

失效模式与影响分析 (DFMEA)

RD02-(018) A/0

DFMEA编号
DFMEA number
:

AD-DFMEA-1

Editor:

R&D Department Yang Jiexiang

Date of
preparation
:

2018.9.4

Product
Category:

LED bulb

Design dpartment:

Model name:

page 13

Completion Date:

2018.9.4

Group members:

Quality Department Li Fuzhen 、 Technology Department Liang Shuyong 、 Production Department Wu Yongwei 、 R&D Department Yang Jiexiang

归类	Item/Function 项目/功能要求	Requirment 规格要求	Potential Failure Mode 在失效模式	潜在失效后果	严重性 SEV	等级 CLASS	Potential Causes of Failure 潜在失效原因	发生率 OCC	Current Controls 现行控制方法	检出性 DET	现行检测方法	RPN总分	Actions Recommended 建议措施	责任人 和完成时间	采取的措施	严重性 SEV	发生率 OCC	检出性 DET	RPN 总分
1-1	Driver board / creepage distance pass	Creepage distance (L line fuse resistor to the distance of any one of the live parts of the lamp required $\geq 2.5\text{mm}$, L to reach the metal part of the lamp creepage distance > 5mm)	Drive pcb wiring does not meet the requirements	Causes a safety accident or personal injury, does not meet safety requirements	10	CS	PCB Layout engineers did not pay special attention to wiring	2	Between L and N $\geq 3\text{mm}$, minimum line spacing $\geq 0.5\text{mm}$ According to PCB process design specifications	3	After the circuit board is proofed, it will be made into a whole lamp, sent to the test center, tested with the creepage distance test card, and an internal report.	60	Measured between the L and N of the circuit board produced by the formal die $\geq 3\text{mm}$, the minimum line spacing $\geq 0.5\text{mm}$; in accordance with the PCB process design specifications		Measured between the L and N of the circuit board produced by the official model $\geq 3\text{mm}$, the minimum line spacing $\geq 0.5\text{mm}$; in accordance with the PCB process design specifications; send the test center test and issue a report				
1-4	Driver board / creepage distance pass		The Components on the driver board are too close to the L N line	Causes a safety accident or personal injury, does not meet safety requirements	10	CS	Improper placement of components on PCB layout	/	and N $\geq 3\text{mm}$, minimum line spacing $\geq 0.5\text{mm}$ According to PCB process design specifications	/	After the circuit board is proofed, it will be made into a whole lamp, sent to the test center, tested with the creepage distance test card, and an internal report.	/	Measured between the L and N of the circuit board produced by the formal die $\geq 3\text{mm}$, the minimum line spacing $\geq 0.5\text{mm}$; in accordance with the PCB process design specifications		The circuit board produced by the official die is ensured that the clearance from L to the accessible metal part is >3mm; according to the PCB process design specification; the test center is sent to test the safety and the internal report is released.				

