



Eight Discipline Report (8D Report)

To: 8D report No.: CPCQ20221027
From: Chicony Power Technology RMA claim No.: N/A
CC : N/A Chicony P/N: A111AP01P-HW01 & A111AP02P-HW01

Submit date: 2022/11/11 Customer P/N:
Receive date: 2022/10/27 Product description: 110W adapter
Subject : Adapter ESD issue*4pcs Defect D/C or Lot No.: 2022/07&2022/09

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	Sunny_Dang
MFG	Ice_Liu
IPQC/QE	BL_Zhang
PE	XP_Zhao
IE	Hunter_Liao
RD	Lance_Lu

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.)

2022/10/26, I feedback HP 110W adapter(A111AP01P-HW01 & A111AP02P-HW01) ESD fail (CQ*3pcs, TPE*1pc).

Customer P/N:

CPT P/N: A111AP01P-HW01-0B

Sample1 SN: WLSYB0BGCGV433 D/C: 2022/7/20

Sample2 SN: WLSYB0BGCGV432 D/C: 2022/7/20

CPT P/N: A111AP02P-HW01-0A

Sample3 SN: WRLUH0AGCH208J D/C: 2022/9/7



TPE Sample SN:WRLUH0AGCH2045 D/C:2022/9/7

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.)

將不良樣機共 4pcs 交換回我司(重慶/台北)進一步分析。

Exchange the 4pcs failed adapter back(Chongqing/Taipei) for further analysis.

Owner:FAE Date: 2022.10.27

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. SFCS 生產記錄

根據退回產品 S/N,查詢廠內 SFCS 記錄正常。

According to the returned adapters S/N, query SFCS record. - no abnormality was found.

Sample1: WLSYB0BGCGV433

出貨序號		WLSYB0BGCGV433		<input type="checkbox"/> 櫄寫自動調整	
生產條碼	MBM28C1101111	客戶名稱	AutoLine_PATE_A_100W		
工單	MBM28C11	途程名稱	CPCQ_L12		
工單類型		生產線別			
料號	A111AP01PHW010B	規格			
機種		狀態	PASS complete		
版本	N/A	下道工序			
客戶序號1	WLSYB0BGCGV433	客戶序號2	N/A		
包裝作業資訊		出貨作業資訊			
彩盒號	N/A	客戶		保固期	
箱號	CW28C1100123				
機板號	PMM10D0100298			出貨地	
流程	維修 抽驗 重工 物料 錫膏 鋼板 削刀 組裝物料	生產條碼	工單	料號	客戶 生產線 制程 狀態
►					
MBM28C1101111	MBM28C11	A111AP01PHW010B	CPCQ... ICT	OK	
MBM28C1101111	MBM28C11	A111AP01PHW010B	CPCQ... ACT	OK	
MBM28C1101111	MBM28C11	A111AP01PHW010B	CPCQ... ASSY	OK	
MBM28C1101111	MBM28C11	A111AP01PHW010B	CPCQ... PRE-ATE-A	OK	
MBM28C1101111	MBM28C11	A111AP01PHW010B	CPCQ... PRE-ATE-B	OK	
MBM28C1101111	MBM28C11	A111AP01PHW010B	CPCQ... SN CHECK	OK	
MBM28C1101111	MBM28C11	A111AP01PHW010B	CPCQ... HIPOT/GROUNDING	OK	
MBM28C1101111	MBM28C11	A111AP01PHW010B	CPCQ... FINAL-ATE1	OK	
MBM28C1101111	MBM28C11	A111AP01PHW010B	CPCQ... FINAL-ATE2	OK	
MBM28C1101111	MBM28C11	A111AP01PHW010B	CPCQ... FINAL-ATE3	OK	
MBM28C1101111	MBM28C11	A111AP01PHW010B	CPCQ... FINAL-ATE	OK	
MBM28C1101111	MBM28C11	A111AP01PHW010B	CPCQ... PACKING	OK	
MBM28C1101111	MBM28C11	A111AP01PHW010B	CPCQ... PACKING	OK	
MBM28C1101111	MBM28C11	A111AP01PHW010B	CPCQ... QC	OK	

