



Test Report issued under the responsibility of:



| | |
|---|--|
| TEST REPORT IEC 62560 Self-Ballasted LED-Lamp for general lighting services by voltage > 50V Safety specifications | |
| Report Number..... | 3015614.50-QUA/LI |
| Date of issue..... | 2012-10-31 |
| Total number of pages | 23 pages |
| Applicant's name | Matrix Lighting Limited |
| Address..... | Room 223-231, 2/F., East Wing, Tsim Sha Tsui Centre, 66 Mody Road, Tsim Sha Tsui East, Kowloon, Hong Kong |
| Test specification: | |
| Standard | IEC 62560:2011 (1 st Edition) |
| Test procedure..... | CB Scheme |
| Non-standard test method..... | N/A |
| Test Report Form No. | IEC62560A |
| Test Report Form(s) Originator | DEKRA Certification B.V. |
| Master TRF..... | Dated 2011-04 |
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| <small>If this Test Report Form is used by non-IECEE members, the IECEE/IEC logo and the reference to the CB Scheme procedure shall be removed.</small> | |
| This report is not valid as a CB Test Report unless signed by an approved CB Testing Laboratory and appended to a CB Test Certificate issued by an NCB in accordance with IECEE 02. | |

| | |
|-------------------------------------|--|
| Test item description: | LED PL-C Lamp |
| Trade Mark | VIRIBRIGHT |
| Manufacturer | Matrix Lighting Limited |
| Factory | 1) KEYHINGE TOYS VIET NAM JOINT STOCK COMPANY Hoa Khanh Industrial Zone, Da Nang City, Viet Nam. 2) ZhongShan Wei Heng Plastic Industry Co.,Ltd. 172 North Banfu Road, Banfu Town, ZhongShan, Guangdong, China |
| Model/Type reference | 1) PLC-75GEU; 2) PLC-75EEU |
| Ratings | 220-240 Vac, 50 Hz, 35 mA, 7,5 W 1) G24; 2) E27 |

| | |
|---|--|
| Testing procedure and testing location: | |
| <input checked="" type="checkbox"/> CB Testing Laboratory: | DEKRA Certification Hong Kong Limited |
| Testing location/ address | Unit 1-14, 6/F., Fuk Shing Commercial Building, 28 On Lok Mun Street, On Lok Tsuen, Fanling, N.T., Hong Kong |
| <input type="checkbox"/> Associated CB Laboratory: | |
| Testing location/ address | <i>Anky Leung</i> |
| Tested by (name + signature).....: | Anky Leung |
| Approved by (name + signature) | Roy Yip <i>[Signature]</i> |
| <input type="checkbox"/> Testing procedure: TMP | |
| Testing location/ address | |
| Tested by (name + signature).....: | |
| Approved by (name + signature) | |
| <input type="checkbox"/> Testing procedure: WMT | |
| Testing location/ address | |
| Tested by (name + signature).....: | |
| Witnessed by (name + signature).....: | |
| Approved by (name + signature).....: | |
| <input type="checkbox"/> Testing procedure: SMT | |
| Testing location/ address | |
| Tested by (name + signature).....: | |
| Approved by (name + signature) | |
| Supervised by (name + signature).....: | |
| <input type="checkbox"/> Testing procedure: RMT | |
| Testing location/ address | |
| Tested by (name + signature).....: | |
| Approved by (name + signature) | |
| Supervised by (name + signature).....: | |

List of Attachments (including a total number of pages in each attachment): Nil

Summary of testing:

Tests performed (name of test and test clause):

IEC 62560:2011 (1st Edition)

The LED PL-C Lamp was tested according IEC 62471:2006. The models: PLC-75GEU with 2800 K and 6000 K LED module were selected for the test, which can represent all models. The LED PL-C Lamp have been classified as Exempt Group.

Testing location:

DEKRA Certification Hong Kong Limited
Unit 1-14, 6/F., Fuk Shing Commercial Building, 28
on Lok Mun Street, On Lok Tsuen, Fanling, N.T.
Hong Kong






Summary of compliance with National Differences






List of countries addressed: No national deviation is reported

The product fulfils the requirements of IEC 62560

Copy of marking plate

The artwork below may be only a draft. The use of certification marks on a product must be authorized by the respective NCBS that own these marks.

