Eight Discipline Report (8D Report)

To:	8D report No.: **N/A**
From:：**Chicony Power Technology**	RMA claim No.: **N/A**
CC：	Chicony Power P/N: **A065RP83P-AX01**
	Customer P/N:
Submit date: **2023/11/12**	Product description: **65W 3pin adapter**
Receive date: **2023/10/6**	
Subject：Acoustic issue *1 pcs	
Keywords/關鍵字：Acoustic	

D1.) 問題解決成員:Use Team Approach

主持者 (Team Leader)：**Edward Hou**

內部成員 (Internal Team Members):

PM：Laura Fang

ME: Marcus Chang

Sales: Jennie Chang

RD: Jack Liu

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.)

在試產階段，客戶端的工程師在配系統測試軟體，在效能全開時會聽到樣機有低頻的震動聲響，耳朵越靠近 Adapter 的時候會越明顯聽見噪音聲響。後續先將樣機領回做分析。

During the trial production phase, the client's engineers were configuring the system test software. When the performance was fully turned on, the prototype would hear a low-frequency vibration sound. The closer the ear was to the Adapter, the more obvious the noise would be. Later, the prototype will be taken back for analysis.

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. 領回樣機分析後，客戶要求重送樣品去補足客戶端的測試樣品需求數量
2. 領回樣機後先實際在噪音室做分析

Date:2023/10/8

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. 送往噪音室復測分別對五個不同位置進行噪音測試，發現靠近Input filter LF2位置，高頻聲響明顯較大，且在越靠近滿載(3.25A)聲音越大，並且在這個位置會超過SPEC的20dB。

SPEC：

Input condition: 90Vac~264Vac/47~63Hz

Load condition:

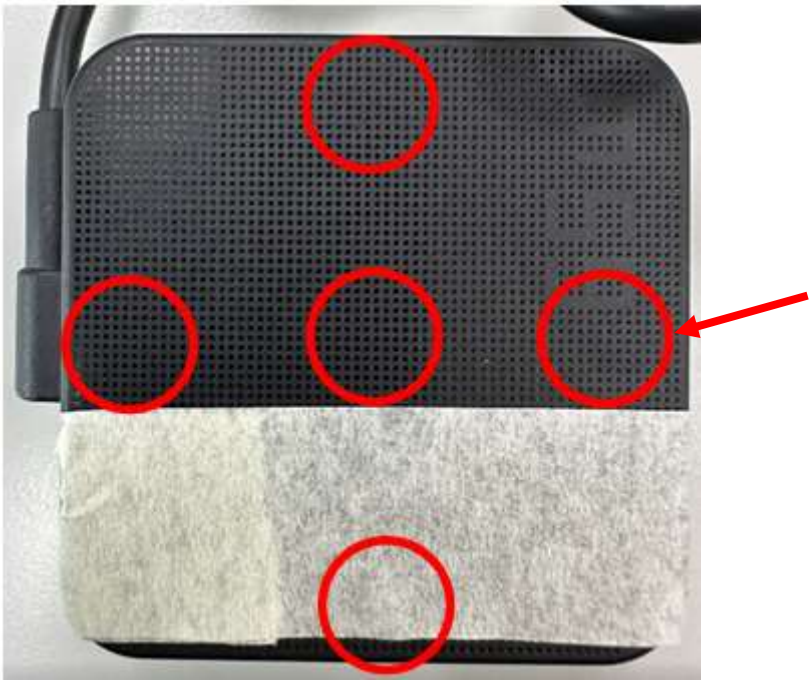
Static load:

For 5V: 0.02A /step (No load to 2W), and 0.1A/step (2W to Full load).

For 9V/15V: 0.01A/step (No load to 2W), and 0.1A/step (2W to Full load).

For 20V: 0.005A/step (No load to 2W), and 0.1A/step (2W to Full load).

Microphone at a distance of **5cm** from the surface and noise level is less than **20dB**.