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1-7	Driver board / clearance gap	The clearance between the components of L N meets the requirements (>1.5mm), and the gap between the L and the accessible metal parts of the lamp is >3mm	Component clearance between L N does not meet the requirements (>1.5mm)	Causes a safety accident or personal injury, does not meet safety requirements	10	CS	Improper placement of components on PCB layout	2	According to PCB design specifications	2	1. PCB proofing The engineer uses the vernier caliper to confirm the L N distance. 2. send the test center to test the safety regulations and report the internal report	40	The circuit board produced by the official die is ensured that the component clearance between LN is >5mm; according to the PCB process design specification		实测正式模生产的线路板确保在LN之间的元件电气间隙>5mm; 按照PCB工艺设计规范; 送测试中心测试安规并出具内部报告 The circuit board produced by the official die is ensured that the component clearance between LN is >5mm; according to the PCB process design specification; the test center is sent to test the safety regulations and an internal report is issued.				
1-8	Driver board / clearance gap		L to the metal parts accessible by the lamp clearance > 3mm	Causes a safety accident or personal injury, does not meet safety requirements	10	CS	Improper placement of components on PCB layout	2	According to PCB design specifications	2	1. PCB proofing The engineer uses the vernier caliper to confirm the L N distance. 2. send the test center to test the safety regulations and report the internal report	40	The circuit board produced by the official die is ensured that the clearance from the L to the accessible metal part is >3mm; according to the PCB process design specification		The circuit board produced by the official die is ensured that the clearance from L to the accessible metal part is >3mm; according to the PCB process design specification; the test center is				
1-9	Driver board / fault status pass	Fault state, open short circuit test can not have a clear smoke	Fault status does not meet the requirements	Causes a safety accident or personal injury, does not meet safety requirements	10	CS	1, the lamp cup, lampshade, circuit board and other flame retardant grades are not enough 2. Membrane capacitors, electrolysis and other components are improperly selected	2	1. Reasonably select the material of the lamp cup lamp cover circuit board during the design phase, and confirm the PP before completion.	2	1. Send the test center to test the flame retardant and report the internal report.	40	The material of the lamp cup, the lampshade and the circuit board are all made of materials with a flame retardant rating of V0		Lamps, lampshades and circuit boards are all made of materials with a flame retardant rating of V0				
2-1	Lamp cup / insulation resistance pass	Insulation resistance, the insulation resistance of the 500V DC test input and the contact part of the lamp body in the tide state is >4MΩ,	<4MΩ, there is a risk of leakage	Causes a safety accident or personal injury, does not meet safety requirements	10	CS	1. In the design stage, the design of the lamp cup is not enough for the plastic and metal design. 2. The supplier has poor injection molding and has defects.	2	1. The distance between the metal and the hand-contactable parts is >5.5mm. 2. After the supplier mold is opened, the small batch test flow provides samples to our company for confirmation.	2	1. Send the test center to test the insulation resistance and report it internally.	40	Pumping test during mass production to ensure insulation resistance >4MΩ		Pumping test during mass production to ensure insulation resistance >4MΩ				
2-3	Lamp cup/pass gauge stop gauge contact gauge pass		Gauge not pass	The light is not on, and the light is not in the lamp holder.	10	CS	1. The diameter of the lamp cup at the needle punching part is too large, too small or too long.	2	1. In the design stage, the structural engineer should reasonably design the size of the lamp cup punching part, and the G9 lamp head center distance control 9mm outer control (12.4-13.3mm)	2	1. After the structural engineer's lamp cup mold is opened, the supplier will proof and test, the lamp head is assembled, and the punching needle is confirmed.	40	Perform a sampling test during mass production to ensure that the lamp head meets the gauge requirements		Perform a sampling test during mass production to ensure that the lamp head meets the gauge requirements				

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2-4	Lamp cup / anti-accident electric shock gauge pass	Anti-shock	Anti-accident electric shock rules not pass	Causes a safety accident or personal injury, does not meet safety requirements	10	CS	The diameter of the shoulder of the lamp cup is too small or the length is too short	2	1. In the design stage, the structural engineer should reasonably design the size of the lamp cup. After the mold is opened, the sample is returned. Use the gauge test and confirm it before pp.	2	1. After the structural engineer's lamp cup mold is opened, the supplier will proof it, and the structural engineer will send the test and test center to test the gauge and report it.	40	Pumping test during mass production to ensure the diameter of the shoulder of the lamp cup		Pumping test during mass production to ensure the diameter of the shoulder of the lamp cup				
2-5	Lamp cup / experiment refers to pass		experiment not pass	Causes a safety accident or personal injury, does not meet safety requirements	10	CS	The diameter of the shoulder of the lamp cup is too small or the length is too short	2	1. In the design stage, the structural engineer should reasonably design the size of the lamp cup. After the mold is opened, the sample is returned. Use the gauge test and confirm it before pp.	2	1. After the lamp cup mold is opened, the supplier will proof it, and the structural engineer will send the test center to test the gauge and report it.	40	Pumping test during mass production to ensure the diameter of the shoulder of the lamp cup		Pumping test during mass production to ensure the diameter of the shoulder of the lamp cup				
2-12	Lamp cup, lampshade / pull pass	N/A	Pull (this product is not required)	/	/	/	/	/	/	/	/	/							
2-13	Lamp/axial pull test pass	Axial pressure of the lamp cap (E14 >80N; E27 >120N)	Axial pressure of the lamp head (E14 80N E27 120N)	Causes a safety accident or personal injury, does not meet safety requirements	10	CS	Poor lamp head, metal parts are too soft, wall thickness is too thin	2	Uniform use of Kathy lamp head	2	1. The whole lamp is tested with a pressure gauge	40	Pressure gauge measurement for the entire lamp		Pressure gauge measurement for the entire lamp				
2-15	Lamp cup / heat resistant pass	Heat resistance (plastic parts supporting the live parts 125 ° C, other parts are 85 ° C diameter 5 mm steel ball 20N force 1 hour) indentation ≤ 2mm	Ball pressure not pass	1. It is easy to deform under high temperature and affects the appearance of the product. 2, because the flame retardant level is not up to standard, it may cause a safety accident or cause personal injury, does not meet the safety requirements	10	CS	Material flame retardant grade is not up to standard	2	1. The structural engineer's drawings are issued and tell the supplier what kind of material is used. The material is confirmed by the structural engineer.	2	1. After the structural engineer's lamp cup and lampshade mold are opened, the supplier will proof it, and the structural engineer will send the test and test center to test the ball pressure and report it.	40	Strict control of raw materials using flame retardant grades		Strict control of raw materials using flame retardant grades				
2-16	灯杯/耐热pass Lamp cup / heat resistant pass				10	CS	Design drawings plastic parts are not thick enough	2	1. In the design stage, the structural engineer shall make drawings to meet the requirements of the thickness of the plastic parts. 2. The supplier shall provide the process control documents for the process.	2	1. After the structural engineer's lamp cup and lampshade mold are opened, the supplier will proof it, and the structural engineer will send the test and test center to test the ball pressure and report it.	40	test thickness of the lampshade during mass production		test thickness of the lampshade during mass production				

