

Eight Discipline Report (8D Report)

| | |
|---|--|
| To: | 8D report No.: |
| From: : Chicony Power Technology | RMA claim No.: N/A |
| CC : N/A | Chicony P/N: A045R00DH |
| | Customer P/N: |
| Submit date: 2014/3/11 | Product description: 45W adapter |
| Receive date: 2014/3/25 | Defect D/C or Lot No.: Fail sample: S/N F2550813500000505 Pass sample: date code 1402 |

Subject : 45W adapter sample conduction test failed in 3rd party laboratory.

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

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.)

Customer feedback information:

What : customer claimed that CPT 45W adapter failed in the conduction test.

Who: (CPT P/N: A045R00DH-HW01)

How many: 2pcs sample. 1pcs passed, and the other failed

Fail sample: S/N F2550813500000505

Pass sample: Date code 1402

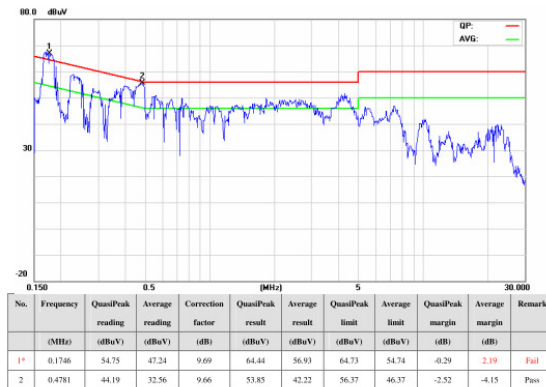


Where: The 3rd party test data shows as below:



程智科技股份有限公司
Compliance Certification Service Inc.
地址: 308 慶安路一段一號二樓二樓, Taoyuan County 33841
Tel: +886-3-324032886-3-3240366
Fax: +886-3-324032886-3-3240360
http://www.ccsmc.com.tw

| | | | | |
|--------------|-----------------------------------|---------------|-------------------|--------------|
| Job No.: | 20140212 | Conduction #4 | Time: | 2014/2/12 |
| Company: | 仁寶 | | Time: | 下午 05:29:39 |
| Standard: | EN 55022 Class B (QP) | | Temp.(°C)/Hum.(%) | 25(°C)/57% |
| Test item: | Conduction test | | Test By: | Tony Tsai |
| Line: | L1 | | Test Voltage: | AC 110V/60Hz |
| Model: | ZPM30 | | | |
| Description: | A045R00DH-FULL SYSTEM-FULL SYSTEM | | | |



Fail sample(S/N: F255081350000505)



程智科技股份有限公司
Compliance Certification Service Inc.
地址: 308 慶安路一段一號二樓二樓, Taoyuan County 33841
Tel: +886-3-324032886-3-3240366
Fax: +886-3-324032886-3-3240360
http://www.ccsmc.com.tw

| | | | | |
|--------------|------------------------|---------------|-------------------|--------------|
| Job No.: | 20140212 | Conduction #4 | Time: | 2014/2/12 |
| Company: | 仁寶 | | Time: | 下午 05:18:28 |
| Standard: | CNS 13438 Class B (QP) | | Temp.(°C)/Hum.(%) | 25(°C)/57% |
| Test item: | Conduction test | | Test By: | Tony Tsai |
| Line: | L1 | | Test Voltage: | AC 110V/60Hz |
| Model: | ZPM30 | | | |
| Description: | A045R00DH-FULL SYSTEM | | | |



Pass sample(Date code: 1402)

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.)

Assign RD go to verify the failed samples. In addition, we provide 2pcs new version samples which can verify the conduction test in 3rd party laboratory, and obtain 1pcs failed sample for analysis.

