

Test Report

(EVERLIGHT ELECTRONICS CO., LTD.)
6-8 (NO. 6-8, ZHONGHUA RD., SHULIN DIST., NEW TAIPEI CITY 23860, TAIWAN)

- (Test Requested) : (1) RoHS 2011/65/EU Annex II (EU) 2015/863
, DBP, BBP, DEHP, DIBP (As specified by client, with reference to RoHS 2011/65/EU Annex II and amending Directive (EU) 2015/863 to determine Cadmium, Lead, Mercury, Cr(VI), PBBs, PBDEs, DBP, BBP, DEHP, DIBP contents in the submitted sample(s).)
- (2) PAHs (As specified by client, to test PAHs and other item(s).)
- (Conclusion) : (1) , DBP, BBP, DEHP, DIBP RoHS 2011/65/EU Annex II (EU) 2015/863
(Based on the performed tests on submitted sample(s), the test results of Cadmium, Lead, Mercury, Cr(VI), PBBs, PBDEs, DBP, BBP, DEHP, DIBP comply with the limits as set by RoHS Directive (EU) 2015/863 amending Annex II to Directive 2011/65/EU.)
- (2) (AfPS) GS
PAHs 3 (Based upon the performed tests on the submitted sample(s), the test results of PAHs (15 items) comply with the limits of PAHs requirement (Category 3) Other consumer products as set by German Committee on Product Safety (AfPS) GS PAHs.)

(Test Part Description)

- No.1 : (BODY)
- No.2 : (PLATING LAYER OF SILVER COLORED METAL PIN)
- No.3 : (BASE MATERIAL OF SILVER COLORED METAL PIN)
- No.4 : () (SILVER COLORED METAL PIN (INCLUDING THE PLATING LAYER))

(Test Results)

(Test Items)	(Method)	(Unit)	MDL	(Result)			(Limit)
				No.1	No.2	No.3	
(Cd) (Cadmium (Cd))	IEC 62321-5: 2013	mg/kg	2	n.d.	---	---	100
(Pb) (Lead (Pb))	(With reference to IEC 62321-5: 2013, analysis was performed by ICP-OES.)	mg/kg	2	n.d.	---	---	1000

Test Report

(EVERLIGHT ELECTRONICS CO., LTD.)
 6-8 (NO. 6-8, ZHONGHUA RD., SHULIN DIST., NEW TAIPEI CITY 23860, TAIWAN)

(Test Items)	(Method)	(Unit)	MDL	(Result)			(Limit)
				No.1	No.2	No.3	
(Hg) (Mercury (Hg))	IEC 62321-4: 2013+ AMD1: 2017 (With reference to IEC 62321-4: 2013+ AMD1: 2017, analysis was performed by ICP-OES.)	mg/kg	2	n.d.	---	---	1000
Cr(VI) (Hexavalent Chromium Cr(VI))	IEC 62321-7-2: 2017 (With reference to IEC 62321-7-2: 2017, analysis was performed by UV-VIS.)	mg/kg	8	n.d.	---	---	1000
(Monobromobiphenyl)	IEC 62321-6: 2015 / (With reference to IEC 62321-6: 2015, analysis was performed by GC/MS.)	mg/kg	5	n.d.	---	---	-
(Dibromobiphenyl)		mg/kg	5	n.d.	---	---	-
(Tribromobiphenyl)		mg/kg	5	n.d.	---	---	-
(Tetrabromobiphenyl)		mg/kg	5	n.d.	---	---	-
(Pentabromobiphenyl)		mg/kg	5	n.d.	---	---	-
(Hexabromobiphenyl)		mg/kg	5	n.d.	---	---	-
(Heptabromobiphenyl)		mg/kg	5	n.d.	---	---	-
(Octabromobiphenyl)		mg/kg	5	n.d.	---	---	-
(Nonabromobiphenyl)		mg/kg	5	n.d.	---	---	-
(Decabromobiphenyl)		mg/kg	5	n.d.	---	---	-
(Sum of PBBs)		mg/kg	-	n.d.	---	---	1000
(Monobromodiphenyl ether)		mg/kg	5	n.d.	---	---	-
(Dibromodiphenyl ether)		mg/kg	5	n.d.	---	---	-
(Tribromodiphenyl ether)		mg/kg	5	n.d.	---	---	-
(Tetrabromodiphenyl ether)		mg/kg	5	n.d.	---	---	-
(Pentabromodiphenyl ether)		mg/kg	5	n.d.	---	---	-
(Hexabromodiphenyl ether)		mg/kg	5	n.d.	---	---	-
(Heptabromodiphenyl ether)		mg/kg	5	n.d.	---	---	-
(Octabromodiphenyl ether)		mg/kg	5	n.d.	---	---	-
(Nonabromodiphenyl ether)		mg/kg	5	n.d.	---	---	-
(Decabromodiphenyl ether)	mg/kg	5	n.d.	---	---	-	
(Sum of PBDEs)	mg/kg	-	n.d.	---	---	1000	

Test Report

(EVERLIGHT ELECTRONICS CO., LTD.)
6-8 (NO. 6-8, ZHONGHUA RD., SHULIN DIST., NEW TAIPEI CITY 23860, TAIWAN)