Sample2:WLSYB0BGCGV432

出貨序號		WLSYB0BGCGV432		<input type="checkbox"/> 櫄寫自動調整	
生產條碼	MBM28C1101928	客戶名稱	AutoLine_PATE_A_100W		
工單	MBM28C11	途程名稱	CPCQ_L12		
工單類型		生產線別			
料號	A111AP01PHW010B	規格			
機種		狀態	PASS complete		
版本	N/A	下道工序			
客戶序號1	WLSYB0BGCGV432	客戶序號2	N/A		
包裝作業資訊		出貨作業資訊			
彩盒號	N/A	客戶		保固期	
箱號	CW28C1100123				
機板號	PMM10D0100298			出貨地	
流程	維修 抽驗 重工 物料 錫膏 鋼板 削刀 組裝物料	生產條碼	工單	料號	客戶 生產線 制程 狀態
►					
MBM28C1101928	MBM28C11	A111AP01PHW010B	CPCQ... ICT	OK	
MBM28C1101928	MBM28C11	A111AP01PHW010B	CPCQ... ACT	OK	
MBM28C1101928	MBM28C11	A111AP01PHW010B	CPCQ... ASSY	OK	
MBM28C1101928	MBM28C11	A111AP01PHW010B	CPCQ... PRE-ATE-A	OK	
MBM28C1101928	MBM28C11	A111AP01PHW010B	CPCQ... PRE-ATE-B	OK	
MBM28C1101928	MBM28C11	A111AP01PHW010B	CPCQ... SN CHECK	OK	
MBM28C1101928	MBM28C11	A111AP01PHW010B	CPCQ... HIPOT/GROUNDING	OK	
MBM28C1101928	MBM28C11	A111AP01PHW010B	CPCQ... FINAL-ATE1	OK	
MBM28C1101928	MBM28C11	A111AP01PHW010B	CPCQ... FINAL-ATE2	OK	
MBM28C1101928	MBM28C11	A111AP01PHW010B	CPCQ... FINAL-ATE3	OK	
MBM28C1101928	MBM28C11	A111AP01PHW010B	CPCQ... FINAL-ATE	OK	
MBM28C1101928	MBM28C11	A111AP01PHW010B	CPCQ... PACKING	OK	
MBM28C1101928	MBM28C11	A111AP01PHW010B	CPCQ... PACKING	OK	
MBM28C1101928	MBM28C11	A111AP01PHW010B	CPCQ... QC	OK	

Sample3:WRLUH0AGCH208J

TPE Sample:WRLUH0AGCH2045

Chicony Power Technology Co., Ltd. 群光電能科技股份有限公司

Address: 29F, No. 69, Sec. 2, Guangfu Rd., Sanchong Dist., New Taipei City 241, Taiwan

新北市三重區光復路二段 69 號 29 樓

TEL:+886-2-6626 0678



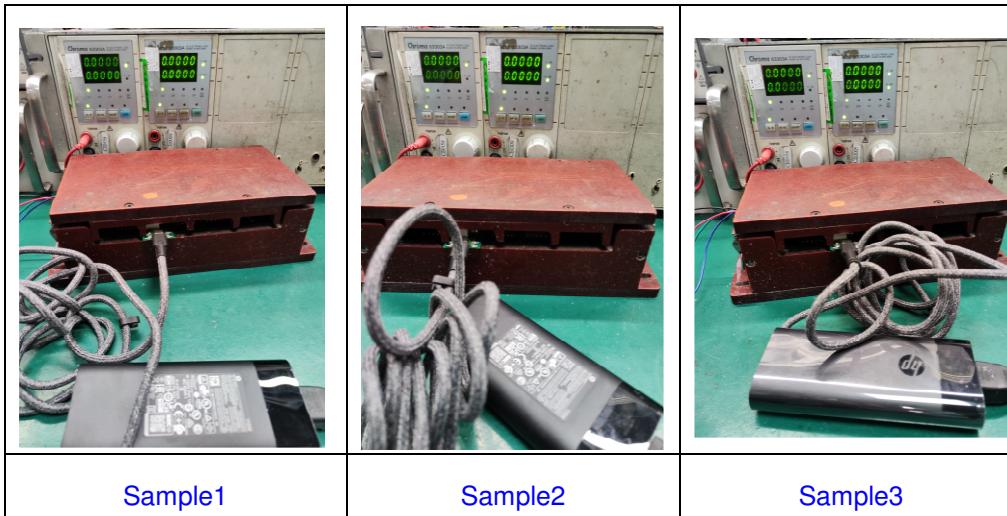
出貨序號	WRLUH0AGCH208J	<input type="checkbox"/> 檢寬自動調整						
生產條碼	MBM35C2100209	客戶名稱	AutoLine_PATE_A_100W					
工單	MBM35C21	生產線別	CPCQ_L13					
工單類型		規格						
料號	A111AP02PHW010A	狀態	PASS	complete				
機種		下道工序						
版本	N/A	客戶序號1	WRLUH0AGCH208J	客戶序號2	N/A			
包裝作業資訊		出貨作業資訊						
彩盒號	N/A	客戶						
箱號	CMM35C2100002	保固期						
棧板號	PMM10D0100412	出貨地						
流程	維修	抽驗	重工	物料	錫膏	鋼板	刮刀	組裝物料
MBM35C2100209	MBM35C21	A111AP02PHW010A	客戶	生產線	制程	狀態		
			CPCQ...	ICT	OK			
			CPCQ...	ACT	OK			
			CPCQ...	ASSY	OK			
			CPCQ...	PRE-ATE-A	OK			
			CPCQ...	PRE-ATE-B	OK			
			CPCQ...	SN CHECK	OK			
			CPCQ...	HIPOT/GROUNDING	OK			
			CPCQ...	FINAL-ATE1	OK			
			CPCQ...	FINAL-ATE2	OK			
			CPCQ...	FINAL-ATE3	OK			
			CPCQ...	FINAL-ATE	OK			
			CPCQ...	PACKING	OK			
			CPCQ...	QC	OK			