| | | | | | | | |
|---|---|---------------------------|---|--|---|---|---|
|  | Model#:PLC-75GEU 220-240VAC 50Hz 35mA 7.5W Indoor Use Only | 7.5W G24 | LED PL-C Lamp Matrix Made In China Patents Pending |  |  |  |  |
|---|---|---------------------------|---|--|---|---|---|

| | | | | | | | |
|---|---|---------------------------|---|--|---|---|---|
|  | Model#:PLC-75EEU 220-240VAC 50Hz 35mA 7.5W Indoor Use Only | 7.5W E27 | LED PL-C Lamp Matrix Made In China Patents Pending |  |  |  |  |
|---|---|---------------------------|---|--|---|---|---|

| | |
|---|----------------|
| Test item particulars | LED PL-C Lamp |
| Classification of installation and use | Class II |
| Supply Connection | 1) G24; 2) E27 |
| | |
| Possible test case verdicts: | |
| - test case does not apply to the test object : N/A | |
| - test object does meet the requirement..... : P (Pass) | |
| - test object does not meet the requirement..... : F (Fail) | |
| Testing | |
| Date of receipt of test item : 2012-10-15 | |
| Date (s) of performance of tests : 2012-10-15 to 2012-10-26 | |
| General remarks: | |
| <p>The test results presented in this report relate only to the object tested. This report shall not be reproduced, except in full, without the written approval of the Issuing testing laboratory. "(see Enclosure #)" refers to additional information appended to the report. "(see appended table)" refers to a table appended to the report. Clause numbers between brackets refer to clauses in IEC 61347-1</p> <p>Throughout this report a <input checked="" type="checkbox"/> comma / <input type="checkbox"/> point is used as the decimal separator.</p> <p>Remark: Due to update of model number: PLC-75EEU, the test report: 3013417.50-QUA/LI was being superseded. The models: PLC-75GEU and PLC-75EEU were using similar construction and same type of LED, the difference is at the lamp cap only, additional test of clauses 6 & 9 were applied to the E27 lamp cap.</p> | |
| Manufacturer's Declaration per sub-clause 6.2.5 of IEC 60529: | |
| <p>The application for obtaining a CB Test Certificate includes more than one factory location and a declaration from the Manufacturer stating that the sample(s) submitted for evaluation is (are) representative of the products from each factory has been provided..... :</p> <p style="text-align: right;"><input checked="" type="checkbox"/> Yes <input type="checkbox"/> Not applicable</p> | |
| When differences exist; they shall be identified in the General product information section. | |
| Name and address of factory (ies) : Nil | |

General product information:

Self-ballasted LED lamps with G24 and E27 lamp cap.

Each model has three different colour temperatures: 2800K, 4000K and 6000K.

All models contained similar construction; the difference between each model is the lamp cap only.

| IEC 62560 | | | |
|-----------|--------------------|-----------------|---------|
| Clause | Requirement + Test | Result - Remark | Verdict |

| | | | |
|----------|---|--|---|
| 4 | GENERAL REQUIREMENTS | | P |
| 4.1 | The lamp shall be so designed and constructed that in normal use cause no danger to the user. | | P |
| 4.2 | Self-ballasted LED-Lamp are non-repairable. | | P |

| | | | |
|----------|---|--------------------|-----|
| 5 | MARKING | | P |
| 5.1 | Mandatory marking | | P |
| | - mark of origin | | P |
| | - rated supply voltage (V)..... : 220-240 VAC | | P |
| | - rated wattage (W)..... : 7,5 W | | P |
| | - rated frequency (Hz)..... : 50 Hz | | P |
| 5.2 | Addition marking | | P |
| | - burning position | | N/A |
| | - rated current (A) : 35 mA | | P |
| | - weight significantly higher | | N/A |
| | - special conditions or restrictions | Non-dimmable | P |
| | - eye protection | Refer to IEC 62471 | P |
| 5.3 | Marking durable and legible | | P |
| | rubbing 15 s water, 15 s petroleum; marking legible | | P |

| | | | |
|----------|---|--|---|
| 6 | INTERCHANGEABILITY | | P |
| 6.1 | Cap interchangeability in accordance with IEC 60061-1 | | P |
| | Gauge in accordance with IEC 60061-3 | | P |
| 6.2 | Bending moment | | P |
| | Bending moment imparted by the lamp at the lampholder | | P |

| | | | |
|----------|--|--|---|
| 7 | PROTECTION AGAINST ACCIDENTAL CONTACT WITH LIVE PARTS | | |
| | Internal, basic insulated or live metal parts not accessible | | P |
| | Tested with a test finger with a force of 10 N | | P |
| | Compliance checked with appropriate gauges | | P |

| IEC 62560 | | | |
|-----------|--------------------|-----------------|---------|
| Clause | Requirement + Test | Result - Remark | Verdict |

| 8 | INSULATION RESISTANCE AND ELECTRIC STRENGTH | | |
|-----|--|----------|---|
| 8.2 | After storage 48 h at 91-95% relative humidity and 20-30 °C measuring of insulation resistance with d.c. 500 V (MΩ): | | P |
| | ≥ 4 MΩ for double or reinforced insulation : | > 100 MΩ | P |
| 8.3 | Immediately after clause 8.2 electric strength test for 1 min | | P |
| | Double or reinforced insulation, 4U + 2000 V | 2960 V | P |
| | No flashover or breakdown | | P |

