Eight Discipline Report (8D Report)

To:	8D report No.:
From:：	RMA claim No.:
CC：	Chicony Power P/N: **E050S040P-AZ01**
	Customer P/N:
Submit date: **2022/07/29**	Product description:
Receive date: **2022/07/29**	
Subject：aux diode damage (輕載切換頻率上升加上 trr 較慢造成 diode 溫度異常升高損壞)	

D1.) 問題解決成員:Use Team Approach

主持者 (Team Leader)：

內部成員 (Internal Team Members):

外部成員 (External Team Member):

D2.)問題說明:Problem Description:

(**Note**: Use **who**, **what**, **when**, **where**, **why**, **how**, **how many** to specify the Customer's problem.)

50W LED driver no output Issue

1. **Installation new build with new power systems and new lighting in customer.**
2. **Installed 600 1x4 EPANL (EPANL 1X4 4800LM80CRI 40K).**
3. **Approx. 30 days after install 250/600 luminaires are not functional.**
4. **Luminaires where Chicony drivers have been replaced with other Chicony (same model) drivers have failed again.**

D3.)內部或客戶的暫時解決辦法及實施日期:Implement and Verify Containment Action:

(Note: Internal / external containment action effectiveness and date.**)**

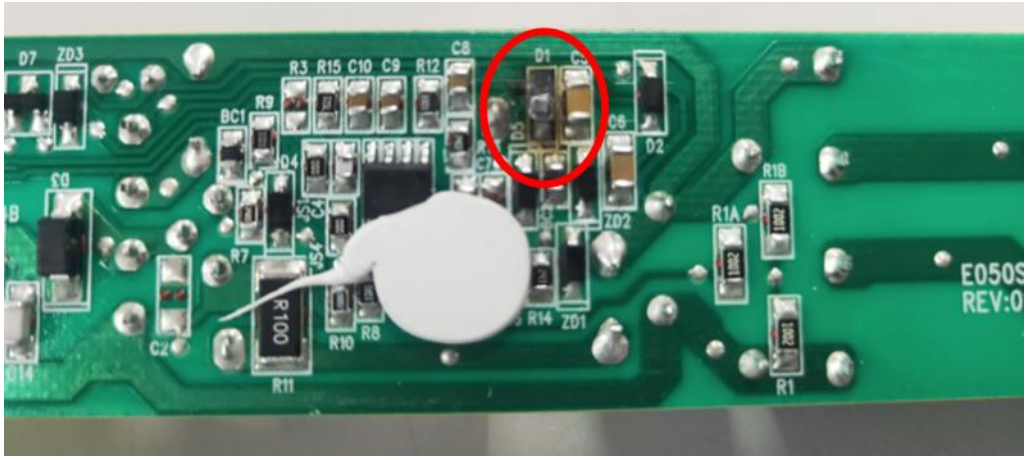
1. **FAE of CPT got this PSU from customer for further analysis.**
2. **CPT send PSU to customer for exchange.**

D4.)不良原因確認: Define and Verify Root Causes:

(Note: Identify and verify all suspect causes, which needs explain why the problem occurred.**)**

- **All Chicony drivers which have failed exhibit the same brown spot on the top side of the PCBA.**

- **There are burn marks on D1 and D1 is broken.**



- **Measured D1 with an electric meter and replaced it with a new component, the driver works normally after replacement.**

- **burn-in test and check the application of load and dimming. According to the information provided by the customer, the input voltage is 277Vac.**

- **When dimming is switched to any state at high temperature, the driver will no output and D1 damage by analysis.**

- **Measure frequency with dimming:**

For AC 277Vac input and 100% DIM, the test waveform of Fsw is 108KHz.

For AC 277Vac input and 20% DIM, the test waveform of Fsw is 247KHz.