出貨序號	WRLUH0AGCH2045	<input type="checkbox"/> 檢寬自動調整						
生產條碼	MBM35C2100328	客戶名稱	AutoLine_PATE_A_100W					
工單	MBM35C21	生產線別	CPCQ_L13					
工單類型		規格						
料號	A111AP02PHW010A	狀態	PASS	complete				
機種		下道工序						
版本	N/A	客戶序號1	WRLUH0AGCH2045	客戶序號2	N/A			
包裝作業資訊		出貨作業資訊						
彩盒號	N/A	客戶						
箱號	CMM10D0100605	保固期						
棧板號	N/A	出貨地						
流程	維修	抽驗	重工	物料	錫膏	鋼板	刮刀	組裝物料
MBM35C2100328	MBM35C21	A111AP02PHW010A	客戶	生產線	制程	狀態		
			CPCQ...	ACT	OK			
			CPCQ...	ASSY	OK			
			CPCQ...	PRE-ATE-A	OK			
			CPCQ...	PRE-ATE-B	OK			
			CPCQ...	SN CHECK	OK			
			CPCQ...	HIPOT/GROU...	OK			
			CPCQ...	FINAL-ATE1	OK			
			CPCQ...	FINAL-ATE2	OK			
			CPCQ...	FINAL-ATE3	OK			
			CPCQ...	FINAL-ATE	OK			
			CPCQ...	PACKING	OK			
			CPCQ...	QC	OK			

2. 實物確認

CQ 端:檢查客戶端退回不良品,adapter 外觀無異常,通電測試確認產品無輸出(如下圖).

CQ:The appearance of adapter is normal. Power on test confirms no power of the adapter.



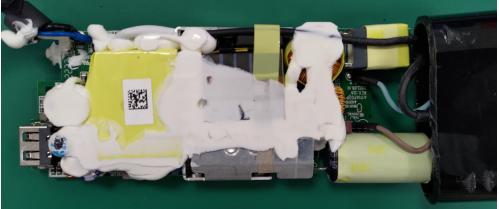
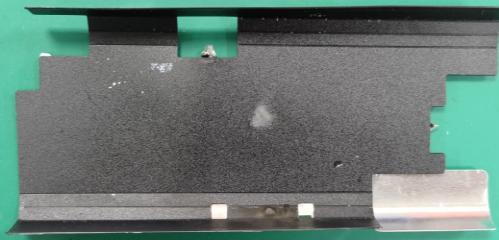
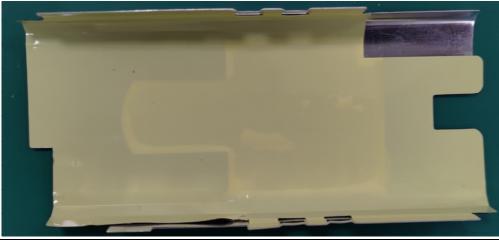
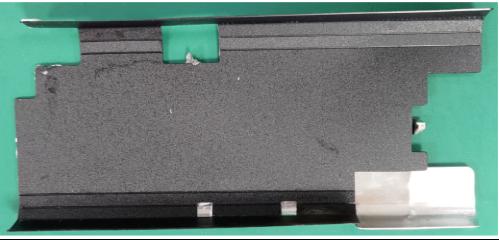
3. 不良分析

3.1. (A111AP01P) Sample1:WLSYB0BGCGV433 Sample2:WLSYB0BGCGV432

3.1.1. 開殼檢查確認零件面及錫面(如下圖)

Open the case to check the parts and tin surface



	 	 
Sample1	 	 

3.1.2.逐次量測錫面各個零件.

PE measure each part of the tin surface one by one.

Sample1: U2、Q6、Q2、R1、Q1、U1、R11、R32、F1 fail.

Sample2: U2、Q6、Q2、R1、ZD1、R13、Q1、U1、R11、R32、F1 fail.

3.2. (A111AP02P) Sample3:WRLUH0AGCH208J

3.2.1.開殼檢查確認零件面及錫面(如下圖)

Open the case to check the parts and tin surface



3.2.2 檢修樣機確認 U2/Q6/ZD1 損壞,更換零件後,產品開機輸出正常.