(Test Items)	(Method)	(Unit)	MDL	(Result)			(Limit)
				No.1	No.2	No.3	
(BBP) (Butyl benzyl phthalate (BBP))	IEC 62321-8: 2017 / (With reference to IEC 62321-8: 2017, analysis was performed by GC/MS.)	mg/kg	50	n.d.	---	---	1000
(DBP) (Dibutyl phthalate (DBP))		mg/kg	50	n.d.	---	---	1000
(2-) (DEHP) (Di-(2-ethylhexyl) phthalate (DEHP))		mg/kg	50	n.d.	---	---	1000
(DIBP) (Diisobutyl phthalate (DIBP))		mg/kg	50	n.d.	---	---	1000
(DIDP) (Diisodecyl phthalate (DIDP)) (CAS No.: 26761-40-0, 68515-49-1)		mg/kg	50	n.d.	---	---	-
(DINP) (Diisononyl phthalate (DINP)) (CAS No.: 28553-12-0, 68515-48-0)		mg/kg	50	n.d.	---	---	-
(DNOP) (Di-n-octyl phthalate (DNOP)) (CAS No.: 117-84-0)		mg/kg	50	n.d.	---	---	-
(DNPP) (Di-n-pentyl phthalate (DNPP)) (CAS No.: 131-18-0)		mg/kg	50	n.d.	---	---	-
(DNHP) (Di-n-hexyl phthalate (DNHP)) (CAS No.: 84-75-3)		mg/kg	50	n.d.	---	---	-
(2-) (DMEP) (Bis(2-methoxyethyl) phthalate (DMEP)) (CAS No.: 117-82-8)		mg/kg	50	n.d.	---	---	-
(DMP) (Dimethyl phthalate (DMP)) (CAS No.: 131-11-3)		mg/kg	50	n.d.	---	---	-
(DIOP) (Diisooctyl phthalate (DIOP)) (CAS No.: 27554-26-3)		mg/kg	50	n.d.	---	---	-

Test Report

(EVERLIGHT ELECTRONICS CO., LTD.)
6-8 (NO. 6-8, ZHONGHUA RD., SHULIN DIST., NEW TAIPEI CITY 23860, TAIWAN)

(Test Items)	(Method)	(Unit)	MDL	(Result)			(Limit)
				No.1	No.2	No.3	
(DNNP) (Di-n-nonyl phthalate (DNNP)) (CAS No.: 84-76-4)	IEC 62321-8: 2017 / (With reference to IEC 62321-8: 2017, analysis was performed by GC/MS.)	mg/kg	50	n.d.	---	---	-
(HBCDD) (- HBCDD, - HBCDD, - HBCDD) (Hexabromocyclododecane (HBCDD) and all major diastereoisomers identified (- HBCDD, - HBCDD, - HBCDD)) (CAS No.: 25637-99-4, 3194-55-6 (134237-51-7, 134237-50-6, 134237-52-8))	IEC 62321: 2008 / (With reference to IEC 62321: 2008, analysis was performed by GC/MS.)	mg/kg	5	n.d.	---	---	-
(F) (Fluorine (F)) (CAS No.: 14762-94-8)	BS EN 14582: 2016 (With reference to BS EN 14582: 2016, analysis was performed by IC.)	mg/kg	50	n.d.	---	---	-
(Cl) (Chlorine (Cl)) (CAS No.: 22537-15-1)		mg/kg	50	102	---	---	-
(Br) (Bromine (Br)) (CAS No.: 10097-32-2)		mg/kg	50	8930	---	---	-
(I) (Iodine (I)) (CAS No.: 14362-44-8)		mg/kg	50	n.d.	---	---	-
(PFOS and its salts) (CAS No.: 1763-23-1 and its salts)	CEN/TS 15968: 2010 (With reference to CEN/TS 15968: 2010, analysis was performed by LC/MS/MS.)	mg/kg	0.01	n.d.	---	---	-
(PFOA and its salts) (CAS No.: 335-67-1 and its salts)	CEN/TS 15968: 2010 (With reference to CEN/TS 15968: 2010, analysis was performed by LC/MS/MS.)	mg/kg	0.01	n.d.	---	---	-



(No.): ETR24301198

(Date): 15-Mar-2024

(Page): 6 of 23

Test Report

(EVERLIGHT ELECTRONICS CO., LTD.)
6-8 (NO. 6-8, ZHONGHUA RD., SHULIN DIST., NEW TAIPEI CITY 23860, TAIWAN)

(Method)	(Unit)	MDL			(Limit)
		No.1	No.2	No.3	
	mg/kg	0.2	n.d.	---	---

Test Report

(EVERLIGHT ELECTRONICS CO., LTD.)
6-8 (NO. 6-8, ZHONGHUA RD., SHULIN DIST., NEW TAIPEI CITY 23860, TAIWAN)

