

## Test Report

Number: GZHH00470115

Applicant: UNI-TREND TECHNOLOGY (CHINA) CO.,LTD  
NO.6,GONG YE BEI 1ST ROAD,SONGSHAN  
LAKE NATIONAL HIGH-TECH INDUSTRIAL  
DEVELOPMENT ZONE,DONGGUAN CITY,  
GUANGDONG PROVINCE,CHINA

Date: Nov 11, 2022

Attn: RITA ZHUANG

### Sample Description:

One (1) piece of submitted sample said to be :

Item Name : **Tachometer**  
Item No. : **UT372D**  
Manufacturer : Uni-Trend Technology (China) Co.,Ltd.  
Country of Origin : China  
Date Sample Received : Sep 30, 2022 & Nov 02, 2022 & Nov 04, 2022  
Testing Period : Sep 30, 2022 to Nov 10, 2022



### Tests conducted:

As requested by the applicant, refer to attached page(s) for details.

To be continued



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Conclusion:

<u>Tested Sample</u>	<u>Standard</u>	<u>Result</u>
Tested components of submitted sample	Restriction of the use of certain hazardous substance in electrical and electronic equipment (RoHS Directive 2011/65/EU and amendment Commission Delegated Directive (EU) 2015/863)	Pass
	Restricted Substances Content Requirement in Regulation 3(1) of The Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment Regulations 2012 (S.I. 2012 No. 3032) as amended	Pass

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

  
Victor T.J. Wang  
Assistant General Manager



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Tests Conducted

1 RoHS Chemical Test

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	ND	
(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	ND	
(6)	Cd	ND	NT
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	ND	



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Screened Components	XRF Results		Chemical Confirmation Result
(7)	Cd	ND	NT
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	ND	
(8)	Cd	ND	NT
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	ND	
(9)	Cd	ND	NT
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	ND	
(10)	Cd	ND	NT
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	ND	
(11)	Cd	ND	NT
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	ND	
(12)	Cd	ND	Cr <sup>6+</sup> : Negative
	Pb	ND	
	Hg	ND	
	Cr	Inconclusive	
	Br	NT	
(13)	Cd	ND	Cr <sup>6+</sup> : Negative
	Pb	ND	
	Hg	ND	
	Cr	Inconclusive	
	Br	NT	
(14)	Cd	ND	Cr <sup>6+</sup> : Negative
	Pb	ND	
	Hg	ND	
	Cr	Inconclusive	
	Br	NT	



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Screened Components	XRF Results		Chemical Confirmation Result
(15)	Cd	ND	NT
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	NT	
(16)	Cd	ND	Cr <sup>6+</sup> : ND
	Pb	ND	
	Hg	ND	
	Cr	Inconclusive	
	Br	ND	
(17)	Cd	ND	Cr <sup>6+</sup> : Negative
	Pb	ND	
	Hg	ND	
	Cr	Inconclusive	
	Br	NT	
(18)	Cd	ND	NT
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	NT	
(19)	Cd	ND	NT
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	NT	
(20)	Cd	ND	NT
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	NT	
(21)	Cd	ND	Pb:32822mg/kg <sup>#</sup>
	Pb	>1300mg/kg	
	Hg	ND	
	Cr	ND	
	Br	NT	
(22)	Cd	ND	Pb:32700mg/kg <sup>#</sup>
	Pb	>1300mg/kg	
	Hg	ND	
	Cr	ND	
	Br	NT	



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Screened Components	XRF Results		Chemical Confirmation Result
(23)	Cd	ND	NT
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	ND	
(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	



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Screened Components	XRF Results		Chemical Confirmation Result
(31)	Cd	ND	NT
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	ND	
(32)	Cd	ND	NT
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	ND	
(33)	Cd	ND	NT
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	ND	
(34)	Cd	ND	NT
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	ND	
(35)	Cd	ND	NT
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	ND	
(36)	Cd	ND	PBBs : ND PBDEs : ND
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	Inconclusive	
(37)	Cd	ND	PBBs : ND PBDEs : ND
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	Inconclusive	
(38)	Cd	ND	NT
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	ND	