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3-1	Lamp/head temperature rise pass	Lamp temperature rise (lamp temperature does not change more than 125K)	Lamp head temperature is too high	Causes a safety accident or personal injury, does not meet safety requirements	10	CS	1. The whole lamp temperature is too high in the design stage, and the heat dissipation is poor.	2	1. During the design phase, the engineer performs a thermal test on the whole lamp and reports it.	2	1. During the design phase, the engineer performs a thermal test on the whole lamp and reports it.	40							
3-2	Dimmer compatibility	Compatible with all dimmers required by the specification (no requirement)	/	/	/	/	/	/	/	/	/	#VALUE!							
4-1	Light board / light bio safe pass	By photobiosafety (UV Blue- ray)	UV blue light leakage, causing harm to human body	Causes a safety accident or personal injury, does not meet safety requirements	10	CS	Improper selection of LED particles or failure of LED particles themselves	2	1.The lamp bead engineer informs the request when requesting the sample, and asks for the specification 2. The ESR phase begins to prepare for the certification. The third party tests and the light biosafety report, and the confirmation is completed before the PP.	2	2. The ESR phase begins to prepare for the certification. The third party tests and emits the biosafety report, and the confirmation is completed before the PP.	40							
5-1	Protection level	IP20								/	/	#VALUE!							
6-1	Whole lamp performance / ambient temperature	Application conditions of lamps (temperature -20C to 40C long-term work)	temperature	light is not on	8	CQ	Application environment temperature is too high or too low	2	1, on the packaging, indicate the use of ambient temperature - 20 ~ 45 ° C 2 do double 85 test	4	1, on the packaging, indicate the use of ambient temperature -20 ~ 45 ° C 2 do double 85 test	64	1, on the packaging, indicate the use of ambient temperature - 20 ~ 45 ° C 2 do double 85 test sampling		1, on the packaging, indicate the use of ambient temperature -20 ~ 45 ° C 2 do double 85 test sampling				
6-2	Whole lamp performance / ambient temperature	Application conditions of lamps (humidity 0-90 long- term work)	humidity	light is not on	8	CQ	Application environment humidity is too high	2	1、 1, do double 85 test	4	1, do double 85 test	64	Do double 85 test in the production process		Do double 85 test in the production process				
6-3	Whole lamp performance / rated voltage	Application conditions of the luminaire (voltage 220-240V without early failure)	Voltage	light is not on	8	CQ	Improper use of voltage	2	1. Mark the rated voltage on the package	3	/	48	Indicate the rated voltage on the package and save the sample		Indicate the rated voltage on the package and save the sample				
6-4	Whole lamp current	Current range (none)	/	/	/	/	/	/	/	/	/	#VALUE!							
6-5	Whole lamp performance / luminous flux pass	Luminous flux 470LM (-10% +10%)	Luminous flux is out of range (too high, too low)	Dissatisfaction and complaints flowed into the client	5	CQ	Lamp bead flow failure	2	1. Select the appropriate lamp bead in the design stage, and set the lumen range. 2. Do 10 whole lamp test light color electricity, complete the confirmation before PP.	2	Test the optical color parameters using an integrating sphere	20							