Owner: CPT Date: 2014.3.19

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:

- We provided 2pcs new sample to 3rd party lab. They can both pass the conduction test and the test margin has 8.92dB.**

2014.3.19

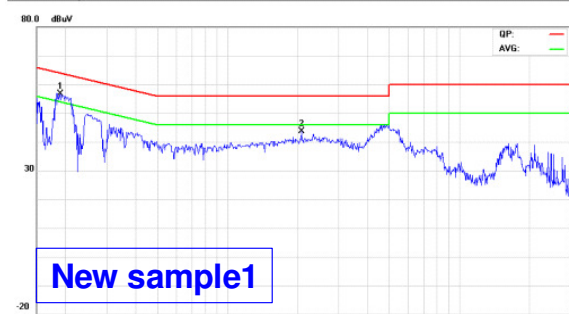


程智科技股份有限公司
Compliance Certification Service Inc.
地址: 886 龍門路一段210巷81-1號
No.81-1, Lane 210, Bade 2nd Rd., Lujhu Township, Taoyuan County 33841
Taiwan Taoyuan Hsien, Taiwan

林口實驗室
Tel: +886-3-3240332/886-3-3245966
Fax: +886-3-3245235/886-3-3247460
http://www.ccsmc.com.tw

Conduction #4

| | | | |
|--------------|------------------------|-------------------|--------------|
| Job No.: | 20140319 | Date: | 2014/3/19 |
| Company: | 群光 | Time: | 下午 02:18:19 |
| Standard: | CNS 13438 Class B (QP) | Temp.(°C)/Hum.(%) | 25(°C)/57% |
| Test item: | Conduction test | Test By: | Tony Tsai |
| Line: | L1 | Test Voltage: | AC 110V/60Hz |
| Model: | A045R07DH-HW01 | | |
| Description: | SAMPLE 1 | | |



| No. | Frequency (MHz) | QuasiPeak reading (dBuV) | Average reading (dBuV) | Correction factor (dB) | QuasiPeak result (dBuV) | Average result (dBuV) | QuasiPeak limit (dBuV) | Average limit (dBuV) | QuasiPeak margin (dB) | Average margin (dB) | Remark |
|-----|-----------------|--------------------------|------------------------|------------------------|-------------------------|-----------------------|------------------------|----------------------|-----------------------|---------------------|--------|
| 1* | 0.1882 | 43.33 | 28.80 | 9.87 | 53.20 | 38.67 | 64.12 | 54.12 | -10.92 | -15.45 | Pass |
| 2 | 2.0628 | 29.29 | 23.34 | 10.01 | 39.30 | 33.35 | 56.00 | 46.00 | -16.70 | -12.65 | Pass |

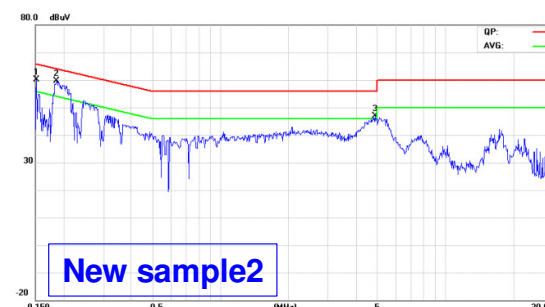


程智科技股份有限公司
Compliance Certification Service Inc.
地址: 886 龍門路一段210巷81-1號
No.81-1, Lane 210, Bade 2nd Rd., Lujhu Township, Taoyuan County 33841
Taiwan Taoyuan Hsien, Taiwan

林口實驗室
Tel: +886-3-3240332/886-3-3245966
Fax: +886-3-3245235/886-3-3247460
http://www.ccsmc.com.tw

Conduction #4

| | | | |
|--------------|------------------------|-------------------|--------------|
| Job No.: | 20140319 | Date: | 2014/3/19 |
| Company: | 群光 | Time: | 下午 02:23:03 |
| Standard: | CNS 13438 Class B (QP) | Temp.(°C)/Hum.(%) | 25(°C)/57% |
| Test item: | Conduction test | Test By: | Tony Tsai |
| Line: | L1 | Test Voltage: | AC 110V/60Hz |
| Model: | A045R07DH-HW01 | | |
| Description: | SAMPLE 2 | | |