| 9 | MECHANICAL STRENGTH | | |
|-----|---|----------------------|-----|
| | Torsion resistance of unused lamps | | P |
| 9.1 | Torque test | | P |
| | B 15 d Cap 1,15 Nm | | N/A |
| | B 22 d Cap 3,0 Nm | | N/A |
| | E 11 Cap 0,8 Nm | | N/A |
| | E 12 Cap 0,8 Nm | | N/A |
| | E 14 Cap 1,15 Nm | | N/A |
| | E 17 Cap 1,5 Nm | | N/A |
| | E 26 or E27 Cap 3,0 Nm | | P |
| | GX 53 Cap 3,0 Nm | under consideration | N/A |
| 9.2 | Torsion resistance of lamps after a defined time of usage | | N/A |
| | Torsion resistance of used lamp | under consideration. | N/A |
| 9.3 | Repetition of clause 8 | | P |
| | Clause 8 shall comply after the mechanical strength test. | | P |

| 10 | CAP TEMPERATURE RISE | | |
|----|---|-------|---|
| | The cap temperature rise Δt_s of the lamp shall not exceed 120 K. | 5,9 K | P |

| 11 | RESISTANCE TO HEAT | | P |
|----|--|-----------------------------|---|
| | Parts of insulating material retaining live parts in position, ball-pressure test: | | P |
| | Part tested; temperature (°C); diameter of impression (≤ 2 mm) : | Lamp cover; 125 °C; 1,06 mm | P |

| IEC 62560 | | | |
|-----------|--|---------------------------------|---------|
| Clause | Requirement + Test | Result - Remark | Verdict |
| | Part tested; temperature (°C); diameter of impression (≤ 2 mm) | LED module; 125 °C; 1,21 mm | P |
| | Part tested; temperature (°C); diameter of impression (≤ 2 mm) | PCB; 125 °C; 0,90 mm | P |
| | Part tested; temperature (°C); diameter of impression (≤ 2 mm) | Bobbin; 125 °C; 0,52 mm | P |
| | Part tested; temperature (°C); diameter of impression (≤ 2 mm) | Lamp enclosure; 125 °C; 1,09 mm | P |
| | Part tested; temperature (°C); diameter of impression (≤ 2 mm) | Lamp cap; 125 °C; 1,12 mm | P |

| | | | |
|-----------|---|--|---|
| 12 | RESISTANCE TO FLAME AND IGNITION | | P |
| | External parts of insulating material preventing electric shock glow-wire test 650 °C | | P |
| | - flame extinguished within 30 s | | P |
| | - no flaming drops igniting tissue paper | | P |

| | | | |
|-----------|---|----------------------|-----|
| 13 | FAULT CONDITIONS | | P |
| 13.2 | Extreme electrical conditions (dimmable lamps) | | N/A |
| | Lamp withstands overpower condition >15 min. | | N/A |
| | Lamp fails safe after 15 min overpower condition | | N/A |
| | Lamp with automatic protective device or power limiter, test performed 15 min. at limit. | | N/A |
| 13.3 | Extreme electrical conditions (non-dimmable lamps) | | P |
| | Tested according 13.2 (as far as possible) | | P |
| 13.4 | Short-circuit across capacitors | (see appended table) | P |
| 13.5 | Fault conditions: where diagram indicates fault condition impairs safety, electronic components have been short-circuited or disconnected | (see appended table) | P |
| 13.6 | When operated under fault conditions the lamp | | P |
| | - does not emit flames or molten material | | P |
| | - does not produce flammable gases or smoke | | P |
| | - live parts not accessible | | P |
| | After the tests the insulation resistance with d.c. 1000 V complies with requirements of Cl. 8.1.....: | > 100 MΩ | P |

| IEC 62560 | | | |
|------------------|--------------------|-----------------|---------|
| Clause | Requirement + Test | Result - Remark | Verdict |

| | | | |
|----------------|--|----------------------|-----|
| 14 (16) | CREEPAGE DISTANCES AND CLEARANCES | | P |
| | Creep age distances and clearances according to Table 3 and 4 of IEC 61347-1, as appropriate | (see appended table) | P |
| | Printed boards see clause 14 of IEC 61347-1 | | P |
| | Insulating lining of metallic enclosures | | N/A |

| 13 | TABLE: tests of fault conditions | | |
|-----------|---|------------------|--------|
| Part | Simulated fault | Result | Hazard |
| U3 | Short-circuited | Fuse operated | NO |
| R7 | Open-circuited | LED switched off | NO |
| C6 | Short-circuited | Fuse operated | NO |
| V1 | Short-circuited | Fuse operated | NO |
| C9 | Short-circuited | Fuse operated | NO |
| C5 | Short-circuited | Fuse operated | NO |

