Eight Discipline Report (8D Report)

To:

From:：Chicony power Technology

CC： N/A

Submit date: 2016/12/05

Receive date: 2016/11/11

Subject：Low voltage *1pc

Regulation, IC, TL431

8D report No.: CPCQ1112

RMA claim No.: N/A

Chicony P/N: A045R051L

Customer P/N:

Product description: 45W Adapter

Defect D/C or Lot No.: 1610

D1.) 問題解決成員:Use Team Approach

主持者 (Team Leader)：Henry_Zhang

內部成員 (Internal Team Members):

CQS	Xiaoyue_Wang
MFG	Ice_Liu
PE	XP_Zhao
IPQC	BL_Zhang
OOBA	Yuanye_Sun
TE	Zhaohui_Shen
QE	Zoe_Qian

外部成員 (External Team Member):

N/A

D2.)問題說明:Problem Description:

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

We got feedback from customer on Nov. 11th that 1pc of 45W adapter was found low voltage.

Customer P/N:

Chicony P/N: A045R051L

Defect S/N: WFTHE0BGC4534H

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. Bring the defect adapter back for analysis.
2. For the adapters in stock, sorting action had been done. And no defect was found after sorting.

   See below for details:

stock: 26928pcs			
Date	Sorting Q'ty	NG	DPPM
11/11	7,000	0	0
11/12	10,368	0	0
11/14	9,560	0	0

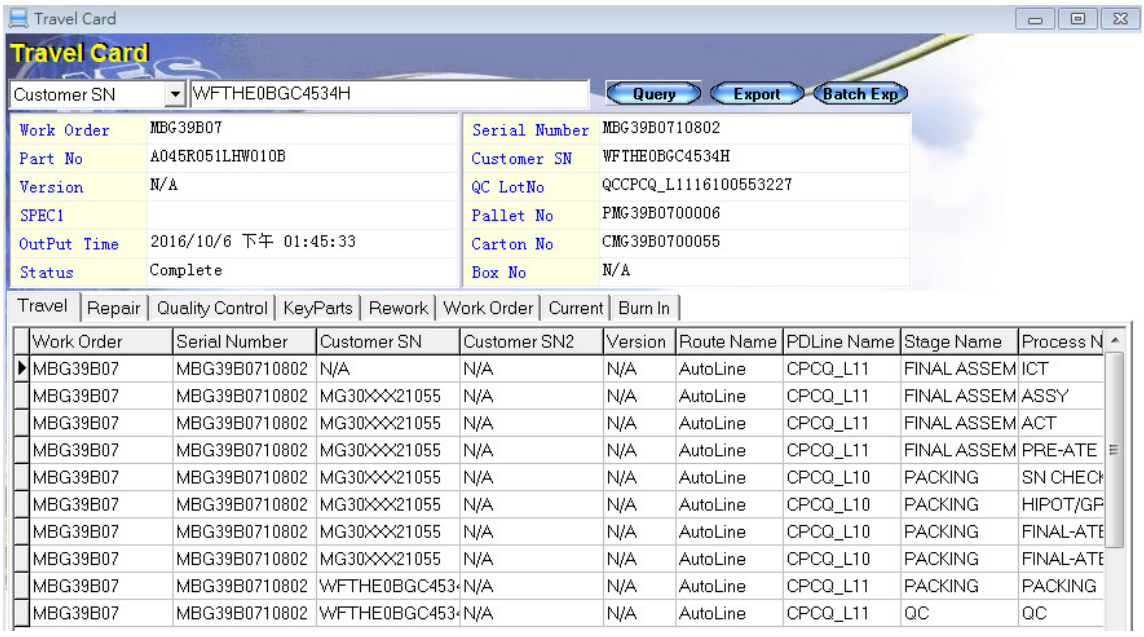
Owner: CPT/FAE Date: 2016.11.11~14

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.)

1. Production records check：

   According to the defect adapter S/N, query SFCS record – no abnormality was found.