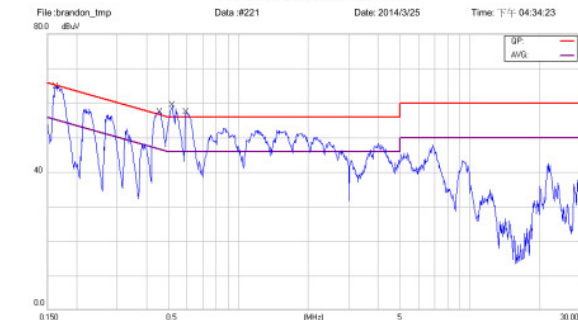


| No. | Frequency (MHz) | QuasiPeak reading (dBuV) | Average reading (dBuV) | Correction factor (dB) | QuasiPeak result (dBuV) | Average result (dBuV) | QuasiPeak limit (dBuV) | Average limit (dBuV) | QuasiPeak margin (dB) | Average margin (dB) | Remark |
|-----|-----------------|--------------------------|------------------------|------------------------|-------------------------|-----------------------|------------------------|----------------------|-----------------------|---------------------|--------|
| 1 | 0.1504 | 38.73 | 13.76 | 9.87 | 48.60 | 23.63 | 65.98 | 55.98 | -17.38 | -32.35 | Pass |
| 2* | 0.1860 | 45.45 | 29.42 | 9.87 | 55.32 | 39.29 | 64.21 | 54.21 | -8.89 | -14.92 | Pass |
| 3 | 4.8432 | 31.35 | 26.96 | 10.12 | 41.47 | 37.08 | 56.00 | 46.00 | -14.53 | -8.92 | Pass |

2. We retest the failed sample with dummy load and found it failed in CPT EMI Lab. Test result of failed sample is over spec 0.1dB at 515kHz(QP) and under spec 1.6dB at 163kHz(Avg). The test results are shown in below: 2014.3.25

Address: 2F, NO.25, Wu-Gong 6th Rd., Wu Ku Industrial Park, Taipei Hsien, Taiwan, R.O.C.
Tel: 886-2-22995636 Ext: 3705 Fax: 886-2-66252622

Conducted Emission Measurement



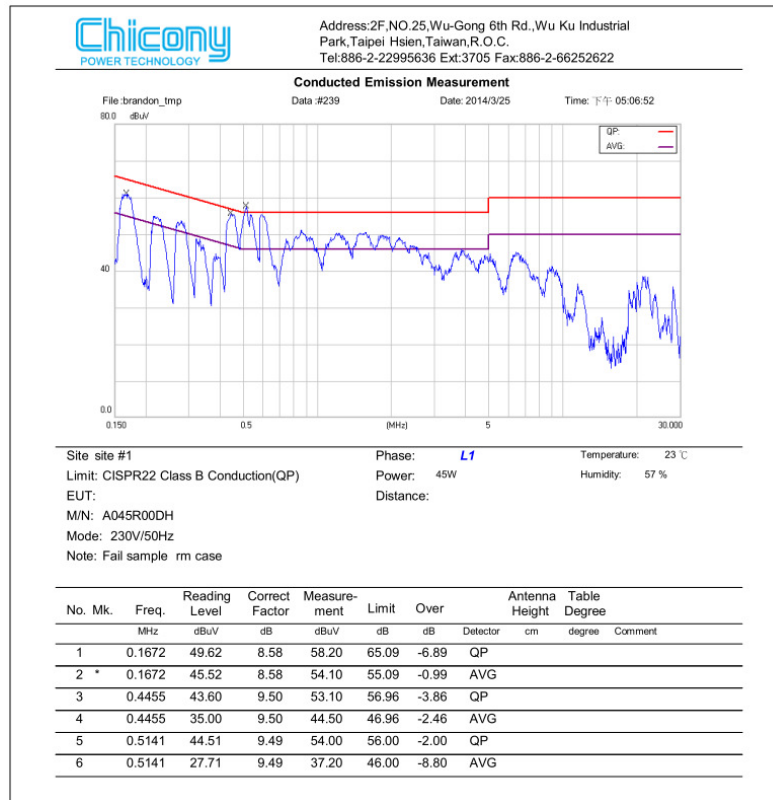
Site site #1
Limit: CISPR22 Class B Conduction(QP)
EUT:
M/N: A045R00DH
Mode: 230V/50Hz
Note: Fail sample 75% load rm case