Check the adapter and confirm that U2/Q6/ZD1 is damaged. After replacing the parts, the output of the adapter is normal .



In summary:

Sample1: U2/Q6/Q2/R1/Q1/U1/R11/R32/F1 fail.

Sample2: U2/Q6/Q2/R1/ZD1/R13/Q1/U1/R11/R32/F1 fail.

Sample3: U2/Q6/ZD1 fail.

TPE Sample: U2/ZD1/Q6/R1/Q2/Q1/U1/R11/D11 fail.

4. 複測驗證:台北端與工廠端進行 ESD 測試,並進行失效零件相關波形驗證.

Retest verification: The Taipei and the CQ factory carry out ESD test, and carry out waveform verification of the failed parts.

4.1. 台北端進行 ESD 測試 4pcs 樣機,1pcs -15kV fail.

Perform ESD test on 4pcs adapter at Taipei, and 1pc failed at -15kV.



	ESD Air Discharge Test				Note(Damage component)
	+/-15kV		+/-16.5kV	+/-20kV	
	Dummy load (Io=5A)	System	Dummy load (Io=5A)	Dummy load (Io=5A)	
Sample1	Pass	Pass	Pass	Fail(-20kV)	
Sample2	Pass	Pass	Pass	Fail(-20kV)	
Sample3	Pass	Pass	Pass	Pass	Io=4A Pass
Sample4	Pass	Fail(-15kV)	Pass		U2/ZD1/Q6/R1/Q2

4.2. 工廠端進行 ESD 測試複驗 5pcs 樣機，2pcs Fail，結果如下：

Perform ESD test on 5pcs adapter at CQ factory, and 2pcs failed.

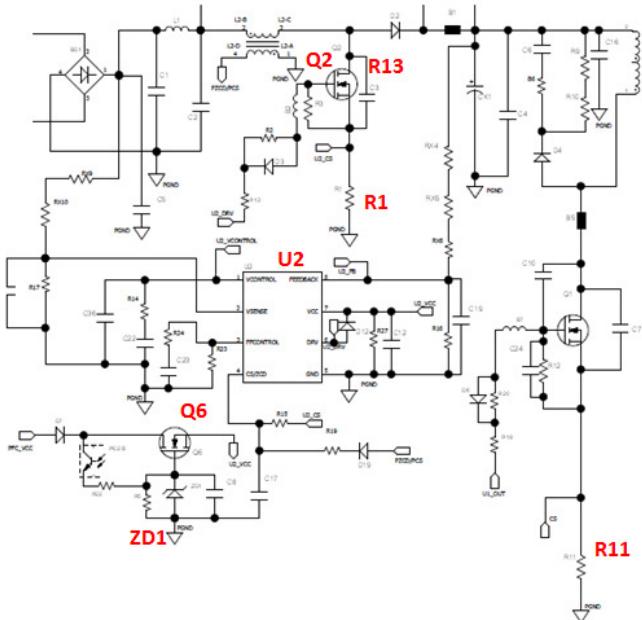
	Number	110V		220V	
		+15KV	-15KV	+15KV	-15KV
A111AP02P	WRLUH0AGCH452D	A	A	A	A
		+16.5KV	-16.5KV	+16.5KV	-16.5KV
	WRLUH0AGCH454T	A	D	A	A
		+15KV	-15KV	+15KV	-15KV
	WRLUH0AGCH451O	A	A	A	A
		+16.5KV	-16.5KV	+16.5KV	-16.5KV
	WRLUH0AGCH455K	+15KV	-15KV	+15KV	-15KV
		A	A	A	A
	WRLUH0AGCH451I	+16.5KV	-16.5KV	+16.5KV	-16.5KV
		/	/	A	A

Note: A: No physical and function error / B: Auto Recovery / C: Latch / D: Fail

修復實驗不良機,確認損壞零件:不良集中於 PFC Vcc 電源迴路零件,分析 U2/Q6/Q2 較可能為失效原因。

Analysis of failed adapter: Defective mainly occur in PFC Vcc power loop parts, U2/Q6/Q2 is more likely to be the failure cause.

	Number	Damage
A111AP02P	WRLUH0AGCH452D	U2、Q6、ZD1、R11、Q2、R1、R13
	WRLUH0AGCH451I	U2、Q6、ZD1
	Sample4	U2、Q6、ZD1、R1、Q2



4.3. 針對不良機集中性較高的失效零件 Q6/ U2/Q2 分別進行於 ESD 放電瞬間的相關波形驗證.