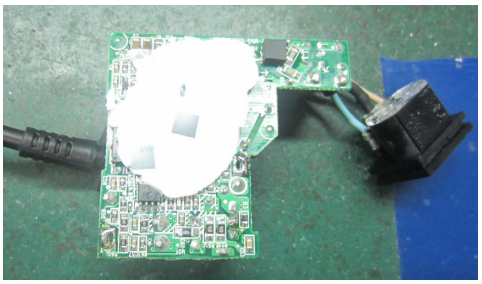


2. Electrical verification:

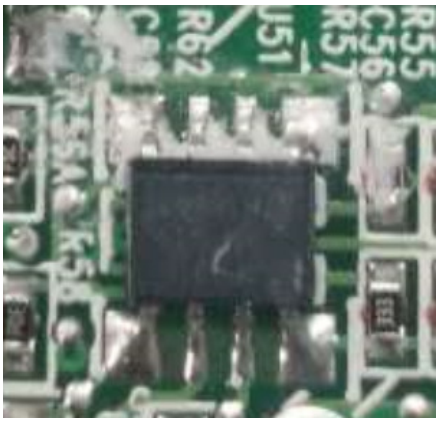
   After retest the defective adapter, we could confirm the output voltage is 4.3V, lower than spec. 19V.

3. Defect Symptom Verification:

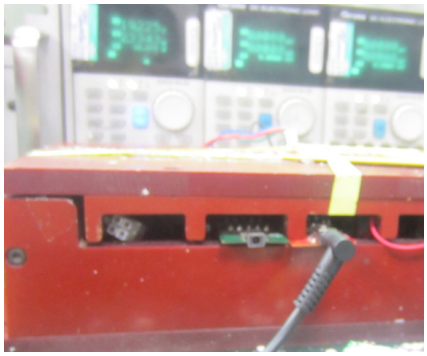
3.1 Open case, inspect solder surface and component side – no abnormality was found.

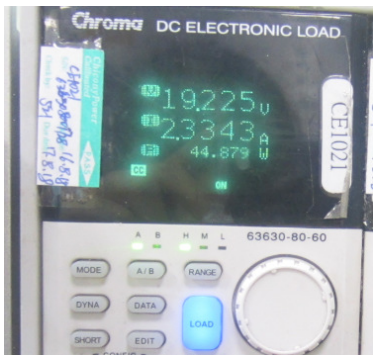


3.2 Based on the defect mode, the possible cause is the component of U51. After appearance checking no abnormality was found around U51.

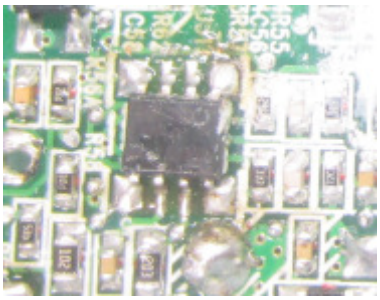


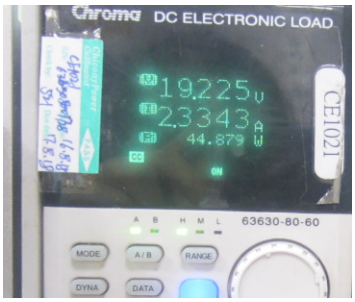
3.3 PE change U51 with a new one, the adapter shows normal.





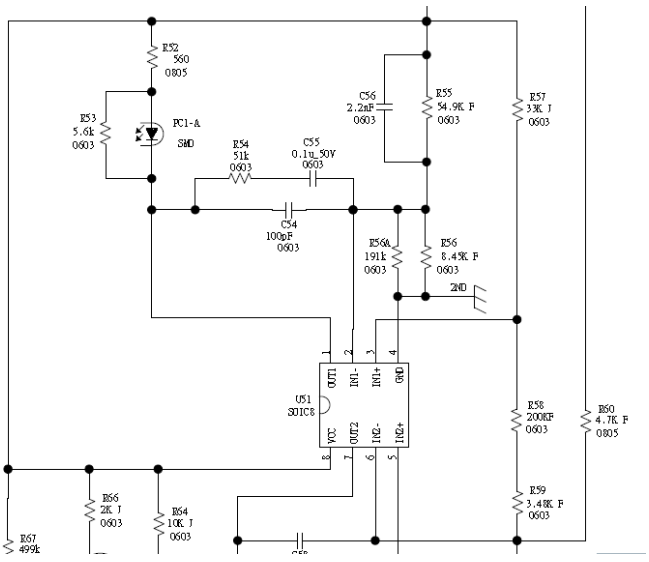
3.4 PE replaced the old U51 back, the adapter shows normal.





