

## Test Report

No. SHAEC2106370401

Date: 12 Apr 2021

Page 1 of 10

APPLIED POWER MICROELECTRONICS CO., LTD

#206,BUILDING#5, 8 HUASHANZHONGLU, XINBEI DISTRICT, CHANGZHOU, JIANGSU

The following sample(s) was/were submitted and identified on behalf of the clients as : TRANSIENT VOLTAGE SUPPRESSOR(TVS)

SGS Job No. : SP21-010064 - SH

Model No. : AR0524P5

Client Ref. Information : SEE ATTACHMENT

Date of Sample Received : 08 Apr 2021

Testing Period : 08 Apr 2021 - 12 Apr 2021

Test Requested : Selected test(s) as requested by client.

Test Method : Please refer to next page(s).

Test Results : Please refer to next page(s).

Conclusion : Based on the performed tests on submitted sample(s), the results of Cadmium, Lead, Mercury, Hexavalent chromium, Polybrominated biphenyls (PBBs), Polybrominated diphenyl ethers (PBDEs) and Phthalates such as Bis(2-ethylhexyl) phthalate (DEHP), Butyl benzyl phthalate (BBP), Dibutyl phthalate (DBP) and Diisobutyl phthalate (DIBP) comply with the limits as set by RoHS Directive (EU) 2015/863 amending Annex II to Directive 2011/65/EU.

Signed for and on behalf of  
SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd.

Sue Sheng

Sue Sheng  
Approved Signatory

scan to see the report



SHAEC2106370401



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Test Results :

Test Part Description :

Specimen No.	SGS Sample ID	Description
SN1	SHA21-063704.001	Black body with silvery metal

Remarks :

- (1) 1 mg/kg = 0.0001%
- (2) MDL = Method Detection Limit
- (3) ND = Not Detected ( < MDL )
- (4) "-" = Not Regulated

**RoHS Directive (EU) 2015/863 amending Annex II to Directive 2011/65/EU**

Test Method : With reference to IEC 62321-4:2013+AMD1:2017, IEC62321-5:2013, IEC62321-7-2:2017, IEC 62321-6:2015 and IEC62321-8:2017, analyzed by ICP-OES, UV-Vis and GC-MS.

Test Item(s)	Limit	Unit	MDL	001
Cadmium (Cd)	100	mg/kg	2	ND
Lead (Pb)	1000	mg/kg	2	ND
Mercury (Hg)	1000	mg/kg	2	ND
Hexavalent Chromium (Cr(VI))	1000	mg/kg	8	ND
Sum of PBBs	1000	mg/kg	-	ND
Monobromobiphenyl	-	mg/kg	5	ND
Dibromobiphenyl	-	mg/kg	5	ND
Tribromobiphenyl	-	mg/kg	5	ND
Tetrabromobiphenyl	-	mg/kg	5	ND
Pentabromobiphenyl	-	mg/kg	5	ND
Hexabromobiphenyl	-	mg/kg	5	ND
Heptabromobiphenyl	-	mg/kg	5	ND
Octabromobiphenyl	-	mg/kg	5	ND
Nonabromobiphenyl	-	mg/kg	5	ND
Decabromobiphenyl	-	mg/kg	5	ND
Sum of PBDEs	1000	mg/kg	-	ND
Monobromodiphenyl ether	-	mg/kg	5	ND
Dibromodiphenyl ether	-	mg/kg	5	ND
Tribromodiphenyl ether	-	mg/kg	5	ND
Tetrabromodiphenyl ether	-	mg/kg	5	ND



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<u>Test Item(s)</u>	<u>Limit</u>	<u>Unit</u>	<u>MDL</u>	<u>001</u>
Pentabromodiphenyl ether	-	mg/kg	5	ND
Hexabromodiphenyl ether	-	mg/kg	5	ND
Heptabromodiphenyl ether	-	mg/kg	5	ND
Octabromodiphenyl ether	-	mg/kg	5	ND
Nonabromodiphenyl ether	-	mg/kg	5	ND
Decabromodiphenyl ether	-	mg/kg	5	ND
Di-butyl Phthalate (DBP)	1000	mg/kg	50	ND
Benzyl Butyl Phthalate (BBP)	1000	mg/kg	50	ND
Di-2-Ethyl Hexyl Phthalate (DEHP)	1000	mg/kg	50	ND
Diisobutyl Phthalates (DIBP)	1000	mg/kg	50	ND

Notes :

- (1) The maximum permissible limit is quoted from RoHS Directive (EU) 2015/863. IEC 62321 series is equivalent to EN 62321 series  
[https://www.cenelec.eu/dyn/www/f?p=104:30:1742232870351101:::FSP\\_ORG\\_ID,FSP\\_LANG\\_ID:1258637,25](https://www.cenelec.eu/dyn/www/f?p=104:30:1742232870351101:::FSP_ORG_ID,FSP_LANG_ID:1258637,25)
- (2) The restriction of DEHP, BBP, DBP and DIBP shall apply to medical devices, including in vitro medical devices, and monitoring and control instruments, including industrial monitoring and control instruments, from 22 July 2021.

