or 1,05 times rated wattage	—					—
	- test 3: Load on wiring to socket-outlet, 1,06 times voltage or 1,05 times wattage	—					—
	- test 4: 1,1 times rated voltage or 1,05 times rated wattage	—					—
temperature (°C)		Clause 12.4 – normal				Clause 12.5 – abnormal	
of part		test 1	test 2	test 3	Limit	test 4	Limit
LED driver tc		63.2	—	—	90	—	—
LED driver output line		54.8	—	—	Ref	—	—
LED driver cavity		52.3	—	—	Ref	—	—
LED pin 1		88.5	—	—	105	—	—
LED pin 2		87.3	—	—	105	—	—
LED pin 3		87.2	—	—	105	—	—
PCB		87.0	—	—	130	—	—
LED pin 4		84.3	—	—	105	—	—
lens		74.8	—	—	Ref	—	—
Ambient temperature		40.0	—	—	Ref	—	—

Annex 7 Thermal test

	temperature measurements, thermal tests of Section 12					P
	Type reference	ZPS-ZD667-120W				—
	Lamp used	LED Light source				—
	Lamp control gear used	LED Driver				—
	Mounting position of luminaire	As normal use				—
	Supply wattage (W)	114.5W				—
	Supply current (A).....	0.466A				—
	Calculated power factor	0.886				—
	Table: measured temperatures corrected for ta 40 °C					P
	- abnormal operating mode.....	—				—
	- test 1: rated voltage	277V 60Hz				—
	- test 2: 1,06 times rated voltage or 1,05 times rated wattage	—				—
	- test 3: Load on wiring to socket-outlet, 1,06 times voltage or 1,05 times wattage	—				—
	- test 4: 1,1 times rated voltage or 1,05 times rated wattage	—				—
temperature (°C)		Clause 12.4 – normal			Clause 12.5 – abnormal	
of part		test 1	test 2	test 3	Limit	
LED driver tc		62.8	—	—	90	test 4Limit
LED driver output line		55.3	—	—	Ref	—
LED driver cavity		52.6	—	—	Ref	—
LED pin 1		89.4	—	—	105	—
LED pin 2		88.0	—	—	105	—
LED pin 3		88.1	—	—	105	—
PCB		85.1	—	—	130	—
LED pin 4		87.9	—	—	105	—
lens		75.1	—	—	Ref	—
Ambient temperature		40.0	—	—	Ref	—

Annex 8 Thermal test

	temperature measurements, thermal tests of Section 12					P
	Type reference	ZPS-ZD667-150W				—
	Lamp used	LED Light source				—
	Lamp control gear used	LED Driver				—
	Mounting position of luminaire	As normal use				—
	Supply wattage (W)	138.2W				—
	Supply current (A).....	1.155A				—
	Calculated power factor	0.997				—
	Table: measured temperatures corrected for ta 40 °C					P
	- abnormal operating mode.....	—				—
	- test 1: rated voltage	120V 60Hz				—
	- test 2: 1,06 times rated voltage or 1,05 times rated wattage	—				—
	- test 3: Load on wiring to socket-outlet, 1,06 times voltage or 1,05 times wattage	—				—
	- test 4: 1,1 times rated voltage or 1,05 times rated wattage	—				—
temperature (°C)		Clause 12.4 – normal			Clause 12.5 – abnormal	
of part	test 1	test 2	test 3	Limit	test 4	Limit
C1	90.5	—	—	105	—	—
C2	101.5	—	—	105	—	—
C4	102.3	—	—	105	—	—
C10	104.2	—	—	105	—	—
C12	91.5	—	—	105	—	—
C15	94.9	—	—	105	—	—
Q105	104.5	—	—	125	—	—
BD1	101.8	—	—	125	—	—
LED driver tc	79.6	—	—	90	—	—
L101	94.0	—	—	125	—	—
LED driver cavity	58.8	—	—	Ref	—	—
D103	108.1	—	—	125	—	—
Q101	104.6	—	—	125	—	—
LED pin	90.8	—	—	105	—	—
Ambient temperature	40.0	—	—	Ref	—	—

Annex 9 Thermal test

		temperature measurements, thermal tests of Section 12				P	
	Type reference	ZPS-ZD667-200W				—	
	Lamp used	LED Light source				—	
	Lamp control gear used	LED Driver				—	
	Mounting position of luminaire	As normal use				—	
	Supply wattage (W)	192.1W				—	
	Supply current (A).....	1.605A				—	
	Calculated power factor	0.997				—	
	Table: measured temperatures corrected for ta 40 °C					P	
	- abnormal operating mode.....	—				—	
	- test 1: rated voltage	120V 60Hz				—	
	- test 2: 1,06 times rated voltage or 1,05 times rated wattage	—				—	
	- test 3: Load on wiring to socket-outlet, 1,06 times voltage or 1,05 times wattage	—				—	
	- test 4: 1,1 times rated voltage or 1,05 times rated wattage	—				—	
temperature (°C)		Clause 12.4 – normal			Clause 12.5 – abnormal		
	of part	test 1	test 2	test 3	Limit	test 4	Limit
	C1	91.3	—	—	105	—	—
	C11	95.9	—	—	105	—	—
	C10	99.1	—	—	105	—	—
	C16	99.2	—	—	105	—	—
	C4	89.6	—	—	105	—	—
	MOS	101.8	—	—	125	—	—
	T101	102.9	—	—	125	—	—
	D103	106.3	—	—	125	—	—
	CY5	84.9	—	—	105	—	—
	C15	78.3	—	—	105	—	—
	LED pin 1	67.7	—	—	105	—	—
	LED pin 2	88.2	—	—	105	—	—
	LED pin 3	94.0	—	—	105	—	—
	LED pin 4	96.9	—	—	105	—	—
	LED driver cavity	75.9	—	—	Ref	—	—
	Ambient temperature	40	—	—	Ref	—	—

Annex 10 Conduction emission**■TEST EQUIPMENT**

Name	Model	Testing range
Receiver	PMM9010/30P	10Hz-3GHz
LISN	L2-16B	9KHz-30MHz

■TEST STANDARD

FCC Part 15B

■TEST CONDITION

Voltage : 120V/AC 60Hz

Temperature: 25.4℃

Humidity : 55%

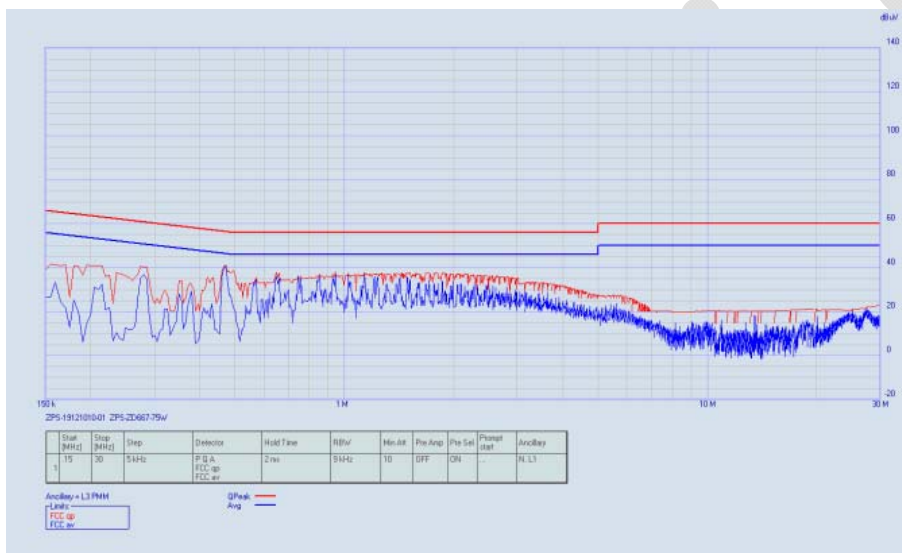
■TEST SETUP

TEST RESULTS

Clause	Items	Technical requirements			Test results
4.3.1	DISTURBANCE VOLTAGES	Frequency range (MHz)	Limit (dBμV)		Pass Details please see below testing data
			QP	AV	
		0.009~0.05	110	*	
		0.05~0.15	90~80	*	
		0.15~0.50	66~56	56~46	
		0.50~5.00	56	46	
		5.00~30.0	60	50	

TEST FIGURE

Model: ZPS-ZD667-75W



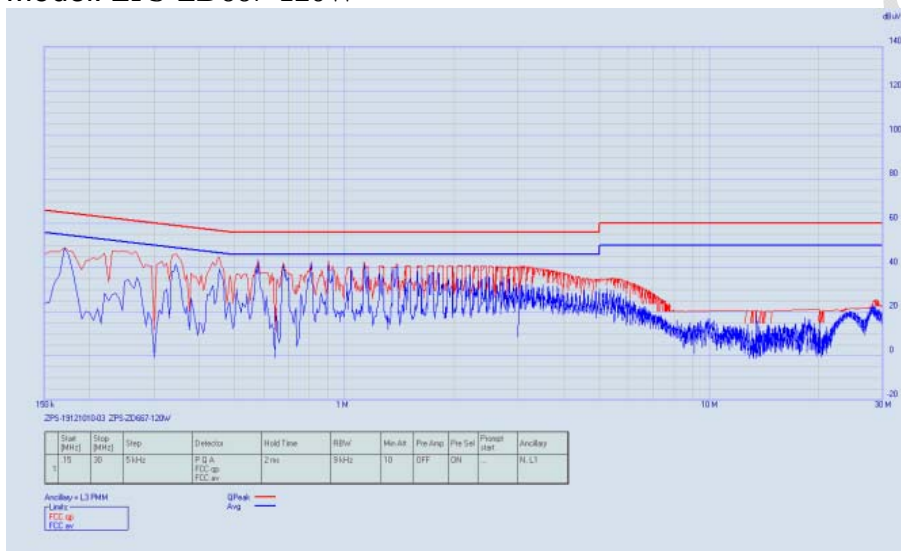
Frequency [MHz]	Peak [dBμV]	Limit FCC qp [dBμV]	Delta QPeak [dB]	Limit FCC av [dBμV]	Delta Avg [dB]
1 .465	43.09	56.60	---	46.60	-6.44
2 .47	44.26	56.51	---	46.51	-5.39
3 .65	45.63	56.00	---	46.00	-9.83
4 .745	42.29	56.00	---	46.00	-9.87
5 .855	40.39	56.00	---	46.00	-9.71
6 .945	41.15	56.00	---	46.00	-8.18
7 1.025	41.86	56.00	---	46.00	-8.97
8 1.135	42.56	56.00	---	46.00	-8.67