3.5 The adapter shows normal after BI aging test.

3.6 Schematic analysis: U51 is IC for voltage stabilization. When U51 fail the voltage will cause adapter output voltage low.



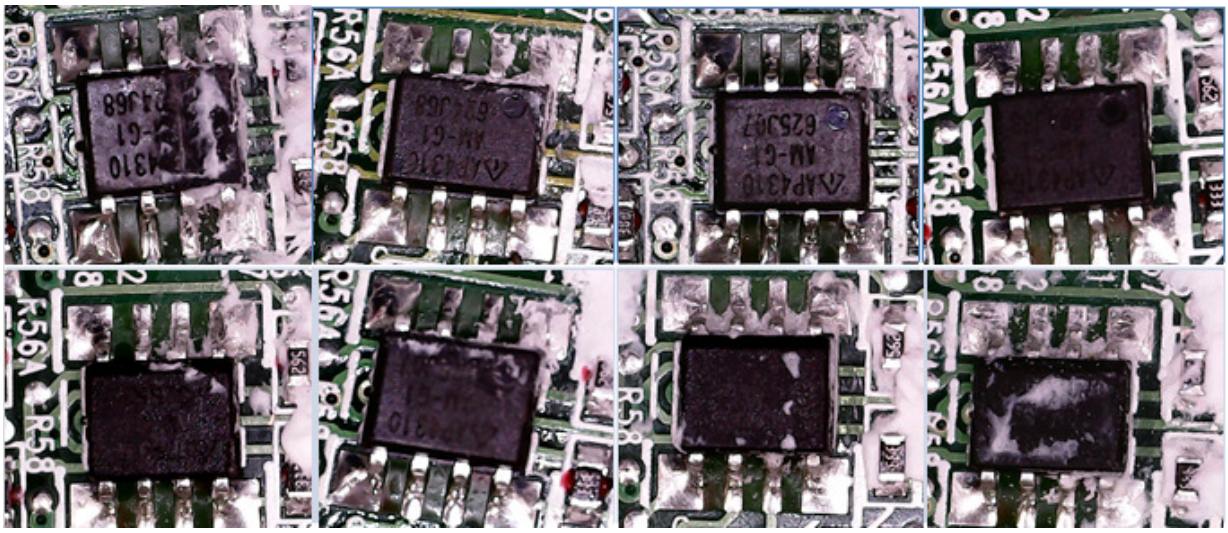
4. U51 is provided to vendor for further analysis. --- Analysis result: NDF.
P/No.: 601AP4310AMTSRHF Vendor: BCD

CCFAR-AP4310AM
TR-AG1-CHICONY-

5. Since the analysis result from U51 vendor is NDF, so we do below for soldering phase:

5.1 Visual inspection has been done to confirm soldering status, and then cross verification of U51 is conducted after no obviously soldering issue conformed. However, so far further analysis to soldering is unable to be re-conformed on original NG product, so we take another 30 pcs products to check soldering status by microscope.