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Screened Components	XRF Results		Chemical Confirmation Result
(39)	Cd	ND	NT
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	ND	
(40a)	Cd	ND	NT
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	ND	
(40b)	Cd	ND	NT
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	NT	
(40c)	Cd	ND	NT
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	NT	
(41)	Cd	ND	NT
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	ND	
(42)	Cd	ND	NT
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	NT	
(43)	Cd	ND	NT
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	ND	
(44)	Cd	ND	NT
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	NT	





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Screened Components	XRF Results		Chemical Confirmation Result
(45)	Cd	ND	NT
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	ND	
(46a)	Cd	ND	NT
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	ND	
(46b)	Cd	ND	NT
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	NT	
(46c)	Cd	ND	Cr <sup>6+</sup> : Negative
	Pb	ND	
	Hg	ND	
	Cr	Inconclusive	
	Br	NT	
(46d)	Cd	ND	NT
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	ND	
(46e)	Cd	ND	NT
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	NT	
(47a)	Cd	ND	NT
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	ND	
(47b)	Cd	ND	NT
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	NT	



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Screened Components	XRF Results		Chemical Confirmation Result
(48)	Cd	ND	PBBs : ND PBDEs : ND
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	Inconclusive	
(49)	Cd	ND	NT
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	ND	
(50)	Cd	ND	NT
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	ND	
(51)	Cd	ND	NT
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	ND	
(52a)	Cd	ND	NT
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	ND	
(52b)	Cd	ND	NT
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	NT	
(53)	Cd	ND	NT
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	ND	
(54)	Cd	ND	PBBs : ND PBDEs : ND
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	Inconclusive	



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Screened Components	XRF Results		Chemical Confirmation Result
(55)	Cd	ND	NT
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	ND	
(56)	Cd	ND	NT
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	ND	
(57)	Cd	ND	NT
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	NT	
(58)	Cd	ND	PBBs : ND PBDEs : ND
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	Inconclusive	
(59a)	Cd	ND	NT
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	NT	
(59b)	Cd	ND	NT
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	ND	
(59c)	Cd	ND	NT
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	NT	
(59d)	Cd	ND	NT
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	NT	



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Screened Components	XRF Results		Chemical Confirmation Result
(59e)	Cd	ND	NT
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	Detected	
(59f)	Cd	ND	NT
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	ND	
(59g)	Cd	ND	NT
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	NT	
(60a)	Cd	ND	NT
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	ND	
(60b)	Cd	ND	NT
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	NT	
(61a)	Cd	ND	NT
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	ND	
(61b)	Cd	ND	NT
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	NT	
(62)	Cd	ND	NT
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	ND	



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Screened Components	XRF Results		Chemical Confirmation Result
(63)	Cd	ND	NT
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	ND	
(64)	Cd	ND	NT
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	ND	
(65)	Cd	ND	NT
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	NT	
(66a)	Cd	ND	NT
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	ND	
(66b)	Cd	ND	NT
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	NT	
(67)	Cd	ND	Cr <sup>6+</sup> : Negative
	Pb	ND	
	Hg	ND	
	Cr	Inconclusive	
	Br	NT	
(68)	Cd	ND	Cr <sup>6+</sup> : Negative
	Pb	ND	
	Hg	ND	
	Cr	Inconclusive	
	Br	NT	
(69)	Cd	ND	Cr <sup>6+</sup> : Negative
	Pb	ND	
	Hg	ND	
	Cr	Inconclusive	
	Br	NT	



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Screened Components	XRF Results		Chemical Confirmation Result
(70)	Cd	ND	Cr <sup>6+</sup> : Negative
	Pb	ND	
	Hg	ND	
	Cr	Inconclusive	
	Br	NT	
(71)	Cd	ND	NT
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	ND	
(72)	Cd	ND	NT
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	NT	
(73)	Cd	ND	Cr <sup>6+</sup> : Negative
	Pb	ND	
	Hg	ND	
	Cr	Inconclusive	
	Br	NT	
(74)	Cd	ND	Cr <sup>6+</sup> : Negative
	Pb	ND	
	Hg	ND	
	Cr	Inconclusive	
	Br	NT	
(75)	Cd	ND	NT
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	NT	
(76)	Cd	ND	NT
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	NT	
(77)	Cd	ND	NT
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	NT	