| | | | |
|---|--|---------------------------------|---|
| 11 | TABLE: Ball Pressure Test of Thermoplastics | | |
| Allowed impression diameter (mm) | | 2 mm | — |
| Part | Test temperature (°C) | Impression diameter (mm) | |
| Lamp cover | 125 °C | 1,06 mm | |
| LED module | 125 °C | 1,21 mm | |
| PCB | 125 °C | 0,90 mm | |
| Bobbin | 125 °C | 0,52 mm | |
| Lamp enclosure | 125 °C | 1,09 mm | |
| Lamp cap | 125 °C | 1,12 mm | |
| Supplementary information: Nil | | | |

| | | | | | | | |
|---|---|-------------------|-------------------------|----------------|----------------------------|-------------------|--|
| 14(16) | TABLE: Clearance And Creep age Distance Measurements | | | | | | |
| clearance cl and creep age distance decry at/of: | Up (V) | U rms. (V) | Required cl (mm) | cl (mm) | required decry (mm) | decry (mm) | |
| Between live parts of different polarity | - | 240 | 2,5 | > 2,5 | 1,7 | > 1,7 | |
| Between live pars and accessible metal parts | - | 240 | 2,5 | > 2,5 | 1,7 | > 1,7 | |
| Between live parts and a flat supporting surface | - | 240 | - | - | 3,6 | > 3,6 | |
| Supplementary information: Nil | | | | | | | |

| TABLE: Critical components information | | | | | |
|--|---|---------------------|-------------------------|--------------------------|---|
| Object / part No. | Manufacturer/ trademark | Type / model | Technical data | Standard | Mark(s) of conformity¹⁾ |
| Varistor | Brightking (Shenzhen) Co. Ltd. / Jinbaoge | 471KD07 | 2,5 A; -40 °C to +85 °C | IEC 61051-1; IEC 61051-2 | VDE |
| Fuse | Dongguan Hongda | 2009 | AC 250 V; 1 A | EN 60127-1; EN 60127-3 | VDE |
| PCB | - | LI02-0 | FR4 | IEC 62560 | Test with appliance |
| PCB | - | LI02-1 | FR4 | IEC 62560 | Test with appliance |
| LED | Epistar Corporation | ES-AEHRAX12 | Max. 2,5 V; 20 mA | IEC 62560 | Test with appliance |
| LED | Chi Mei Lighting Technology Corporation | C-C4XXCTXXS X | Max. 3,5 V; 20 mA | IEC 62560 | Test with appliance |
| - Description: | - | | | | |
| Supplementary information: | | | | | |
| ¹⁾ Provided evidence ensures the agreed level of compliance. See OD-CB2039. | | | | | |

