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No. : 180614011GZU-001
Date: Jul 03, 2018

XRF Screening And Chemical Confirmation Test Report

Applicant: [redacted]

Sample Description:
The following submitted sample(s) said to be:

Item Name	:	**Smart charger**
Model No.	:	ZX-1U13
Date of Sample Received	:	Jun 19, 2018
Testing Period	:	Jun 19, 2018 to Jul 02, 2018

Tests conducted:
As requested by the applicant, refer to following page(s) for details.

Conclusion:

Tested Sample	Standard	Result
Tested components of submitted sample	Screening by XRF spectroscopy and chemical confirmation test for RoHS Directive (2011/65/EU)	Pass

Authorized by:
For Intertek Testing Services Shenzhen Ltd. Guangzhou Branch:

Michael Pang
Assistant Technical Supervisor

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Screening Test by XRF Spectroscopy

Cadmium (Cd), Lead (Pb), Mercury (Hg), Chromium (Cr) and Bromine (Br) content were measured with reference to IEC 62321-3-1 Edition 1.0：2013 by XRF spectroscopy and chemical confirmation test for RoHS restricted substances.

(A) Results:

Screened Components	XRF Results		Chemical Confirmation Result
(1)	Cd	ND	NT
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	ND	
(2)	Cd	ND	NT
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	NT	
(3)	Cd	ND	NT
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	ND	
(4)	Cd	ND	NT
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	ND	
(5)	Cd	ND	NT
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	NT	
(6)	Cd	ND	NT
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	ND	
(7)	Cd	ND	Cr^{6+}: Negative
	Pb	ND	
	Hg	ND	
	Cr	Inconclusive	
	Br	NT	

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Screened Components	XRF Results		Chemical Confirmation Result
(8)	Cd	ND	NT
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	ND	
(9a)	Cd	ND	NT
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	ND	
(9b)	Cd	ND	NT
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	NT	
(10)	Cd	ND	NT
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	ND	
(11a)	Cd	ND	NT
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	ND	
(11b)	Cd	ND	NT
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	NT	
(11c)	Cd	ND	NT
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	ND	
(11d)	Cd	ND	NT
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	NT	

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Screened Components	XRF Results		Chemical Confirmation Result
(11e)	Cd	ND	NT
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	NT	
(11f)	Cd	ND	NT
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	ND	
(11g)	Cd	ND	NT
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	NT	
(12a)	Cd	ND	NT
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	ND	
(12b)	Cd	ND	NT
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	ND	
(12c)	Cd	ND	NT
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	ND	
(12d)	Cd	ND	NT
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	NT	
(12e)	Cd	ND	NT
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	ND	

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(12f)	Cd	ND	NT
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	ND	
(12g)	Cd	ND	NT
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	ND	
(12h)	Cd	ND	NT
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	NT	
(13)	Cd	ND	NT
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	ND	
(14a)	Cd	ND	NT
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	NT	
(14b)	Cd	ND	NT
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	ND	
(14c)	Cd	ND	NT
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	ND	
(14d)	Cd	ND	NT
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	NT	

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Screened Components	XRF Results		Chemical Confirmation Result
(14e)	Cd	ND	NT
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	NT	
(14f)	Cd	ND	NT
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	ND	
(14g)	Cd	ND	NT
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	NT	
(15a)	Cd	ND	NT
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	ND	
(15b)	Cd	ND	NT
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	NT	
(16a)	Cd	ND	NT
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	ND	
(16b)	Cd	ND	NT
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	ND	
(16c)	Cd	ND	NT
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	NT	

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Screened Components	XRF Results		Chemical Confirmation Result
(16d)	Cd	ND	NT
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	NT	
(17)	Cd	ND	NT
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	NT	
(18)	Cd	ND	NT
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	ND	
(19)	Cd	ND	NT
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	NT	
(20)	Cd	ND	Cr^{6+}: ND
	Pb	>1500mg/kg[#1]	
	Hg	ND	
	Cr	Inconclusive	
	Br	ND	
(21)	Cd	>1500mg/kg[#1]	Cr^{6+}: ND
	Pb	ND	
	Hg	ND	
	Cr	Inconclusive	
	Br	ND	
(22)	Cd	ND	PBBs : ND PBDEs : ND
	Pb	>1500mg/kg[#2]	
	Hg	ND	
	Cr	ND	
	Br	Inconclusive	
(23)	Cd	ND	NT
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	ND	

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Screened Components	XRF Results		Chemical Confirmation Result
(24)	Cd	ND	NT
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	ND	
(25)	Cd	ND	NT
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	ND	
(26)	Cd	ND	NT
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	ND	
(27)	Cd	ND	NT
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	ND	
(28)	Cd	ND	NT
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	ND	
(29)	Cd	ND	NT
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	ND	
(30)	Cd	ND	NT
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	ND	
(31)	Cd	ND	NT
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	NT	

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Screened Components	XRF Results		Chemical Confirmation Result
(32)	Cd	ND	PBBs : ND PBDEs : ND
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	Inconclusive	

ND = Not detected
NT = Not tested

Negative = A negative test result indicated the concentration of Cr (VI) is less than threshold of 0.10μg/cm2 for boiling-water-extraction procedures by UV-VIS Spectrophotometer analysis. The coating is considered a non-Cr (VI) based coating.

