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：**The shielding gap of transformer impacts the conduction 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.

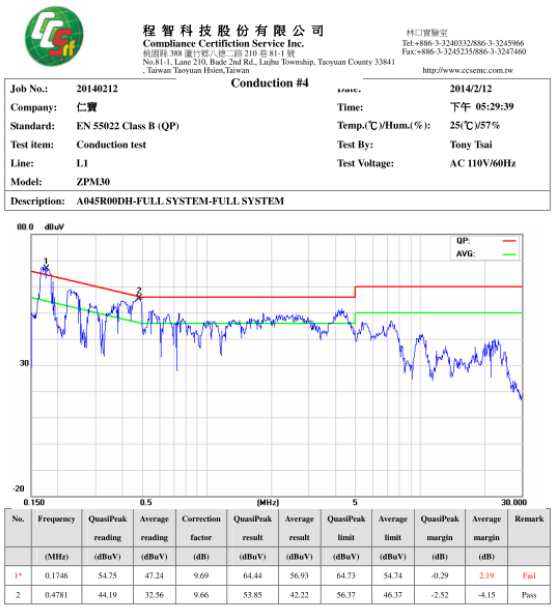
Who: CPT P/N: A045R00DH-HW01

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

Fail sample: S/N F2550813500000505

Pass sample: Date code 1402

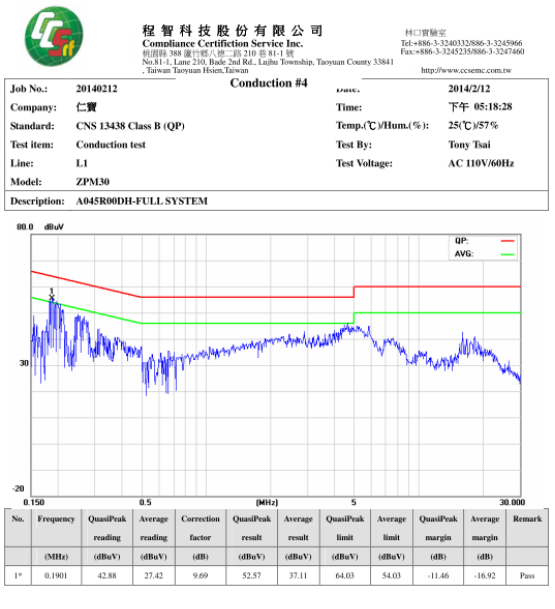
Where: The 3rd party test data shows as below:



程智科技股份有限公司
Compliance Certifiction Service Inc.
Conduction #4

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

No.	Frequency	QuasiPeak reading	Average reading	Correction factor	QuasiPeak result	Average result	QuasiPeak limit	Average limit	QuasiPeak margin	Average margin	Remark
	(MHz)	(dBuV)	(dBuV)	(dB)	(dBuV)	(dBuV)	(dBuV)	(dBuV)	(dB)	(dB)	
1*	0.1746	54.75	47.24	9.69	64.44	56.93	64.73	54.74	-0.29	2.19	Fail
2	0.4781	44.19	32.56	9.66	53.85	42.22	56.37	46.37	-2.52	-4.15	Pass



程智科技股份有限公司
Compliance Certifiction Service Inc.
Conduction #4

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

No.	Frequency	QuasiPeak reading	Average reading	Correction factor	QuasiPeak result	Average result	QuasiPeak limit	Average limit	QuasiPeak margin	Average margin	Remark
	(MHz)	(dBuV)	(dBuV)	(dB)	(dBuV)	(dBuV)	(dBuV)	(dBuV)	(dB)	(dB)	
1*	0.1901	42.88	27.42	9.69	52.57	37.11	64.03	54.03	-11.46	-16.92	Pass

Fail sample(S/N: F2550813500000505) **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:

1. **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

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Compliance Certifiction Service Inc.
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No.81-1, Lane 210, Bade 2nd Rd., Lujhu Township, Taoyuan County 33841 , Taiwan Taoyuan Hsien,Taiwan
林口實驗室
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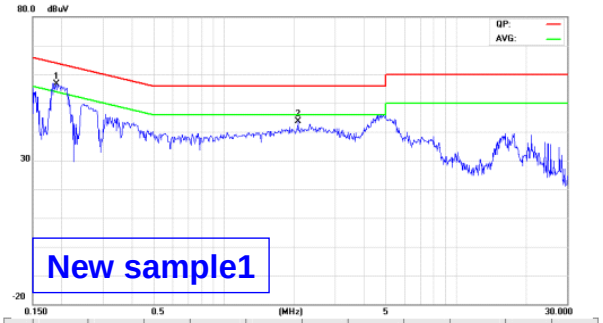
Fax:+886-3-3245235/886-3-3247460
http://www.ccsemc.com.tw

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.(℃)/Hum.(%):	25(℃)/57%
Test item:	Conduction test	Test By:	Tony Tsai
Line:	L1	Test Voltage:	AC 110V/60Hz
Model:	A045R07DH-HW01		
Description:	SAMPLE 1		



No.	Frequency	QuasiPeak reading	Average reading	Correction factor	QuasiPeak result	Average result	QuasiPeak limit	Average limit	QuasiPeak margin	Average margin	Remark
	(MHz)	(dBuV)	(dBuV)	(dB)	(dBuV)	(dBuV)	(dBuV)	(dBuV)	(dB)	(dB)	
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

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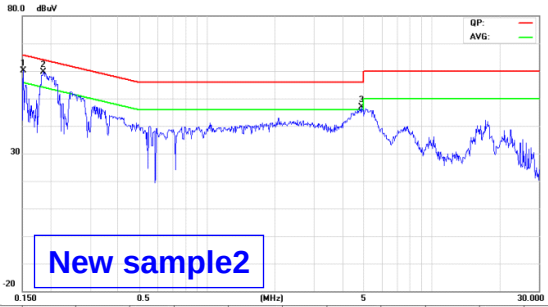
Conduction #4

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



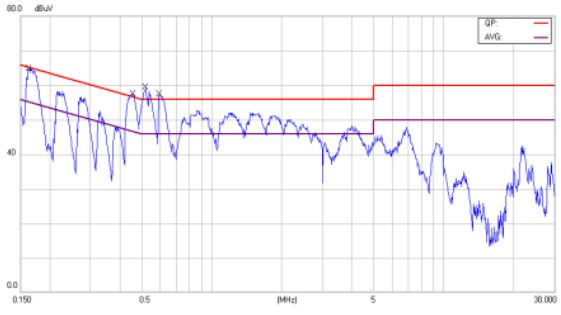
No.	Frequency	QuasiPeak reading	Average reading	Correction factor	QuasiPeak result	Average result	QuasiPeak limit	Average limit	QuasiPeak margin	Average margin	Remark
	(MHz)	(dBuV)	(dBuV)	(dB)	(dBuV)	(dBuV)	(dBuV)	(dBuV)	(dB)	(dB)	
1	0.1504	38.73	13.76	9.87	48.60	23.63	65.98	55.98	-17.38	-32.35	Pass
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

Chicony POWER TECHNOLOGY
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

File :brandon_tmp Data :#221 Date: 2014/3/25 Time: 下午 04:34:23



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 ℃
Humidity: 57 %

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV	dB	dB	Detector	cm	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

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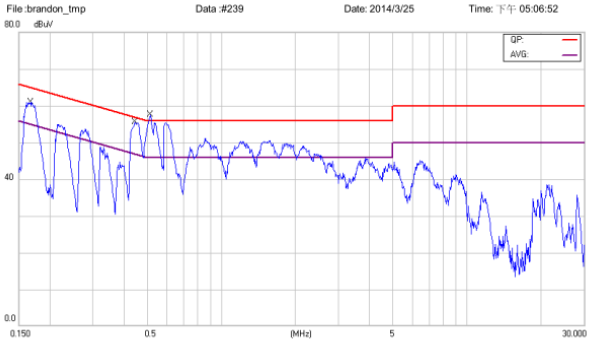
Conducted Emission Measurement