Phase: L1
Power: 45W
Distance:
Temperature: 23 °C
Humidity: 57 %

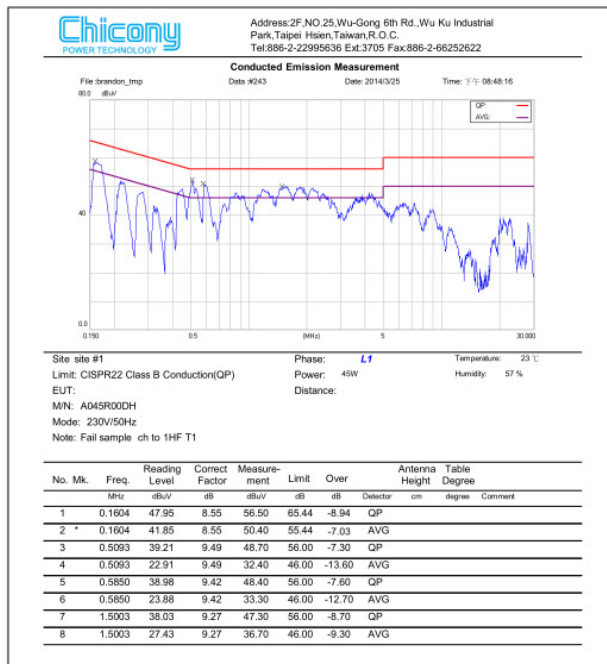
| No. | Mk. | Freq. (MHz) | Reading Level (dBuV) | Correct Factor (dB) | Measure-ment (dBuV) | Limit (dB) | Over (dB) | Antenna Height (cm) | Table Degree | Comment |
|-----|-----|-------------|----------------------|---------------------|---------------------|------------|-----------|---------------------|--------------|---------|
| 1 | | 0.1630 | 52.24 | 8.56 | 60.80 | 65.30 | -4.50 | QP | | |
| 2 | | 0.1630 | 45.14 | 8.56 | 53.70 | 55.30 | -1.60 | AVG | | |
| 3 | | 0.4575 | 45.60 | 9.50 | 55.10 | 56.74 | -1.64 | QP | | |
| 4 | | 0.4575 | 32.50 | 9.50 | 42.00 | 46.74 | -4.74 | AVG | | |
| 5 * | | 0.5147 | 46.61 | 9.49 | 56.10 | 56.00 | 0.10 | QP | | |
| 6 | | 0.5147 | 32.41 | 9.49 | 41.90 | 46.00 | -4.10 | AVG | | |
| 7 | | 0.5951 | 45.59 | 9.41 | 55.00 | 56.00 | -1.00 | QP | | |
| 8 | | 0.5951 | 34.09 | 9.41 | 43.50 | 46.00 | -2.50 | AVG | | |

Defect Symptom Verification:

- (1) After retest these defective adapter, we disassemble the sample case. And retest the failed sample in CPT EMI lab. The test margin of failed sample has 0.99dB at 167kHz.
2014.3.25



- (2) We changed the modified transformer T1 to failed sample, and retest the failed sample. The test margin becomes to 7.03dB. The sample has enough margins to meet spec request.



230V/50Hz

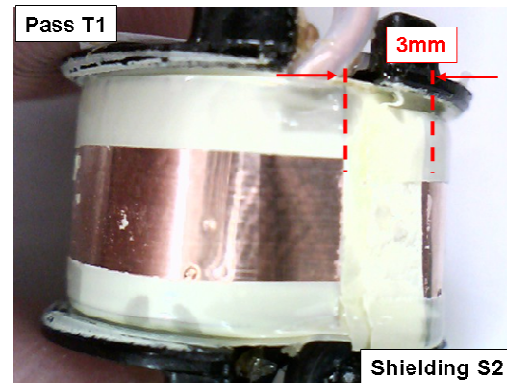
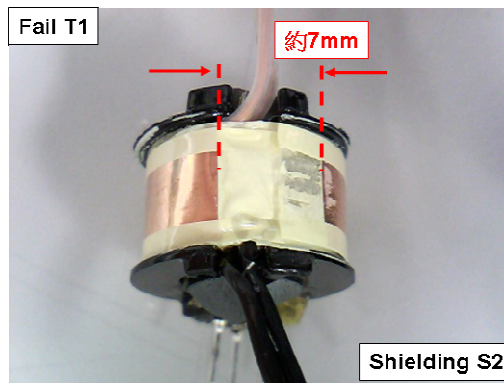


115V/60Hz

According to above experiments, we infer it should be the transformer T1 causes the issue.