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Screened Components	XRF Results		Chemical Confirmation Result
(78)	Cd	ND	Pb:33768mg/kg <sup>#</sup>
	Pb	>1300mg/kg	
	Hg	ND	
	Cr	ND	
	Br	NT	
(79)	Cd	ND	NT
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	ND	
(80)	Cd	ND	NT
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	ND	
(81)	Cd	ND	NT
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	ND	
(82)	Cd	ND	NT
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	ND	
(83)	Cd	ND	NT
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	ND	



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Tests Conducted

(B) Phthalate Screening Test

Non-toys:

Screened Components	Items	Screened Results(phthalates)	Chemical Confirmation Result
(1)	DEHP	P	NT
	BBP	P	
	DBP	P	
	DIBP	P	
(2)	DEHP	P	NT
	BBP	P	
	DBP	P	
	DIBP	P	
(3)	DEHP	P	NT
	BBP	P	
	DBP	P	
	DIBP	P	
(4)	DEHP	P	NT
	BBP	P	
	DBP	P	
	DIBP	P	
(5)	DEHP	P	NT
	BBP	P	
	DBP	P	
	DIBP	P	
(6)	DEHP	P	NT
	BBP	P	
	DBP	P	
	DIBP	P	
(7)	DEHP	P	NT
	BBP	P	
	DBP	P	
	DIBP	P	
(8)	DEHP	P	NT
	BBP	P	
	DBP	P	
	DIBP	P	
(9)	DEHP	P	NT
	BBP	P	
	DBP	P	
	DIBP	P	
(10)	DEHP	P	NT
	BBP	P	
	DBP	P	
	DIBP	P	





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Screened Components	Items	Screened Results(phthalates)	Chemical Confirmation Result
(11)	DEHP	P	NT
	BBP	P	
	DBP	P	
	DIBP	P	
(24)	DEHP	P	NT
	BBP	P	
	DBP	P	
	DIBP	P	
(25)	DEHP	P	NT
	BBP	P	
	DBP	P	
	DIBP	P	
(26)	DEHP	P	NT
	BBP	P	
	DBP	P	
	DIBP	P	
(28)	DEHP	P	NT
	BBP	P	
	DBP	P	
	DIBP	P	
(29)	DEHP	P	NT
	BBP	P	
	DBP	P	
	DIBP	P	
(30)	DEHP	P	NT
	BBP	P	
	DBP	P	
	DIBP	P	
(31)	DEHP	P	NT
	BBP	P	
	DBP	P	
	DIBP	P	
(32)	DEHP	P	NT
	BBP	P	
	DBP	P	
	DIBP	P	
(33)	DEHP	P	NT
	BBP	P	
	DBP	P	
	DIBP	P	
(34)	DEHP	P	NT
	BBP	P	
	DBP	P	
	DIBP	P	



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Screened Components	Items	Screened Results(phthalates)	Chemical Confirmation Result
(35)	DEHP	P	NT
	BBP	P	
	DBP	P	
	DIBP	P	
(36)	DEHP	P	NT
	BBP	P	
	DBP	P	
	DIBP	P	
(37)	DEHP	P	NT
	BBP	P	
	DBP	P	
	DIBP	P	
(38)	DEHP	P	NT
	BBP	P	
	DBP	P	
	DIBP	P	
(39)	DEHP	P	NT
	BBP	P	
	DBP	P	
	DIBP	P	
(40a)	DEHP	P	NT
	BBP	P	
	DBP	P	
	DIBP	P	
(41)	DEHP	P	NT
	BBP	P	
	DBP	P	
	DIBP	P	
(43)	DEHP	P	NT
	BBP	P	
	DBP	P	
	DIBP	P	
(45)	DEHP	P	NT
	BBP	P	
	DBP	P	
	DIBP	P	
(46a)	DEHP	P	NT
	BBP	P	
	DBP	P	
	DIBP	P	
(46d)	DEHP	P	NT
	BBP	P	
	DBP	P	
	DIBP	P	