Sample Photo



Outlook – PLC-75GEU



Outlook – PLC-75EEU

Sample Photo



Remote Phosphor – 6000 K

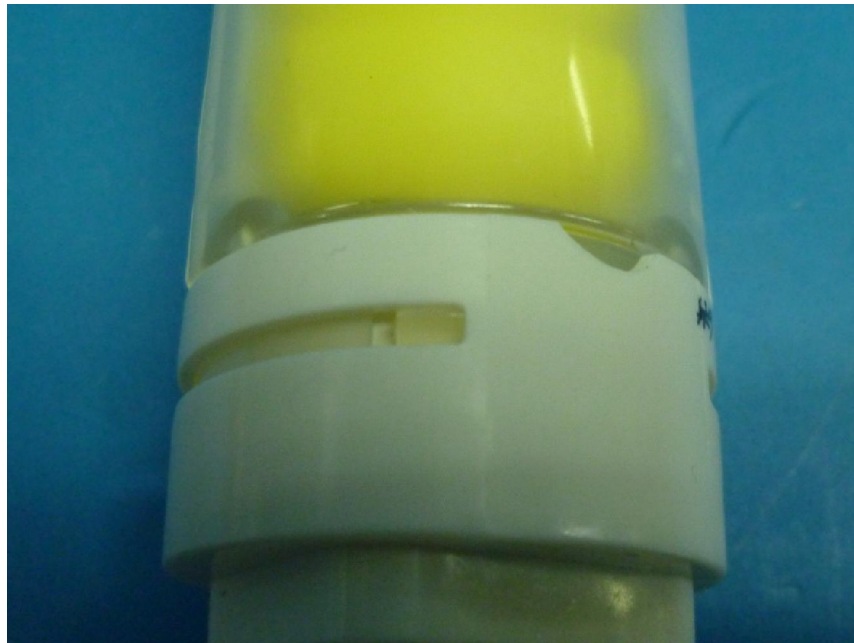


Remote Phosphor – 4000 K

Sample photo

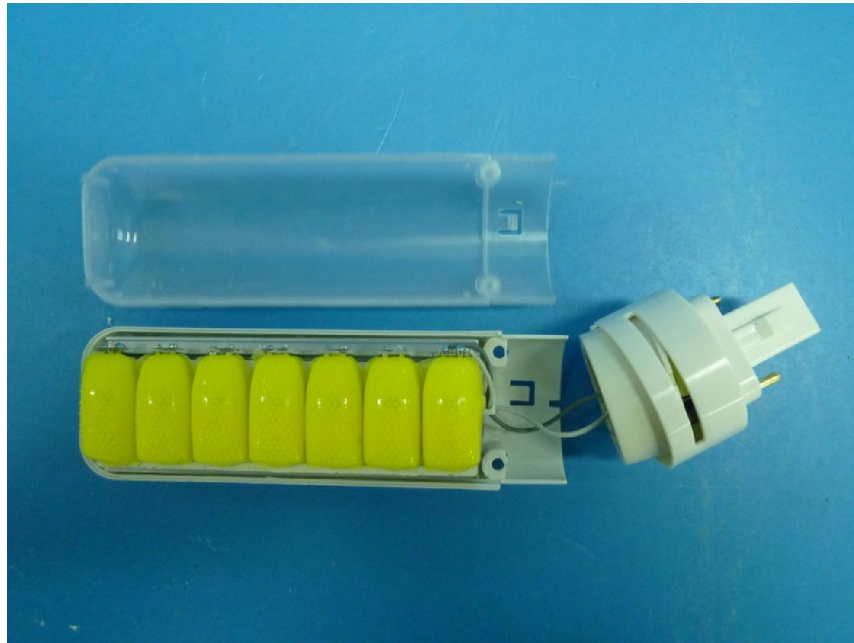


