

# **Test Report**

Number: TWNC00799819

Date : Jun 24, 2019

Applicant: Trankey Micro-Tech Corp.

No.179-2, Jy Muu Yi, Jy Yi Li, Hsin Hwa Dist., Tainan City,

Zing Ear Enterprise Co., Ltd. No. 194 Shuh Reen Road., Wu Fong Dist. Taichung City,

Taiwan, R.O.C.

Sample Description:

One (1) group of submitted samples said to be : Sample Description : Circuit Breaker

Style / Item No. : ZE-700, ZE-700S Series

Date Sample Received : Jun 14, 2019 Date Test Started : Jun 14, 2019

Test Conducted:

As requested by the applicant, for details please refer to attached pages.

## Tested Components:

(1) Mixed all metal parts of submitted samples

(2) Mixed all plastic parts of submitted samples

Authorized By:

On behalf of Intertek Testing Service

Taiwan Limited

Matt Wang Sr. Manager Signed by:

Thomas Chou Manager

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homasChou

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Test Result Summary:

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<u>Test Item</u>	<u>Unit</u>	Test Method	Result (1)	<u>RL</u>
Heavy Metal				
Cadmium (Cd) Content	ppm	With reference to IEC 62321-5: 2013, by microwave or acid digestion and determined by ICP-OES.	ND	2
Lead (Pb) Content	ppm	With reference to IEC 62321-5: 2013, by microwave or acid digestion and determined by ICP-OES.	ND	2
Mercury (Hg) Content	ppm	With reference to IEC 62321-4:2013+AMD1:2017, by microwave or acid digestion and determined by ICP-OES.	ND	2
Chromium VI (Cr <sup>6+</sup> ) Content @	µg/ cm²	With reference to IEC 62321-7-1: 2015, by boiling water extraction and determined by UV-Vis Spectrophotometer or visual observation.	Negative	0.10

Test Item	<u>Unit</u>	Test Method	Result (2)	<u>RL</u>
Heavy Metal				
Cadmium (Cd) Content	ppm	With reference to IEC 62321-5: 2013, by microwave or acid digestion and determined by ICP-OES.	ND	2
Lead (Pb) Content	ppm	With reference to IEC 62321-5: 2013, by microwave or acid digestion and determined by ICP-OES.	ND	2
Mercury (Hg) Content	ppm	With reference to IEC 62321-4:2013+AMD1:2017, by microwave or acid digestion and determined by ICP-OES.	ND	2
Chromium VI (Cr <sup>6+</sup> ) Content	ppm	With reference to IEC 62321-7-2: 2017, organic solvent was used to dissolve or swell sample matrix, followed by alkaline digestion and determined by UV-Vis Spectrophotometer.	ND	8









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<u>Test Item</u>	<u>Unit</u>	Test Method	Result (2)	<u>RL</u>
Polybrominated Biphenyls (PBBs)				
Monobrominated Biphenyls (MonoBB)	ppm		ND	5
Dibrominated Biphenyls (DiBB)	ppm		ND	5
Tribrominated Biphenyls (TriBB)	ppm		ND	5
Tetrabrominated Biphenyls (TetraBB)	ppm	With reference to IEC 62321-	ND	5
Pentabrominated Biphenyls (PentaBB)	ppm	6: 2015, by solvent extraction and determined by GC-MS and	ND	5
Hexabrominated Biphenyls (HexaBB)	ppm	further HPLC-DAD confirmation when necessary.	ND	5
Heptabrominated Biphenyls (HeptaBB)	ppm	when necessary.	ND	5
Octabrominated Biphenyls (OctaBB)	ppm		ND	5
Nonabrominated Biphenyls (NonaBB)	ppm		ND	5
Decabrominated Biphenyl (DecaBB)	ppm		ND	5
Polybrominated Diphenyl Ether	s (PBDE	5)		
Monobrominated Diphenyl Ethers (MonoBDE)	ppm		ND	5
Dibrominated Diphenyl Ethers (DiBDE)	ppm		ND	5
Tribrominated Diphenyl Ethers (TriBDE)	ppm		ND	5
Tetrabrominated Diphenyl Ethers (TetraBDE)	ppm	With reference to IFC (2221	ND	5
Pentabrominated Diphenyl Ethers (PentaBDE)	ppm	With reference to IEC 62321- 6: 2015, by solvent extraction	ND	5
Hexabrominated Diphenyl Ethers (HexaBDE)	ppm	and determined by GC-MS and further HPLC-DAD confirmation when necessary.	ND	5
Heptabrominated Diphenyl Ethers (HeptaBDE)	ppm		ND	5
Octabrominated Diphenyl Ethers (OctaBDE)	ppm		ND	5
Nonabrominated Diphenyl Ethers (NonaBDE)	ppm		ND	5
Decabrominated Diphenyl Ether (DecaBDE)	ppm		ND	5









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Test Item	<u>Unit</u>	Test Method	Result (2)	<u>RL</u>
Phthalates				
Di(2-ethylhexyl) Phthalate (DEHP)	ppm	With mafanana to IEC (2221	ND	50
Dibutyl Phthalate (DBP)	ppm	With reference to IEC 62321-	ND	50
Benzyl Butyl Phthalate (BBP)	ppm	8:2017, by solvent extraction and determined by GC-MS.	ND	50
Diisobutyl Phthalate (DIBP)	ppm	and determined by GC-M3.	ND	50

Remarks: ppm = Parts per million based on weight of tested sample = mg/kg

ND = Not detected

RL= Reporting limit, quantitation limit of analyte in sample

Test results were for reference only and might not represent the real content in each component as the composite sampling procedure was according to the special request of client. Please be noted the fewer components are mixed up, the better representation of sampling will get.