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6-6	Whole lamp performance / luminous flux pass				5	CQ	The light transmittance of the lampshade is unqualified and the light transmittance is too low.	2	1. Select the appropriate lamp cover material and material thickness in the design stage. 2. Test the transmittance and confirm the PP.	2	Use the integrating sphere to test the light color electrical parameters, the same lamp, stable lampshade and no lampshade steady state are tested once, calculate the light	20	Whole lamp sampling during production		Whole lamp sampling during production				
6-7	Whole lamp performance / luminous flux pass				5	CQ	Drive output current is too large or too small	2	1. The design stage reasonably defines the typical value and range of the current according to the lamp bead specification.	3	1. Test the whole lamp input and output performance in the design stage	30	Whole lamp sampling during production		Whole lamp sampling during production				
6-8	Whole lamp performance / luminous flux pass				/	/	The lamp bead is connected in parallel, and the pressure drop difference of each string is more, resulting in a large difference in the luminous flux of each street lamp. (This product is a full string, not applicable)	/	/	/	/	#VALUE!							
6-10	Whole lamp performance / illumination angle pass	illumination angle 310±15°	Illumination angle is not in range	Dissatisfaction and complaints flowed into the client	2	CQ	1. The material of the lampshade 2. The arrangement of the lamp beads in the lampshade	2	1. Select the appropriate lampshade material in the design stage and arrange the lamp beads reasonably. 2. Test verification during ESR.	3	1. Test verification during ESR.	12	Whole lamp sampling during production		Whole lamp sampling during production				
6-12	Whole lamp performance / color temperature pass	Color temperature (3000K/4000K), color coordinate center point (ANSI), color tolerance <6	Color temperature is not in the ANSI requirements (3045 ± 300 3985 ± 400) color tolerance is out of the required range	Dissatisfaction and complaints flowed into the client	6	CQ	1. The specification of the lamp bead is unreasonable. 2. There is a problem with the mixed bin method.	2	1. Define the specification book and the mixing mode in the design stage. 2. Use the integrating sphere to test the optical color parameters.	2	Test the optical color parameters using an integrating sphere	24	Whole lamp sampling during production		Whole lamp sampling during production				
6-13	Whole lamp performance / color rendering index pass	Color rendering index Ra>80	Color rendering index <80	Dissatisfaction and complaints flowed into the client	6	CQ	1, the lamp bead specifications are unreasonable	2	1. Define the specification book in the design stage. 2. Test the optical color parameters using the integrating sphere.	2	Test the optical color parameters using an integrating sphere	24	Whole lamp sampling during production		Whole lamp sampling during production				

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6-14	Whole lamp performance / R9pass	R9>0	R9>0	Dissatisfaction and complaints flowed into the client	6	CQ	1. The specification of the lamp bead is unreasonable. 2. The supplier has poor incoming materials.	2	1. Define the specification book in the design stage. 2. Test the optical color parameters using the integrating sphere.	2	Test the optical color parameters using an integrating sphere	24	Whole lamp sampling during production		Whole lamp sampling during production				
6-16	Whole lamp performance / power factor pass	Power factor (3.8W PF>0.4)	Power factor is unacceptable (requires 3.8W PF>0.4)	Unable to authenticate the product or flow into the client, causing dissatisfaction, complaints, returns	6	CQ	1. The parameter setting in the design stage is unreasonable (the input electrolytic capacity is too large)	2	1. The parameter setting in the design stage is reasonable, so that the power factor steady state is greater than the required 0.03.	2	1. Test the optical color parameters using the integrating sphere	24	Whole lamp sampling during production		Whole lamp sampling during production				
7-1	Driver board / startup time	Start time <0.5s	Startup time is too long	Customer dissatisfied, complain	6	CQ	The chip has a capacitor charging process when working, the capacitance is large, and the charging time is long.	2	Test phase with oscilloscope to test startup off time	2	Test phase with oscilloscope to test startup off time	24	Whole lamp sampling during production		Whole lamp sampling during production				
7-2	Driver board / turn-off time	Shutdown time <0.5s	Turn off time is too long	Customer dissatisfied, complain	6	CQ	Large output capacitor capacity and long discharge time	2	Test phase with oscilloscope to test startup off time	2	Test phase with oscilloscope to test startup off time	24	Whole lamp sampling during production		Whole lamp sampling during production				
7-3	Driver board / input ripple	Input ripple (<30%)	Early failure of electrolysis	light is not on	6	CQ	The input electrolytic capacity is too small	/	The design stage uses an oscilloscope to test the input electrolysis VI mapping ripple current, peak-to- peak/2* average	2	The design stage uses an oscilloscope to test the input electrolysis VI mapping ripple current, peak-to- peak/2* average	#VALUE!							
7-5	DRIVER BOARD	Neon switch turns off the switch and the lamp is completely off, no flashback	After turning off the switch, the light cannot be completely extinguished, and there is a flashback.	Incoming to the client, causing dissatisfaction, complaints, returns	6	CQ	The input terminal is not connected in parallel with a capacitor of appropriate capacity before the rectifier bridge	2	Connect a CBB62 100n 275V capacitor in parallel with the AC side of the PCB	2	In the dark environment, use electronic switch test, visual inspection	24							
7-6	Driver board / output ripple	Output ripple (<30%)	Output ripple >30%	Too much ripple current may cause lamp hole breakdown, affecting lamp life	6	CQ	The capacitance of the output capacitor is too small	2	The design stage uses an oscilloscope to test the output ripple current, peak- to-peak/2* average	2	The design stage uses an oscilloscope to test the output ripple current, peak-to-peak/2* average	24							