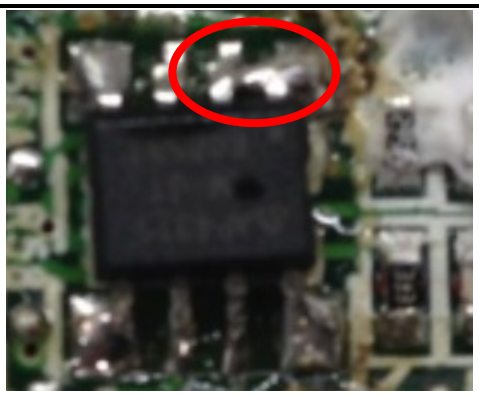
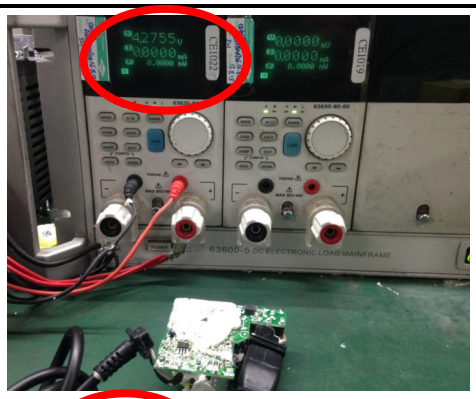
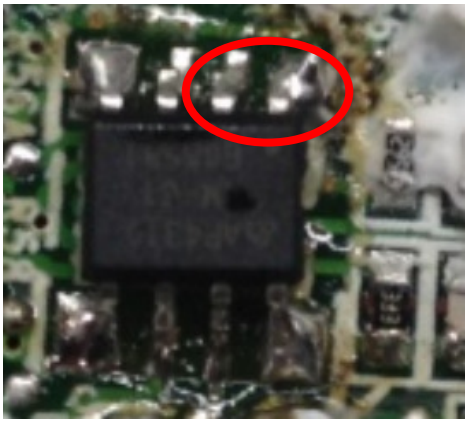
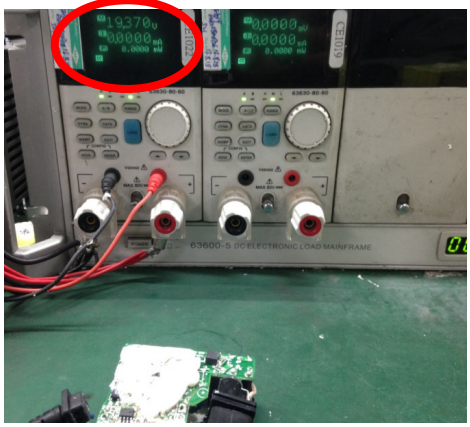
And result is OK, no soldering issue is found.



5.2 Simulation verification:

Since soldering problem is unable to be found on original NG ADP, we do simulation as below:

One ADP is taken and we short U51 pin1-2, and then the output voltage is 4.27V, which is similar to defect condition of original NG ADP. And then ADP becomes normal after solder between U51 Pin1 and 2 is removed.

Summary:

1. Per vendor analysis result, U51 is NDF
2. Per simulation verification result, it is supposed soldering short between U51 Pin1 and Pin2 to cause low voltage.

D5.)改善措施: improvement measure:

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

1. Per simulation result, the possibility is soldering short between U51 Pin1 and Pin2, so we take improvement action for this first.
   1.1 To take it as key point to check if any soldering short or particle between U51 pins.
   Before: Visual inspection by operator with microscope
   After: Since this is new model, AOI equipment is also launched for inspection automatically.

Before	After
Check & touch up by manual	AOI
	

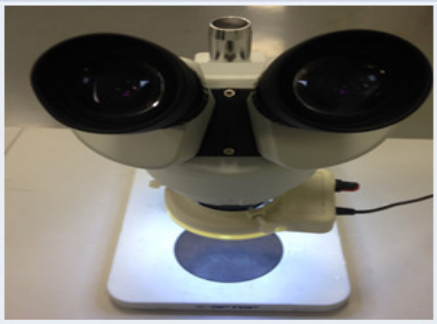
Owner：MFG/TE Due date: 2016/12/5

1.2. Analysis method improvement:

Since the rough visual inspection at initial analysis stage, soldering status is unable to be further confirmed, so we take action as below for improvement:

a. Continue notice and collecting similar defect.

b. Improvement analysis method of soldering inspection:

Before	After
Visual inspection	Visual inspection “by microscope”
	 Model: SDPTOP SZM
If no soldering issue, do cross verification of component	If no soldering issue, do cross verification of component.

Owner：PE/CQS Date：2016/12/01

2. Risk assessment

2.1. Production record investigation:

So far this model is produced 355K, there is no identical U51 or low voltage defect found during production.

Q'ty	fail	fail dppm
355,000	0	0

2.2. Total shipment is 340K. So far there is one failure in. No such defect was found in field.

Shipping Q'ty	ODM fail	ODM fail dppm	Field fail	Field fail dppm
340,000	1	2.94	0	0

And do sorting in HUB, no defect is found.

Q'ty	fail	fail dppm
27,000	0	0

3. Per above data, it is confirmed that the risk is low. CPT will monitor the similar status from now.

Owner：MFG/SQE/CQS Date：2016/12/01

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)

Due date : 2016.12.05

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.)

QIT members and IPQC will continue trace this issue day by day.

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 all QIT members.

Signature Team Leader: Henry_Zhang

Name – Title

Signature by Approver: Wade_Lo

Name-Title