



**BUREAU
VERITAS**

TEST REPORT

LAB NO. : (6617)100-1635
DATE : April 14, 2017
PAGE : 1 OF 11

Applicant 申请人公司名称:

TONGFU MICROELECTRONIC CO., LTD/ 通富微电子股份有限公司

NO. 288, CHONGCHUAN ROAD, NANTONG, JIANGSU, CHINA/ 南通市崇川路 288 号

Date of Submission 样品收取日期: 2017-04-10
Test Period 所需工作周期: 2017-04-10 to 2017-04-14
BV EE Ref. No. BV 参考编号: /

Sample Description 样品描述:	Sample(s) received is(are) stated to be 收到的送测样品为: SOT23-5		
Manufacturer 制造商:	/	Buyer 买家:	/
Style No(s) 款号:	/	PO No. 采购订单号:	/
Country of Origin 原产地:	/	Country of Destination 目的地:	/

Test Item(s) 测试项目: Details see page 2 详见第二页

SUMMARY OF TEST RESULTS 测试结果摘要

TEST REQUESTED 测试项目	CONCLUSION 结论	REMARK 备注
Perfluorooctane Sulphonates (PFOS) and Perfluorooctanoic Acid (PFOA) Content 全氟辛烷磺酰基化合物和全氟辛酸含量	-	See Result 见结果页
Total Antimony Content 总锑含量测试	-	See Result 见结果页
Hexabromocyclododecane (HBCDD) Content 六溴环十二烷含量	-	See Result 见结果页
Phthalate Test 邻苯二甲酸盐测试	-	See Result 见结果页
Halogen (fluorine, chlorine, bromine, iodine) Content 卤素 (氟、氯、溴、碘) 含量	-	See Result 见结果页
European Parliament and Council Directive 2011/65/EU on the Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment (RoHS) with its Amendments 有关欧盟委员会针对电子产品的指令(电子电器禁用某些有害物质指令), 2011/65/EU 及其修订条款	PASS 通过	-

Note 注释: The tested part of the sample was specified by client. 样品的测试部位由客户指定。
The test conclusion was given based on the results of tested part. 结论基于测试部位结果。
Chinese translation of report just for reference only, English report shall prevail if you have any objection.
报告中文翻译仅供参考, 如有异议以英文报告内容为准。

REMARK/备注

If there are questions or concerns on this report, please contact the following persons:

若有任何疑问或咨询, 可通过下述联络方式与我们联系

General enquiry and invoicing

其他问题

Technical enquiry

技术问题

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BUREAU VERITAS

CONSUMER PRODUCTS SERVICES DIVISION (SHANGHAI)

必维国际检验集团-必维申美商品检测(上海)有限公司

PREPARED BY : Lily

制定:

余克刚 Gorden Yu

化学实验室经理 Analytical Lab Manager



**BUREAU
VERITAS**

LAB NO. : (6617)100-1635
DATE : April 14, 2017
PAGE : 2 OF 11

Sample Description Assigned by Laboratory:

实验室对样品的描述:

Test Item 测试项目	Description 描述
1	Metal and non-metal part

Note 注释:

g = gram(s) 克

mcg = microgram(s) 微克

mg/kg = milligram per kilogram 毫克每千克

mg/L = milligram per litre 毫克每升

MDL = Method Detection Limit 方法检测限

ND = Not Detected (< MDL) 未检出

EX = Exempted 豁免

% = percentage 百分比

1 mg/kg = 0.0001%

“<” = less than 小于

“>” = Greater than 大于

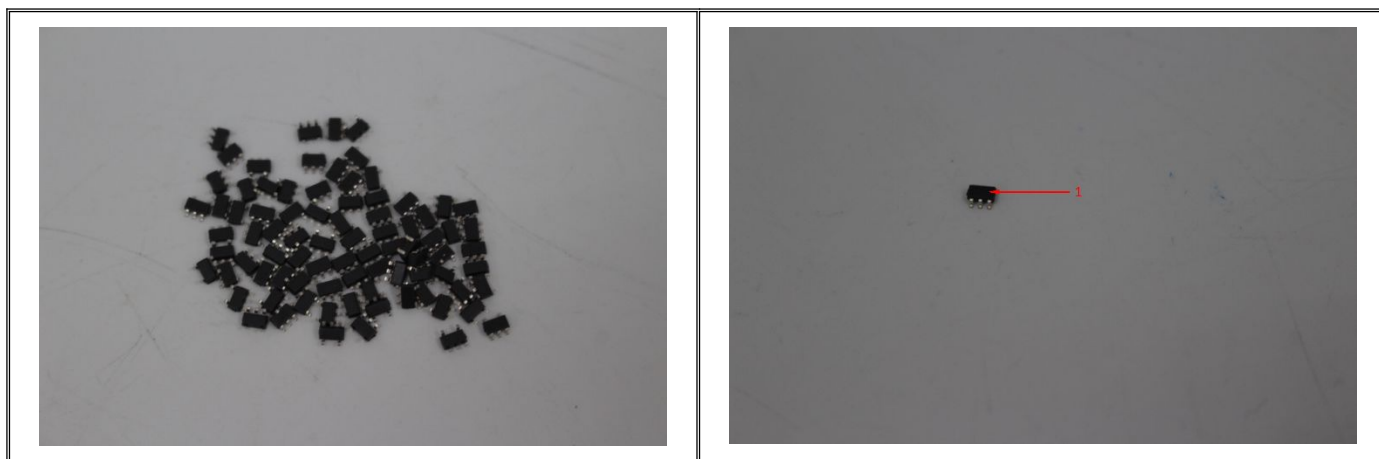
Req. = Requirement 要求

“-” = Not Regulated 未规定

NA = Not applicable 不适用

Photo of the Submitted Sample

递交样品照片





**BUREAU
VERITAS**

LAB NO. : (6617)100-1635
DATE : April 14, 2017
PAGE : 3 OF 11

TEST RESULT 测试结果

I. Perfluorooctane Sulphonates (PFOS) and Perfluorooctanoic Acid (PFOA) Content

I. 全氟辛烷磺酰基化合物和全氟辛酸含量

Test Method: Organic solvent extraction and analysis by Liquid Chromatograph Mass Spectrometer (LC-MS).
测试方法: 用有机溶剂萃取样品, 并用液相色谱质谱联用仪进行分析

Parameter 参数	Unit 单位	MDL 方法检测限	Result 结果
			1
Perfluorooctane Sulphonates (PFOS) 全氟辛烷磺酰基化合物	mg/kg	0.05	ND
Perfluorooctanoic Acid (PFOA) 全氟辛酸含量	mg/kg	0.05	ND

Note: mcg/sq. m = microgram per square metre

II. Total Antimony Content

II. 总锑含量测试

Test methods: The sample is comminuted and digested with acid mixtures. Sb content is determined with ICP-AES technique (Reference: US EPA 3050B/3051/3052)
测试方法: 样品粉碎后, 用酸消解。锑含量由 ICP-AES 测定。(参照: US EPA 3050B/3051/3052)

Parameter 参数	Unit 单位	MDL 方法检测限	Result 结果
			1
Antimony (Sb) 锑(Sb)	mg/kg	10	ND

III. Hexabromocyclododecane (HBCDD) Content

III. 六溴环十二烷含量

Test Method: Sample was extracted with organic solvent and then analyzed by Liquid Chromatograph Mass Spectrometer
测试方法: 用有机溶剂萃取样品, 然后用液相色谱质谱联用仪进行分析.