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Screened Components	Items	Screened Results(phthalates)	Chemical Confirmation Result
(47a)	DEHP	P	NT
	BBP	P	
	DBP	P	
	DIBP	P	
(48)	DEHP	P	NT
	BBP	P	
	DBP	P	
	DIBP	P	
(52a)	DEHP	P	NT
	BBP	P	
	DBP	P	
	DIBP	P	
(54)	DEHP	P	NT
	BBP	P	
	DBP	P	
	DIBP	P	
(55)	DEHP	P	NT
	BBP	P	
	DBP	P	
	DIBP	P	
(58)	DEHP	P	NT
	BBP	P	
	DBP	P	
	DIBP	P	
(59b)	DEHP	P	NT
	BBP	P	
	DBP	P	
	DIBP	P	
(59e)	DEHP	P	NT
	BBP	P	
	DBP	P	
	DIBP	P	
(59f)	DEHP	P	NT
	BBP	P	
	DBP	P	
	DIBP	P	
(60a)	DEHP	P	NT
	BBP	P	
	DBP	P	
	DIBP	P	
(61a)	DEHP	P	NT
	BBP	P	
	DBP	P	
	DIBP	P	



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Screened Components	Items	Screened Results(phthalates)	Chemical Confirmation Result
(64)	DEHP	P	NT
	BBP	P	
	DBP	P	
	DIBP	P	
(66a)	DEHP	P	NT
	BBP	P	
	DBP	P	
	DIBP	P	
(71)	DEHP	P	NT
	BBP	P	
	DBP	P	
	DIBP	P	
(79)	DEHP	P	NT
	BBP	P	
	DBP	P	
	DIBP	P	
(80)	DEHP	P	NT
	BBP	P	
	DBP	P	
	DIBP	P	
(81)	DEHP	P	NT
	BBP	P	
	DBP	P	
	DIBP	P	
(82)	DEHP	P	NT
	BBP	P	
	DBP	P	
	DIBP	P	
(83)	DEHP	P	NT
	BBP	P	
	DBP	P	
	DIBP	P	

DBP =Dibutyl phthalate  
 DEHP = Di-(2-ethyl hexyl) phthalate  
 BBP = Benzyl butyl phthalate  
 DIBP = Di-(iso-butyl) phthalate

Detected = Below the lower screening limit of table (C) and pass  
 ND = Not detected  
 NT = Not tested  
 P = Pass



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### Tests Conducted

Negative = A negative test result indicated the concentration of Cr(VI) is less than threshold of 0.10 µg/cm<sup>2</sup> for boiling-water-extraction procedures by UV-VIS Spectrophotometer analysis. The coating is considered a non-Cr(VI) based coating.

Remark:

(#) = As claimed by the declaration submitted from supplier of applicant, the Lead content of the component comes from Copper alloy only. According to EU RoHS Directive (2011/65/EU), Lead in Copper alloy containing up to 4% (40,000 mg/kg) Lead by weight can be exempted.

### (C) Screening Limits

#### (C1) XRF Screening limits in mg/kg for Regulated Elements in Various Matrices

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

#### (C2) Preliminary Screening limits in mg/kg for phthalates test.

Phthalates	Polymer Materials
Dibutyl phthalate (DBP)	$P \leq 600 < X$
Di-(2-ethyl hexyl) phthalate (DEHP)	$P \leq 600 < X$
Benzyl butyl phthalate (BBP)	$P \leq 600 < X$
Di-(iso-butyl) phthalate (DIBP)	$P \leq 600 < X$

P = Pass

X = Inconclusive result

**F = Fail**

mg/kg = milligram per kilogram = ppm



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(D) 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 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 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.

(E) Chemical Test Methods:

Testing Item	Testing Method	Detection Limit
Lead (Pb) Content	With reference to IEC 62321-5 Edition 1.0:2013, by acid digestion and determined by ICP - OES	2 mg/kg
Polybrominated Biphenyls (PBBs) & Polybrominated Diphenyl Ethers (PBDEs)	With reference to IEC 62321-6 Edition 1.0:2015, by solvent extraction and determined by GC/MS and further HPLC confirmation when necessary	5 mg/kg
Chromium (VI) (Cr <sup>6+</sup> ) 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 <sup>2</sup>
Chromium (VI)(Cr <sup>6+</sup> ) 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
Dibutyl phthalate (DBP) & Di-(2-ethyl hexyl) phthalate (DEHP) & Benzyl butyl phthalate (BBP) & Di-(iso-butyl) phthalate (DIBP)	With reference to IEC 62321-8 Edition 1.0:2017, by Gas Chromatographic-Mass Spectrometric (GC-MS) analysis	50 mg/kg