Remark:

(#1) = As claimed by the declaration submitted from the applicant, the Lead content of the component comes from the constituent of ceramic of the electrical and electronic component (other than dielectric ceramic in capacitors) only. According to EU RoHS Directive (2011/65/EU), Lead in ceramic of the component can be exempted.

(#2) = As claimed by the declaration submitted from the applicant, the Lead content of the component comes from the constituent of high melting temperature type solders (i.e. Lead-based alloys containing 85% by weight or more Lead) only. According to EU RoHS Directive (2011/65/EU), Lead in high melting temperature type solders of the component can be exempted.

(B) XRF Screening Limits in mg/kg for Regulated Elements in Various Matrices

Element	Polymer Materials	Metallic Materials	Composite Materials
Cd	P ≤70 < X < 130 ≤ F	P ≤ 70 < X < 130 ≤ F	P ≤ 70 < X < 150 ≤ F
Pb	P ≤ 700 < X < 1300≤ F	P ≤ 700 < X < 1300 ≤ F	P ≤ 500< X < 1500 ≤ F
Hg	P ≤ 700< X < 1300 ≤ F	P ≤ 700 < X < 1300 ≤ F	P ≤ 500 < X < 1500 ≤ F
Cr	P ≤ 700< X	P ≤ 700 < X	P ≤ 500 < X
Br	P ≤ 300< X	Not applicable	P ≤ 250 < X

P = Pass
X = Inconclusive result
F = Fail
mg/kg = milligram per kilogram = ppm

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(C) Estimated Detection Limits in mg/kg for Regulated Elements in Various Matrices

Element	Polymer Materials	Metallic Materials	Composite Materials
Cd	50	70	70
Pb	100	200	200
Hg	100	200	200
Cr	100	200	200
Br	200	Not applicable	200

Disclaimers:

This XRF Screening and Chemical Confirmation Test Report is for reference purposes only. The applicant shall make its/his/her own judgment as to whether the information provided in this XRF Screening and Chemical Confirmation Test Report is sufficient for its/his/her purposes.

The results shown in this XRF Screening and Chemical Confirmation Test Report will differ based on various factors, including but not limited to, the sample size, thickness, area, surface flatness, equipment parameters and matrix effect (e.g. plastic, rubber, metal, glass, ceramic etc.). Further wet chemical pre-treatment with relevant chemical equipment analysis is required to obtain quantitative data.

(D) Chemical Confirmation Test Methods:

Testing Item	Testing Method	Reporting Limit
Chromium (VI)(Cr^{6+}) Content	With reference to IEC 62321-7-2 Edition 1.0: 2017, Hexavalent chromium – Determination of hexavalent chromium (Cr(VI) in polymers and electronics by the colorimetric method	10 mg/kg
Chromium (VI) (Cr^{6+}) Content	With reference to IEC 62321-7-1 Edition 1.0: 2015, by boiling water extraction and determined by UV-VIS spectrophotometer	0.10 μg/cm^2

(E) RoHS Requirement:

Restricted Substances	Limits
Cadmium (Cd)	0.01% (100 mg/kg)
Lead (Pb)	0.1% (1000 mg/kg)
Mercury (Hg)	0.1% (1000 mg/kg)
Chromium (VI) (Cr^{6+})	0.1% (1000 mg/kg)
Polybrominated Biphenyls (PBBs)	0.1% (1000 mg/kg)
Polybrominated Diphenyl Ethers (PBDEs)	0.1% (1000 mg/kg)

The above limits were quoted from 2011/65/EU for homogeneous material.