Parameter 参数	Unit 单位	MDL 方法检测限	Result 结果
			1
Hexabromocyclododecane (HBCDD) 六溴环十二烷	%	0.01	ND



**BUREAU
VERITAS**

LAB NO. : (6617)100-1635
DATE : April 14, 2017
PAGE : 4 OF 11

TEST RESULT 测试结果

IV. Phthalate Test

IV. 邻苯二甲酸盐测试

Test Method: Extraction with solvent, analysed by Gas Chromatography Mass Spectrometer.
测试方法: 用溶剂萃取样品, 并用气相色谱-质谱联用仪分析。

Parameter 参数	CAS No.	Unit 单位	MDL 方法检测限	Result 结果
				1
Dibutyl phthalate (DBP) / 邻苯二甲酸二丁酯	84-74-2	%	0.005	ND
Butyl benzyl phthalate (BBP) / 邻苯二甲酸丁基苄基酯	85-68-7	%	0.005	ND
Di-2-ethylhexyl phthalate (DEHP) / 邻苯二甲酸二(2-乙基己基)酯	117-81-7	%	0.005	ND
Di-n-octyl phthalate (DNOP) / 邻苯二甲酸二辛酯	117-84-0	%	0.005	ND
Di-iso-decyl phthalate (DIDP) / 邻苯二甲酸二异癸酯	26761-40-0/ 68515-49-1	%	0.005	ND
Di-iso-nonyl phthalate (DINP) / 邻苯二甲酸二异壬酯	28553-12-0/ 68515-48-0	%	0.005	ND
Diisobutyl phthalate (DIBP) / 邻苯二甲酸二异丁酯	84-69-5	%	0.005	ND
Di-n-hexyl phthalate (DHP) / 邻苯二甲酸二正己酯	84-75-3	%	0.005	ND
Bis(2-methoxyethyl) phthalate (DMEP) / 邻苯二甲酸二甲氧基乙酯	117-82-8	%	0.005	ND
Diisopentylphthalate(DiPP) / 邻苯二甲酸二异戊酯	605-50-5	%	0.005	ND
1,2-benzenedicarboxylic acid, di-C7- 11 branched alkyl ester and linear alkyl ester / 邻苯二甲酸二(C7-11 支链与 直链)烷基酯 (DHNUP)	68515-42-4	%	0.005	ND
1,2-benzenedicarboxylic acid, di-C6-8- branched alkyl ester, C7-rich (DIHP) / 邻苯二甲酸二(C6-8 支链与直链) 烷 基酯,富 C7 链 (DIHP)	71888-89-6	%	0.005	ND



**BUREAU
VERITAS**

LAB NO. : (6617)100-1635
DATE : April 14, 2017
PAGE : 5 OF 11

TEST RESULT 测试结果

V. Halogen (fluorine, chlorine, bromine, iodine) Content

V. 卤素（氟、氯、溴、碘）含量

Test Method: Sample was firstly combusted and absorbed with solvent, then analyzed by ion chromatography
测试方法: (Reference to EN14582:2016).
将样品燃烧后用溶剂吸收, 然后用离子色谱仪分析。(参照 EN14582:2016)

Parameter 参数	Unit 单位	MDL 方法检测限	Result 结果
			1
Fluorine 氟	mg/kg	100	ND
Chlorine 氯	mg/kg	50	ND
Bromine 溴	mg/kg	50	ND
Iodine 碘	mg/kg	100	ND



**BUREAU
VERITAS**

LAB NO. : (6617)100-1635
DATE : April 14, 2017
PAGE : 6 OF 11

TEST RESULT 测试结果

VI. European Parliament and Council Directive 2011/65/EU on the Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment (RoHS) with its Amendments