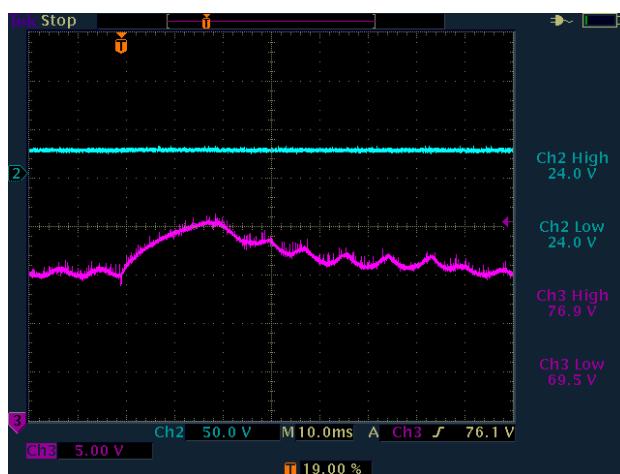
For the parts Q6/ U2/Q2 with failure concentration, the relevant waveforms are verified respectively in ESD discharge moment.

4.3.1 VQ6/VU2_Vcc waveform: (a)VQ6_max=76.9V<100V(SPEC)

(b)VU2_Vcc_max=24V<35V(SPEC)

根據量測波形,Q6 與 U2 執行 ESD 時,電壓應力未超過零件規格.

According to the measured waveform, when Q6 and U2 perform ESD, the voltage stress does not exceed the part specifications.



CH2: VQ2_Vcc、CH3: VQ2_gs

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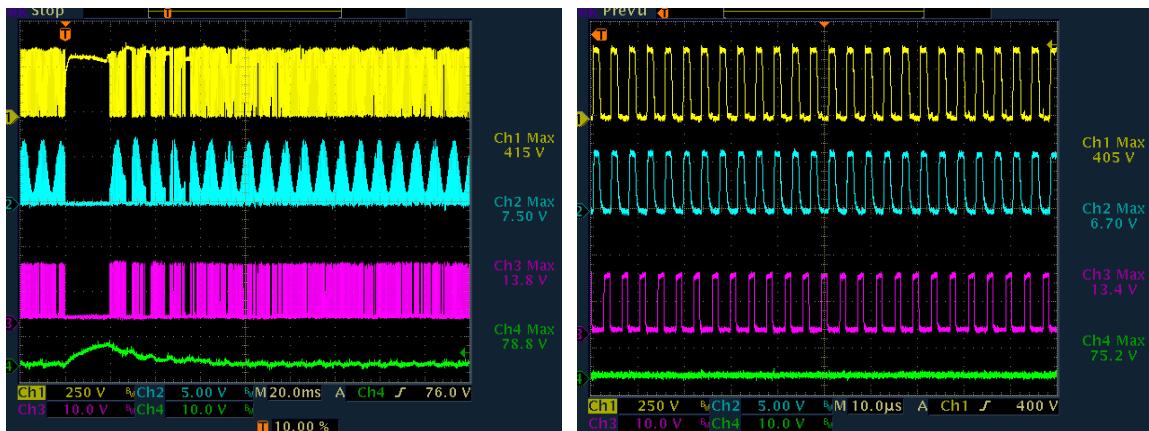
Address: 29F, No. 69, Sec. 2, Guangfu Rd., Sanchong Dist., New Taipei City 241, Taiwan

新北市三重區光復路二段 69 號 29 樓

TEL:+886-2-6626 0678

4.3.2 VQ2_ds/ VQ2_gs 波型如下:量測 Q2 相關波形,確認 PFC 開關無異常開啟問題,排除 Q2 為失效主因.

The VQ2_ds/ VQ2_gs wave patterns are as follows: Measure Q2 waveforms and confirm that there is no abnormal PFC switch on, and exclude Q2 as the main cause of failure.



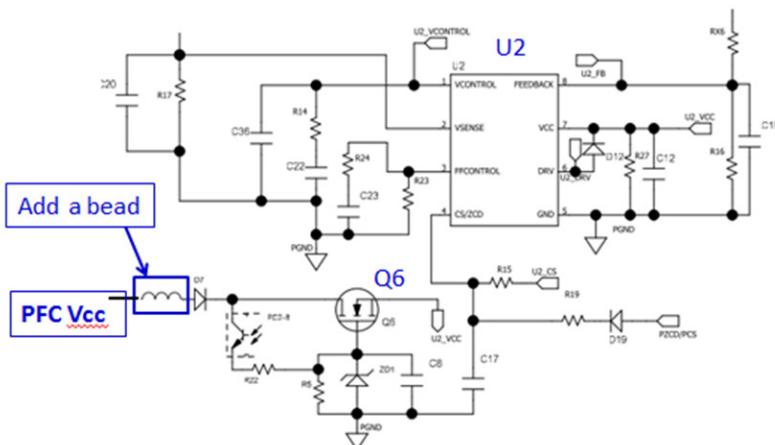
CH1: VQ2_ds CH2: VU2_cs CH3: VQ2_gs CH4: VQ6_gs

4.4. 針對 Q6 D 端新增 ESD 對策.