File :brandon_tmp Data :#239 Date: 2014/3/25 Time: 下午 05:06:52



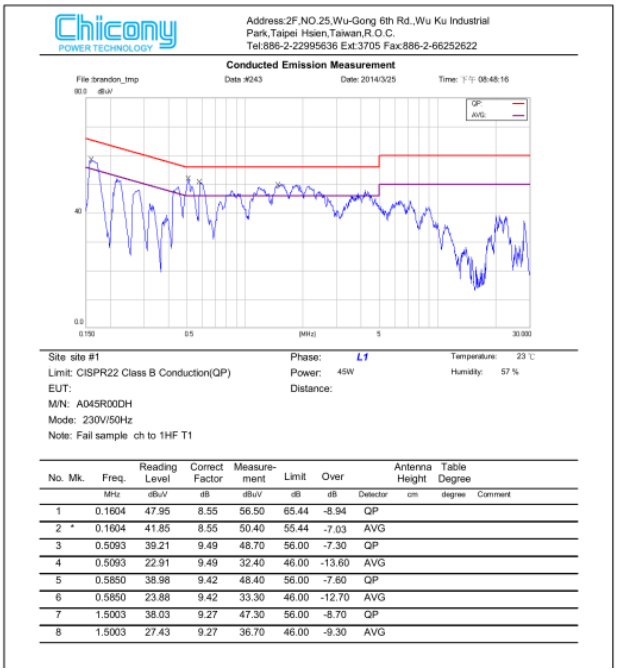
Site site #1
Limit: CISPR22 Class B Conduction(QP)
EUT:
M/N: A045R00DH
Mode: 230V/50Hz
Note: Fail sample rm case

Phase: *L1*
Power: 45W
Distance:

Temperature: 23 ℃
Humidity: 57 %

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV	dB	dB	Detector	cm	degree	Comment
1		0.1672	49.62	8.58	58.20	65.09	-6.89	QP			
2	*	0.1672	45.52	8.58	54.10	55.09	-0.99	AVG			
3		0.4455	43.60	9.50	53.10	56.96	-3.86	QP			
4		0.4455	35.00	9.50	44.50	46.96	-2.46	AVG			
5		0.5141	44.51	9.49	54.00	56.00	-2.00	QP			
6		0.5141	27.71	9.49	37.20	46.00	-8.80	AVG			

(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.



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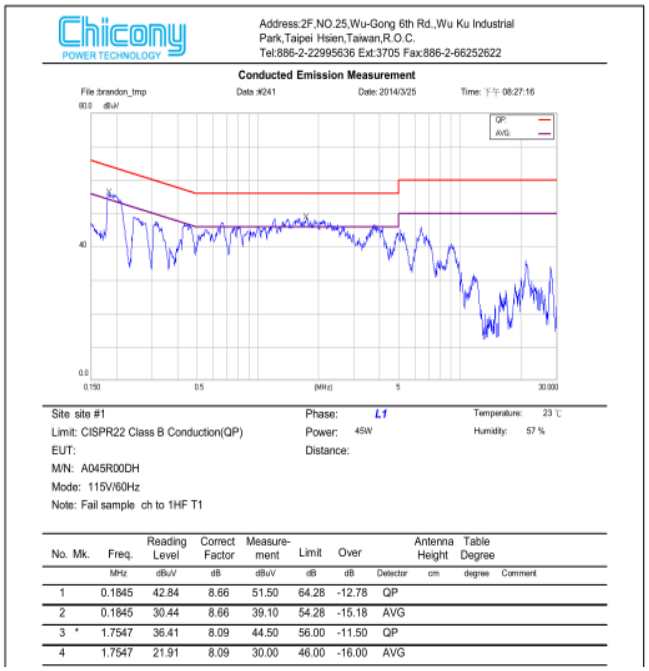
Conducted Emission Measurement

File :brandon_tmp Data :#243 Date: 2014/3/25 Time: 下午 08:48:16

Site site #1
Limit: CISPR22 Class B Conduction(QP)
EUT:
M/N: A045R00DH
Mode: 230V/50Hz
Note: Fail sample ch to 1HF T1

