

Survey Report No.: CS/2010/80047 Date: 2010/09/01 Page: 1 of 15

FORMOSA MICROSEMI CO., LTD.

5F, NO. 208, SEC. 3, CHUNG-YANG ROAD, TUCHENG CITY, TAIPEI HSIEN,

TAIWAN



The following test reports/information were submitted and identified by the client as:

Sample Description BRIDGE RECTIFIERS PRODUCTS (POTTED)

Style/Item No. WOB / RB-15 / KBPC / RS **Testing Period** 2010/07/21 TO 2010/07/28

Test Results Please refer to next page(s).

Conclusion

- 1. Based upon the test reports/information submitted by client, the results of Cadmium, Lead, Mercury, Hexavalent Chromium Cr(VI), PBBs and PBDEs comply with the limits of RoHS Directive 2002/95/EC and its subsequent amendments.
- 2. Base upon the performed tests by submitted samples, the test results of PAHs comply with the PAHs requirement according to (Category 1) of ZEK 01.2-08 of German ZLS and its amendments.

* This report is combined with 3 copies of test reports which provided by client. *



Unless otherwise stated the results shown in this test report refer only to the sample(s) tested. This test report cannot be reproduced, except in full, without prior written permission of the Company. 除非另有說明,此報告結果僅對測試之樣品負責。本報告未經本公司書面許可,不可部分複製。



Survey Report No.: CS/2010/80047 Date: 2010/09/01 Page: 2 of 15

FORMOSA MICROSEMI CO., LTD.

5F, NO. 208, SEC. 3, CHUNG-YANG ROAD, TUCHENG CITY, TAIPEI HSIEN,

TAIWAN



Test Result(s)

PART NAME No.1 BLACK PLASTIC (EIGHT TYPES) (CE/2010/74137)

PLATING LAYER OF SILVER COLORED METAL (CE/2010/74140 NO.1) PART NAME No.2 BASE MATERIAL OF SILVER COLORED METAL (CE/2010/74140 NO.2) PART NAME No.3

PART NAME No.4 BLACK EPOXY (CE/2010/74141)

Test Item(s):	Unit	Mathad	MDI	MDI	Result			1 : :4
		Method	MDL	No.1	No.2	No.3	No.4	Limit
Cadmium (Cd)	mg/kg	With reference to IEC 62321: 2008 and performed by ICP-AES.	2	n.d.		n.d.	n.d.	100
	mg/kg	IEC 62321: 2008 application of modified digestion by surface etching and performed by ICP-AES.	2		n.d.		1	100
Lead (Pb)	mg/kg	With reference to IEC 62321: 2008 and performed by ICP-AES.	2	n.d.		47	n.d.	1000
	mg/kg	IEC 62321: 2008 application of modified digestion by surface etching and performed by ICP-AES.	2		n.d.			1000
Mercury (Hg)	mg/kg	With reference to IEC 62321: 2008 and performed by ICP-AES.	2	n.d.		n.d.	n.d.	1000
	mg/kg	IEC 62321: 2008 application of modified digestion by surface etching and performed by ICP-AES.	2		n.d.			1000

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested. This test report cannot be reproduced, except in full, without prior written permission of the Company. 除非另有說明,此報告結果僅對測試之樣品負責。本報告未經本公司書面許可,不可部分複製。



Survey Report No.: CS/2010/80047 Date: 2010/09/01 Page: 3 of 15

μg/m² With reference to US EPA

3540C: 1996 method for PFOA Content. Analysis was performed by LC/MS.

FORMOSA MICROSEMI CO., LTD.