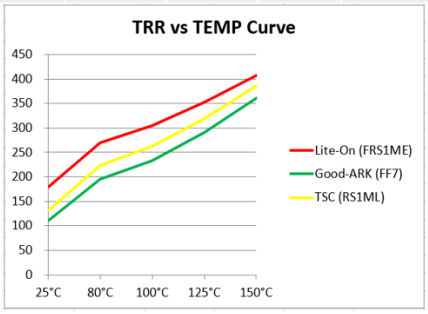
- **The reverse recovery time(Trr) of the diode is too slow or the reverse leakage current(Ir) is too high, and the switching frequency of the 20% current is too fast, causing temperature to rise rapidly, and finally causing D1 to be damaged.**

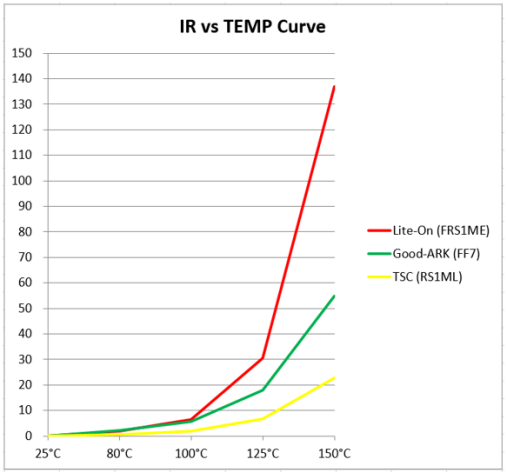
D5.)改善措施:Corrective Action Verification:

(Note: Be make sure the corrective actions is effective in process as well as able to fix the customer complaint problem**)**

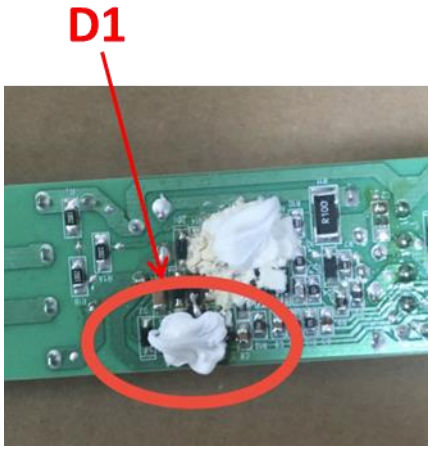
- **Trr and Ir CPK distributions(30pcs AVG.). The TSC component perform best.**

Diode	Lite-On (FRS1ME)		Good-ARK (FF7)		TSC (RS1ML)	
Temp.	TRR(nS)	IR(uA)	TRR(nS)	IR(uA)	TRR(nS)	IR(uA)
25°C	179.3	0.073	110.5	0.114	132.1	0.040
80°C	269.4	1.879	194.5	2.039	223.3	0.634
100°C	304.5	6.500	233.2	5.503	262.9	1.857
125°C	352.5	30.371	289.9	18.020	318.9	6.663
150°C	406.9	136.920	360.3	54.862	385.5	22.693





1. **Because the TSC component perform best, we will replace the TSC component (RS1ML).**
2. **In order to prevent Ir and Trr tolerance of the diode from causing the temperature to become higher, we will add thermal glue on D1 location.**
3. **After D1 replace to the TSC component and add thermal glue, the D1 component will not cause damage.**



D6.)改善措施實施日期:Implement Permanent Corrective Actions:

(Note: Be provide the phase-in date or lot# of corrective actions **implementation** in process**)**

immediately

D7.)預防再發生措施:Prevent Recurrence:

(Note: Modified the management, operating systems, practices, and procedures to prevent recurrence for the problems as well as lessons learned cases**.)**

- **For diode applications, the following points should be noted :**
  1) **Whether the operating frequency is high frequency for various conditions.**
  2) **Choose the diode that produce low Ir at the high temperature.**
  3) **Use the faster TRR possible.**
  4) **Use diodes with slower Trr due to EMI issues, verify component temperature for various conditions.**
  5) **In addition to the steady state, the verification conditions need to include dynamic load, low and high temperature.**

D8.)確認並感謝問題解決成員:Check and Congratulate the Team:

(Note: Recognize the collective efforts of the team.**)**

Thanks to you all！！！

Signature **Team Leader**:	
	Name – Title
Signature by Approver:	
	Name-Title