(Test Items)	(Method)	(Unit)	MDL	(Result)			(Limit)
				No.1	No.2	No.3	
(Be) (Beryllium (Be)) (CAS No.: 7440-41-7)	US EPA 3052: 1996 (With reference to US EPA 3052: 1996, analysis was performed by ICP-OES.)	mg/kg	2	n.d.	---	---	-
(Cd) (Cadmium (Cd))	IEC 62321-5: 2013 (IEC 62321-5: 2013 application of modified digestion by surface etching, analysis was performed by ICP-OES.)	mg/kg	2	---	n.d.	---	100
(Pb) (Lead (Pb))	IEC 62321-4: 2013+ AMD1: 2017 (IEC 62321-4: 2013+AMD1: 2017 application of modified digestion by surface etching, analysis was performed by ICP-OES.)	mg/kg	2	---	45.2	---	1000
(Hg) (Mercury (Hg))	IEC 62321-4: 2013+ AMD1: 2017 (IEC 62321-4: 2013+AMD1: 2017 application of modified digestion by surface etching, analysis was performed by ICP-OES.)	mg/kg	2	---	n.d.	---	1000
(Cd) (Cadmium (Cd))	IEC 62321-5: 2013 (With reference to IEC 62321-5: 2013, analysis was performed by ICP-OES.)	mg/kg	2	---	---	n.d.	100
(Pb) (Lead (Pb))	IEC 62321-4: 2013+ AMD1: 2017 (With reference to IEC 62321-4: 2013+ AMD1: 2017, analysis was performed by ICP-OES.)	mg/kg	2	---	---	n.d.	1000
(Hg) (Mercury (Hg))	IEC 62321-4: 2013+ AMD1: 2017 (With reference to IEC 62321-4: 2013+ AMD1: 2017, analysis was performed by ICP-OES.)	mg/kg	2	---	---	n.d.	1000

Test Report

(EVERLIGHT ELECTRONICS CO., LTD.)
 6-8 (NO. 6-8, ZHONGHUA RD., SHULIN DIST., NEW TAIPEI CITY 23860, TAIWAN)

PFAS Remark

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(The quantitative technology of PFAS is to analyze the specific structure of PFAS substances. However, PFAS acid and its salts with the same carbon number group have the same specific structure that can be identified. The tested results of the analyzed specific structure cannot be distinguished to identify the contribution from PFAS acid or its salts. Therefore, the tested results display the sum of concentrations of PFAS acids and its salts with the same carbon number group. The concentration of PFAS substances in the below table have been included in the tested results, please refer to the table for relevant information: (The listed PFAS substances are examples only, it do not include all PFAS salts with the same carbon number group.))

(Group Name)	(Substance Name)	CAS No.
PFOS, & (PFOS, its salts & derivatives)	(Perfluorooctane sulfonates) (PFOS)	1763-23-1
	(PFOS-K) Potassium perfluorooctanesulfonate (PFOS-K)	2795-39-3
	(PFOS-Li) Perfluorooctanesulfonic acid, lithium salt (PFOS-Li)	29457-72-5
	(PFOS-NH ₄) Perfluorooctanesulfonic acid, ammonium salt (PFOS-NH ₄)	29081-56-9
	(PFOS-NH(OH) ₂) Perfluorooctane sulfonate diethanolamine salt (PFOS-NH(OH) ₂)	70225-14-8
	(PFOS-N(C ₂ H ₅) ₄) Perfluorooctanesulfonic acid, tetraethylammonium salt (PFOS- N(C ₂ H ₅) ₄)	56773-42-3
	(PFOS-DDA) N-decyl-N,N-dimethyldecyl-1-aminium 1,1,2,2,3,3,4,4,5,5,6,6,7,7,8,8,8- heptadecafluorooctane-1-sulfonate (PFOS- DDA)	251099-16-8



(No.): ETR24301198

(Date): 15-Mar-2024

(Page): 11 of 23

Test Report

(EVERLIGHT ELECTRONICS CO., LTD.)
6-8 (NO. 6-8, ZHONGHUA RD., SHULIN DIST., NEW TAIPEI CITY 23860, TAIWAN)

(Group Name)	(Substance Name)	CAS No.
PFOS, & (PFOS, its salts & derivatives)	(POSF) Perfluorooctane sulfonyl fluoride (POSF)	307-35-7
	(PFOS-Mg) Perfluorooctanesulfonic acid, magnesium salt (PFOS-Mg)	91036-71-4
	(PFOS-Na) Perfluorooctanesulfonic acid, sodium salt (PFOS-Na)	4021-47-0
	(Perfluorooctanoic acid) (PFOA) Sodium perfluorooctanoate (PFOA-Na)	71463-74-6
PFOA, & (PFOA, its salts & derivatives)	Piperidine 1,1,2,2,3,3,4,4,5,5,6,6,7,7,8,8,8-heptafluorooctanesulfonate (PFOA-K) Potassium perfluorooctanoate (PFOA-K)	335-95-5
	(PFOA-Ag) Silver perfluorooctanoate (PFOA-Ag)	2395-00-8
	(PFOA-F) Perfluorooctanoyl fluoride (PFOA-F)	335-93-3
	(A PFO) Ammonium pentafluorooctanoate (APFO)	335-66-0
	(PFOA-Li) Lithium perfluorooctanoate (PFOA-Li)	3825-26-1