Add ESD countermeasures for Q6 D side.

4.4.1 D7 正端新增 bead 對策,驗證 10pcs,9 pcs pass,1pcs -16.5kV Fail,ESD 不良率有略為改善.

D7 positive side added bead,ESD test verified 10pcs adapter.9 pcs pass,1pcs failed at -16.5kV. ESD defect rate slightly improved.



輸入電壓	更改條件	WRLUH0AGCH453J		WRLUH0AGCH92A5		WRLUH0AGCH929X		WRLUH0AGCH928N		WRLUH0AGCH929K	
		+15KV	-15KV								
110Vac	D7正極前加bead	20V	A	A	A	A	A	A	A	A	A
	D7正極前加bead	15V	A	A	A	A	A	A	A	A	A
	D7正極前加bead	12V	A	A	A	A	A	A	A	A	A
	D7正極前加bead	9V	A	A	A	A	A	A	A	A	A
	D7正極前加bead	5V	A	A	A	A	A	A	A	A	A
230Vac	D7正極前加bead	20V	A	A	A	A	A	A	A	A	A
	D7正極前加bead	15V	A	A	A	A	A	A	A	A	A
	D7正極前加bead	12V	A	A	A	A	A	A	A	A	A
	D7正極前加bead	9V	A	A	A	A	A	A	A	A	A
	D7正極前加bead	5V	A	A	A	A	A	A	A	A	A
輸入電壓	負載條件	+16.5KV	-16.5KV								
110Vac	D7正極前加bead	20V	A	A	A	A	A	A	A	A	D
	D7正極前加bead	15V	A	A	A	A	A	A	A	A	A
	D7正極前加bead	12V	A	A	A	A	A	A	A	A	A
	D7正極前加bead	9V	A	A	A	A	A	A	A	A	A
	D7正極前加bead	5V	A	A	A	A	A	A	A	A	A
230Vac	D7正極前加bead	20V	A	A	A	A	A	A	A	A	A
	D7正極前加bead	15V	A	A	A	A	A	A	A	A	A
	D7正極前加bead	12V	A	A	A	A	A	A	A	A	A
	D7正極前加bead	9V	A	A	A	A	A	A	A	A	A
	D7正極前加bead	5V	A	A	A	A	A	A	A	A	A

Note: A: No physical and function error / B: Auto Recovery / C: Latch / D: Damage

輸入電壓	更改條件	WRLUH0AGCH4J2K		WRLUH0AGCH93G6		WRLUH0AGCH9423		WRLUH0AGCH95KL		WRLUH0AGCH94PR	
		+15KV	-15KV								
110Vac	D7正極前加bead	20V	A	A	A	A	A	A	A	A	A
	D7正極前加bead	15V	A	A	A	A	A	A	A	A	A
	D7正極前加bead	12V	A	A	A	A	A	A	A	A	A
	D7正極前加bead	9V	A	A	A	A	A	A	A	A	A
	D7正極前加bead	5V	A	A	A	A	A	A	A	A	A
230Vac	D7正極前加bead	20V	A	A	A	A	A	A	A	A	A
	D7正極前加bead	15V	A	A	A	A	A	A	A	A	A
	D7正極前加bead	12V	A	A	A	A	A	A	A	A	A
	D7正極前加bead	9V	A	A	A	A	A	A	A	A	A
	D7正極前加bead	5V	A	A	A	A	A	A	A	A	A
輸入電壓	負載條件	+16.5KV	-16.5KV								
110Vac	D7正極前加bead	20V	A	A	A	A	A	A	A	A	A
	D7正極前加bead	15V	A	A	A	A	A	A	A	A	A
	D7正極前加bead	12V	A	A	A	A	A	A	A	A	A
	D7正極前加bead	9V	A	A	A	A	A	A	A	A	A
	D7正極前加bead	5V	A	A	A	A	A	A	A	A	A
230Vac	D7正極前加bead	20V	A	A	A	A	A	A	A	A	A
	D7正極前加bead	15V	A	A	A	A	A	A	A	A	A
	D7正極前加bead	12V	A	A	A	A	A	A	A	A	A
	D7正極前加bead	9V	A	A	A	A	A	A	A	A	A
	D7正極前加bead	5V	A	A	A	A	A	A	A	A	A

Note: A: No physical and function error / B: Auto Recovery / C: Latch / D: Damage

4.4.2 更換 Q6 用料為 ON/FDN86246(160V/1.6A)驗證 3pcs,3pcs pass(加嚴至+/-25kV).

Replace Q6 with ON/FDN86246(160V/1.6A). ESD test verifies 3pcs adapter, 3pcs pass(tightened to +/-25kV).