2. 測試其他同樣工單的其餘樣機進行噪音測試，同樣將麥克風靠近 LF2 的位置進行測量，一樣會超過 SPEC 的 20dB。

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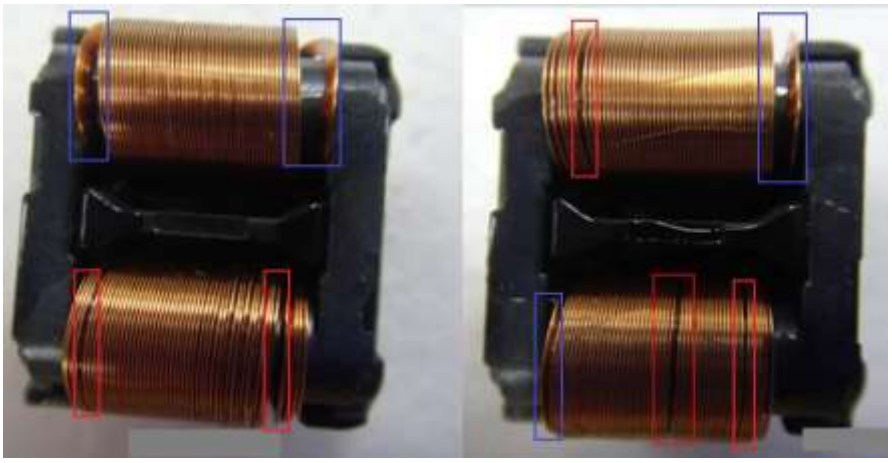
3. 拆開樣機觀察**Top**面跟**Bottom**面點膠，點膠並無多餘的溢膠，位置都如**WI**所標示。

4. 拆解**LF2 (39EXFT14003NT1LF)**，製程上是用一片一片銅線疊起來，當流過的電流越大銅片之間的震動越明顯。實際將LF2拆掉，將該位置短路後，重新測試滿載噪音分貝由原本23dB降至13dB。明顯是由LF2所帶出的高頻聲響。



5. 另因為上**Shielding**與殼之間點散熱膠，因膠乾掉變為固狀，聲音更容易傳導出去，將膠刮除後可以明顯聽到聲音下降。在實驗拉載至**3.25A**滿載時，在其中一台實驗樣機上會聽到比**LF2**的高頻振動聲還大聲的銅片震動聲音，因此實驗將**LF2**上方銅片挖除後，噪音明顯下降。

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➢ Conclusion:

1. 因在滿載的時候電流增大，使**LF2 choke**的銅線間彼此產生震動導致聲音傳出，**LF2 (39EXFT14003NT1LF)**在製程上有透明膠做**core**與**base**還有線圈之間的固定，但因長時間熱效應下容易有**core**裂的風險，所以透明膠沾黏的比例較少，致使電流通過時會使線圈震動而發出聲響。

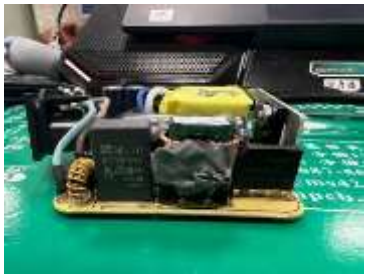
2. 前期開發時，因客戶**SPEC**未明訂麥克風在樣機上方**5cm**的測量位置，導致在開發測試時都將麥克風擺在樣機正上方位置，因而忽略了最大的發聲源是在**LF2**上方位置。

3. 在**LF2**的上方位置經過了**Shielding**還有殼膠，在殼膠乾硬由液狀變為固狀後容易導致聲音傳出。另上**Shielding**的鋁片震動將強了聲音的傳出。

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**)**

1. 將**LF2**周圍點上灰膠固定膠**(750000970X92LF)**，因灰膠屬於固定膠可以固定住線圈與線圈之間的距離，減少線圈的震動。



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2. 將上Shielding鋁片部分減少，避免共振，另WI規定上Shielding與殼之間不點膠，以避免膠乾硬後聲音傳出。

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**.)**
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 you all！！！ **PM：Laura Fang** **ME: Marcus Chang** **Sales: Jennie Chang** **RD: Jack Liu**

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