TEST RESULTS

Clause	Items	Technical requirements			Test results
4.3.1	DISTURBANCE VOLTAGES	Frequency range (MHz)	Limit (dBμV)		Pass Details please see below testing data
			QP	AV	
		0.009~0.05	110	*	
		0.05~0.15	90~80	*	
		0.15~0.50	66~56	56~46	
		0.50~5.00	56	46	
		5.00~30.0	60	50	

TEST FIGURE

Model: ZPS-ZD667-120W



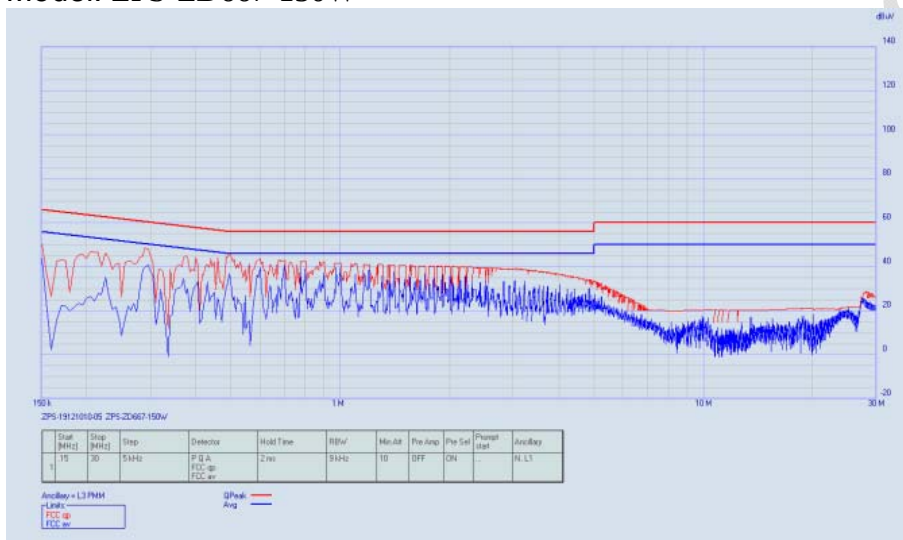
Frequency [MHz]	Peak [dBμV]	Limit FCC qp [dBμV]	Delta QPeak [dB]	Limit FCC av [dBμV]	Delta Avg [dB]
1 .17	53.12	64.96	---	54.96	-6.08
2 .57	45.21	56.00	---	46.00	-6.72
3 .58	45.67	56.00	---	46.00	-2.83
4 .68	44.64	56.00	---	46.00	-4.86
5 .81	44.60	56.00	---	46.00	-3.88
6 .905	46.19	56.00	---	46.00	-3.66
7 .93	46.38	56.00	---	46.00	-6.76
8 1.04	43.16	56.00	---	46.00	-6.86
9 1.045	43.16	56.00	---	46.00	-6.86
10 1.13	46.19	56.00	---	46.00	-4.74
11 1.135	46.39	56.00	---	46.00	-5.02
12 1.39	45.14	56.00	---	46.00	-5.73
13 1.395	45.37	56.00	---	46.00	-5.73

TEST RESULTS

Clause	Items	Technical requirements			Test results
4.3.1	DISTURBANCE VOLTAGES	Frequency range (MHz)	Limit (dBμV)		Pass Details please see below testing data
			QP	AV	
		0.009~0.05	110	*	
		0.05~0.15	90~80	*	
		0.15~0.50	66~56	56~46	
		0.50~5.00	56	46	
		5.00~30.0	60	50	

TEST FIGURE

Model: ZPS-ZD667-150W



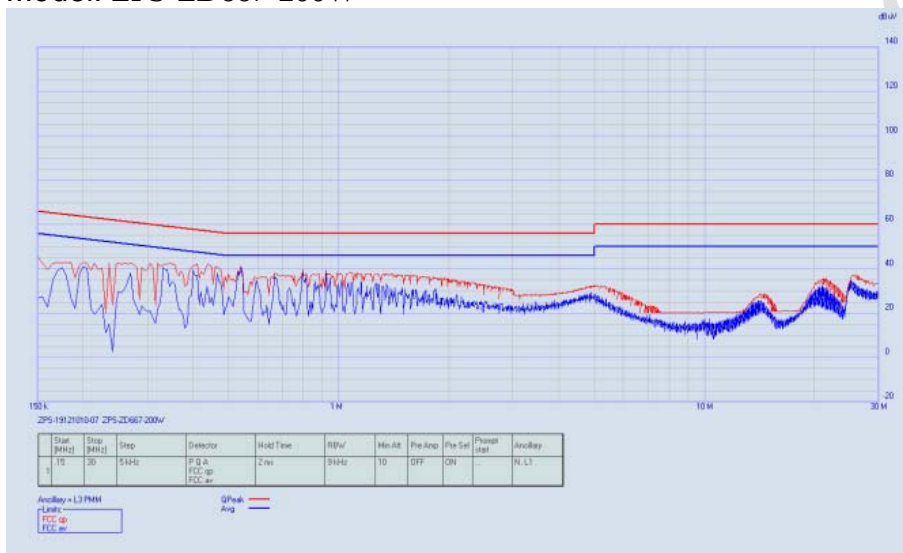
Frequency [MHz]	Peak [dBuV]	Limit FCC qp [dBuV]	Delta QPeak [dB]	Limit FCC av [dBuV]	Delta Avg [dB]
1 .6	43.87	56.00	---	46.00	-6.39
2 .7	45.37	56.00	---	46.00	-5.38
3 .8	46.01	56.00	---	46.00	-6.91
4 .975	45.03	56.00	---	46.00	-6.29
5 1	45.25	56.00	---	46.00	-6.68

TEST RESULTS

Clause	Items	Technical requirements			Test results
4.3.1	DISTURBANCE VOLTAGES	Frequency range (MHz)	Limit (dBμV)		Pass Details please see below testing data
			QP	AV	
		0.009~0.05	110	*	
		0.05~0.15	90~80	*	
		0.15~0.50	66~56	56~46	
		0.50~5.00	56	46	
		5.00~30.0	60	50	

TEST FIGURE

Model: ZPS-ZD667-200W



Frequency [MHz]	Peak [dBuV]	Limit FCC qp [dBuV]	Delta QPeak [dB]	Limit FCC av [dBuV]	Delta Avg [dB]
1 .54	44.22	56.00	---	46.00	-4.94
2 .925	44.29	56.00	---	46.00	-7.00

Annex 11 Radiated emission

■ Testing Equipment

Name	Model	Testing range
Receiver	ESRP3	9Hz-3.6GHz
LISN	NSLK8122	9KHz-30MHz

■ TEST STANDARD

FCC Part 15B

■ TEST CONDITION

Voltage : 120V/AC 60Hz

Temperature: 24.3℃

Humidity : 42 %

■ TEST SETUP

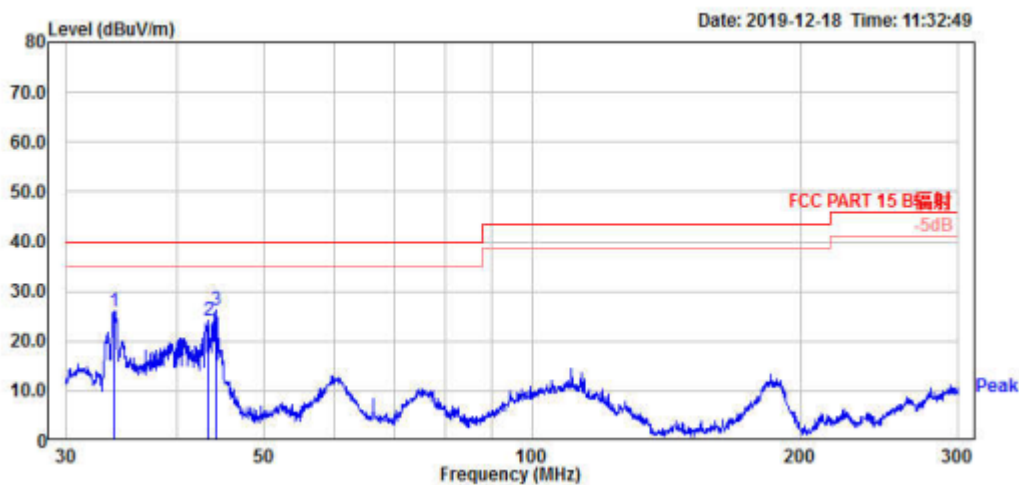


TEST RESULTS

Clause	Items	Technical requirements			Test results	Remarks
4.4.1	radiated emission	The measured values should be within the corresponding limits	Frequency range (MHz)	Quasi-peak Limit /db(uA)	Pass Details please see below testing data	Apply lower resistance at the conversion frequency
			30-230	30		
			230-300	37		