5F, NO. 208, SEC. 3, CHUNG-YANG ROAD, TUCHENG CITY, TAIPEI HSIEN, **TAIWAN**

Result Test Item(s): Unit Method **MDL** Limit No.1 No.2 No.3 No.4 Hexavalent Chromium mg/kg With reference to IEC 2 1000 n.d. n.d. 62321: 2008 and Cr(VI) by alkaline extraction performed by UV-VIS. Hexavalent Chromium With reference to IEC 0.02mg/kg Negative Negative # Cr(VI) by Spot test / boiling 62321: 2008 and with 50 water extraction performed by Spot test / cm² boiling water extraction surface Method. (See Note 5) area Perfluorooctane sulfonates mg/kg With reference to US EPA 10 n.d. n.d. (PFOS) 3540C: 1996 method for PFOS – Acid PFOS Content. Analysis PFOS - Metal Salt was performed by LC/MS. PFOS - Amide ug/m² With reference to US EPA n.d. 3540C: 1996 method for PFOS Content. Analysis was performed by LC/MS. PFOA (CAS No.: 000335mg/kg With reference to US EPA 10 n.d. n.d. 67-1)3540C: 1996 method for PFOA Content. Analysis was performed by LC/MS.

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested. This test report cannot be reproduced, except in full, without prior written permission of the Company. 除非另有說明,此報告結果僅對測試之樣品負責。本報告未經本公司書面許可,不可部分複製

This Test Report is issued by the Company under its General Conditions of Service printed overleaf or available on request and accessible at http://www.sgs.com/terms_and_conditions.htm. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this Test Report is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.

n.d.



Survey Report No.: CS/2010/80047 Page: 4 of 15 Date: 2010/09/01

FORMOSA MICROSEMI CO., LTD.

5F, NO. 208, SEC. 3, CHUNG-YANG ROAD, TUCHENG CITY, TAIPEI HSIEN,

TAIWAN

Toot Itom(a):	11:4:4	Mathad	MDI	Result				Limit
Test Item(s):	Unit	Method	MDL	No.1	No.2	No.3	No.4	Limit
Polynuclear Aromatic Hydrocarbons (PAHs)								
Acenaphthene (CAS No.: 000083-32-9)		With reference to ZLS standard ZEK 01.2-08 method. Analysis was performed by GC/MS.	0.2	n.d.			n.d.	-
Acenaphthylene (CAS No.: 000208-96-8)			0.2	n.d.			n.d.	-
Anthracene (CAS No.: 000120-12-7)			0.2	n.d.			n.d.	-
Benzo[a]anthracene (CAS No.: 000056-55-3)			0.2	n.d.			n.d.	-
Benzo[a]pyrene (CAS No.: 000050-32-8)			0.2	n.d.			n.d.	-
Benzo[b]fluoranthene (CAS No.: 000205-99-2)			0.2	n.d.			n.d.	-
Benzo[g,h,i]perylene (CAS No.: 000191-24-2)	mg/kg		0.2	n.d.			n.d.	-
Benzo[k]fluoranthene (CAS No.: 000207-08-9)			0.2	n.d.			n.d.	-
Chrysene (CAS No.: 000218-01-9)			0.2	n.d.			n.d.	-
Dibenzo[a,h]anthracene (CAS No.: 000053-70-3)			0.2	n.d.			n.d.	-
Fluoranthene (CAS No.: 000206-44-0)			0.2	n.d.			n.d.	-
Fluorene (CAS No.: 000086-73-7)			0.2	n.d.			n.d.	-
Indeno[1,2,3-c,d] pyrene (CAS No.: 000193-39-5)			0.2	n.d.			n.d.	-
Naphthalene (CAS No.: 000091-20-3)			0.2	n.d.			n.d.	-
Phenanthrene (CAS No.: 000085-01-8)			0.2	n.d.			n.d.	-
Pyrene (CAS No.: 000129- 00-0)			0.2	n.d.			n.d.	-
Sum of 16 PAHs			-	n.d.			n.d.	-

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested. This test report cannot be reproduced, except in full, without prior written permission of the Company. 除非另有說明,此報告結果僅對測試之樣品負責。本報告未經本公司書面許可,不可部分複製。

This Test Report is issued by the Company under its General Conditions of Service printed overleaf or available on request and accessible at http://www.sgs.com/terms_and_conditions.htm. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this Test Report is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.



Survey Report No.: CS/2010/80047 Page: 5 of 15 Date: 2010/09/01

FORMOSA MICROSEMI CO., LTD.