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

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV	dB	dB	Detector	cm	degree	Comment
1		0.1604	47.95	8.55	56.50	65.44	-8.94	QP			
2	*	0.1604	41.85	8.55	50.40	55.44	-7.03	AVG			
3		0.5093	39.21	9.49	48.70	56.00	-7.30	QP			
4		0.5093	22.91	9.49	32.40	46.00	-13.60	AVG			
5		0.5850	38.98	9.42	48.40	56.00	-7.60	QP			
6		0.5850	23.88	9.42	33.30	46.00	-12.70	AVG			
7		1.5003	38.03	9.27	47.30	56.00	-8.70	QP			
8		1.5003	27.43	9.27	36.70	46.00	-9.30	AVG			



Chicony POWER TECHNOLOGY

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

File :brandon_tmp Data :#241 Date: 2014/3/25 Time: 下午 08:27:16

Site site #1
Limit: CISPR22 Class B Conduction(QP)
EUT:
M/N: A045R00DH
Mode: 115V/60Hz
Note: Fail sample ch to 1HF T1

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

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV	dB	dB	Detector	cm	degree	Comment
1		0.1845	42.84	8.66	51.50	64.28	-12.78	QP			
2		0.1845	30.44	8.66	39.10	54.28	-15.18	AVG			
3	*	1.7547	36.41	8.09	44.50	56.00	-11.50	QP			
4		1.7547	21.91	8.09	30.00	46.00	-16.00	AVG			

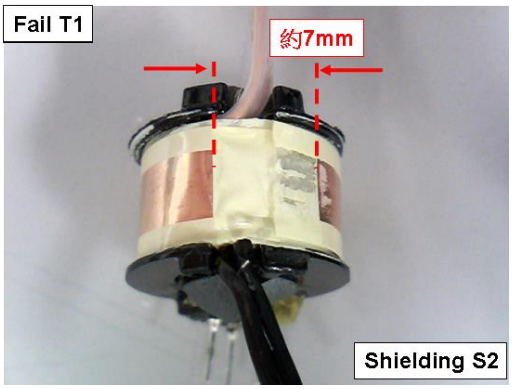
230V/50Hz

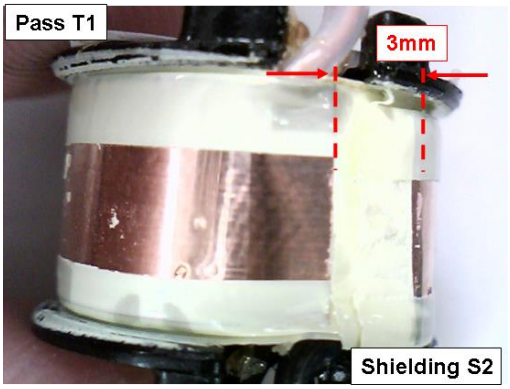
115V/60Hz

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

3. Failure analysis: For transformer T1

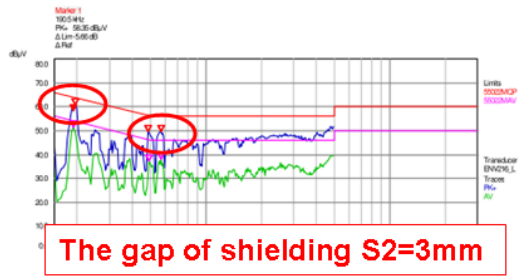
(1) We disassemble the fail and pass transformers T1, and find a disparate point which the gap of shielding S2 of them are 7mm and 3mm, respectively.





(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.

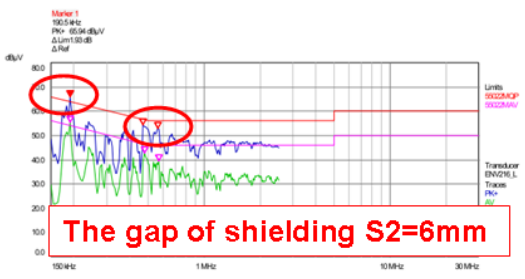
Pre-measurement Graph



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	60.82	63.82	-3.00		L1 on
1 PK+	0.483	49.75	56.29	-6.54		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+	0.1905	65.94 *	64.01	1.93		N on
2 AV	0.1905	55.39 *	54.01	1.38		N on
1 PK+	0.4695	54.12	56.52	-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	39.55	46.00	-6.45		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_H

D:\Chicony\002_brandon\001_H

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.