TEST FIGURE

Model: ZPS-ZD667-75W V



Site : Zhuzhou Zopoise Technology Co.,Ltd
Condition: FCC PART 15 B辐射 3m vertical
: DET:Positive
EUT :
Mode : 120V/50HZ
Note : 2019-12-18

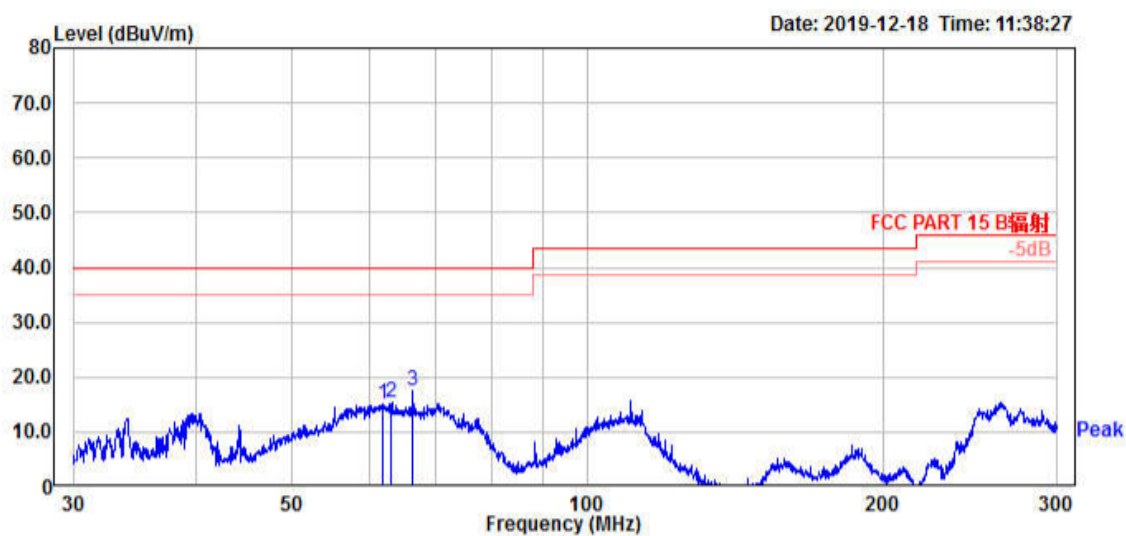
	Ant Freq	Cable Factor	Read Level	Cable Loss	Read Level	Limit Line	Over Limit	Remark	Preamp Factor
	MHz	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB		dB
1	33.972	10.66	1.00	43.75	25.97	40.00	-14.03	Peak	35.00
2	43.363	12.91	1.01	41.75	24.16	40.00	-15.84	Peak	35.00
3	44.169	13.05	1.01	44.42	26.41	40.00	-13.59	Peak	35.00

TEST RESULTS

Clause	Items	Technical requirements			Test results	Remarks
4.4.1	radiated emission	The measured values should be within the corresponding limits	Frequency range (MHz)	Quasi-peak Limit /db(uA)	Pass Details please see below testing data	Apply lower resistance at the conversion frequency
			30-230	30		
			230-300	37		

TEST FIGURE

Model: ZPS-ZD667-75W H



Site : Zhuzhou Zopoise Technology Co.,Ltd
Condition: FCC PART 15 B辐射 3m horizontal
: DET:Positive
EUT :
Mode : 120V/50HZ
Note : 2019-12-18

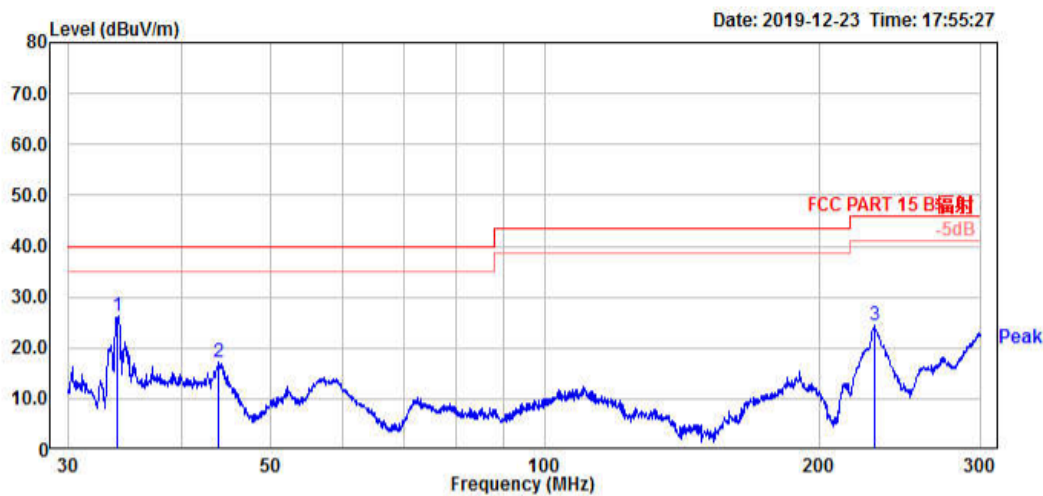
	Ant Freq	Cable Factor	Read Level	Cable Loss	Read Level	Limit Line	Over Limit	Remark	Preamp Factor
	MHz	dB/m	dB	dB	dBuV	dBuV/m	dBuV/m	dB	dB
1	61.801	11.13	1.03	27.51	15.15	40.00	-24.85	Peak	35.00
2	63.092	10.80	1.03	27.77	15.44	40.00	-24.56	Peak	35.00
3	66.364	9.95	1.04	30.29	17.43	40.00	-22.57	Peak	35.00

TEST RESULTS

Clause	Items	Technical requirements			Test results	Remarks
4.4.1	radiated emission	The measured values should be within the corresponding limits	Frequency range (MHz)	Quasi-peak Limit /db(uA)	Pass Details please see below testing data	Apply lower resistance at the conversion frequency
			30-230	30		
			230-300	37		

TEST FIGURE

Model: ZPS-ZD667-120W V



Site : Zhuzhou Zopoise Technology Co.,Ltd
Condition: FCC PART 15 B辐射 3m vertical
: DET:Positive
EUT : ZD667-120W
Mode : 120V/60HZ
Note : 2019-12-23

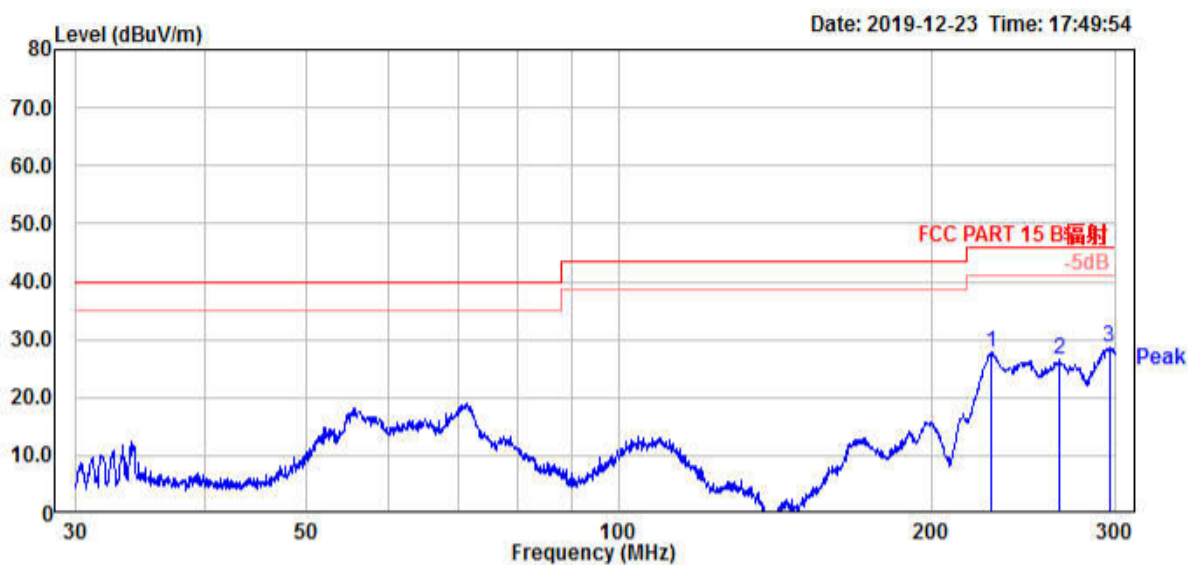
	Ant Freq	Cable Factor	Read Level	Limit Level	Over Limit	Remark	Preamp Factor
	MHz	dB/m	dB	dBuV	dBuV/m	dB	dB
1	34.024	10.66	1.00	44.04	26.26	40.00	-13.74
2	43.860	12.99	1.01	35.16	17.31	40.00	-22.69
3	229.284	11.66	1.21	44.24	24.32	46.00	-21.68

TEST RESULTS

Clause	Items	Technical requirements			Test results	Remarks
4.4.1	radiated emission	The measured values should be within the corresponding limits	Frequency range (MHz)	Quasi-peak Limit /db(uA)	Pass Details please see below testing data	Apply lower resistance at the conversion frequency
			30-230	30		
			230-300	37		