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### Tests Conducted

(F) 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 <sup>6+</sup> )	0.1% (1000 mg/kg)
Polybrominated Biphenyls (PBBs)	0.1% (1000 mg/kg)
Polybrominated Diphenyl Ethers (PBDEs)	0.1% (1000 mg/kg)
Dibutyl phthalate (DBP)	0.1% (1000 mg/kg)
Di-(2-ethyl hexyl) phthalate (DEHP)	0.1% (1000 mg/kg)
Benzyl butyl phthalate (BBP)	0.1% (1000 mg/kg)
Di-(iso-butyl) phthalate (DIBP)	0.1% (1000 mg/kg)

The above limits were quoted from Directive 2011/65/EU and amendment Commission Delegated Directive (EU) 2015/863 for homogeneous material.

Tested Components: See component list in the last section of this report



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Tests Conducted

2 RoHS Chemical Test

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	ND	
(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	ND	
(6)	Cd	ND	NT
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	ND	





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Screened Components	XRF Results		Chemical Confirmation Result
(7)	Cd	ND	NT
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	ND	
(8)	Cd	ND	NT
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	ND	
(9)	Cd	ND	NT
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	ND	
(10)	Cd	ND	NT
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	ND	
(11)	Cd	ND	NT
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	ND	
(12)	Cd	ND	Cr <sup>6+</sup> : Negative
	Pb	ND	
	Hg	ND	
	Cr	Inconclusive	
	Br	NT	
(13)	Cd	ND	Cr <sup>6+</sup> : Negative
	Pb	ND	
	Hg	ND	
	Cr	Inconclusive	
	Br	NT	
(14)	Cd	ND	Cr <sup>6+</sup> : Negative
	Pb	ND	
	Hg	ND	
	Cr	Inconclusive	
	Br	NT	



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Screened Components	XRF Results		Chemical Confirmation Result
(15)	Cd	ND	NT
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	NT	
(16)	Cd	ND	Cr <sup>6+</sup> : ND
	Pb	ND	
	Hg	ND	
	Cr	Inconclusive	
	Br	ND	
(17)	Cd	ND	Cr <sup>6+</sup> : Negative
	Pb	ND	
	Hg	ND	
	Cr	Inconclusive	
	Br	NT	
(18)	Cd	ND	NT
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	NT	
(19)	Cd	ND	NT
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	NT	
(20)	Cd	ND	NT
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	NT	
(21)	Cd	ND	Pb:32822mg/kg <sup>#</sup>
	Pb	>1300mg/kg	
	Hg	ND	
	Cr	ND	
	Br	NT	
(22)	Cd	ND	Pb:32700mg/kg <sup>#</sup>
	Pb	>1300mg/kg	
	Hg	ND	
	Cr	ND	
	Br	NT	



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Screened Components	XRF Results		Chemical Confirmation Result
(23)	Cd	ND	NT
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	ND	
(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	



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Screened Components	XRF Results		Chemical Confirmation Result
(31)	Cd	ND	NT
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	ND	
(32)	Cd	ND	NT
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	ND	
(33)	Cd	ND	NT
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	ND	
(34)	Cd	ND	NT
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	ND	
(35)	Cd	ND	NT
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	ND	
(36)	Cd	ND	PBBs : ND PBDEs : ND
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	Inconclusive	
(37)	Cd	ND	PBBs : ND PBDEs : ND
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	Inconclusive	
(38)	Cd	ND	NT
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	ND	



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Screened Components	XRF Results		Chemical Confirmation Result
(39)	Cd	ND	NT
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	ND	
(40a)	Cd	ND	NT
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	ND	
(40b)	Cd	ND	NT
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	NT	
(40c)	Cd	ND	NT
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	NT	
(41)	Cd	ND	NT
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	ND	
(42)	Cd	ND	NT
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	NT	
(43)	Cd	ND	NT
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	ND	
(44)	Cd	ND	NT
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	NT	