VI. 有关欧盟委员会针对电子产品的指令(电子电器禁用某些有害物质指令), 2011/65/EU 及其修订条款

Test Method 测试方法 : See Appendix. 见附录。

-	Unit 单位	Maximum Allowable Limit (Req.) 最大允许限值 (要求)	Result 结果
Test Item 测试项目	-	-	1
Parameter 参数	-	-	-
Lead (Pb) 铅	mg/kg	1000	ND
Cadmium (Cd) 镉	mg/kg	100	ND
Mercury (Hg) 汞	mg/kg	1000	ND
Chromium VI (Cr VI) 六价铬	mg/kg	1000	ND
MonoBB 一溴联苯	mg/kg		ND
DiBB 二溴联苯	mg/kg		ND
TriBB 三溴联苯	mg/kg		ND
TetraBB 四溴联苯	mg/kg		ND
PentaBB 五溴联苯	mg/kg		ND
HexaBB 六溴联苯	mg/kg		ND
HeptaBB 七溴联苯	mg/kg		ND
OctaBB 八溴联苯	mg/kg		ND
NonaBB 九溴联苯	mg/kg		ND
DecaBB 十溴联苯	mg/kg		ND
Sum of PBBs 多溴联苯总和	mg/kg	1000	ND
MonoBDE 一溴二苯醚	mg/kg		ND
DiBDE 二溴二苯醚	mg/kg		ND
TriBDE 三溴二苯醚	mg/kg		ND
TetraBDE 四溴二苯醚	mg/kg		ND
PentaBDE 五溴二苯醚	mg/kg		ND
HexaBDE 六溴二苯醚	mg/kg		ND
HeptaBDE 七溴二苯醚	mg/kg		ND
OctaBDE 八溴二苯醚	mg/kg		ND
NonaBDE 九溴二苯醚	mg/kg		ND
DecaBDE 十溴二苯醚	mg/kg		ND
Sum of PBDEs 多溴二苯醚总和	mg/kg	1000	ND
Conclusion 结论	-	-	PASS 通过



**BUREAU
VERITAS**

LAB NO. : (6617)100-1635
DATE : April 14, 2017
PAGE : 7 OF 11

Note / Key 注释:

Detection Limit 检出限(mg/kg) :

Each (Pb, Cd, Hg & Cr VI) 2 各 (铅, 镉, 汞和六价铬) 2;

Each PBB 5; Each PBDE 5 各多溴联苯 5; 各多溴二苯醚 5

Remark 备注:

- The list of analytes is summarized in table of Appendix. 分析物列表 – 见附录。
- The test flowchart of heavy metals and flame retardants content is listed in table of Appendix.
重金属和阻燃剂含量的测试流程图 – 见附录
- Result(s) of Cr VI for metallic material(s) was (were) expressed in term of positive and negative. Negative means the absence of Cr VI on the tested areas and the result(s) was (were) regarded as in compliance with European Parliament and Council Directive 2011/65/EU, Article 4(1). While, positive means the presence of Cr VI on tested areas and the result(s) was (were) regarded as in conflict with European Parliament and Council Directive 2011/65/EU, Article 4(1).
金属材料的六价铬结果以阴性和阳性表示。阴性表示六价铬未被检出在测试表面, 即结果被认为符合 2011/65/EU 指令中, 条款 4(1) 的要求。而阳性则表示六价铬存在在测试表面, 即不符合 2011/65/EU 指令中, 条款 4(1)的要求。
- According to European Parliament and Council Directive 2011/65/EU, Article 5 “Adaptation of the Annexes to scientific and technical progress”, exemption(s) should be granted to the materials and components of Test Item(s) in the lists in Annexes III and IV of this directive.
根据欧盟委员会 2011/65/EU 指令中, 条款 5“适应科学技术进步的附件”, 附件 III 和 IV 中列明的测试项目中的材料和部件可予以豁免。