TEST FIGURE

Model: ZPS-ZD667-120W H



Site : Zhuzhou Zopoise Technology Co.,Ltd
 Condition: FCC PART 15 B辐射 3m horizontal
 : DET:Positive
 EUT : ZD667-120W
 Mode : 120V/60HZ
 Note : 2019-12-23

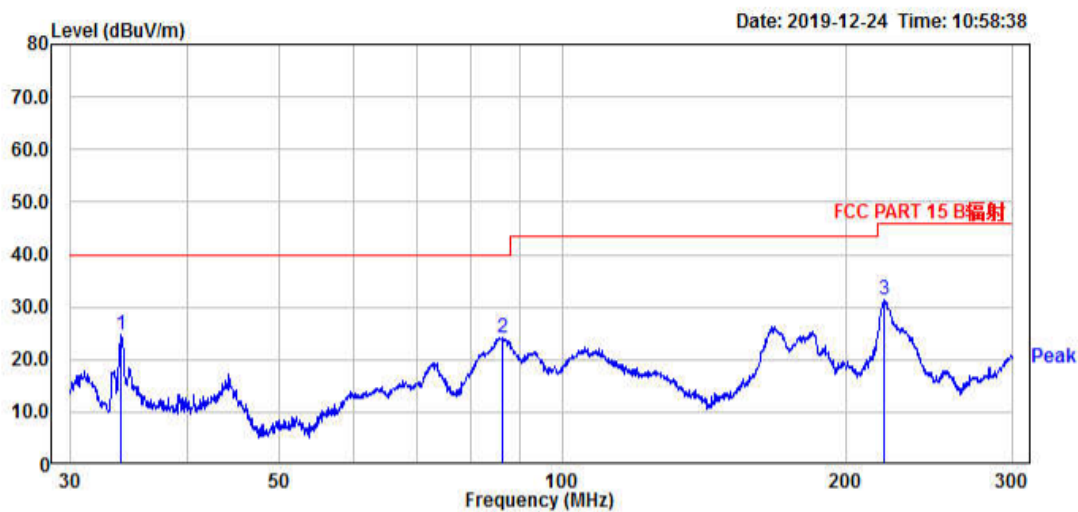
	Ant Freq	Cable Factor	Cable Loss	Read Level	Level	Limit Line	Over Limit	Remark	Preamp Factor
	MHz	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB		dB
1	227.606	11.62	1.20	50.68	27.89	46.00	-18.11	Peak	35.00
2	265.204	12.50	1.24	39.59	26.45	46.00	-19.55	Peak	35.00
3	295.902	13.12	1.27	45.39	28.53	46.00	-17.47	Peak	35.00

TEST RESULTS

Clause	Items	Technical requirements			Test results	Remarks
4.4.1	radiated emission	The measured values should be within the corresponding limits	Frequency range (MHz)	Quasi-peak Limit /db(uA)	Pass Details please see below testing data	Apply lower resistance at the conversion frequency
			30-230	30		
			230-300	37		

TEST FIGURE

Model: ZPS-ZD667-150W V



Site : Zhuzhou Zopoise Technology Co.,Ltd
Condition: FCC PART 15 B辐射 3m vertical
: DET:Positive
EUT : 150W
Mode : 120V/60HZ
Note : 2019-12-24

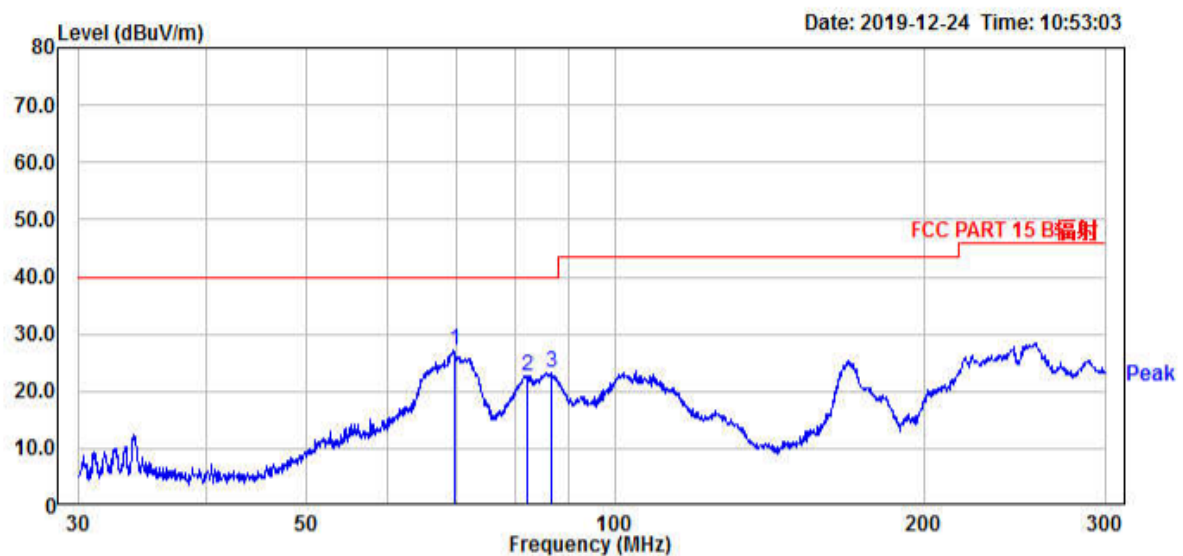
	Ant Freq	Factor	Cable Loss	Read Level	Level	Limit Line	Over Limit	Remark	Preamp Factor
	MHz	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB		dB
1	33.956	10.66	1.00	42.68	24.90	40.00	-15.10	Peak	35.00
2	86.355	8.56	1.06	45.36	24.30	40.00	-15.70	Peak	35.00
3	219.614	11.41	1.20	50.95	31.44	46.00	-14.56	Peak	35.00

TEST RESULTS

Clause	Items	Technical requirements			Test results	Remarks
4.4.1	radiated emission	The measured values should be within the corresponding limits	Frequency range (MHz)	Quasi-peak Limit /db(uA)	Pass Details please see below testing data	Apply lower resistance at the conversion frequency
			30-230	30		
			230-300	37		

TEST FIGURE

Model: ZPS-ZD667-150W H



Site : Zhuzhou Zopoise Technology Co.,Ltd
Condition: FCC PART 15 B辐射 3m horizontal
: DET:Positive
EUT : 150W
Mode : 120V/60HZ
Note : 2019-12-24

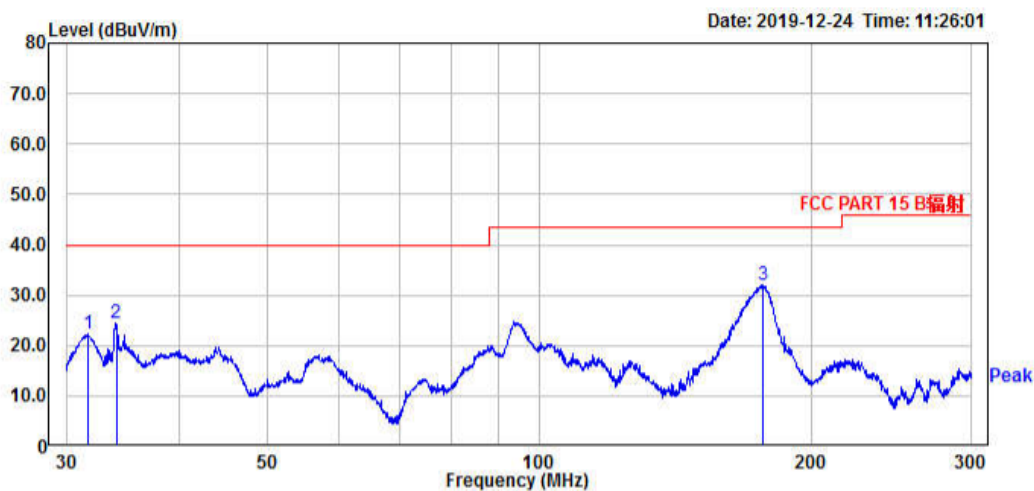
	Ant Freq	Cable Factor	Read Level	Cable Loss	Read Level	Limit Line	Over Limit	Remark	Preamp Factor
	MHz		dB		dBuV	dBuV/m	dB		dB
1	69.660	9.09	1.04	41.21	27.03	40.00	-12.97	Peak	35.00
2	81.970	7.55	1.05	44.65	22.71	40.00	-17.29	Peak	35.00
3	86.539	8.60	1.06	43.46	23.25	40.00	-16.75	Peak	35.00

TEST RESULTS

Clause	Items	Technical requirements			Test results	Remarks
4.4.1	radiated emission	The measured values should be within the corresponding limits	Frequency range (MHz)	Quasi-peak Limit /db(uA)	Pass Details please see below testing data	Apply lower resistance at the conversion frequency
			30-230	30		
			230-300	37		

TEST FIGURE

Model: ZPS-ZD667-200W V



Site : Zhuzhou Zopoise Technology Co.,Ltd
Condition: FCC PART 15 B辐射 3m vertical
: DET:Positive
EUT : 200W
Mode : 120V/60HZ
Note : 2019-12-24