輸入電壓	更改條件	測試條件	產品輸出	No.1		No.2		No.3	
110Vac	Q6修改為 ON/FDN86246	±15KV	20V Mode	A	A	A	A	A	A
		±16.5KV	20V Mode	A	A	A	A	A	A
		±20KV	20V Mode	A	A	A	A	A	A
		±23KV	20V Mode	A	A	A	A	A	A
		±25KV	20V Mode	A	A	A	A	A	A
230Vac	Q6修改為 ON/FDN86246	±15KV	20V Mode	A	A	A	A	A	A
		±16.5KV	20V Mode	A	A	A	A	A	A
		±20KV	20V Mode	A	A	A	A	A	A
		±23KV	20V Mode	A	A	A	A	A	A
		±25KV	20V Mode	A	A	A	A	A	A

Note: A: No physical and function error / B: Auto Recovery / C: Latch / D: Damage



4.4.3 複測 Q6 更換為 ON/FDN86246,驗證 10pcs,10pcs pass.

Retest, Q6 was replaced with ON/FDN86246.ESD test verified 10pcs adapter and all pass.

輸入電壓	更改條件	負載條件	WRLUH0AGCH928L	WRLUH0AGCH928I	WRLUH0AGCH928K	WRLUH0AGCH928O	WRLUH0AGCH929Q
110Vac	Q6修改為 ON/FDN86246	20V/15V/12V/9V/5V	A	A	A	A	A
230Vac	Q6修改為 ON/FDN86246	20V/15V/12V/9V/5V	A	A	A	A	A
輸入電壓	更改條件	負載條件	+15KV	-15KV	+15KV	-15KV	+15KV
110Vac	Q6修改為 ON/FDN86246	20V/15V/12V/9V/5V	A	A	A	A	A
230Vac	Q6修改為 ON/FDN86246	20V/15V/12V/9V/5V	A	A	A	A	A
輸入電壓	更改條件	負載條件	+20KV	-20KV	+20KV	-20KV	+20KV
110Vac	Q6修改為 ON/FDN86246	20V/15V/12V/9V/5V	A	A	A	A	A
230Vac	Q6修改為 ON/FDN86246	20V/15V/12V/9V/5V	A	A	A	A	A

輸入電壓	更改條件	負載條件	WRLUH0AGCH928T	WRLUH0AGCH929W	WRLUH0AGCH92A2	WRLUH0AGCH9293	WRLUH0AGCH9244
110Vac	Q6修改為 ON/FDN86246	20V/15V/12V/9V/5V	A	A	A	A	A
230Vac	Q6修改為 ON/FDN86246	20V/15V/12V/9V/5V	A	A	A	A	A
輸入電壓	更改條件	負載條件	+15KV	-15KV	+15KV	-15KV	+15KV
110Vac	Q6修改為 ON/FDN86246	20V/15V/12V/9V/5V	A	A	A	A	A
230Vac	Q6修改為 ON/FDN86246	20V/15V/12V/9V/5V	A	A	A	A	A
輸入電壓	更改條件	負載條件	+20KV	-20KV	+20KV	-20KV	+20KV
110Vac	Q6修改為 ON/FDN86246	20V/15V/12V/9V/5V	A	A	A	A	A
230Vac	Q6修改為 ON/FDN86246	20V/15V/12V/9V/5V	A	A	A	A	A

4.4.4 複測 Q6 更換為 ON/FDN86246,搭配系統(WARG16)驗證 3pcs, 3pcs pass.

Retest, Q6 was replaced with ON/FDN86246, and the matching system (WARG16) verified 3pcs adapter and all pass.

根據 4.4.2/4.4.3/4.4.4 實驗,Q6 更換為 ON/FDN86246,樣機無失效狀況,可改善 ESD 不良問題.

According to the test in 4.4.2/4.4.3/4.4.4,Q6 was changed to ON/FDN86246, and the adapter had no failure, which could improve the problem of ESD issue.

輸入電壓	更改條件	負載條件	NO1		NO2		NO3	
			+15KV	-15KV	+15KV	-15KV	+15KV	-15KV
110Vac	Q6修改為 ON/FDN86246	System(WARG16)	A	A	A	A	A	A
230Vac	Q6修改為 ON/FDN86246	SystemWARG16)	A	A	A	A	A	A
輸入電壓	更改條件	負載條件	+16.5KV	-16.5KV	+16.5KV	-16.5KV	+16.5KV	-16.5KV
110Vac	Q6修改為 ON/FDN86246	System(WARG16)	A	A	A	A	A	A
230Vac	Q6修改為 ON/FDN86246	System(WARG16)	A	A	A	A	A	A

4.5 Q6 失效材料(AP/AP10TN135N)相關分析

Correlation analysis of Q6 failure materials (AP/AP10TN135N)

4.5.1 Q6 (AP/AP10TN135N)不良品失效材料分析結果如下

Analysis results of failed Q6 (AP/AP10TN135N) are as follows:

根據分析報告,Q6 失效主因疑似為高電壓破壞 MOS 晶體絕緣後,導致流入電流過大造成 EOS 損壞.