END



**BUREAU
VERITAS**

LAB NO. : (6617)100-1635
DATE : April 14, 2017
PAGE : 8 OF 11

APPENDIX 附录

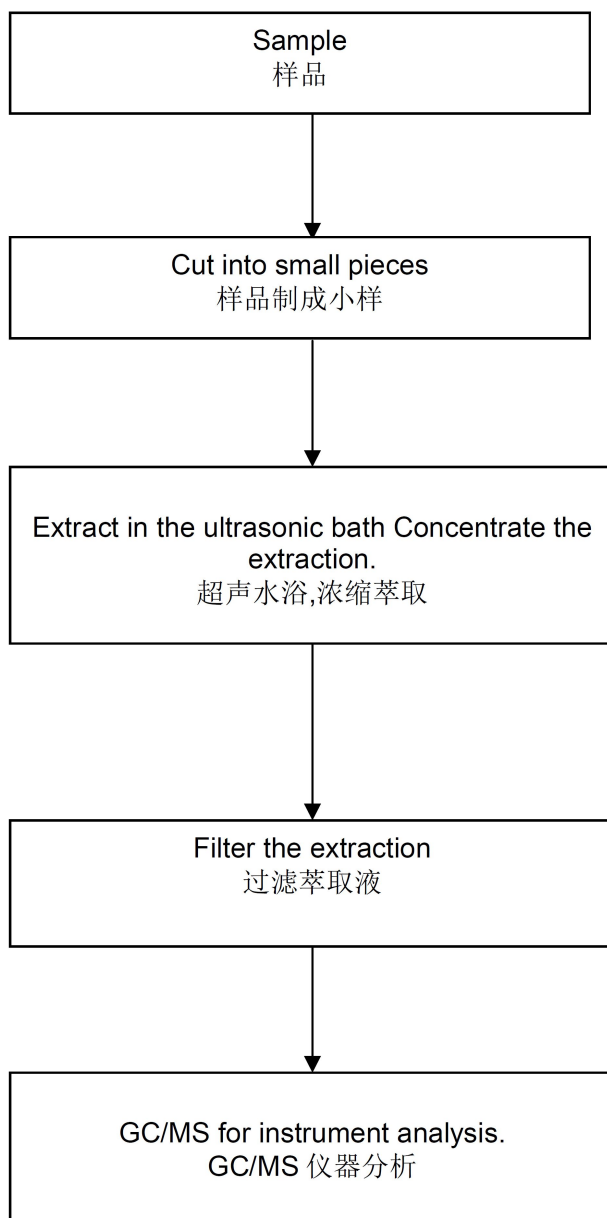
List of Analytes and their Corresponding Test Methods [European Parliament and Council Directive 2011/65/EU] : 分析物名单及其相应的测试方法 [欧盟委员会指令 2011/65/EU]:		
No.	Name of Analytes 分析物名称	Test Method(s) 测试方法
1	Lead (Pb) 铅	With reference to IEC 62321-5: 2013. 参照 IEC 62321-5: 2013.
2	Cadmium (Cd) 镉	
3	Mercury (Hg) 汞	With reference to IEC 62321-4: 2013. 参照 IEC 62321-4: 2013.
4	Chromium VI (Cr VI) 六价铬	<u>Metal 金属</u> : With reference to IEC 62321-7-1:2015. 参照 IEC 62321-7-1: 2015. <u>Polymers & Electronics 聚合物及电子件</u> : With reference to EN 62321: 2009, Annex C. 参照 EN 62321: 2009, Annex C.
5	Polybromobiphenyls (PBBs) 多溴联苯 - Bromobiphenyl (MonoBB) - Dibromobiphenyl (DiBB) - Tribromobiphenyl (TriBB) - Tetrabromobiphenyl (TetraBB) - Pentabromobiphenyl (PentaBB) - Hexabromobiphenyl (HexaBB) - Heptabromobiphenyl (HeptaBB) - Octabromobiphenyl (OctaBB) - Nonabromobiphenyl (NonaBB) - Decabromobiphenyl (DecaBB)	With reference to IEC 62321-6:2015. 参照 IEC 62321-6:2015.
6	Polybromodiphenyl ethers (PBDEs) 多溴二苯醚 - Bromodiphenyl ether (MonoBDE) - Dibromodiphenyl ether (DiBDE) - Tribromodiphenyl ether (TriBDE) - Tetrabromodiphenyl ether (TetraBDE) - Pentabromodiphenyl ether (PentaBDE) - Hexabromodiphenyl ether (HexaBDE) - Heptabromodiphenyl ether (HeptaBDE) - Octabromodiphenyl ether (OctaBDE) - Nonabromodiphenyl ether (NonaBDE) - Decabromodiphenyl ether (DecaBDE)	