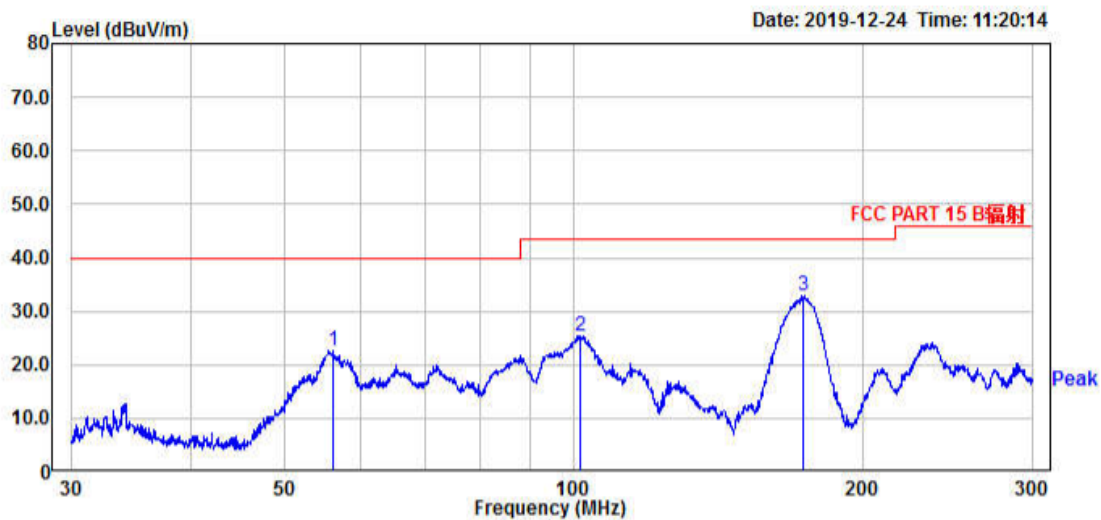
	Ant Freq	Cable Factor	Read Level	Limit Level	Over Limit	Remark	Preamp Factor
	MHz	dB/m	dB	dBuV	dBuV/m	dB	dB
1	31.734	10.57	1.00	40.34	22.23	40.00	-17.77
2	34.035	10.66	1.00	42.08	24.30	40.00	-15.70
3	176.224	8.79	1.15	47.03	31.91	43.50	-11.59

TEST RESULTS

Clause	Items	Technical requirements			Test results	Remarks
4.4.1	radiated emission	The measured values should be within the corresponding limits	Frequency range (MHz)	Quasi-peak Limit /db(uA)	Pass Details please see below testing data	Apply lower resistance at the conversion frequency
			30-230	30		
			230-300	37		

TEST FIGURE

Model: ZPS-ZD667-200W H



Site : Zhuzhou Zopoise Technology Co.,Ltd
Condition: FCC PART 15 B辐射 3m horizontal
: DET:Positive
EUT : 200W
Mode : 120V/60HZ
Note : 2019-12-24

	Ant Freq	Cable Factor	Read Loss	Level	Level	Limit Line	Over Limit	Remark	Preamp Factor
	MHz	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB		dB
1	56.123	12.22	1.03	35.23	22.78	40.00	-17.22	Peak	35.00
2	101.433	10.99	1.07	37.35	25.45	43.50	-18.05	Peak	35.00
3	172.867	8.61	1.15	53.02	32.78	43.50	-10.72	Peak	35.00

Annex 12 Surge

■ TEST SETUP

Name	Model	Testing range
Surge generator	EMS61000-5H	10.0 kV

■ TEST STANDARD

ANSI C62.41.2-2002

■ TEST CONDITION

Voltage : 120V/AC 60Hz

Temperature: 25.5°C

Humidity : 56 %

■ TEST LEVEL AND THE TEST RESULTS

Clause	Characteristic	Testing Level (<25W)
IEC 61547-2009 Cl. 5.5	Testing Wave	1.25/50μs
	Line-Line	4kV
	Line-Ground	6kV
Testing description:	No abnormal observation, conform to the requirements of CRITERION A level.	

■ TEST SETUP



Photo

Model: ZPS-ZD667-75W (Light control plate)

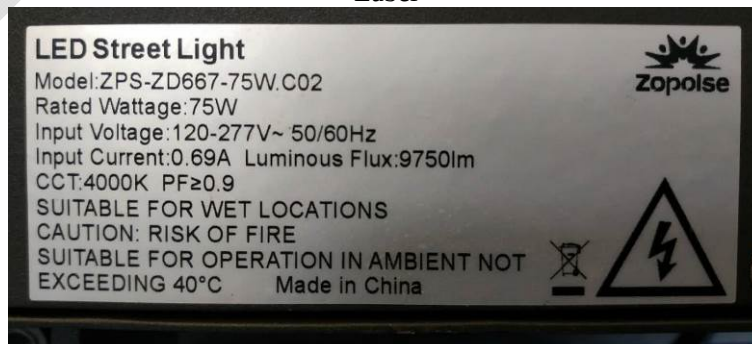
Front view



Back view



Label



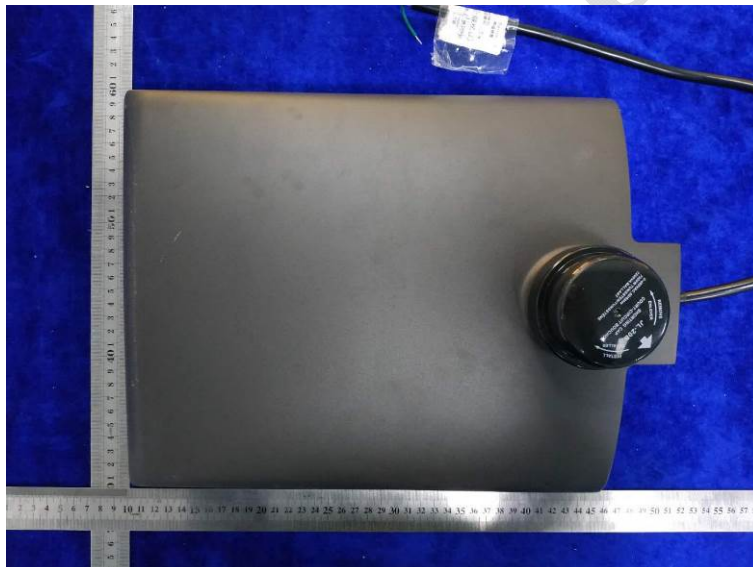
Photo

Model: ZPS-ZD667-120W (Light control plate)

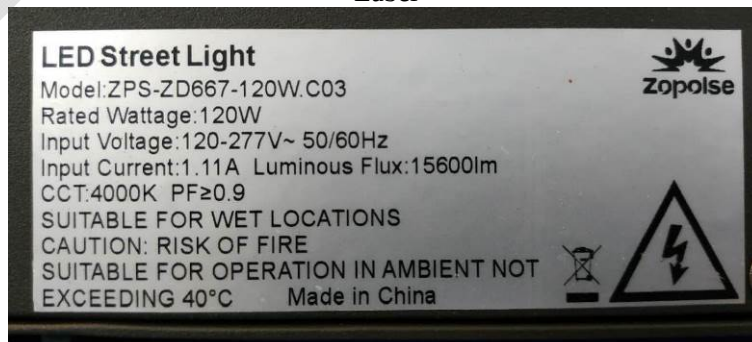
Front view



Back view



Label



Photo

Model: ZPS-ZD667-150W (Light control plate)

Front view



Back view



Label



Photo

Model: ZPS-ZD667-200W (Light control plate)