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Screened components:

(1) White plastic
(2) Silvery metal
(3) White plastic
(4) White plastic
(5) Silvery metal
(6) Transparent plastic
(7) Silvery metal
(8) White glue
(9) Resistor
(9a) Grey body with multicolor printing
(9b) Silvery metal(pin)
(10) Black plastic
(11) Capacitor
(11a) Black plastic with white printing
(11b) Silvery metal (case)
(11c) Beige paper (electrolytic paper)
(11d) Dull silver-grey metal sheet (electrolytic paper)
(11e) Bright silver-grey metal sheet (electrolytic paper)
(11f) Black soft plastic
(11g) Silvery metal (pin)
(12) Transformer
(12a) Yellow tape
(12b) Black magnet
(12c) Black plastic
(12d) Silvery metal (pin)
(12e) Transparent plastic
(12f) Transparent plastic
(12g) Yellow plastic
(12h) Copper color metal wire
(13) Transparent plastic
(14) Capacitor
(14a) Silvery metal with red printing (case)
(14b) Transparent adhesive plastic tape
(14c) Grey-white paper (electrolytic paper)
(14d) Silver-grey metal sheet (electrolytic paper)
(14e) Dull silver-grey metal sheet (electrolytic paper)
(14f) Black soft plastic
(14g) Silvery metal (pin)
(15) Capacitor
(15a) Blue body

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(15b) Silvery metal (pin)
(16) Inductor
(16a) Green plastic with coatings (silver color, brown, orange)
(16b) Black magnet
(16c) Copper color enamelled wire
(16d) Silvery metal (pin)
(17) Silvery metal
(18) White plastic
(19) Silvery metal
(20) White ceramic with black material & white printing & silvery metal (SMD resistor)
(21) White ceramic with black material & white printing & silvery metal (SMD resistor)
(22) Black body with silvery metal (SMD bridge rectifier)
(23) Brown ceramic with silvery metal (SMD capacitor)
(24) Black body with silvery metal (IC)
(25) White ceramic with black material & white printing & silvery metal (SMD resistor)
(26) Brown ceramic with silvery metal (SMD capacitor)
(27) Light brown ceramic with silvery metal (SMD capacitor)
(28) Black ceramic with silvery metal (SMD capacitor)
(29) Black body with silvery metal (SMD diode)
(30) Black body with silvery metal (IC)
(31) Solder
(32) Green PCB

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Sample photo

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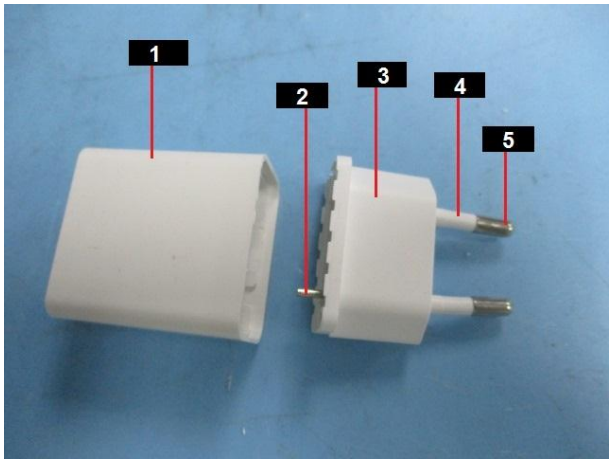