5F, NO. 208, SEC. 3, CHUNG-YANG ROAD, TUCHENG CITY, TAIPEI HSIEN, **TAIWAN**

Test Item(s):	Unit Method	MDI	Result				Limit	
		Method MDL	MIDL	No.1	No.2	No.3	No.4	
Sum of PBBs			-	n.d.			n.d.	1000
Monobromobiphenyl			5	n.d.			n.d.	-
Dibromobiphenyl]		5	n.d.			n.d.	-
Tribromobiphenyl			5	n.d.			n.d.	-
Tetrabromobiphenyl]		5	n.d.			n.d.	-
Pentabromobiphenyl			5	n.d.			n.d.	-
Hexabromobiphenyl]		5	n.d.			n.d.	-
Heptabromobiphenyl			5	n.d.			n.d.	-
Octabromobiphenyl		With reference to IEC (g) 62321: 2008 and performed by GC/MS.	5	n.d.			n.d.	-
Nonabromobiphenyl	1		5	n.d.			n.d.	-
Decabromobiphenyl	mg/kg		5	n.d.			n.d.	-
Sum of PBDEs			-	n.d.			n.d.	1000
Monobromodiphenyl ether			5	n.d.			n.d.	-
Dibromodiphenyl ether]		5	n.d.			n.d.	-
Tribromodiphenyl ether			5	n.d.			n.d.	-
Tetrabromodiphenyl ether			5	n.d.			n.d.	-
Pentabromodiphenyl ether			5	n.d.			n.d.	-
Hexabromodiphenyl ether			5	n.d.			n.d.	-
Heptabromodiphenyl ether			5	n.d.			n.d.	-
Octabromodiphenyl ether			5	n.d.			n.d.	-
Nonabromodiphenyl ether			5	n.d.			n.d.	-
Decabromodiphenyl ether			5	n.d.			n.d.	-

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested. This test report cannot be reproduced, except in full, without prior written permission of the Company. 除非另有說明,此報告結果僅對測試之樣品負責。本報告未經本公司書面許可,不可部分複製。

This Test Report is issued by the Company under its General Conditions of Service printed overleaf or available on request and accessible at http://www.sgs.com/terms_and_conditions.htm. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this Test Report is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.



Survey Report No.: CS/2010/80047 Date: 2010/09/01 Page: 6 of 15

FORMOSA MICROSEMI CO., LTD.

5F, NO. 208, SEC. 3, CHUNG-YANG ROAD, TUCHENG CITY, TAIPEI HSIEN, **TAIWAN**

Note: 1. mg/kg = ppm, 0.1% = 1000 ppm(mg/kg), 0.0005% = 5 ppm(mg/kg)

- 2. n.d. = Not Detected
- 3. MDL = Method Detection Limit
- 4. Spot-test:

Negative = Absence of Cr(VI) coating / surface layer,

Positive = Presence of Cr(VI) coating / surface layer;

(The tested sample should be further verified by boiling-water-extraction method if the spot test result cannot be confirmed.)

Boiling-water-extraction:

Negative = Absence of Cr(VI) coating / surface layer.

Positive = Presence of Cr(VI) coating / surface layer;

the detected concentration in boiling-water-extraction solution is equal or greater than 0.02 mg/kg with 50 cm2 sample surface area.

5. # = Positive indicates the presence of Cr(VI) on the tested areas and result be regarded as not comply with RoHS requirement. Negative indicates the absence of Cr(VI) on the tested areas and result be regarded as comply with RoHS requirement.

6. "---" = Not Conducted

7. " - " = Not Regulated

8. ** = Qualitative analysis (No Unit)

PFOS Reference Information: Directive 2006/122/EC

(1) May not be placed on the market or used as a substance or constituent of preparations in a concentration equal to or higher than 0.005 % by mass.

(2) May not be placed on the market in semi-finished products or articles, or parts thereof, if the concentration of PFOS is equal to or higher than 0.1 % by mass calculated with reference to the mass of structurally or microstructurally distinct parts that contain PFOS or, for textiles or other coated materials, if the amount of PFOS is equal to or higher than 1µg/m² of the coated material.