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8-1	Whole lamp performance / full lamp length	Whole lamp length (60 ± 1mm)	过长Too long	The whole lamp package cannot be produced. 2. The dissatisfaction with the requirements causes dissatisfaction, complaints, and returns.	6	CQ	There is a gap between the lamp cup and the lamp cover	2	Confirm the match between the lamp cup and the lamp cover during the design phase	2	Measuring with a vernier caliper	24	Whole lamp sampling during production		Whole lamp sampling during production				
8-2	Whole lamp performance / full lamp length	Whole lamp width (19±1mm)	Too wide	The whole lamp package cannot be produced. 2. The dissatisfaction with the requirements causes dissatisfaction, complaints, and returns.	6	CQ	Bad lamp feed	2	After the mold is opened, the structural engineer confirms the size of the lampshade. 2. Measurement using a vernier caliper	2	Measuring with a vernier caliper	24	Whole lamp sampling during production		Whole lamp sampling during production				
8-3	Whole lamp performance / whole lamp weight	Whole lamp weight (10.5g ± 10%)	Weight is not in range	Inconsistent with the packaging, the customs shipment inspection failed	6	CQ	1. The data defined in the design phase is not accurate. 2. Light cup 2. The weight of the lampshade manufacturer is different from the previous test sample.	2	ESR selects the average of 15 total lamp weights, then defines the upper and lower limits. 2. Weighing using electronic scales	2	Weighing using electronic scales	24	Whole lamp sampling during production		Whole lamp sampling during production				
9-1	Driver board / overvoltage	Overvoltage 240V+15%	Whole lamp failure at high voltage	light is not on	6	CQ	When the voltage is high, the input electrolytic withstand voltage is not	2	400V pressure- resistant electrolysis is	2	High temperature 100 ° C high voltage 264V test	24	Whole lamp sampling during production		Whole lamp sampling during production				
10-1	Whole lamp performance / environmental protection	be in line with RoHS	Not in compliance with RoHS	Violation of regulations, can not be shipped, inflow to the client was found to need all returns	9	CQ	the whole lamp material does not comply with RoHS	2	All parts of the whole lamp in the design stage are bom check, test Rohs REACH PVC	2	All parts of the whole lamp in the design stage are bom check, test Rohs REACH PVC	36							
10-2	Whole lamp performance / environmental protection	be in line with REACH	Not in compliance with REACH	Violation of regulations, can not be shipped, inflow to the client was found to need all returns	9	CQ	Part of the whole lamp material does not comply with REACH	2	All parts of the whole lamp in the design stage are bom check, test Rohs REACH PVC	2	All parts of the whole lamp in the design stage are bom check, test Rohs REACH PVC	36							
10-3	Whole lamp performance / environmental protection	be in line with PVC FREE	Not in compliance with PVC FREE	Violation of regulations, can not be shipped, inflow to the client was found to need all returns	9	CQ	Part of the whole lamp material does not meet PVC FREE	2	All parts of the whole lamp in the design stage are bom check, test Rohs REACH PVC	2	All parts of the whole lamp in the design stage are bom check, test Rohs REACH PVC	36							