Remote Phosphor – 2800 K

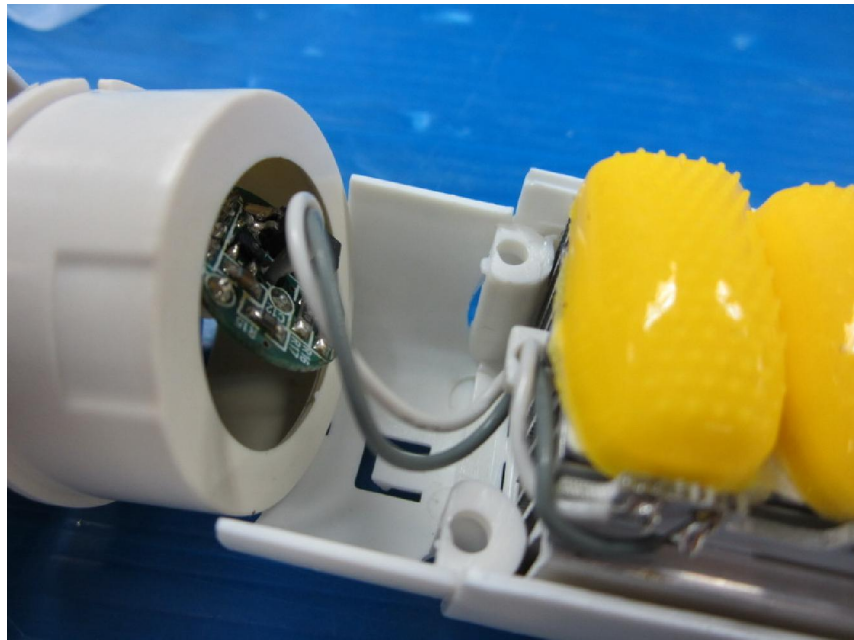


Construction

Sample Photo

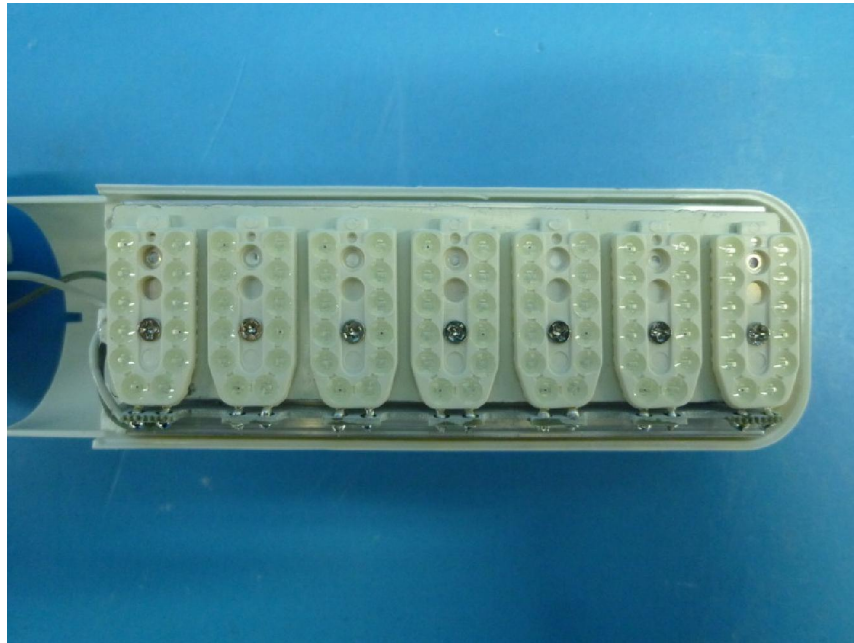


Construction

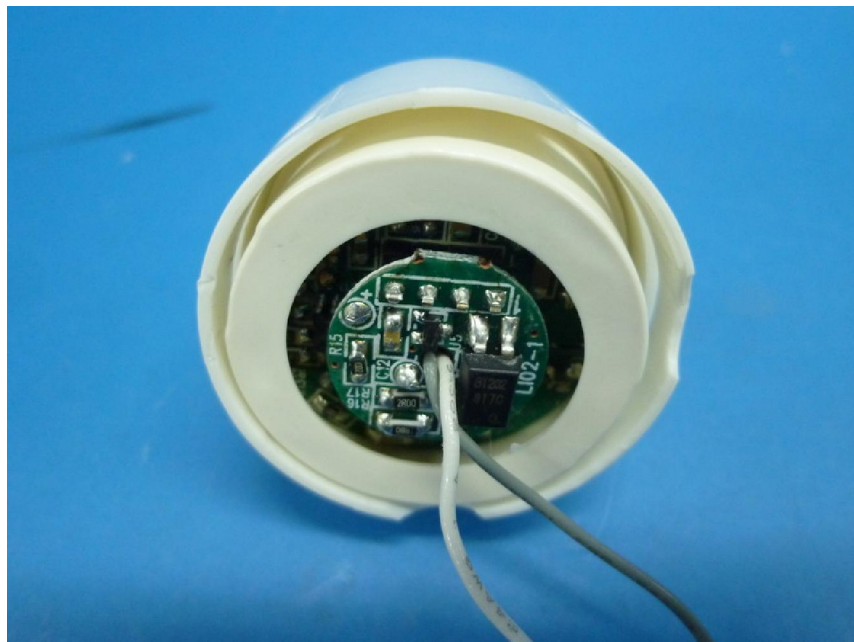


Construction