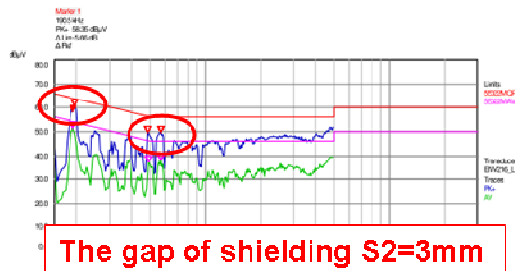
3. Failure analysis: For transformer T1

- (1) We disassemble the fail and pass transformers T1, and find a disparate point which the gap of shielding S2 of them are 7mm and 3mm, respectively.



- (2) We manufacture 2pcs transformers in Taipei. The gap of shielding S2 in one transformer is 6mm, and the other is 3mm. According to conduction test results, the result of 3mm gap is better than the other one. We infer the failed frequency range is affected by the gap of shielding.

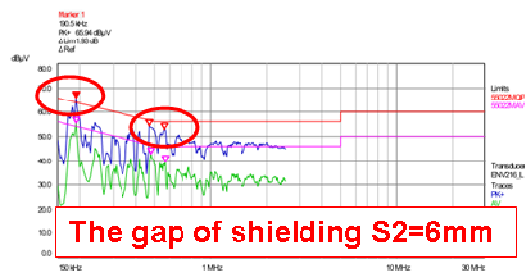
Pre-measurement Graph



Peak Search Results

| Trace | Frequency (MHz) | Level (dBμV) | Limit (dBμV) | Delta Limit (dB) | Delta Ref (dB) | Comment |
|-------|-----------------|--------------|--------------|------------------|----------------|---------|
| 2 AV | 0.1905 | 51.44 | 54.01 | -2.57 | | L1 on |
| 1 PK+ | 0.195 | 60.62 | 63.62 | -3.00 | | L1 on |
| 1 PK+ | 0.483 | 49.35 | 56.29 | -6.94 | | L1 on |
| 2 AV | 0.4875 | 37.32 | 46.21 | -8.89 | | L1 on |
| 1 PK+ | 0.573 | 49.49 | 56.00 | -6.51 | | L1 on |
| 2 AV | 0.573 | 38.19 | 46.00 | -7.81 | | L1 on |

Pre-measurement Graph



Peak Search Results

| Trace | Frequency (MHz) | Level (dBμV) | Limit (dBμV) | Delta Limit (dB) | Delta Ref (dB) | Comment |
|-------|-----------------|--------------|--------------|------------------|----------------|---------|
| 1 PK+ | 0.1965 | 65.94 * | 64.01 | 1.93 | | N on |
| 2 AV | 0.1965 | 55.39 * | 54.01 | 1.38 | | N on |
| 1 PK+ | 0.4885 | 54.12 | 51.59 | -2.40 | | N on |
| 2 AV | 0.4785 | 42.73 | 46.37 | -3.64 | | N on |
| 1 PK+ | 0.564 | 53.00 | 56.00 | -3.00 | | N on |
| 2 AV | 0.5685 | 29.55 | 46.00 | -16.45 | | N on |

(3) We verify another 5pcs new version transformer (The shielding S1/S2 in transformer is 1.1 turns) and find it could pass the test. Test report and new version transformer datasheet is as below

Test report:

New version T1 datasheet:



D:\Chicony\
002_brandon\001_HI



D:\Chicony\
002_brandon\001_HI

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 shielding S1/S2 of transformer T1 to 1.1 turns. Production revision change from 0A to 0B

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.