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10-4	Whole lamp performance / environmental protection	be in line with BFR FREE	Not in compliance with BFR FREE	Violation of regulations, can not be shipped, inflow to the client was found to need all returns	9	CQ	FREEPart of the whole lamp material does not comply with BFR FREE	2	All parts of the whole lamp in the design stage are bom check, test Rohs REACH PVC	2	All parts of the whole lamp in the design stage are bom check, test Rohs REACH PVC	36							
11-1	Driver Board / EMI CDN pass	Conduction <30M >3dB Radiation >30M >3dB Meet regulatory requirements while meeting customer requirements	EMI exceeds the required limit	Excessive EMC will interfere with other electrical equipment and cause the appliance to work abnormally.	4	CQ	L11 differential mode inductor with short circuit	4	Visual inspection	5	EMI test, visual inspection	80	Differential mode inductor two-pin pad plus solder mask; test tooling to increase impedance test function;		Differential mode inductor two-pin pad plus solder mask	4	1	3	12
11-2	Driver Board / EMI CDN pass				4	CQ	PCB wiring, improper placement of components	2	PCB process design specification	5	EMI test	40							
11-3	Driver board / surge 700V pass	Surge meets requirements (600V pass)	The surge does not pass	Drive damaged	8	CQ	L insurance resistor resistance is improperly selected	3	Resistance power <1/10 times the nominal power	4	Test with lightning surge generator	96	Prescribed resistance DC resistance		The DC resistance range of the resistor is specified in the product specification. IQC inspection control.	8	1	3	24
11-4	Driver board / surge 700V pass				8	CQ	L11 impedance exceeds the lower limit	2	Linear impedance >1 Ω, safe temperature <115° C	4	Test with lightning surge generator	64	In the production process, the L11 is tested for incoming materials.		In the production process, the L11 is tested for incoming materials.				
11-5	Driver board / surge 700V pass				8	CQ	Improper selection of rectifier bridge stack	2	Peak current >25A duration >5ms	4	Test with lightning surge generator	64	Feeding and sampling of the rectifier bridge		Feeding and sampling of the rectifier bridge				
11-6	Driver board / low temperature start pass	Low temperature start at minus 20 degrees. Meet customer requirements	Zero temperature below 20 degrees can not start	The light is not lit or flashback	6	CQ	L2 inductor design is unreasonable, improper working frequency setting	3	Set a reasonable operating frequency according to the IC datasheet	3	Place in a -20 ° C refrigerator for more than two hours to start at low temperature	54							
11-7	Driver board / no noise	Noise meets requirements <24dB, @20cm Compliance with regulatory requirements	Noise meets requirements >30dB	Noise	5	CQ	L2 lamp inductor dip paint is not done well	2	Confirmation within the scope of the specification, the negotiation process	5	Entrust a third party to test the noise	50							
11-8	Driver board / compatible electronic switch	Compatible with electronic switches	Flash back after turning off the light	Flash back after turning off the light	5	CQ	C1 solder joint or low capacity	2	Visual inspection of full repair welding, PCB process design specifications Control capacitor capacitance design to leave a reasonable margin	3	Electronic switch test	30							

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12-1	Lamp cup / high and low temperature impact pass	Through high and low temperature impact -40~100 ° C 500 hours	Lamp cup cracking	Causes a safety accident or personal injury, does not meet safety requirements	10	CS	Plastic coated aluminum structure, poor injection molding by suppliers	2	Lamp cup for high and low temperature impact -40~100° C 500 hours	3	Lamp cup for high and low temperature impact -10~100° C 500 hours	60							
13-1	Whole lamp performance / vibration test pass	Vibration (in accordance with UN4001 standard) single lamp	The components inside the lamp fall off	light not works	8	CQ	Pad adhesion is not enough	2	Execute the single-lamp vibration test and issue a third-party test report to complete the confirmation before pp	2	Execute the single-lamp vibration test and issue a third-party test report	32							
13-2	Whole lamp performance / all device temperatures in	Thermal test component temperature meets SPEC	Component temperature exceeds SPEC	The lamp failed early and the light did not light up.	8	CQ	Unreasonable selection of component parameters in the design phase	2	All key devices are tested for temperature at 25 ° C and 45 ° C	2	All key devices are tested for temperature at 25 ° C and 45 ° C	32							
14-1	Light board / heat sink	25°C free air 15000h	Lamp temperature over spec	Luminous maintenance does not meet the requirements, the whole lamp fails early	7	M	Light board warping	7	Control lock screw torque, coated with thermal silica	9	Visual inspection	441	The plate was changed to AL CEM-3, and the structural part was		Plate changed to AL CEM-3	7	1	7	49
14-2	Lamp cup / heat sink				7	M	The aluminum parts in the lamp cup that are in contact with the circuit board are not flat (this structure is a fast mold)	8	Structural engineer visual inspection of incoming materials	9	Visual inspection	504	Products after the formal model will be improved		Change to formal mold production	7	1	7	49
14-3	Lamp cup / positioning				7	M	The bump size and tolerance of aluminum parts do not meet the requirements, resulting in uneven circuit board	8	Structural engineer visual inspection of incoming materials	2	Gage measurement	112	After the official model, the product will be improved, and the bump will be changed to plastic.		Change to formal mold production	7	1	2	14
15-1	Driver board / positioning				7	M	The board slot size does not match	8	Structural engineer visual inspection of incoming materials	8	目视 Visual inspection	448	Dimensional requirements are written into the specification, and IQC is inspected according to the specification.		Dimensional requirements are written into the specification, and IQC is inspected according to the specification.	7	1	2	14
16-1	bulb performance/no hazardous chemicals		The lamp cup and the device material on the circuit board contain sulfur and halogen components, which have an effect on the light quality of the lamp bead.	Luminous maintenance does not meet	4	CQ	The sulfur and halogen components react chemically with the silver on the lamp holder to blacken the lamp beads	5	Send BOM check to detect all components, structural parts, packaging materials such as Rohs REACH, S, Cl, etc.	4	Tested with an environmentally friendly tester, the product point light dimension continues to follow	80	Tested with an environmentally friendly tester, the product point light dimension continues to follow		Tested with an environmentally friendly tester, the product point light dimension continues to follow	4	2	3	24

