Eight Discipline Report (8D Report)

To:	8D report No.: **CPTP0326**
From:：**Chicony Power Technology**	RMA claim No.: **N/A**
CC： **N/A**	Chicony P/N: **A045R07DH**
	Customer P/N:
Submit date: **2014/3/3**	Product description: **45W adapter**
Receive date: **2014/3/26**	Defect D/C or Lot No.:
Subject：There are 0.1% productions which has voltage drop phenomenon during burn in process.	

D1.) 問題解決成員:Use Team Approach

主持者 (Team Leader)：

內部成員 (Internal Team Members):

Sales: Angela

PM: Emma

RD: Brandon/Frankly/Jackson

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.)

CQ factory feedback information:

What : There are 0.1% productions which has voltage drop phenomenon during burn in process. The output voltage is approximately 19 V at cold start, and the voltage will decrease to 18.4V gradually during burn in mode.

Who:

How many: 16pcs/14530pcs (Defective Rate: 0.11%)

Where: CQ factory

When: 2014/3/3

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.**)**

CQ factory send 5 pcs defective and 5 pcs normal samples to Taipei, and assign RD verify the defective samples.

Date: 2014.3.7

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.**)**

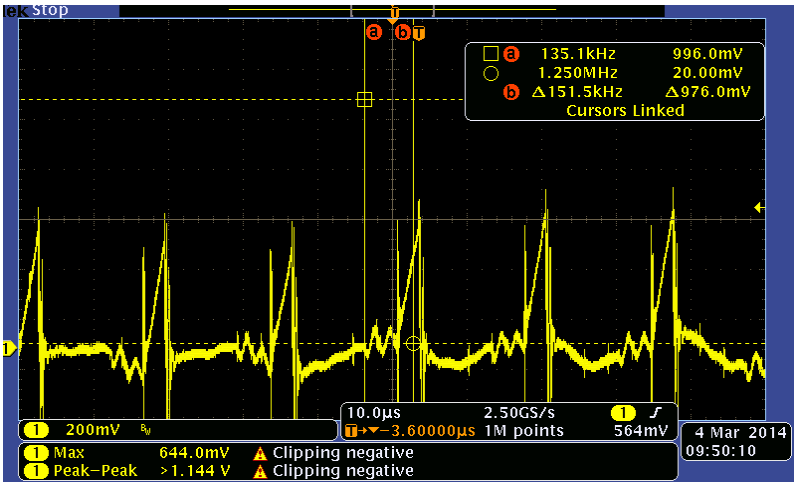
Analysis and findings:

1. **We tested the defective and normal samples in Taipei. Burn in 2 hours, the output voltage of defective samples will decrease 0.47V~0.7V gradually. And the drop voltage of normal samples are 0.11 V~0.25V. Before burn in, the output voltage of defective sample are lower than 19.1V.**

defective samples					
	Vo-no1	Vo-no2	Vo-no3	Vo-no4	Vo-no5
Before burn in(Full load)	18.99V	19.01V	18.93V	18.82V	19.04V
Burn in 2 hours(Full load)	18.35V	18.42V	18.23V	18.35V	18.43
Different	0.64V	0.59V	0.7 V	0.47V	0.61V

normal samples					
	Vo-no1	Vo-no2	Vo-no3	Vo-no4	Vo-no5
Before burn in(Full load)	19.46V	19.43V	19.38V	19.36V	19.45V
Burn in 2 hours(Full load)	19.35V	19.28V	19.17V	19.17V	19.2V
Different	0.11V	0.15V	0.21V	0.19V	0.25V

2. **We measured the V_{sense} waveform of defective sample, and find the voltage waveform has oscillating phenomenon. We infer it should be the transformer T1 interfere the control circuit.**



3. **We test the transformers parameters of defective and normal samples, the test data shows as follow attachment. All the parameter of defective and normal samples seems similar.**

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4. **We modified the control loop parameters of 5pcs defective samples as follow:**

   (1) R52 change from 3.6kohm to 560ohm,

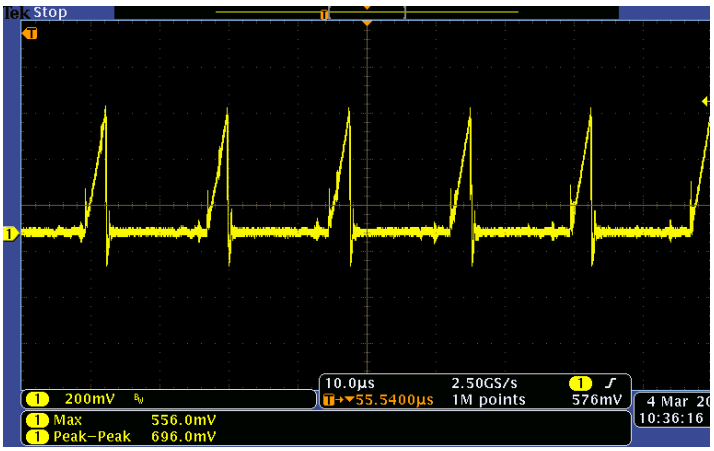
   (2) R53 change from 20kohm to 5.6kohm,

   (3) R54 change from 15kohm to 51kohm

   (4) Remove C56(was 1nF).

We re-tested the output voltage of defective samples, the test results and V_{sense} waveform show as follow:

defective samples(R52=560ohm, R53=5.6kohm, R54=51kohm, remove C56)					
	Vo-no1	Vo-no2	Vo-no3	Vo-no4	Vo-no5
Before burn in(Full load)	19.39V	19.53V	19.45V	19.42V	19.37V
Burn in 2 hours(Full load)	19.37V	19.48V	19.39V	19.34V	19.31V
Different	0.02V	0.05V	0.06V	0.08V	0.06V



Modified R52/R53/R54/C56 can improve voltage drop issue.

5. **We verified the loop gain and dynamic load of modified defective samples, and the test results show as follow:**

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6. **We requested the CQ factory to modify 10pcs defective and normal samples, respective, and implemented the production process. All the samples can pass the test in production line.**

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**)**

Modified the control loop parameters R52/R53/R54, and remove C56 (was 1nF).

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: Running change in April, 2014.

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**.)**

The same as D5

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 members.