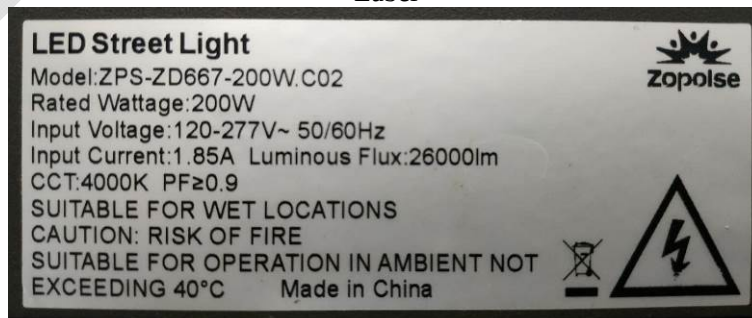
Front view



Back view



Label



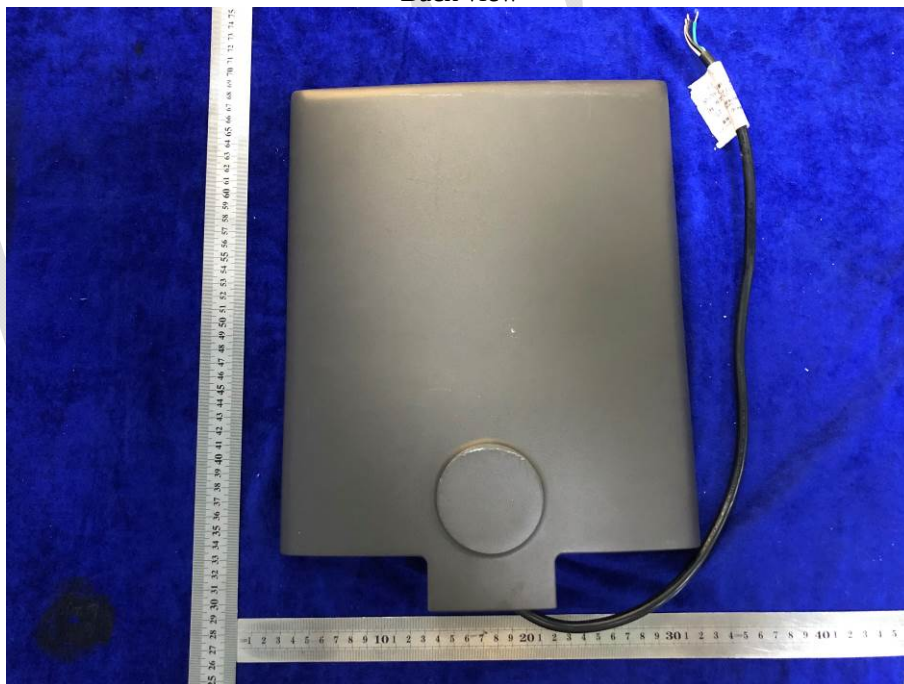
Photos

Regular Edition

Front view

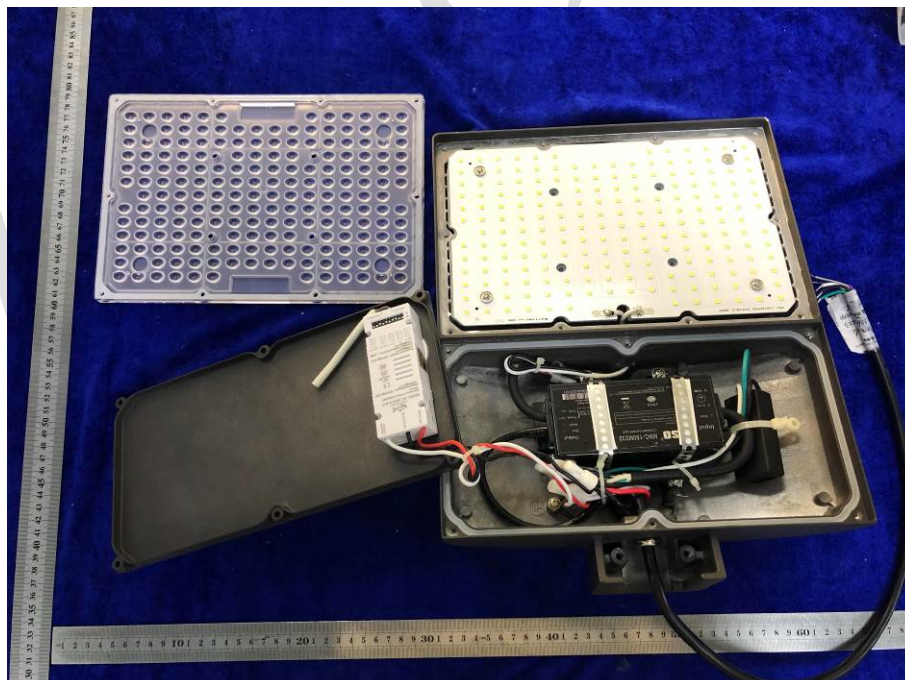
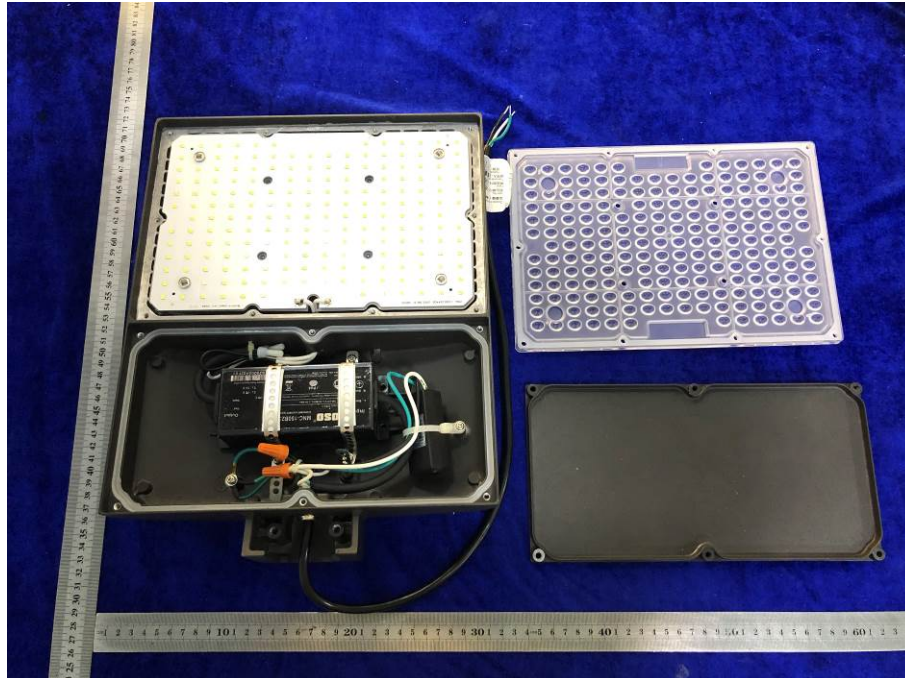


Back view



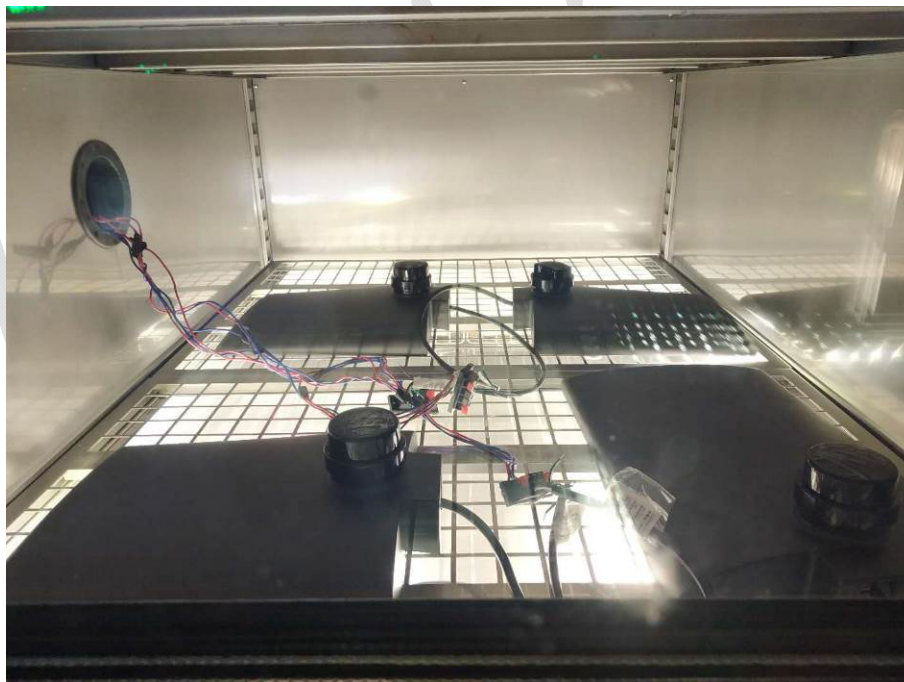
Photos

Internal structure of normal Edition



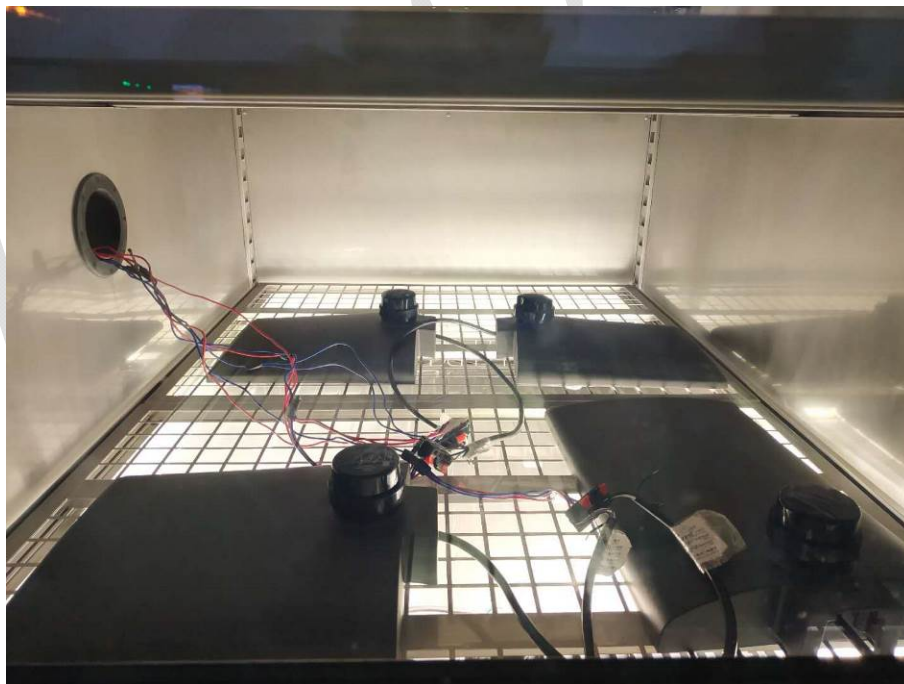
Photos

Low temperature start-up -40°C



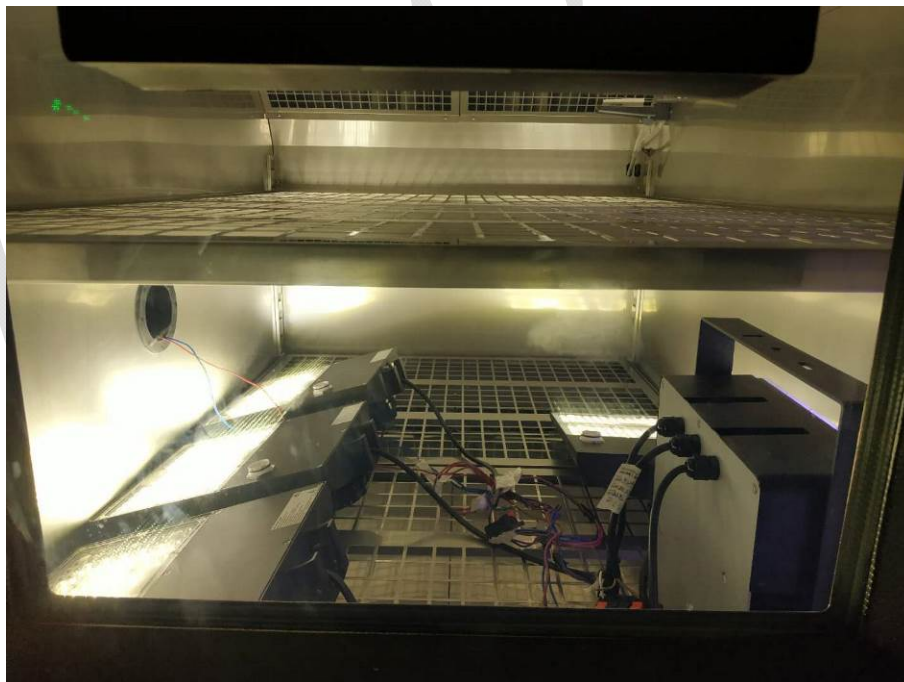
Photos

High temperature operation 50℃



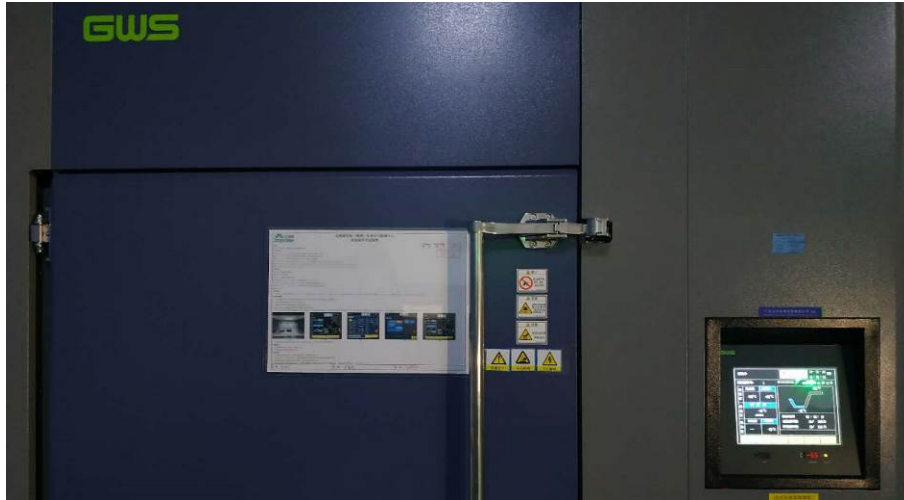
Photos

Steady damp-heat 40°C93%RH (6h On /6h Off)



Photos

Thermal shock -40℃, 0.5h~70℃0.5h

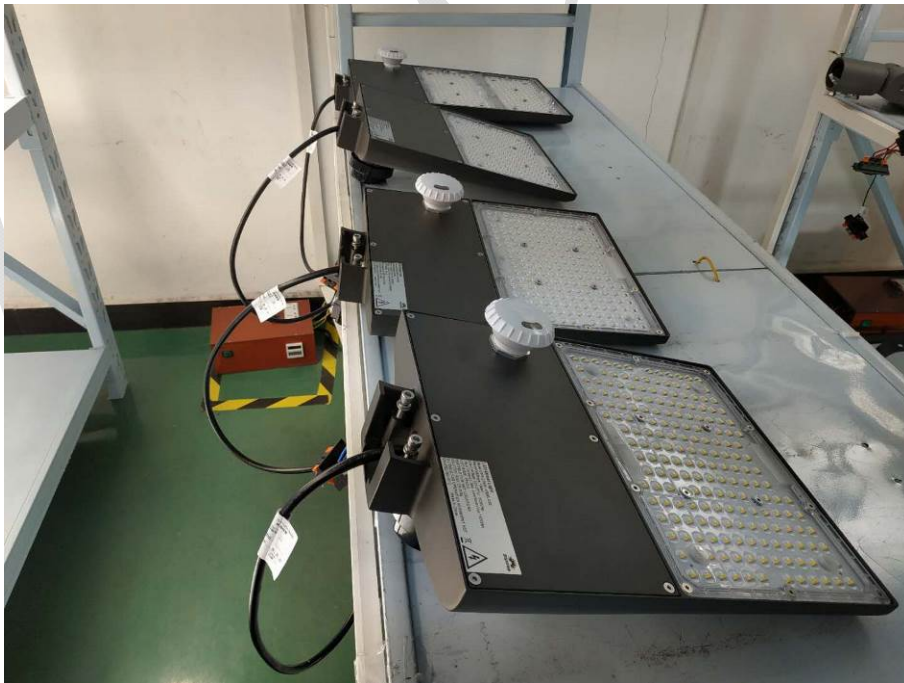


Photos

On/Off test
30s On

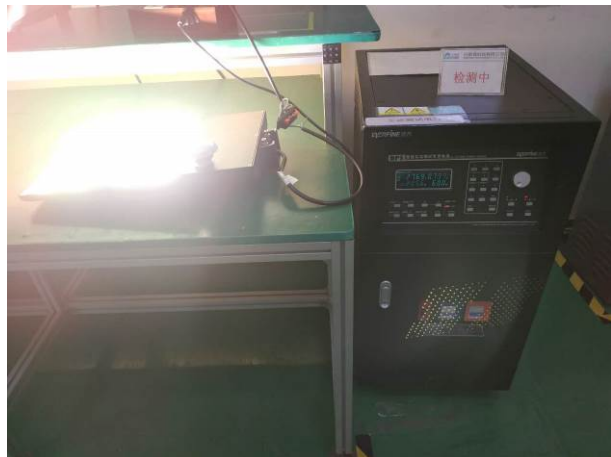
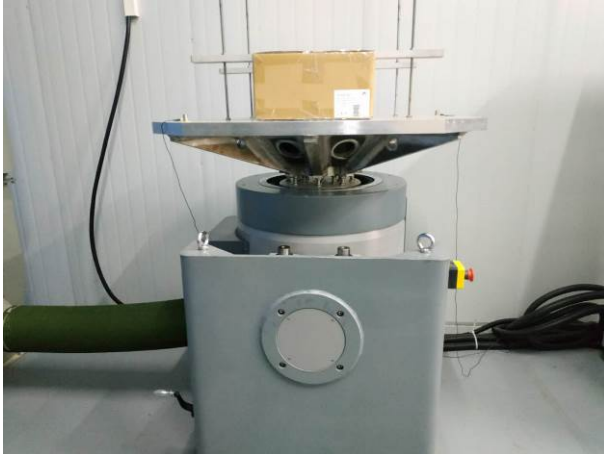