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16-2	灯板/灯珠温度符合 SPEC Light board / lamp bead temperature in accordance with SPEC		The life of the lamp bead particles is not satisfactory in our products.	Luminous maintenance does not meet the requirements, the whole lamp fails early	8	CQ	Tj in temperature super spec	2	The temperature of the lamp board is tested, and the temperature of the negative end of the	2	Test the lamp bead temperature using a multi- channel temperature	32	Control the temperature of the lamp board does not exceed the Tj temperature is the T		Control the temperature of the lamp board does not exceed the Tj				
16-3	Driver board / component temperature in accordance with SPEC		Actual measured temperature of components on the driver board (such as fuse resistor, bridge stack, diode, varistor, film capacitor, electrolytic capacitor, inductor, inductor, IC) super SPEC	Early failure of the whole lamp	8	CQ	Temperature is too spec, early failure of the device	2	1.The device is temperature-tested and tested for the actual operating temperature of the entire lamp cavity. 2. The product is subjected to a high- temperature oven at 100 ° C deterioration test and point life.	2	1, the device point temperature, test its actual working temperature in the lumen of the whole lamp 2, the product does high temperature oven 100 ° C deterioration experiment, point life	32	In the production process, the components on the drive board are selected in strict accordance with the design requirements, and the pumping test is performed.		生产过程中严格按照 设计要求选择驱动板 上的元器件，并进行 抽测 In the production process, the components on the drive board are selected in strict accordance with the design requirements, and the pumping test is performed.				
16-4	Driver board / output current in accordance with SPEC		Drive output current over spec	Luminous maintenance does not meet the requirements, the whole lamp fails early	8	CQ	Drive current super lamp bead spec	5	Test the output current and check with the lamp bevel spec	2	Use led input and output performance tester	80	Pumping test during production, output current is controlled within the lamp panel spec		生产过程中进行抽 测，输出电流控制在 灯板spec之内 Pumping test during production, output current is controlled within the lamp panel spec				
16-5	Whole lamp performance / switching times >50000 times	Fast switching times >50000 times, 4s on/1s off	Early failure	light not works	8	CQ	Driver board parameters are not reasonable (output current is too large)	2	Fast switching test during design phase	2	Fast switching test during design phase	32	Pumping and testing during production, fast switching test		Pumping and testing during production, fast switching test				
17-1	Packing / vibration (in accordance with UN4001 standard)	Vibration (in accordance with UN4001 standard)	Shake not pass	After the vibration, the product is bad (the outer box is broken, the light is not bright), the lamp head is deformed	8	CQ	Unreasonable packaging structure design, unreasonable selection of packaging materials	2	At the beginning of the design, the sample is returned to do the vibration drop test, and the confirmation is completed before pp.	3	Do the vibration drop experiment	48	After the production, the whole package is shipped after passing the drop test.		After the production, the whole package is shipped after passing the drop test.				
17-2	Packing / vibration (in accordance with UN4001 standard)		after shaking, the bulb is failed and component falls off	8	CQ	The circuit board pad design is unreasonable, resulting in insufficient grip	6	Do the vibration drop test, complete the confirmation before pp	3	Do the vibration drop experiment	144	Change the pcb component pad design to amplify the pad. Updated into pcb layout design specification file	Qin Haixiao	Change the pcb component pad design to amplify the pad.	8	2	3	48	
17-3	Packing/dropping (in accordance with UN4001 standard)		Drop (in accordance with UN4001 standard)	Falling not pass	Bad product after falling (outer box broken, light is not bright), lamp head deformation	8	CQ	Unreasonable packaging structure design, unreasonable selection of packaging materials	2	At the beginning of the design, the sample is returned to do the vibration drop test, and the confirmation is completed before pp.	3	Do the vibration drop experiment	48	After the production, the whole package is shipped after passing the drop test.		After the production, the whole package is shipped after passing the drop test.			