@ The explanation of Chromium VI (Cr<sup>6+</sup>) analysis results

@ THE EXPIGNACION O		\(\frac{1}{2} \) \(\fra
Colorimetric result	<u>Qualitative</u> <u>Result</u>	<u>Explanation</u>
< 0.10 μg/cm <sup>2</sup>	MACIATIVA	The result of sample is negative for Cr(VI). The sample coating is considered a non-Cr(VI) based coating.
$\geq 0.10 \ \mu g/cm^2$ and $\leq 0.13 \ \mu g/cm^2$	Inconclusive	The result of sample is considered to be inconclusive. If addition samples are available, recommend to add trials and get the average result for the final determination.
> 0.13 μg/cm <sup>2</sup>		The result of sample is positive for Cr(VI). The sample coating is considered to contain Cr(VI).  A result expresses as Positive, while not an actual value, which indicates a visual observation was used.

Responsibility of Chemist: Pelny Hsiao/ Vita Fu

Date Sample Received Jun 14, 2019

Test Period Jun 14, 2019 to Jun 20, 2019

#### **RoHS Limit**

ROLD LITTIC	
Restricted Substances	<u>Limits</u>
Cadmium (Cd) content	0.01% (100ppm)
Lead (Pb) content	0.1% (1000ppm)
Mercury (Hg) content	0.1% (1000ppm)
Chromium VI (Cr <sup>6+</sup> ) content	0.1% (1000ppm)
Polybrominated Biphenyls (PBBs)	0.1% (1000ppm)
Polybrominated Diphenyl Ethers (PBDEs)	0.1% (1000ppm)
Di(2-ethylhexyl) Phthalate (DEHP)	0.1% (1000ppm)
Dibutyl Phthalate (DBP)	0.1% (1000ppm)
Benzyl Butyl Phthalate (BBP)	0.1% (1000ppm)
Diisobutyl Phthalate (DIBP)	0.1% (1000ppm)

The limits were quoted from Annex II of 2011/65/EU and Amendment (EU) 2015/863 for homogeneous material.







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#### Measurement Flowchart:

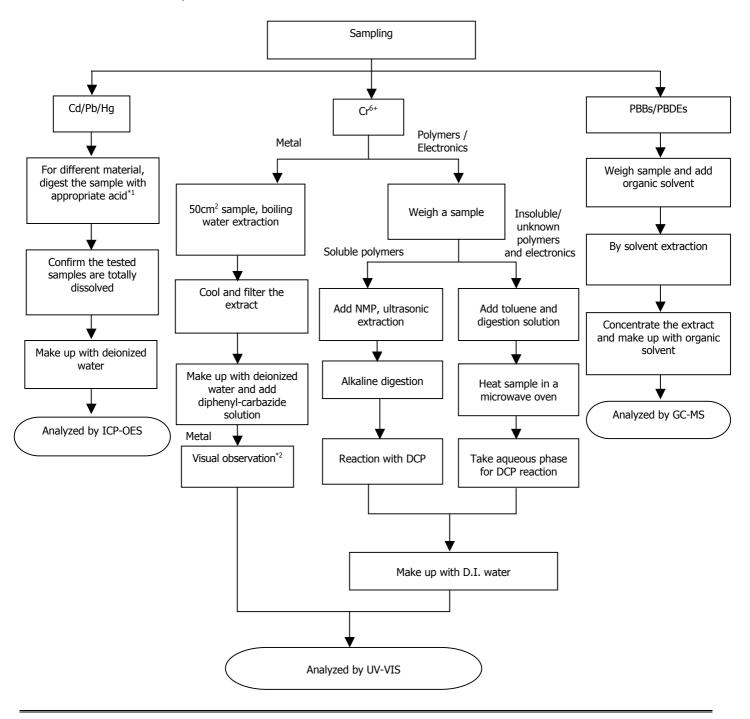
Test for Cd/Pb/Hg/Chromium (VI)/PBBs/PBDEs Content

Reference Standard: Cd/Pb: IEC 62321-5:2013; Hg: IEC 62321-4:2013+AMD1:2017;

Chromium (VI): IEC 62321-7-1:2015 (boiling water extraction);

Chromium (VI): IEC 62321-7-2:2017 (solvent and alkaline extraction);

PBBs/PBDEs: IEC 62321-6:2015









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#### Remarks:

\*1: List of Appropriate Acid:

Material	Acid Added for Digestion	
Polymers	HNO <sub>3</sub> ,HCl,HF,H <sub>2</sub> O <sub>2</sub> ,H <sub>3</sub> BO <sub>3</sub>	
Metals	HNO <sub>3</sub> ,HCl,HF	
Electronics	HNO <sub>3</sub> ,HCl,H <sub>2</sub> O <sub>2</sub> ,HBF <sub>4</sub>	

\*2: If sample solution is significantly more intense than 0.13  $\mu g/cm^2$  equivalent comparison standard, Chromium VI would be determined as detected, the result of visual observation is positive.





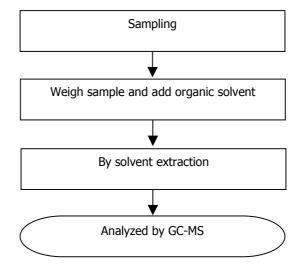


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Measurement Flowchart:

**Test for Phthalates Content** 

Reference Method: IEC 62321-8:2017





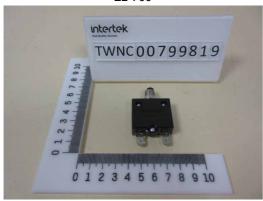




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## **Submitted Sample**

ZE-700





## **Tested Component**

(1) Mixed all metal parts of submitted samples



(2) Mixed all plastic parts of submitted samples



End of Report

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