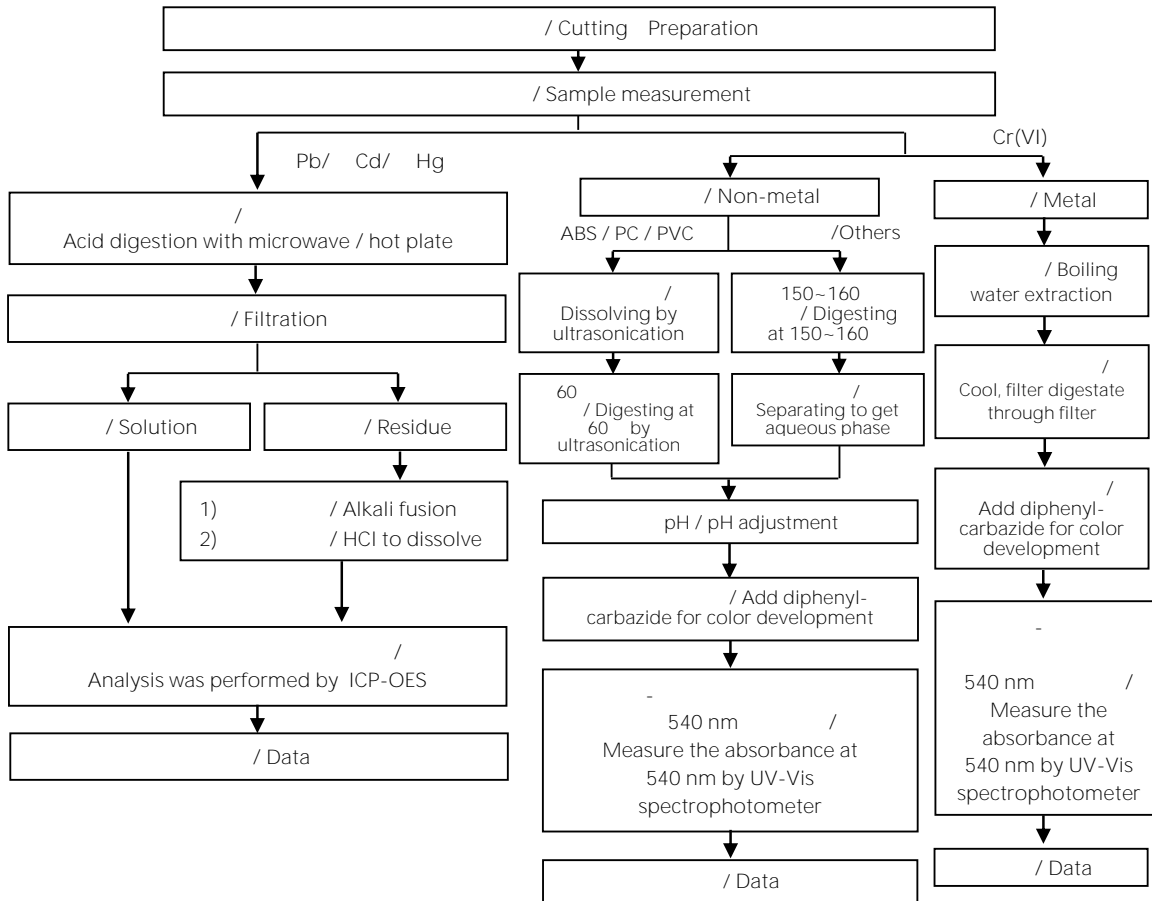
Test Report

(EVERLIGHT ELECTRONICS CO., LTD.)
 6-8 (NO. 6-8, ZHONGHUA RD., SHULIN DIST., NEW TAIPEI CITY 23860, TAIWAN)

/ Analytical flow chart of heavy metal

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

Cr⁶⁺ test method excluded



Test Report

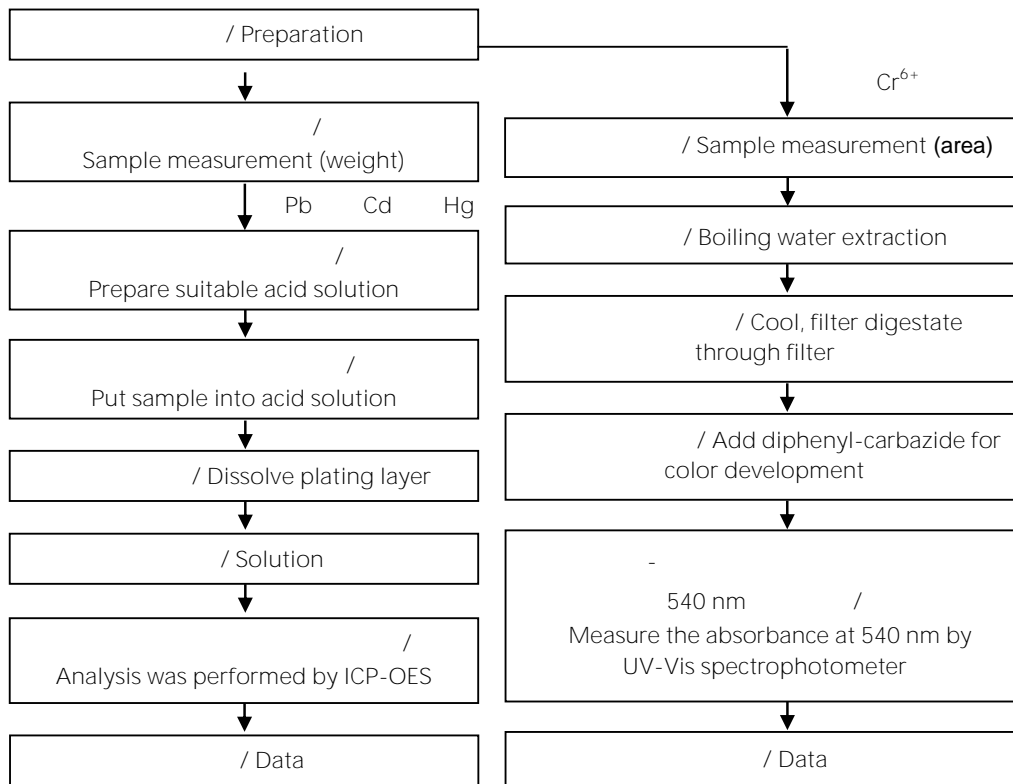
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 6-8 (NO. 6-8, ZHONGHUA RD., SHULIN DIST., NEW TAIPEI CITY 23860, TAIWAN)

/ Flow chart of stripping method for metal analysis

/ The plating layer

of samples were dissolved totally by pre-conditioning method according to below flow chart.

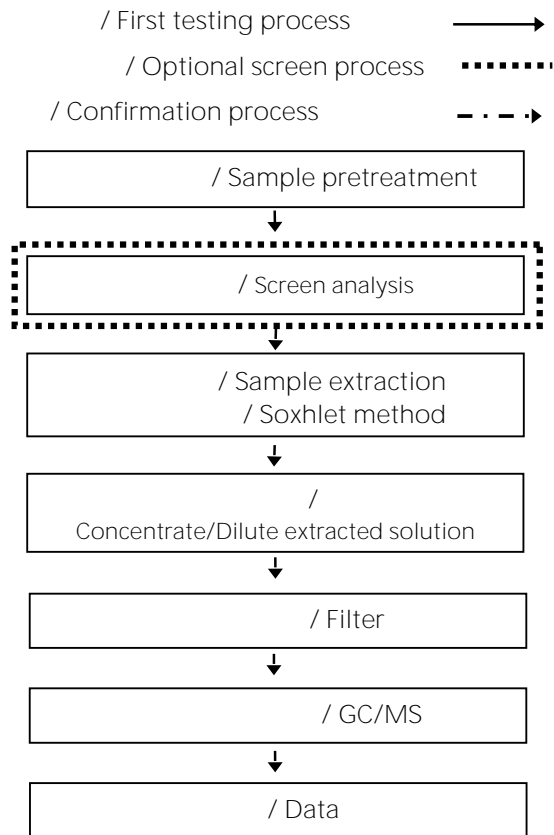
Cr⁶⁺ test method excluded



Test Report

(EVERLIGHT ELECTRONICS CO., LTD.)
6-8 (NO. 6-8, ZHONGHUA RD., SHULIN DIST., NEW TAIPEI CITY 23860, TAIWAN)

/ Analytical flow chart - PBBs/PBDEs

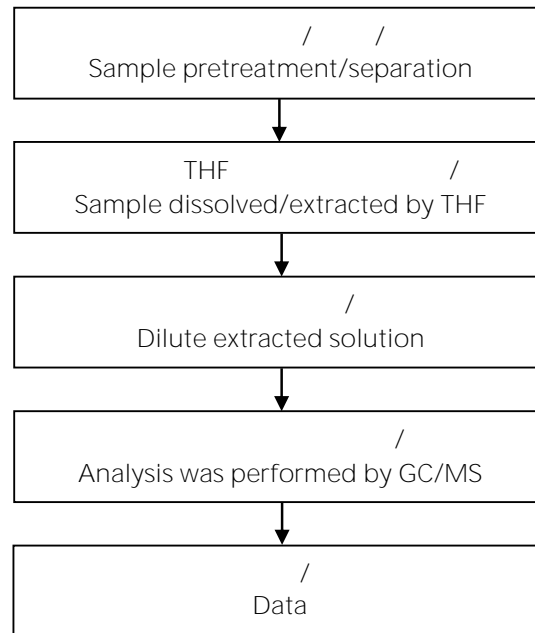


Test Report

(EVERLIGHT ELECTRONICS CO., LTD.)
6-8 (NO. 6-8, ZHONGHUA RD., SHULIN DIST., NEW TAIPEI CITY 23860, TAIWAN)

/ Analytical flow chart - Phthalate

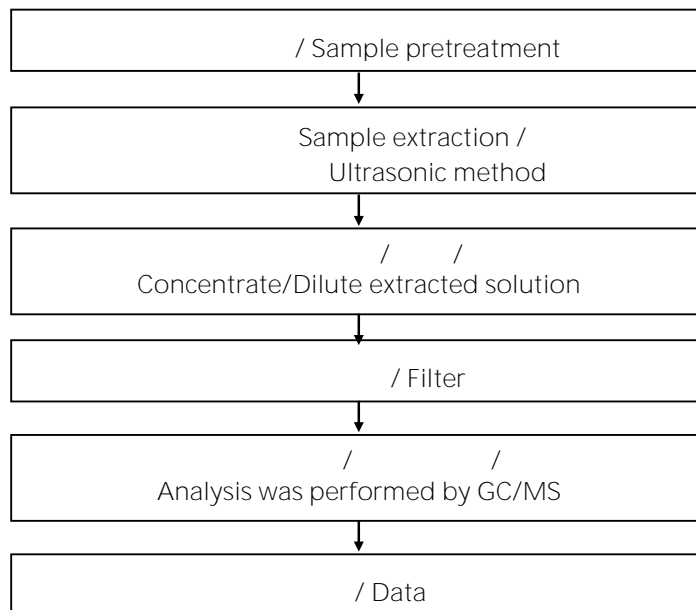
/Test method: IEC 62321-8



Test Report

(EVERLIGHT ELECTRONICS CO., LTD.)
6-8 (NO. 6-8, ZHONGHUA RD., SHULIN DIST., NEW TAIPEI CITY 23860, TAIWAN)

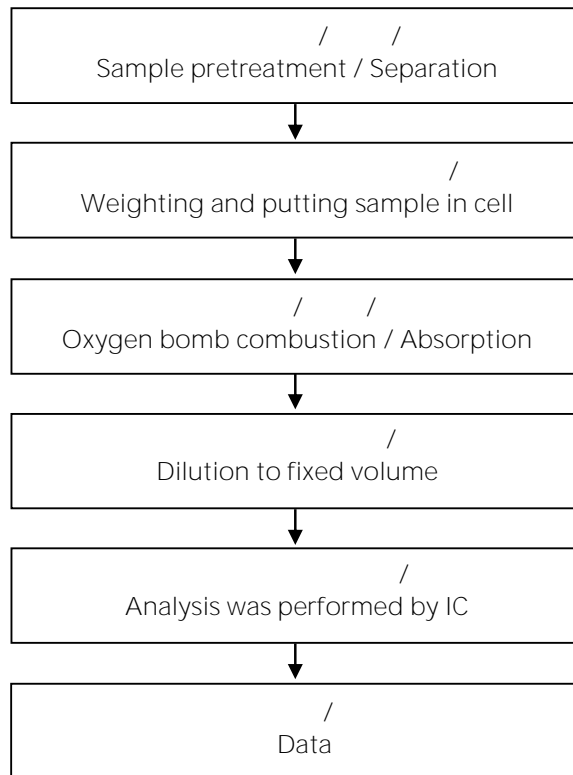
/ Analytical flow chart - HBCDD



Test Report

(EVERLIGHT ELECTRONICS CO., LTD.)
6-8 (NO. 6-8, ZHONGHUA RD., SHULIN DIST., NEW TAIPEI CITY 23860, TAIWAN)

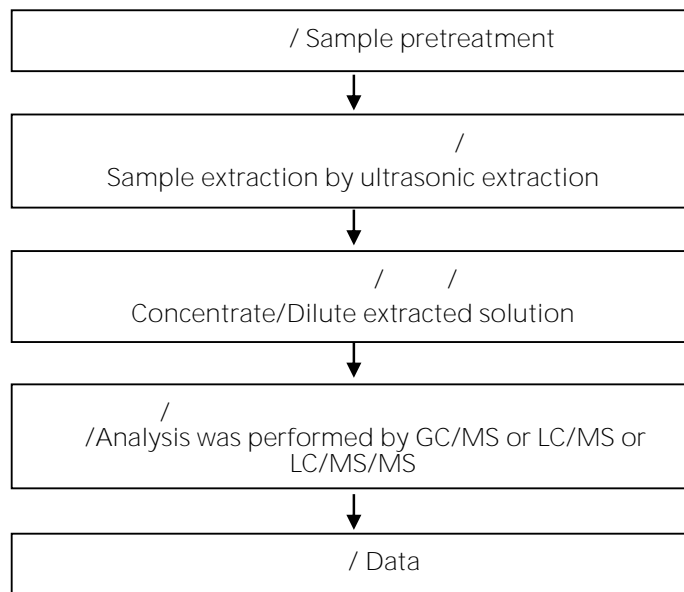
/ Analytical flow chart - Halogen



Test Report

(EVERLIGHT ELECTRONICS CO., LTD.)
6-8 (NO. 6-8, ZHONGHUA RD., SHULIN DIST., NEW TAIPEI CITY 23860, TAIWAN)

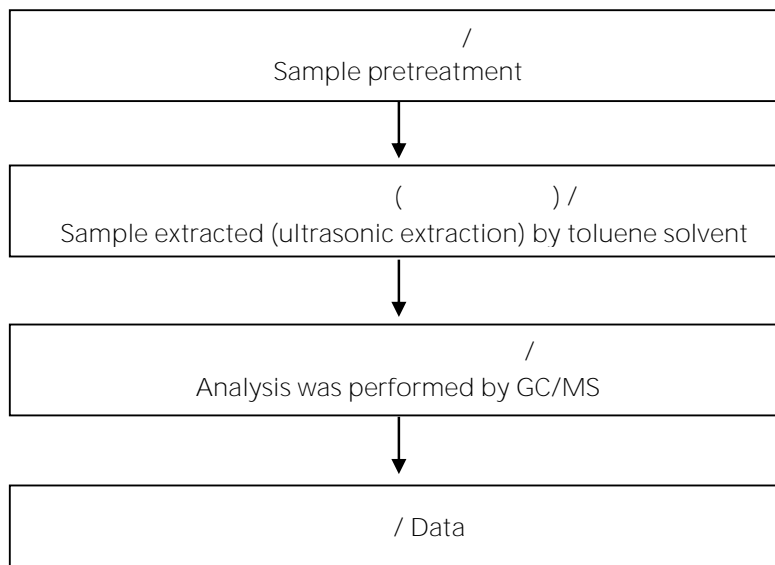
(/ /) / Analytical flow
chart - PFAS (including PFOA/PFOS/its related compound, etc.)



Test Report

(EVERLIGHT ELECTRONICS CO., LTD.)
6-8 (NO. 6-8, ZHONGHUA RD., SHULIN DIST., NEW TAIPEI CITY 23860, TAIWAN)

Analytical flow chart - PAHs (Polycyclic Aromatic Hydrocarbons)



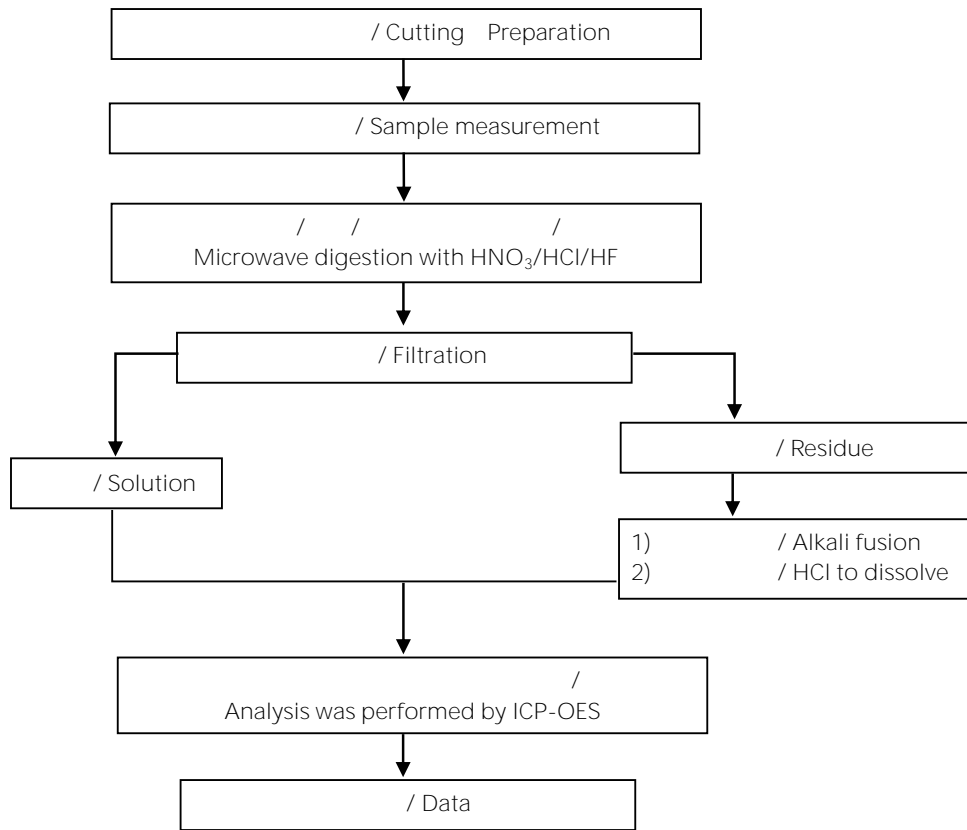
Test Report

(EVERLIGHT ELECTRONICS CO., LTD.)
 6-8 (NO. 6-8, ZHONGHUA RD., SHULIN DIST., NEW TAIPEI CITY 23860, TAIWAN)

() / Analytical flow chart of elements (Heavy metal included)

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

/Reference method US EPA 3051A US EPA 3052



* US EPA 3051A

/ US EPA 3051A method does not add HF.

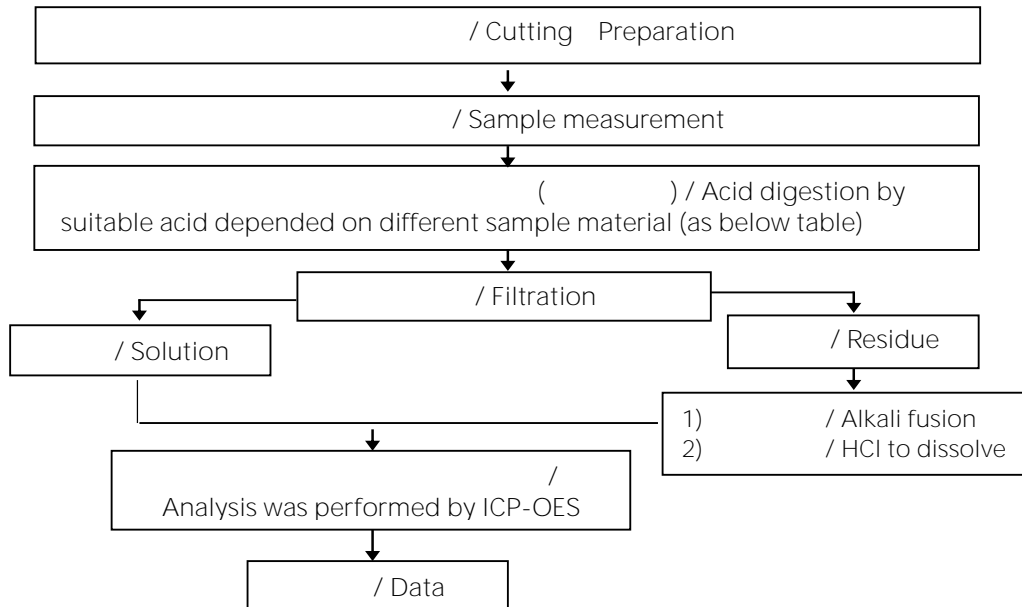
Test Report

(EVERLIGHT ELECTRONICS CO., LTD.)
 6-8 (NO. 6-8, ZHONGHUA RD., SHULIN DIST., NEW TAIPEI CITY 23860, TAIWAN)

ICP-OES

(Flow chart of digestion for the elements analysis performed by ICP-OES)

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



/ Steel, copper, aluminum, solder	/ Aqua regia, HNO ₃ , HCl, HF, H ₂ O ₂
/ Glass	/ HNO ₃ , HF
/ Gold, platinum, palladium, ceramic	/ Aqua regia
/ Silver	/ HNO ₃
/ Plastic	/ H ₂ SO ₄ , H ₂ O ₂ , HNO ₃ , HCl
/ Others	/ Added appropriate reagent to total digestion

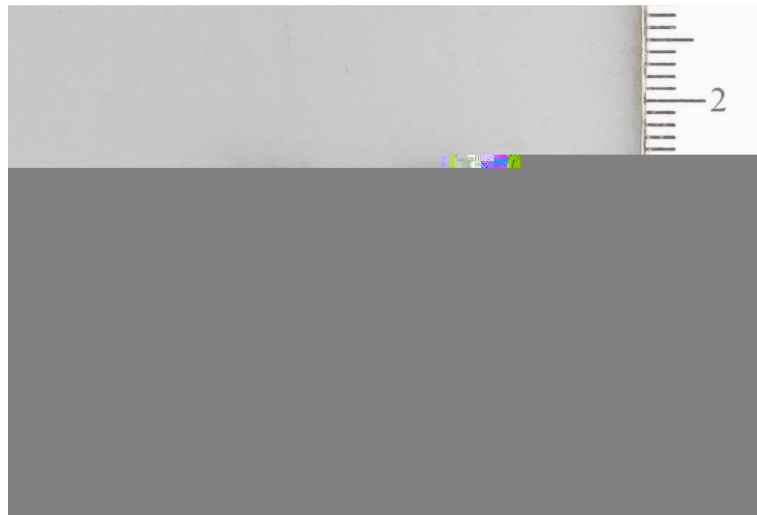
Test Report

(EVERLIGHT ELECTRONICS CO., LTD.)
6-8 (NO. 6-8, ZHONGHUA RD., SHULIN DIST., NEW TAIPEI CITY 23860, TAIWAN)

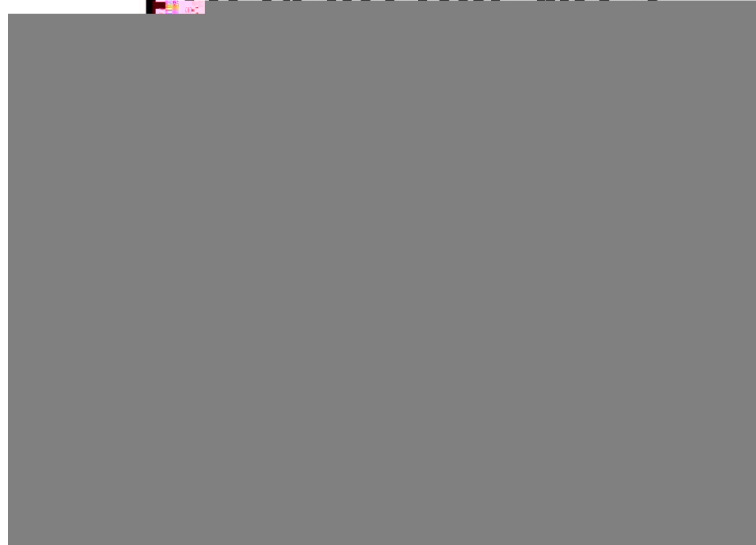
* / *

(The tested sample / part is marked by an arrow if it's shown on the photo.)

ETR24301198 NO.1



ETR24301198 NO.2



Test Report

(EVERLIGHT ELECTRONICS CO., LTD.)
6-8 (NO. 6-8, ZHONGHUA RD., SHULIN DIST., NEW TAIPEI CITY 23860, TAIWAN)

ETR24301198 NO 3



ETR24301198 NO 4



** (End of Report) **