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17-4	Packing/dropping (in accordance with UN4001 standard)			The lamp cup is separated from the lamp cover	8	CQ	Lamp cup and lampshade snap design is not reasonable, not tight enough	2	At the beginning of the design, the proof is returned to do the drop test, and the confirmation is completed before pp.	3	Do the vibration drop experiment	48	The tightness test between the lamp cup and the lamp cover		The tightness test between the lamp cup and the lamp cover				
17-5	Packing/dropping (in accordance with UN4001 standard)			Poor product after falling, components falling off	8	CQ	The circuit board pad design is unreasonable, resulting in insufficient grip	6	Do the vibration drop test, complete the confirmation before pp	3	Do the vibration drop experiment	144	Change the pcb component pad design to amplify the pad. Updated into pcb layout design specification file	Qin Haixiao	Change the pcb component pad design to amplify the pad.	8	2	3	48
18-1	Packing/boxing	The packaging structure conforms to the whole lamp size	Unable to assemble	Whole lamp packaging cannot be produced	8	CQ	Unreasonable packaging structure design, too small size	2	At the beginning of the design, the sample is returned for trial installation, and the confirmation is completed before pp.	2	At the beginning of the design, the sample is returned for trial installation, and the confirmation is completed before pp.	32	Feeding and testing of packaging materials		Feeding and testing of packaging materials				
18-2	Packing/boxing		Test (vibration drop) not pass	Whole lamp packaging cannot be produced	8	CQ	Unreasonable packaging structure design, too small size	2	At the beginning of the design, the sample is returned for trial installation, and the confirmation is completed before pp.	2	At the beginning of the design, the sample is returned for trial installation, and the confirmation is completed before pp.	32	Feeding and testing of packaging materials		Feeding and testing of packaging materials				
18-3	Packing/boxing			Dissatisfaction and complaints flowed into the client	8	CQ	过) The design margin is not enough (there may be some vibration drop experiments, some passed some not pass).	2	Newly designed packaging, the number of test boxes must be more than 2 boxes	4	Newly designed packaging, the number of test boxes must be more than 2 boxes	64	After the production, the whole package is shipped after passing the drop test.		After the production, the whole package is shipped after passing the drop test.				
18-4	Wrapper/content is correct	Packaging material (color box, outer box, box sticker, color box, color card)	The content does not match, the production line cannot be produced.	Production line cannot be produced	7	CQ	Customer design error	4	Suspend production, notify customers to update files	3	Packaging designer proofreading confirmation package documents and physical objects	84							
18-5	Wrapper/content is correct				7	CQ	Our packaging group internal conversion error	2	Suspension of production, packaging engineer update file	3	Packaging designer proofreading confirmation package documents and physical objects	42							
18-6	Wrapper/content is correct		Content does not match, inspection is missing	Dissatisfaction and complaints flowed into the client	7	CQ	QC is inspected at all stages	2	Suspend production, update files	1	Packaging designer proofreading confirmation package documents and physical objects	14							

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18-7	Packing/side pressure meets requirements	Packaging materials (outer box, lining, color card, color box, partition, etc.) side pressure meets the requirements	Unsatisfactory side pressure (selection material in design stage)	The production line cannot be produced, and it is dissatisfied and complained when it flows into the client.	7	CQ	Improper selection of materials in customer packaging design	1	Packaging designer proofing back to test side pressure	2	Packaging designer proofing back to test side pressure	14							
18-8	The packaging/adhesive bond is intact, firm and unobtrusive	Self-adhesive bonding is intact, firm, not upturned	Adhesive adhesion is not enough, lifting	Unable to ship, need to rework, flow into the client, causing dissatisfaction, complaint	7	CQ	The adhesive size is too small, the adhesive adhesion is not strong enough	2	Suspension of production, update of self-adhesive design	2	Adhesion test at the beginning of design	28							

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product model as below

Product EAN	Supplier ref
3276000628392	G9-10 3.8W30G9B3
3276000628507	G9-10 3.8W40G9B3
3276000603177	G9-10 3.8W40G9
3276000603160	G9-10 3.8W30G9
3276000628514	G9-10 3.8W30G9B3Z
3276000628521	G9-10 3.8W40G9B3Z
3276000627777	G9-10 3.8W30G9R
3276000628491	G9-10 3.8W40G9R