## Halogen

Test Method : With reference to EN 14582: 2016 , analysis was performed by IC.

<u>Test Item(s)</u>	<u>Unit</u>	<u>MDL</u>	<u>001</u>
Fluorine (F)	mg/kg	50	ND
Chlorine (Cl)	mg/kg	50	ND
Bromine (Br)	mg/kg	50	ND
Iodine (I)	mg/kg	50	ND



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DFN SERIES	0201&0402 SERIES					
AR3301P0	AR3321P0	AR0501P0	AR0521P0	AU3321P0	AU3361P0	AU0511P0
AU0521P0	AU0721P0	AU0861P0				
AR3301P1	AR3321P1	AR0501P1	AR0521P1	AR0502P1	AR0801P1	AR0821P1
AR1201P1	AR1211P1	AR1801P1	AR1821P1	AR2401P1	AR2411P1	
AU1821P1	AU1881P1	AU2521P1	AU2581P1	AU3301P1	AU3321P1	AU3351P1
AU3361P1	AU3381P1	AU4581P1	AU4581P1H	AU0501P1	AU0511P1	AU0521P1
AU0531P1	AU0541P1	AU0551P1	AU0561P1	AU0502P1	AU0522P1	AU0562P1
AU0581P1	AU0701P1	AU0721P1	AU0771P1	AU0781P1	AU0811P1	AU1201P1
AU1211P1	AU1231P1	AU1221P1	AU1501P1	AU1511P1	AU2401P1	AU2411P1
AU3601P1	AU3611P1					
AR2504P3	AR2504P8	AR2502S8	AR2504P9	AR3304P3	AR3304P5	AR3304P8
AR3304P9	AR3306PA	AR0502P2	AR0521P6	AR0502P6	AR0504P3	AR0534P3
AR0504P4	AR0523P5	AR0524P5	AR0504P9	AR0534P9	AR0508PB	AR0506PA
AR0507PA	AR1203P3	AR3603P3				
AU2512PT	AU3304P7	AU0524P7	AU0504P5	AU4571P6	AU4581P6	AU0571P6
AU0581P6	AU0771P6	AU0971P6	AU1271P6	AU1571P6	AU2471P6	
AU4501P4-3	AU4521P4-3	AU0501P4-3	AU0521P4-3	AU0701P4-3	AU0721P4-3	AU1001P4-3
AU1201P4-3	AU1501P4-3	AU1801P4-3	AU2001P4-3	AU2401P4-3		
AR0521M0	AR0521M1	AU0561M0	AU0561M1	AU0521M0	AU0521M1	AU0761M0
AU0761M1						



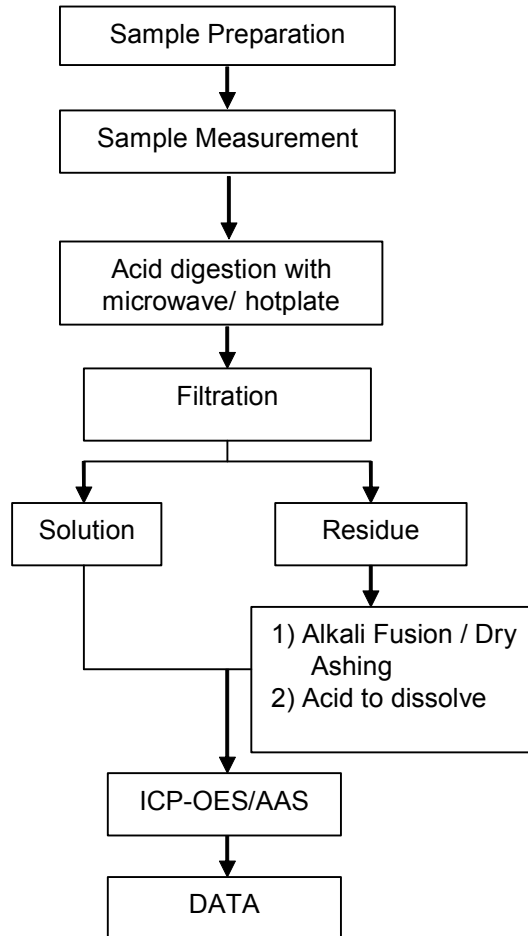
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Elements (IEC62321) Testing Flow Chart

1) These samples were dissolved totally by pre-conditioning method according to below flow chart.