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested. This test report cannot be reproduced, except in full, without prior written permission of the Company. 除非另有說明,此報告結果僅對測試之樣品負責。本報告未經本公司書面許可,不可部分複製。



Survey Report No.: CS/2010/80047 Page: 7 of 15 Date: 2010/09/01

FORMOSA MICROSEMI CO., LTD.

5F, NO. 208, SEC. 3, CHUNG-YANG ROAD, TUCHENG CITY, TAIPEI HSIEN, **TAIWAN**



Reference information for PAHs:

Requirement of ZEK 01.2-08: Restraining maximum values for products

Parameter	Category 1	Category 2	Category 3		
	Materials in contact with foodstuff or materials which are meant to put in the mouth as well as toys for children <36 months.	Materials with foreseeable skin contact >30 s (prolonged skin contact) and toys not covered by category 1.	Materials with foreseeable skin contact <30 s (short time skin contact) or without skin contact.		
Benzo[a]pyrene (mg/kg)	<mdl (<0.2)**<="" td=""><td>1</td><td>20</td></mdl>	1	20		
Sum of 16 EPA-PAH (mg/kg)*	<mdl (<0.2)**<="" td=""><td>10</td><td>200</td></mdl>	10	200		

Remark:

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested. This test report cannot be reproduced, except in full, without prior written permission of the Company. 除非另有說明,此報告結果僅對測試之樣品負責。本報告未經本公司書面許可,不可部分複製。

^{* =} Only PAH substances > 0.2 mg/kg are taken into account while calculating the sum of PAHs

^{** =} In case that the maximum values exceed the limits of category 1, but are within the limits of category 2, one may confirm the suitability of the tested material for contact with foodstuff or oral mucosa by additional specific migration tests of PAH components based on DIN EN 1186ff and §64 LFGB 80.30-1. The conclusion of the migration test results must be made based on food law criteria.



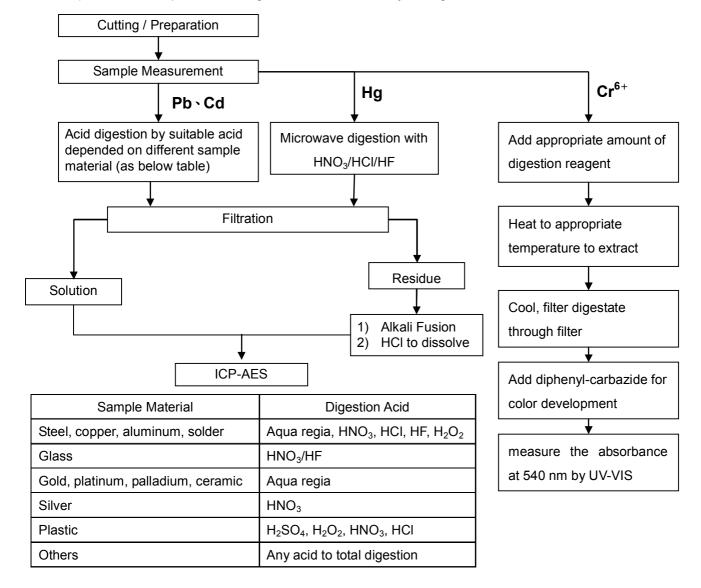
Survey Report No.: CS/2010/80047 Date: 2010/09/01 Page: 8 of 15

FORMOSA MICROSEMI CO., LTD.

5F, NO. 208, SEC. 3, CHUNG-YANG ROAD, TUCHENG CITY, TAIPEI HSIEN, **TAIWAN**

NO.1,3,4

- 1) These samples were dissolved totally by pre-conditioning method according to below flow chart. (Cr⁶⁺ test method excluded)
- 2) Name of the person who made measurement: Climbgreat Yang
- 3) Name of the person in charge of measurement: Troy Chang



Unless otherwise stated the results shown in this test report refer only to the sample(s) tested. This test report cannot be reproduced, except in full, without prior written permission of the Company. 除非另有說明,此報告結果僅對測試之樣品負責。本報告未經本公司書面許可,不可部分複製。