30s Off



Photos

Random vibration

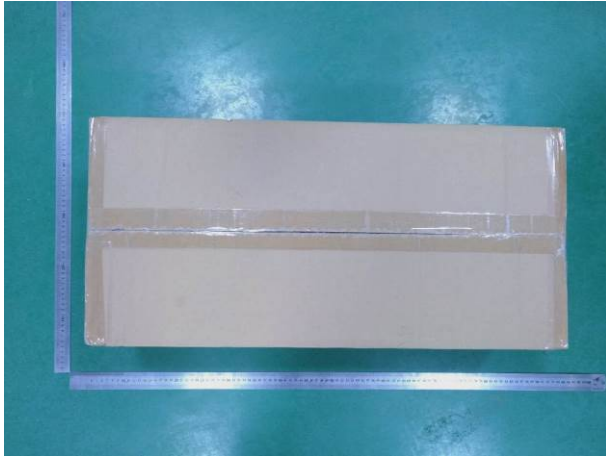


Photos

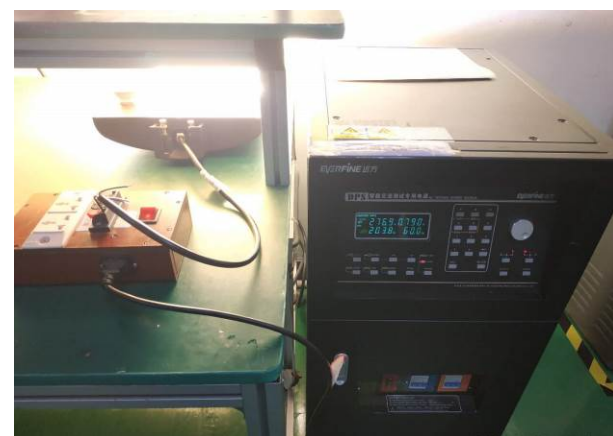
Drop test

Dimensions : 745*360*185mm

Package weight: 8.247kg

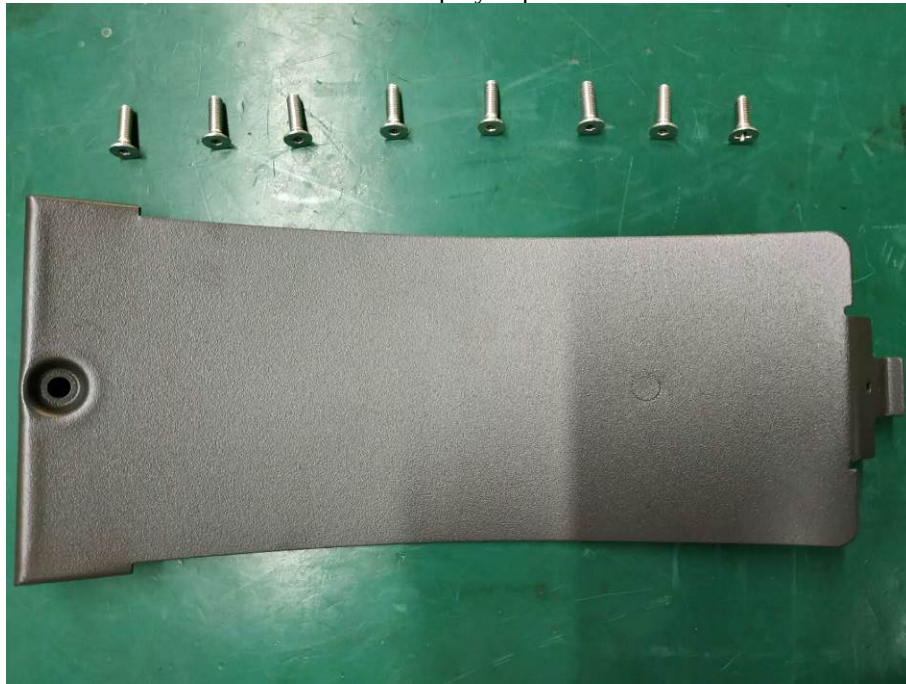


Drop Height: 760mm



Photos

Before salt spray experiment



After salt spray test



Photos

Before UV aging test



After UV aging test



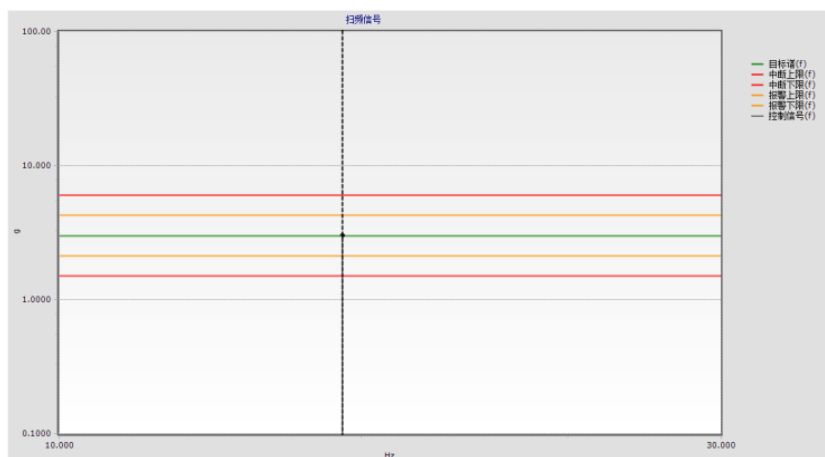
Photos

3G vibration test

ZPS-ZD667-150W



试验窗口图片:



信号窗口 1-扫描信号-1

当前量级	100 %	目标峰值	3 g	控制峰值	3.01033 g
当前频率	16 Hz	扫描率	--	扫描类型	--
总运行时间	03:40:28	当前量级时间	01:45:00	剩余时间	00:00:00
试验扫描数	--	剩余扫描数	--	数据文件保存时间	2020-05-12-14:34:35

Photos

3G vibration test

ZPS-ZD667-200W



试验窗口图片:

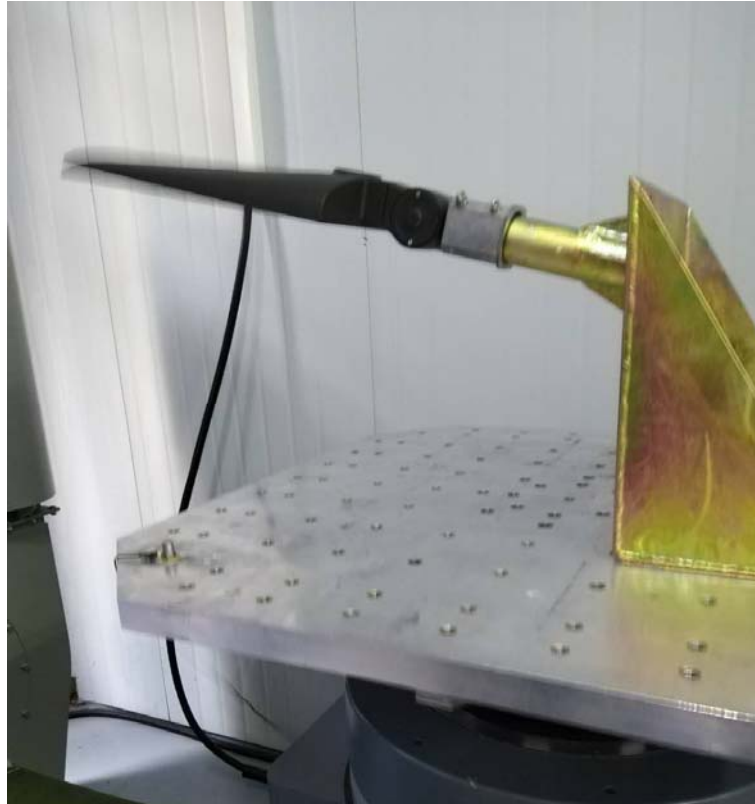


信号窗口 1-扫描信号-1

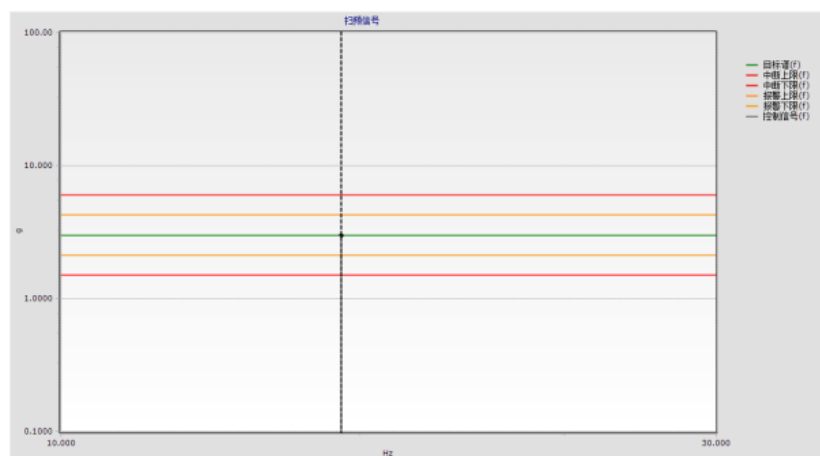
当前量级	100 %	目标峰值	3 g	控制峰值	2.99705 g
当前频率	16 Hz	扫描率	--	扫描类型	--
总运行时间	01:45:34	当前量级时间	01:45:00	剩余时间	00:00:00
试验扫描数	--	剩余扫描数	--	数据文件保存时间	2020-05-12-16:31:42

Photos

3G vibration test



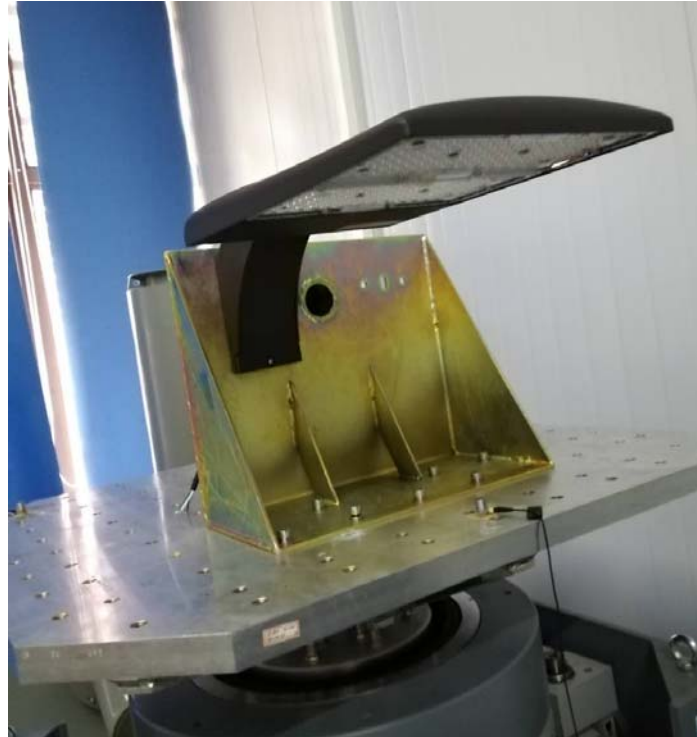
试验窗口图片:



当前量级	100 %	目标峰值	3 g	控制峰值	2.98658 g
当前频率	16 Hz	扫频率	—	扫频类型	—
总运行时间	01:47:12	当前量级时间	01:45:00	剩余时间	00:00:00
试验扫频数	—	剩余扫频数	—	数据文件保存时间	2020-05-13-11:38:30

Photos

3G vibration test



试验窗口图片:



信号窗口 1-扫描信号-1

当前量级	100 %	目标峰值	3 g	控制峰值	2.99975 g
当前频率	16 Hz	扫描率	—	扫描类型	—
总运行时间	01:45:34	当前量级时间	01:45:00	剩余时间	00:00:00
试验扫描数	—	剩余扫描数	—	数据文件保存时间	2020-05-13-17:24:56

Photos

3G vibration test



-----END-----