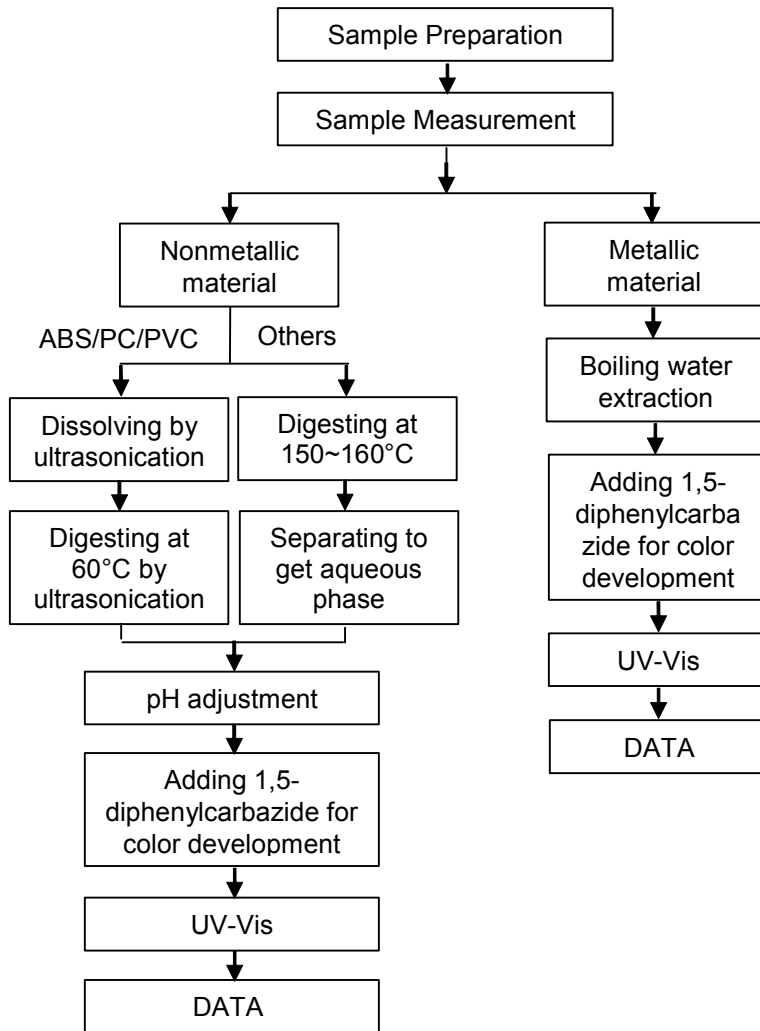
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Hexavalent Chromium (Cr(VI)) Testing Flow Chart

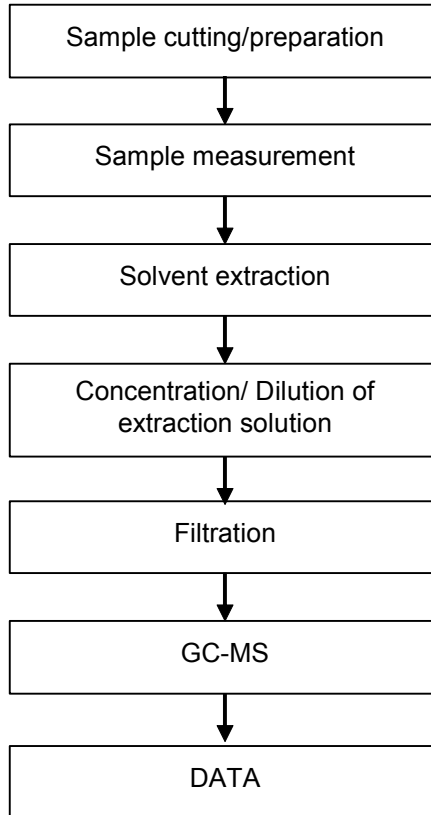


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**PBBs/PBDEs Testing Flow Chart**

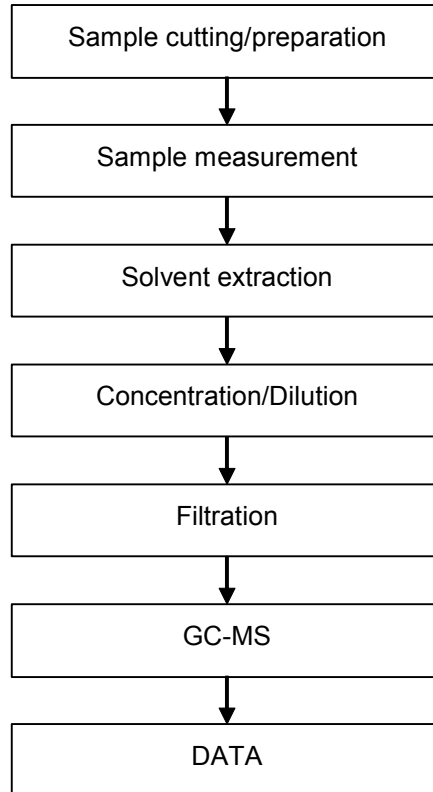


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### Phthalates Testing Flow Chart



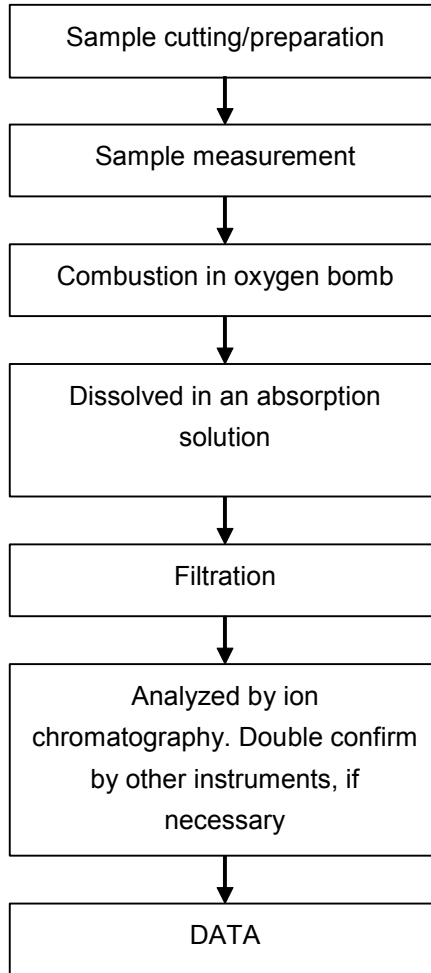
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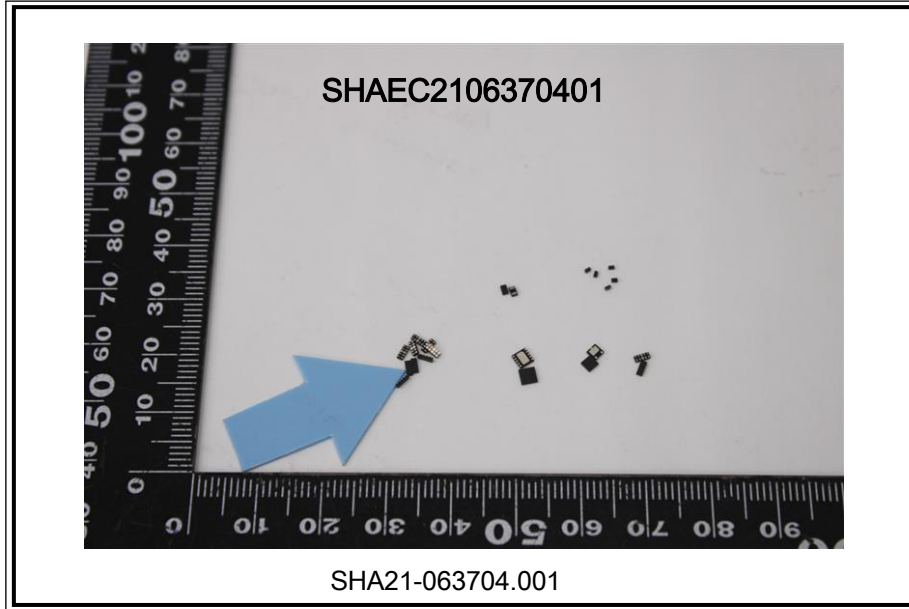
**Halogen Testing (oxygen bomb) Flow Chart**



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