Survey Report No.: CS/2010/80047 Date: 2010/09/01 Page: 9 of 15

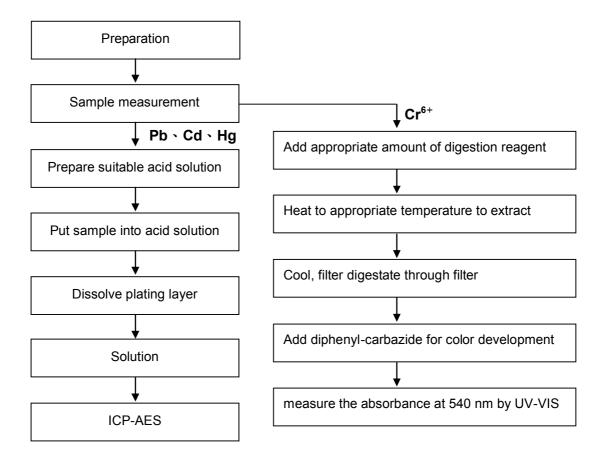
FORMOSA MICROSEMI CO., LTD.

5F, NO. 208, SEC. 3, CHUNG-YANG ROAD, TUCHENG CITY, TAIPEI HSIEN, **TAIWAN**

NO.2

- 1) These samples were dissolved totally by pre-conditioning method according to below flow chart. (Cr⁶⁺ test method excluded)
- 2) Name of the person who made measurement: Climbgreat Yang
- 3) Name of the person in charge of measurement: Troy Chang

Flow Chart of Stripping method for metal analysis



Unless otherwise stated the results shown in this test report refer only to the sample(s) tested. This test report cannot be reproduced, except in full, without prior written permission of the Company. 除非另有說明,此報告結果僅對測試之樣品負責。本報告未經本公司書面許可,不可部分複製。

This Test Report is issued by the Company under its General Conditions of Service printed overleaf or available on request and accessible at http://www.sgs.com/terms_and_conditions.htm. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this Test Report is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.



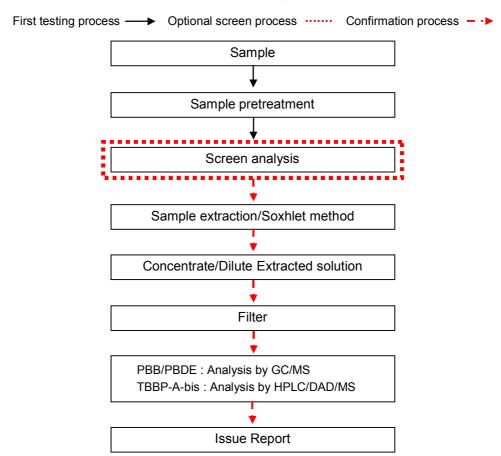
Survey Report No.: CS/2010/80047 Date: 2010/09/01 Page: 10 of 15

FORMOSA MICROSEMI CO., LTD. 5F, NO. 208, SEC. 3, CHUNG-YANG ROAD, TUCHENG CITY, TAIPEI HSIEN, **TAIWAN**



Analytical flow chart

- 1) Name of the person who made measurement: Roman Wong
- 2) Name of the person in charge of measurement: Troy Chang
 - Test Items: PBB/PBDE, TBBP-A-bis



Unless otherwise stated the results shown in this test report refer only to the sample(s) tested. This test report cannot be reproduced, except in full, without prior written permission of the Company. 除非另有說明,此報告結果僅對測試之樣品負責。本報告未經本公司書面許可,不可部分複製。



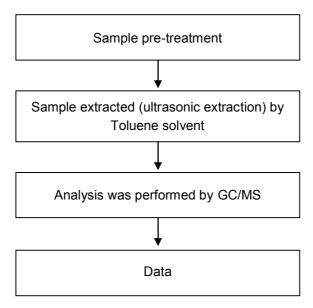
Survey Report No.: CS/2010/80047 Date: 2010/09/01 Page: 11 of 15