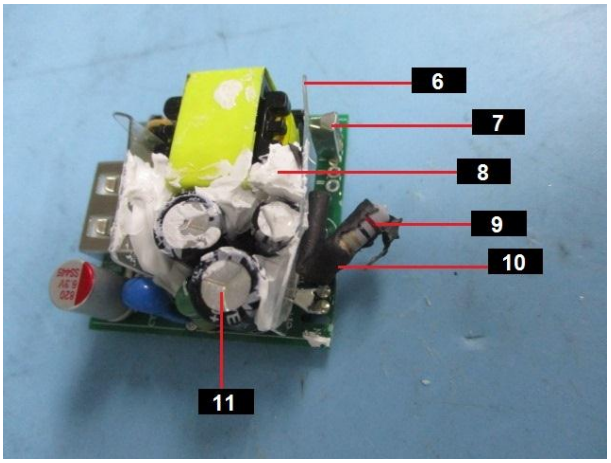

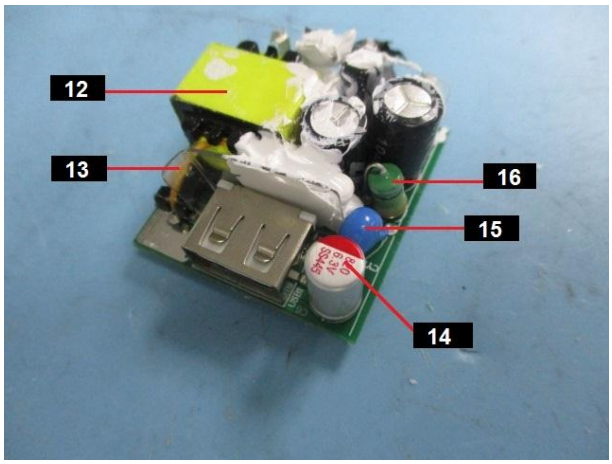

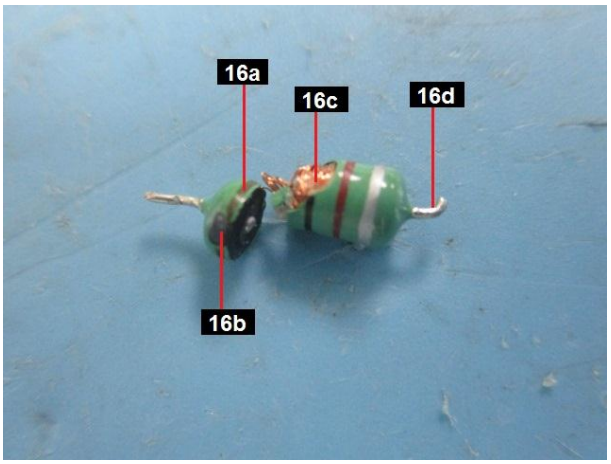

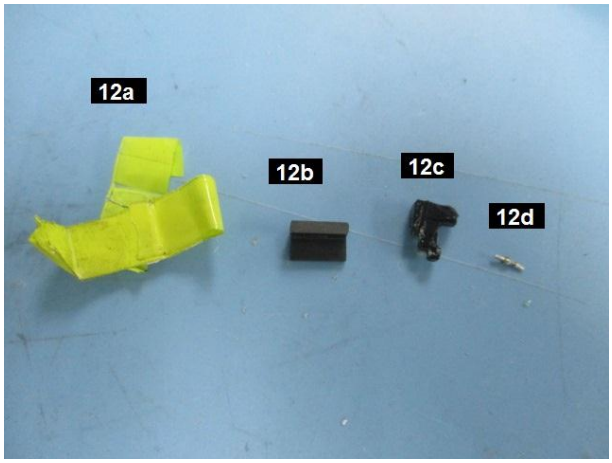

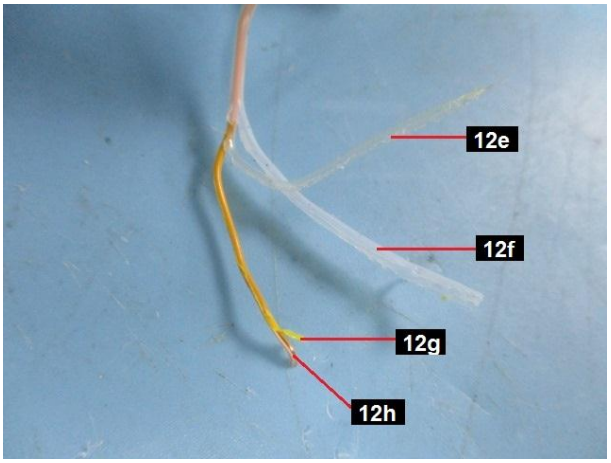

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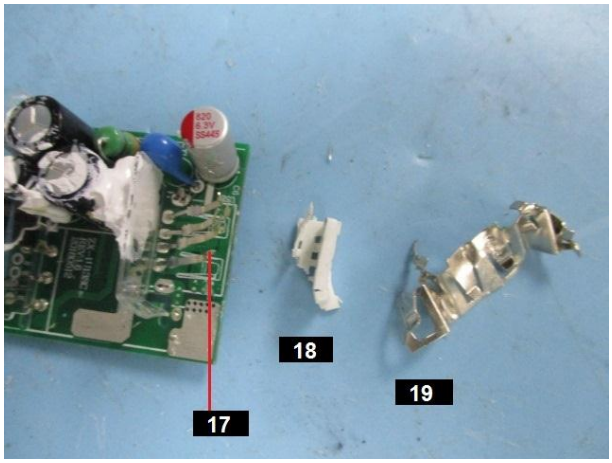

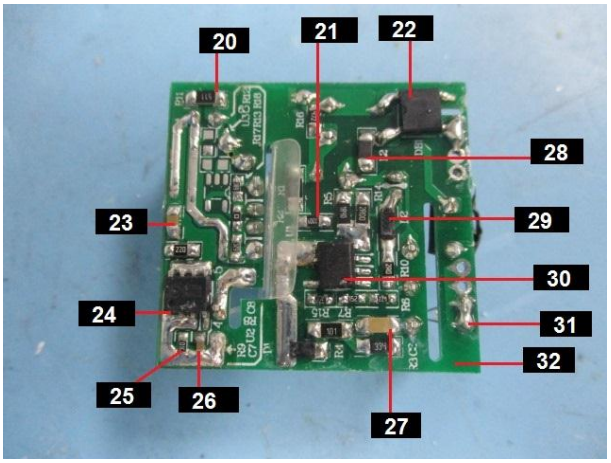

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End of report

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