APPENDIX

附录

Test Procedures Flow Chart for the determination of Phthalates

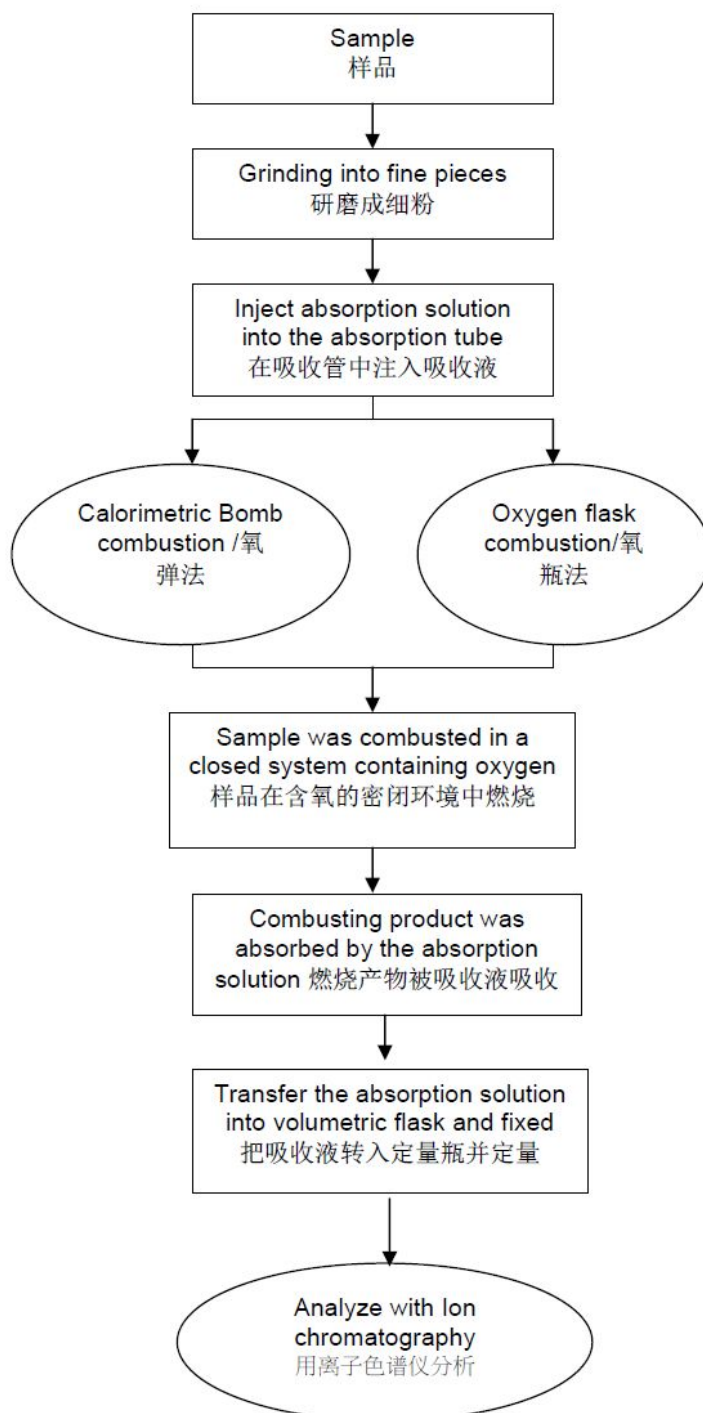




APPENDIX

附录

Test Procedures Flow Chart for the determination of Halogen





APPENDIX 附录

Test Flowchart of Heavy Metals and Flame Retardants Content [European Parliament and Council Directive 2011/65/EU] :
重金属和阻燃剂的测试流程图[欧盟委员会指令 2011/65/EU]:

