TEST REPORT

KOTITI No.	**8222-1401-100614**		
Applicant	SAMSUNG ELECTRO-MECHANICS CO., LTD.		
Date In	2022. 02. 04.	**Date Out**	2022. 02. 10.

Sample Description	Substrate
Sample Quantity	One (1) Sample(s)
Buyer	N/S
Item Number	Au Plating
Material	N/S
Testing Period	2022. 02. 04. ~ 2022. 02. 10.
Test Result	**For further details, please refer to the following page(s).**

*** N/S : Not Submitted, N.A. : Not Applicable, N.D. : Not Detected [< RL(Report Limit)]**

*** Negative : Not Detected, Positive : Detected**

Affirmation	Prepared by Name : Jeong taek Kim	Technical Manager Name : Hae sung Kim

KOTITI Testing & Research Institute

Contact Information for technical questions and general inquiries.

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Tested Sample List			
Sample No.	**Sample Description**	**Item No.**	**Material**
1	Substrate	Au Plating	N/S

RoHS, Unit: mg/kg
(EU Directive 2011/65/EU, 2015/863/EU)

Test Conducted	Test Method	RL	Test Results
			1
Lead (Pb)	IEC 62321-5:2013 (Acid digestion and determined by ICP-OES)	5	N.D.
Cadmium (Cd)		2	N.D.
Mercury (Hg)	IEC 62321-4:2013 (Acid digestion and determined by ICP-OES)	1	N.D.
Hexavalent Chromium (Cr^{6+})	IEC 62321-7-1:2015 (Boiling water extraction and determined by UV-VIS)	-	Negative
*** Polybrominated Biphenyls(PBBs)**			
Bromobiphenyl	IEC 62321-6:2015 (Solvent extraction and determined by GC-MS)	5	N.D.
Dibromobiphenyl		5	N.D.
Tribromobiphenyl		5	N.D.
Tetrabromobiphenyl		5	N.D.
Pentabromobiphenyl		5	N.D.
Hexabromobiphenyl		5	N.D.
Heptabromobiphenyl		5	N.D.
Octabromobiphenyl		5	N.D.
Nonabromobiphenyl		5	N.D.
Decabromobiphenyl		5	N.D.
Sum of PBBs		-	N.D.
*** Polybrominated Diphenyl Ethers(PBDEs)**			
Bromodiphenyl ethers		5	N.D.
Dibromodiphenyl ethers		5	N.D.
Tribromodiphenyl ethers		5	N.D.
Tetrabromodiphenyl ethers		5	N.D.
Pentabromodiphenyl ethers		5	N.D.
Hexabromodiphenyl ethers		5	N.D.
Heptabromodiphenyl ethers		5	N.D.
Octabromodiphenyl ethers		5	N.D.
Nonabromodiphenyl ethers		5	N.D.
Decabromodiphenyl ether		5	N.D.
Sum of PBDEs		-	N.D.

Phthalates, Unit: mg/kg (EU Directive 2011/65/EU, 2015/863/EU)

Test Conducted	Test Method	RL	Test Results
			1
butyl benzyl phthalate (BBP)	IEC 62321-8:2017 (Solvent extraction and determined by GC-MS)	50	N.D.
di-n-butyl phthalate (DBP)		50	N.D.
di(ethylhexyl) phthalate (DEHP)		50	N.D.
diisobutyl phthalate (DIBP)		50	N.D.

Halogen, Unit: mg/kg

Test Conducted	Test Method	RL	Test Results
			1
Chlorine (Cl)	EN 14582:2016 & IEC 62321-3-2 Annex A determined by IC	30	N.D.
Bromine (Br)		30	N.D.

Heavy metal, Unit: mg/kg

Test Conducted	Test Method	RL	Test Results
			1
Antimony (Sb)	Reference to EPA 3052:1996 determined by ICP-OES	5	N.D.
Beryllium (Be)		5	N.D.

PFOS / PFOA, Unit: µg/kg

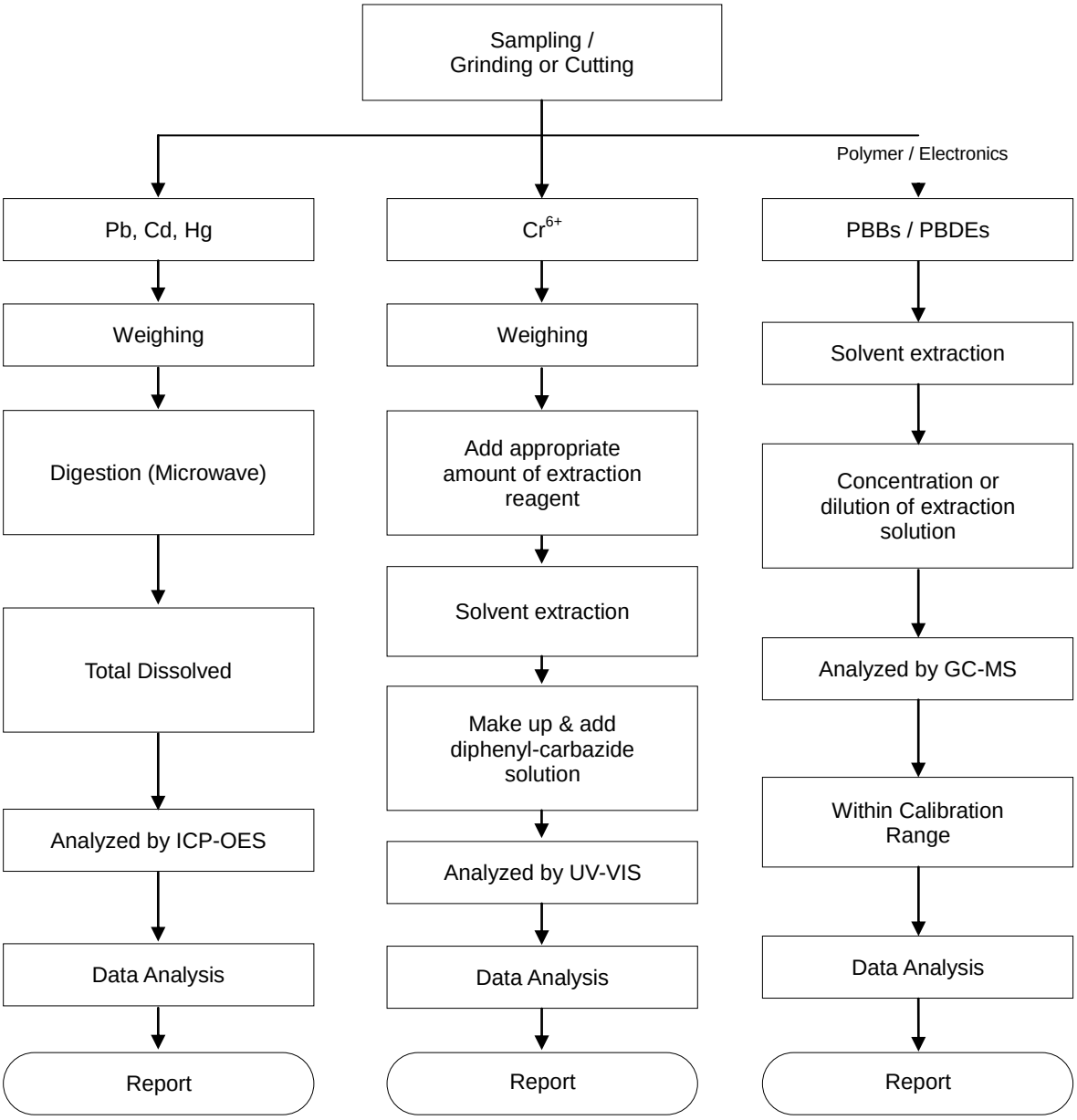
Test Conducted	Test Method	RL	Test Results
			1
Perfluorooctane sulfonate (PFOS)	Reference to KOTITI In-house method determined by LC-MS-MS	10	N.D.
Perfluorooctanoic acid (PFOA)		10	N.D.

Photo of the submitted sample(s)

Sample No.1	

Flow Chart

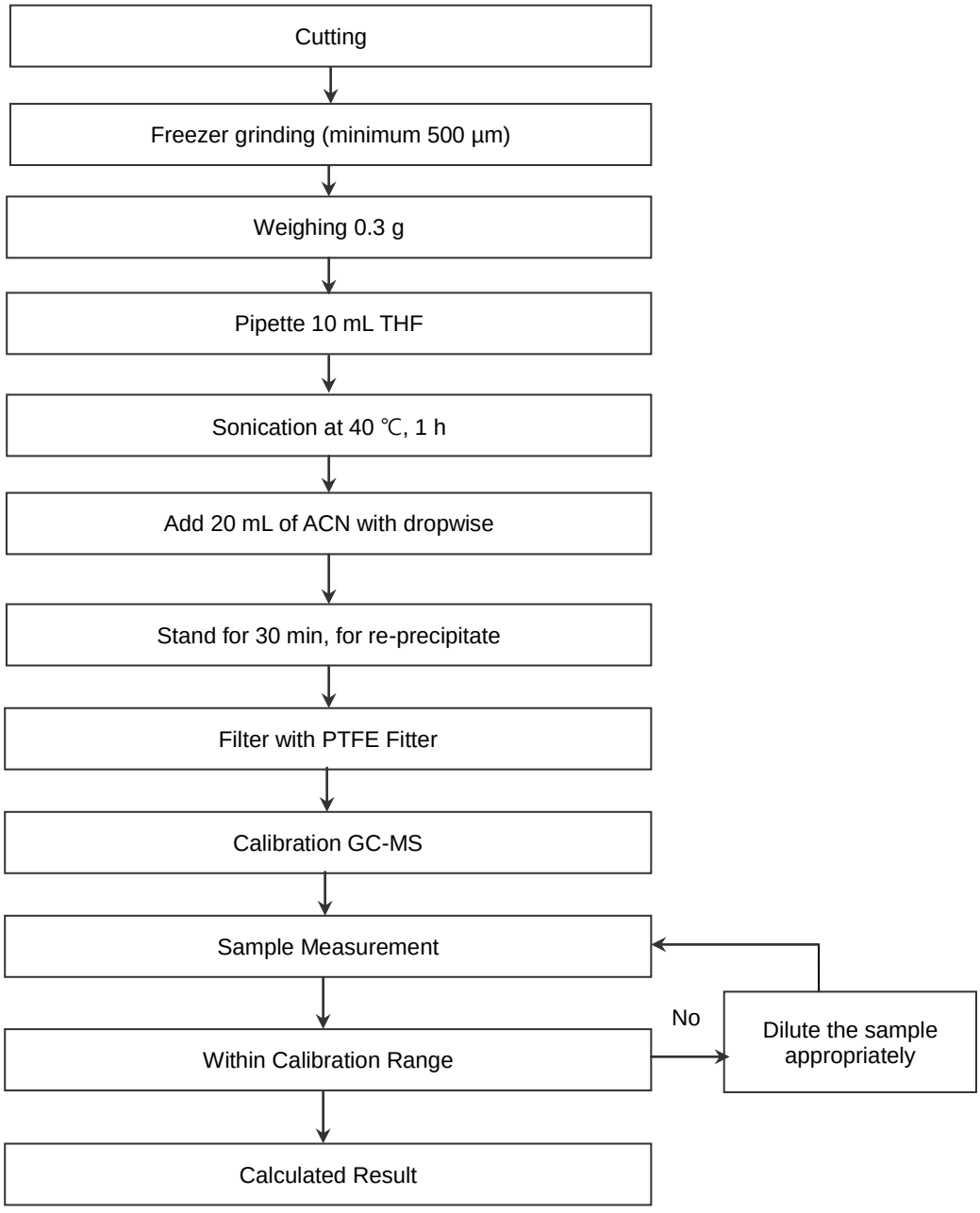
RoHS



Material	Digestion Acid
Polymers	HNO_3, HCl, HF, H_2O_2, H_2SO_4, etc.
Metals	HNO_3, HCl
Electronics	HNO_3, HCl, HF, H_2O_2, H_2SO_4, etc.

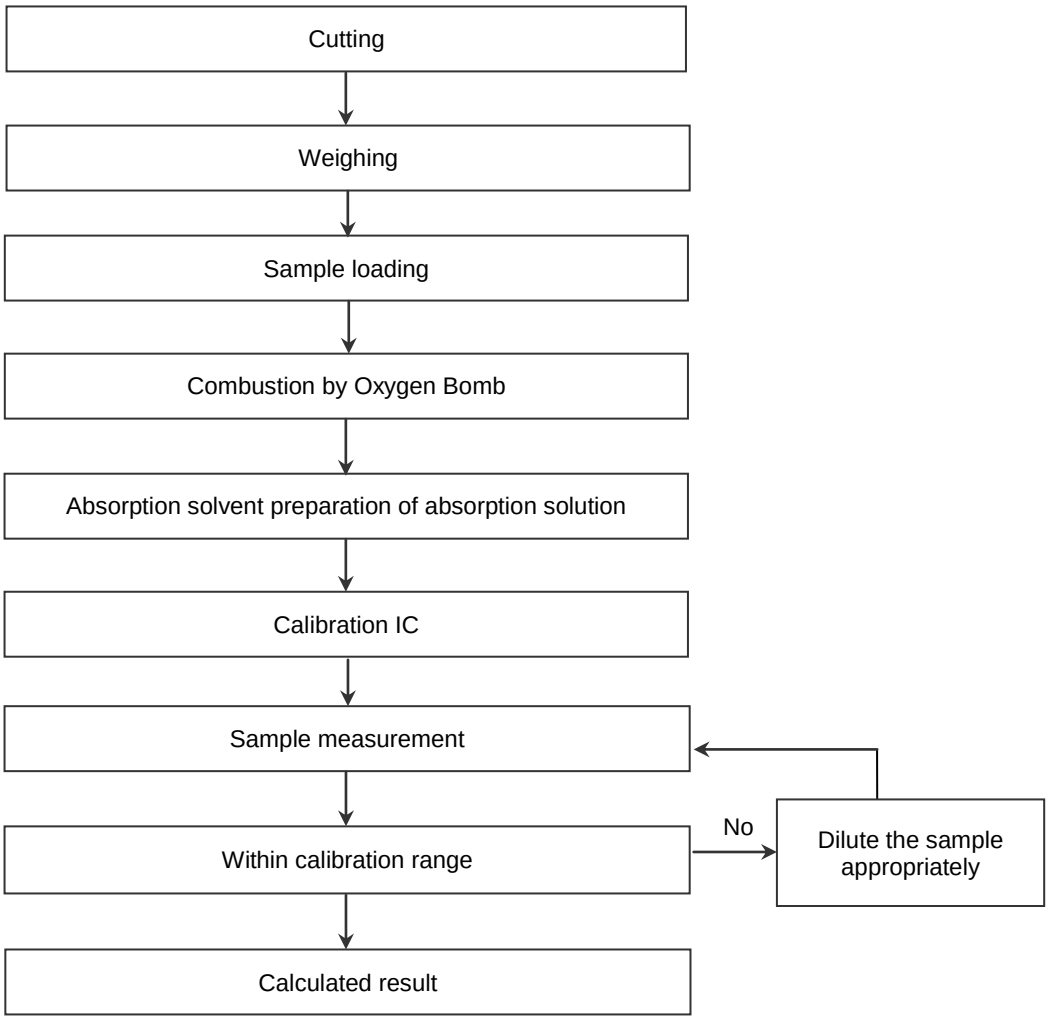
Flow Chart

Phthalates



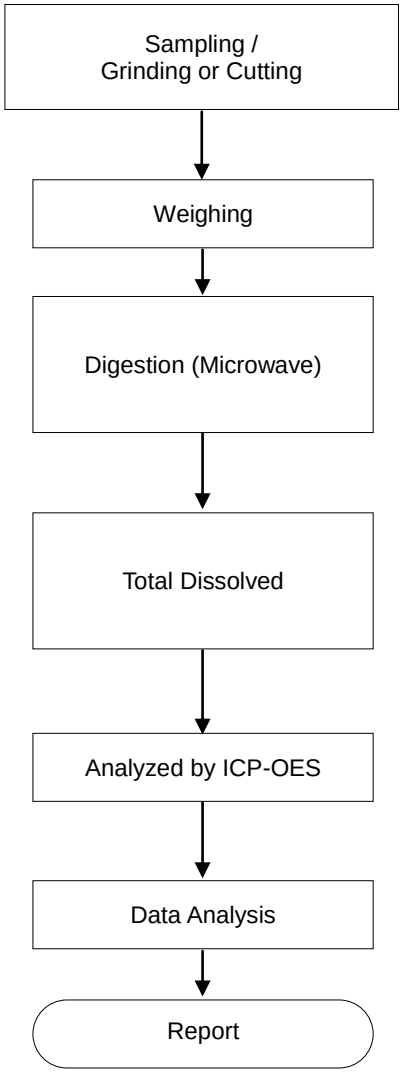
Flow Chart

Halogen



Flow Chart

Heavy metal



Material	Digestion Acid
Polymers	HNO_3, HCl, HF, H_2O_2, H_2SO_4, etc.
Metals	HNO_3, HCl
Electronics	HNO_3, HCl, HF, H_2O_2, H_2SO_4, etc.

Flow Chart

PFOS / PFOA