Sample Photo

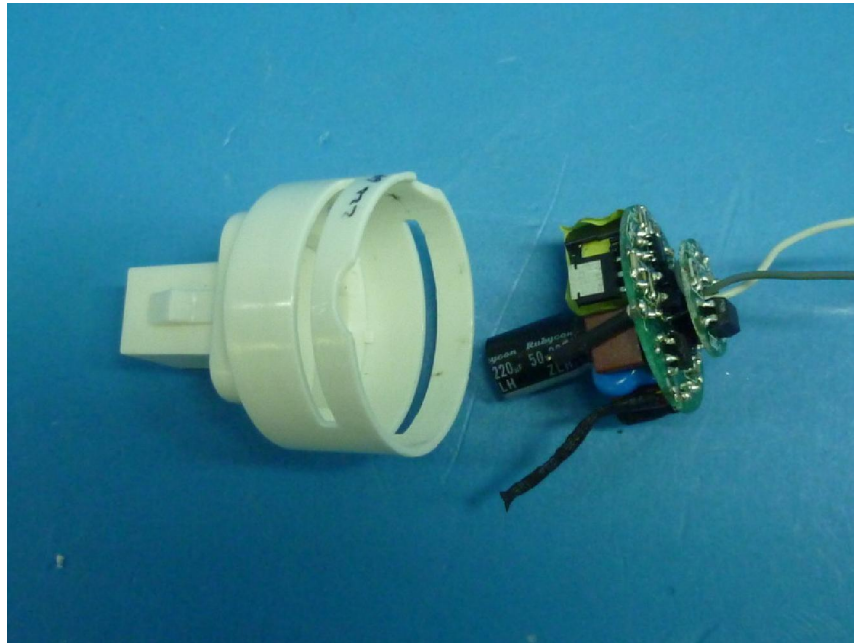


LED module

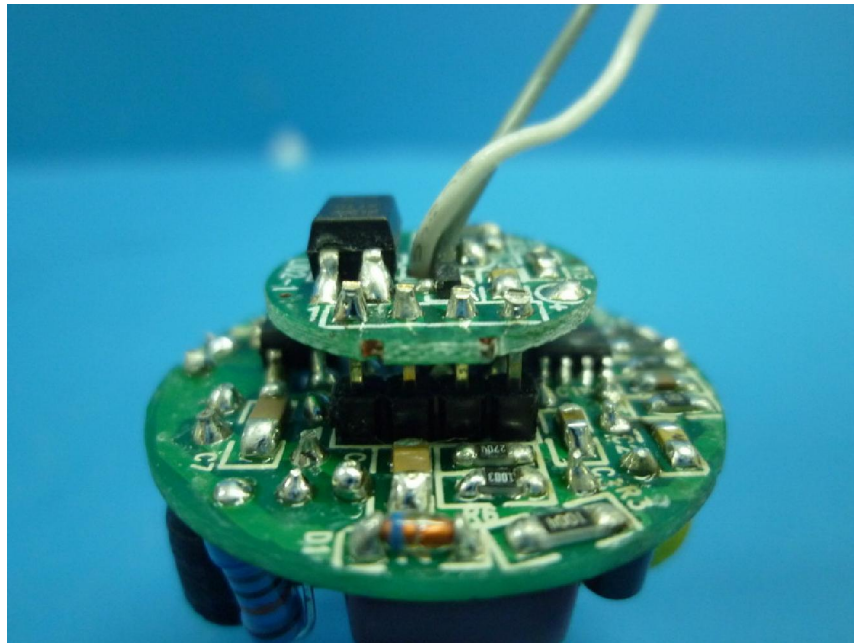


Construction

Sample Photo

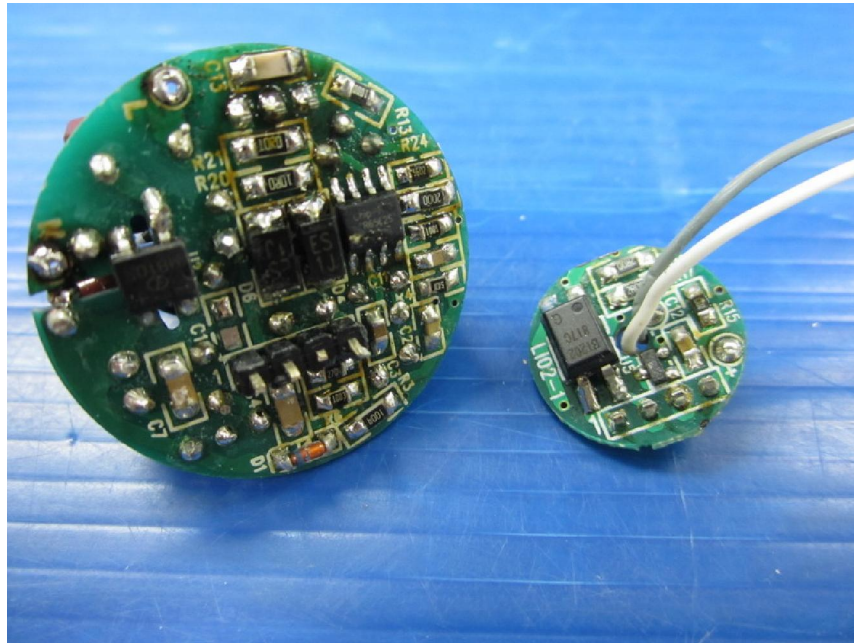


Construction

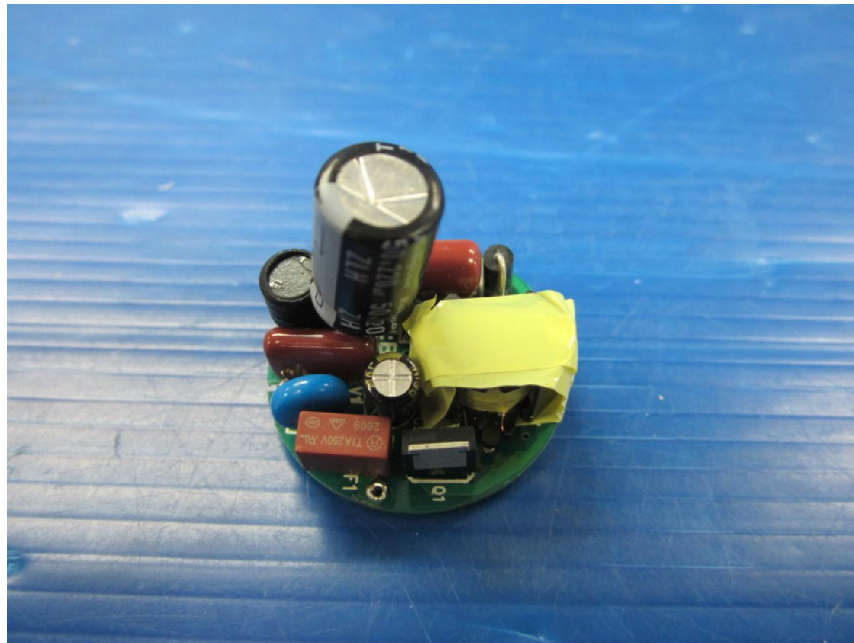