According to the analysis report, the main reason of Q6 failure is suspected to be the damage of EOS caused by excessive inflow current after high voltage destroys the MOS crystal insulation.

Final Response to
Customer Complaint_



4.5.2 零件 datasheet 與參數比較.

Part datasheet and parameter comparison.

AP10TN135N &
FDN86246.xlsx

FDN86246_D-18080
06.pdf

AP
AP10TN135N.pdf

4.6 A111AP02P-HW01 adapter stock.

Finished goods: HUB stock is 18,880pcs as of 11AM 2022/10/31.

CP stock is 521pcs.

No more WIPs.

針對庫存品進行風險評估:驗證 ESD air discharge +/-8kV ~ +/-15kV, 驗證 10pcs, 2pcs 於 15kV Fail, 8pcs 驗證 +/-15kV 可 pass.

Risk assessment: ESD test. Air discharge +/-8kV ~ +/-15kV, total 10pcs adapter. 2pcs failed at 15kV, 8pcs were verified to pass +/-15kV.

輸入電壓	更改條件	測試條件	產品輸出	No.1		No.2		No.3		No.4		No.5	
				WRLUHOAGCH9285		WRLUHOAGCH92A1		WRLUHOAGCH92A8		WRLUHOAGCH92G7		WRLUHOAGCH92U	
				Positive	Negative	Positive	Negative	Positive	Negative	Positive	Negative	Positive	Negative
230Vac	A111AP02P-HW01 工廠成品機	±8KV	20V Mode/5A	A	A	A	A	A	A	A	A	A	A
		±10KV	20V Mode/5A	A	A	A	A	A	A	A	A	A	A
		±12KV	20V Mode/5A	A	A	A	A	A	A	A	A	A	A
		±14KV	20V Mode/5A	A	A	A	A	A	A	A	A	A	A
		±15KV	20V Mode/5A	A	A	A	A	A	A	A	D	/	/
110Vac	A111AP02P-HW01 工廠成品機	±8KV	20V Mode/5A	A	A	A	A	A	A	A	A	/	/
		±10KV	20V Mode/5A	A	A	A	A	A	A	A	A	/	/
		±12KV	20V Mode/5A	A	A	A	A	A	A	A	A	/	/
		±14KV	20V Mode/5A	A	A	A	A	A	A	A	A	/	/
		±15KV	20V Mode/5A	A	A	A	A	A	A	A	A	/	/

Note: A: No physical and function error / B: Auto Recovery / C: Latch / D: Damage



輸入電壓	更改條件	測試條件	產品輸出	No.6		No.7		No.8		No.9		No.10	
				WRLUH0AGCH929Y		WRLUH0AGCH929S		WRLUH0AGCH929Z		WRLUH0AGCH929F		WRLUH0AGCH92AC	
				Positive	Negative								
110Vac	A111AP02P-HW01 工廠成品機	±8KV	20V Mode/5A	A	A	A	A	A	A	A	A	A	A
		±10KV	20V Mode/5A	A	A	A	A	A	A	A	A	A	A
		±12KV	20V Mode/5A	A	A	A	A	A	A	A	A	A	A
		±14KV	20V Mode/5A	A	A	A	D	A	A	A	A	A	A
		±15KV	20V Mode/5A	A	A	A	/	A	A	A	A	A	A
230Vac	A111AP02P-HW01 工廠成品機	±8KV	20V Mode/5A	A	A	/	/	A	A	A	A	A	A
		±10KV	20V Mode/5A	A	A	/	/	A	A	A	A	A	A
		±12KV	20V Mode/5A	A	A	/	/	A	A	A	A	A	A
		±14KV	20V Mode/5A	A	A	/	/	A	A	A	A	A	A
		±15KV	20V Mode/5A	A	A	/	/	A	A	A	A	A	A

Note: A: No physical and function error / B: Auto Recovery / C: Latch / D: Damage

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)

經實驗驗證,Q6 原材料 AP/AP10TN135N 在耐受 ESD 能力不平均,更換用料為 ON/FDN86246 可改善 ESD 問題.

After ESD test, it is verified that Q6 raw material AP/AP10TN135N has uneven ESD tolerance ability. Replacing the material with ON/FDN86246 can improve ESD issue.

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)

NA

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:

Roy_Tsai

Name-Title

Chicony Power Technology Co., Ltd. 群光電能科技股份有限公司

Address: 29F, No. 69, Sec. 2, Guangfu Rd., Sanchong Dist., New Taipei City 241, Taiwan

新北市三重區光復路二段 69 號 29 樓

TEL:+886-2-6626 0678