FORMOSA MICROSEMI CO., LTD. 5F, NO. 208, SEC. 3, CHUNG-YANG ROAD, TUCHENG CITY, TAIPEI HSIEN, **TAIWAN**



PAHs (Polynuclear Aromatic Hydrocarbons) analytical flow chart

- 1) Name of the person who made measurement: Andy Shu
- 2) Name of the person in charge of measurement: Shinjyh Chen



Unless otherwise stated the results shown in this test report refer only to the sample(s) tested. This test report cannot be reproduced, except in full, without prior written permission of the Company. 除非另有說明,此報告結果僅對測試之樣品負責。本報告未經本公司書面許可,不可部分複製。



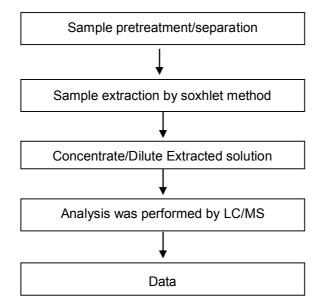
Survey Report No.: CS/2010/80047 Date: 2010/09/01 Page: 12 of 15

FORMOSA MICROSEMI CO., LTD. 5F, NO. 208, SEC. 3, CHUNG-YANG ROAD, TUCHENG CITY, TAIPEI HSIEN, **TAIWAN**



Analytical flow chart of Soxhlet extraction (LC/MS) procedure

- 1) Name of the person who made measurement: Lydia Fu
- 2) Name of the person in charge of measurement: Shinjyh Chen
 - Test Items: PFOS/PFOA · Benzotriazole



Unless otherwise stated the results shown in this test report refer only to the sample(s) tested. This test report cannot be reproduced, except in full, without prior written permission of the Company. 除非另有說明,此報告結果僅對測試之樣品負責。本報告未經本公司書面許可,不可部分複製。



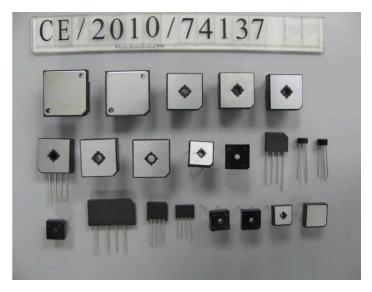
Survey Report No.: CS/2010/80047 Date: 2010/09/01 Page: 13 of 15

FORMOSA MICROSEMI CO., LTD.

5F, NO. 208, SEC. 3, CHUNG-YANG ROAD, TUCHENG CITY, TAIPEI HSIEN, **TAIWAN**

PART NAME No.1











Unless otherwise stated the results shown in this test report refer only to the sample(s) tested. This test report cannot be reproduced, except in full, without prior written permission of the Company. 除非另有說明,此報告結果僅對測試之樣品負責。本報告未經本公司書面許可,不可部分複製。



Survey Report No.: CS/2010/80047 Page: 14 of 15 Date: 2010/09/01

FORMOSA MICROSEMI CO., LTD.

5F, NO. 208, SEC. 3, CHUNG-YANG ROAD, TUCHENG CITY, TAIPEI HSIEN, **TAIWAN**







PART NAME No.4





Unless otherwise stated the results shown in this test report refer only to the sample(s) tested. This test report cannot be reproduced, except in full, without prior written permission of the Company. 除非另有說明,此報告結果僅對測試之樣品負責。本報告未經本公司書面許可,不可部分複製。



Survey Report No.: CS/2010/80047 Page: 15 of 15 Date: 2010/09/01

FORMOSA MICROSEMI CO., LTD.

5F, NO. 208, SEC. 3, CHUNG-YANG ROAD, TUCHENG CITY, TAIPEI HSIEN, **TAIWAN**



** End of Report **

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested. This test report cannot be reproduced, except in full, without prior written permission of the Company. 除非另有說明,此報告結果僅對測試之樣品負責。本報告未經本公司書面許可,不可部分複製。

This Test Report is issued by the Company under its General Conditions of Service printed overleaf or available on request and accessible at http://www.sgs.com/terms_and_conditions.htm. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this Test Report is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.