PCB

Sample Photo

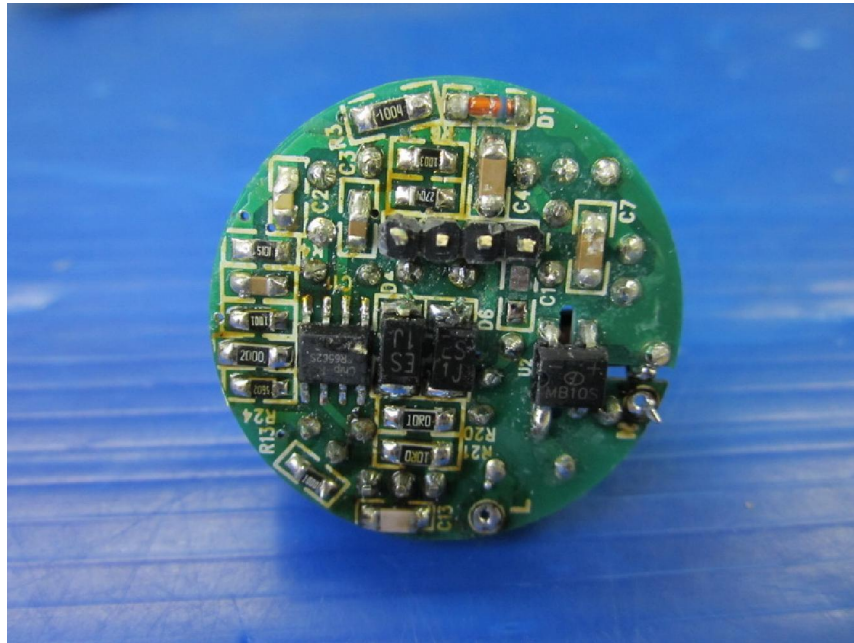


PCB

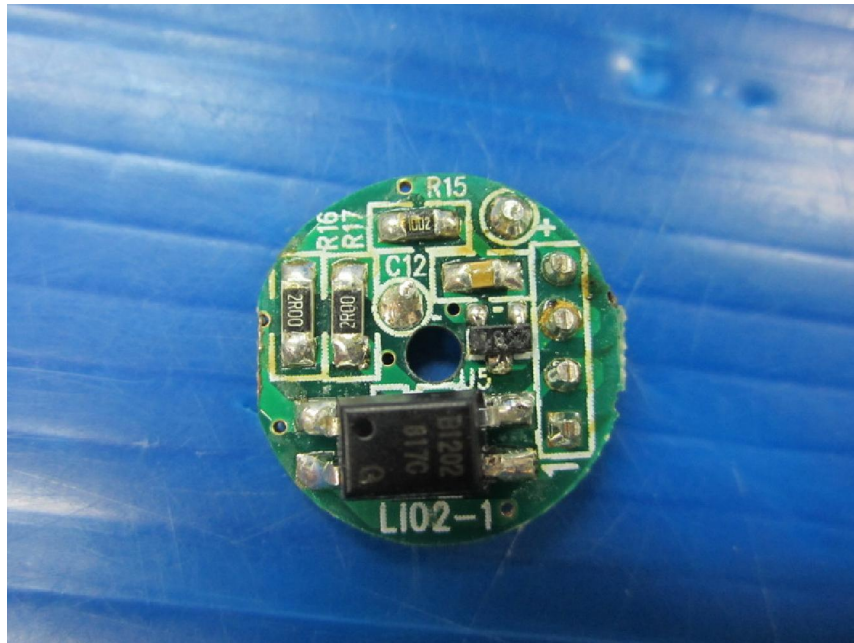


PCB

Sample Photo

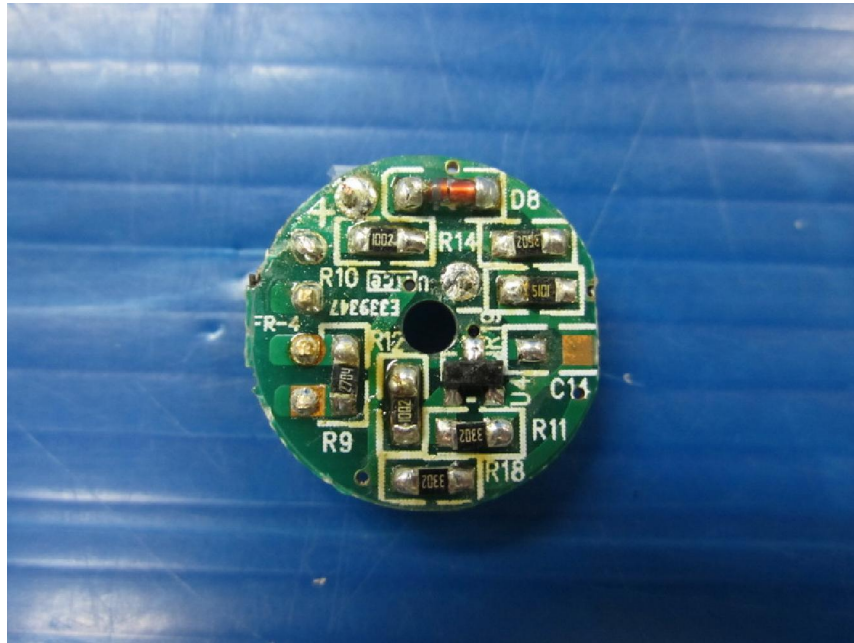


PCB



PCB

Sample Photo



PCB