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Screened Components	XRF Results		Chemical Confirmation Result
(45)	Cd	ND	NT
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	ND	
(46a)	Cd	ND	NT
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	ND	
(46b)	Cd	ND	NT
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	NT	
(46c)	Cd	ND	Cr <sup>6+</sup> : Negative
	Pb	ND	
	Hg	ND	
	Cr	Inconclusive	
	Br	NT	
(46d)	Cd	ND	NT
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	ND	
(46e)	Cd	ND	NT
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	NT	
(47a)	Cd	ND	NT
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	ND	
(47b)	Cd	ND	NT
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	NT	



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Tests Conducted

Screened Components	XRF Results		Chemical Confirmation Result
(48)	Cd	ND	PBBs : ND PBDEs : ND
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	Inconclusive	
(49)	Cd	ND	NT
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	ND	
(50)	Cd	ND	NT
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	ND	
(51)	Cd	ND	NT
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	ND	
(52a)	Cd	ND	NT
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	ND	
(52b)	Cd	ND	NT
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	NT	
(53)	Cd	ND	NT
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	ND	
(54)	Cd	ND	PBBs : ND PBDEs : ND
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	Inconclusive	



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Screened Components	XRF Results		Chemical Confirmation Result
(55)	Cd	ND	NT
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	ND	
(56)	Cd	ND	NT
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	ND	
(57)	Cd	ND	NT
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	NT	
(58)	Cd	ND	PBBs : ND PBDEs : ND
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	Inconclusive	
(59a)	Cd	ND	NT
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	NT	
(59b)	Cd	ND	NT
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	ND	
(59c)	Cd	ND	NT
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	NT	
(59d)	Cd	ND	NT
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	NT	





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Screened Components	XRF Results		Chemical Confirmation Result
(59e)	Cd	ND	NT
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	Detected	
(59f)	Cd	ND	NT
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	ND	
(59g)	Cd	ND	NT
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	NT	
(60a)	Cd	ND	NT
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	ND	
(60b)	Cd	ND	NT
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	NT	
(61a)	Cd	ND	NT
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	ND	
(61b)	Cd	ND	NT
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	NT	
(62)	Cd	ND	NT
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	ND	



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Screened Components	XRF Results		Chemical Confirmation Result
(63)	Cd	ND	NT
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	ND	
(64)	Cd	ND	NT
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	ND	
(65)	Cd	ND	NT
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	NT	
(66a)	Cd	ND	NT
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	ND	
(66b)	Cd	ND	NT
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	NT	
(67)	Cd	ND	Cr <sup>6+</sup> : Negative
	Pb	ND	
	Hg	ND	
	Cr	Inconclusive	
	Br	NT	
(68)	Cd	ND	Cr <sup>6+</sup> : Negative
	Pb	ND	
	Hg	ND	
	Cr	Inconclusive	
	Br	NT	
(69)	Cd	ND	Cr <sup>6+</sup> : Negative
	Pb	ND	
	Hg	ND	
	Cr	Inconclusive	
	Br	NT	



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Screened Components	XRF Results		Chemical Confirmation Result
(70)	Cd	ND	Cr <sup>6+</sup> : Negative
	Pb	ND	
	Hg	ND	
	Cr	Inconclusive	
	Br	NT	
(71)	Cd	ND	NT
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	ND	
(72)	Cd	ND	NT
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	NT	
(73)	Cd	ND	Cr <sup>6+</sup> : Negative
	Pb	ND	
	Hg	ND	
	Cr	Inconclusive	
	Br	NT	
(74)	Cd	ND	Cr <sup>6+</sup> : Negative
	Pb	ND	
	Hg	ND	
	Cr	Inconclusive	
	Br	NT	
(75)	Cd	ND	NT
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	NT	
(76)	Cd	ND	NT
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	NT	
(77)	Cd	ND	NT
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	NT	



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Screened Components	XRF Results		Chemical Confirmation Result
(78)	Cd	ND	Pb:33768mg/kg <sup>#</sup>
	Pb	>1300mg/kg	
	Hg	ND	
	Cr	ND	
	Br	NT	
(79)	Cd	ND	NT
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	ND	
(80)	Cd	ND	NT
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	ND	
(81)	Cd	ND	NT
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	ND	
(82)	Cd	ND	NT
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	ND	
(83)	Cd	ND	NT
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	ND	



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Tests Conducted

(B) Phthalate Screening Test

Non-toys:

Screened Components	Items	Screened Results(phthalates)	Chemical Confirmation Result
(1)	DEHP	P	NT
	BBP	P	
	DBP	P	
	DIBP	P	
(2)	DEHP	P	NT
	BBP	P	
	DBP	P	
	DIBP	P	
(3)	DEHP	P	NT
	BBP	P	
	DBP	P	
	DIBP	P	
(4)	DEHP	P	NT
	BBP	P	
	DBP	P	
	DIBP	P	
(5)	DEHP	P	NT
	BBP	P	
	DBP	P	
	DIBP	P	
(6)	DEHP	P	NT
	BBP	P	
	DBP	P	
	DIBP	P	
(7)	DEHP	P	NT
	BBP	P	
	DBP	P	
	DIBP	P	
(8)	DEHP	P	NT
	BBP	P	
	DBP	P	
	DIBP	P	
(9)	DEHP	P	NT
	BBP	P	
	DBP	P	
	DIBP	P	
(10)	DEHP	P	NT
	BBP	P	
	DBP	P	
	DIBP	P	



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Tests Conducted

Screened Components	Items	Screened Results(phthalates)	Chemical Confirmation Result
(11)	DEHP	P	NT
	BBP	P	
	DBP	P	
	DIBP	P	
(24)	DEHP	P	NT
	BBP	P	
	DBP	P	
	DIBP	P	
(25)	DEHP	P	NT
	BBP	P	
	DBP	P	
	DIBP	P	
(26)	DEHP	P	NT
	BBP	P	
	DBP	P	
	DIBP	P	
(28)	DEHP	P	NT
	BBP	P	
	DBP	P	
	DIBP	P	
(29)	DEHP	P	NT
	BBP	P	
	DBP	P	
	DIBP	P	
(30)	DEHP	P	NT
	BBP	P	
	DBP	P	
	DIBP	P	
(31)	DEHP	P	NT
	BBP	P	
	DBP	P	
	DIBP	P	
(32)	DEHP	P	NT
	BBP	P	
	DBP	P	
	DIBP	P	
(33)	DEHP	P	NT
	BBP	P	
	DBP	P	
	DIBP	P	
(34)	DEHP	P	NT
	BBP	P	
	DBP	P	
	DIBP	P	



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Screened Components	Items	Screened Results(phthalates)	Chemical Confirmation Result
(35)	DEHP	P	NT
	BBP	P	
	DBP	P	
	DIBP	P	
(36)	DEHP	P	NT
	BBP	P	
	DBP	P	
	DIBP	P	
(37)	DEHP	P	NT
	BBP	P	
	DBP	P	
	DIBP	P	
(38)	DEHP	P	NT
	BBP	P	
	DBP	P	
	DIBP	P	
(39)	DEHP	P	NT
	BBP	P	
	DBP	P	
	DIBP	P	
(40a)	DEHP	P	NT
	BBP	P	
	DBP	P	
	DIBP	P	
(41)	DEHP	P	NT
	BBP	P	
	DBP	P	
	DIBP	P	
(43)	DEHP	P	NT
	BBP	P	
	DBP	P	
	DIBP	P	
(45)	DEHP	P	NT
	BBP	P	
	DBP	P	
	DIBP	P	
(46a)	DEHP	P	NT
	BBP	P	
	DBP	P	
	DIBP	P	
(46d)	DEHP	P	NT
	BBP	P	
	DBP	P	
	DIBP	P	



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Screened Components	Items	Screened Results(phthalates)	Chemical Confirmation Result
(47a)	DEHP	P	NT
	BBP	P	
	DBP	P	
	DIBP	P	
(48)	DEHP	P	NT
	BBP	P	
	DBP	P	
	DIBP	P	
(52a)	DEHP	P	NT
	BBP	P	
	DBP	P	
	DIBP	P	
(54)	DEHP	P	NT
	BBP	P	
	DBP	P	
	DIBP	P	
(55)	DEHP	P	NT
	BBP	P	
	DBP	P	
	DIBP	P	
(58)	DEHP	P	NT
	BBP	P	
	DBP	P	
	DIBP	P	
(59b)	DEHP	P	NT
	BBP	P	
	DBP	P	
	DIBP	P	
(59e)	DEHP	P	NT
	BBP	P	
	DBP	P	
	DIBP	P	
(59f)	DEHP	P	NT
	BBP	P	
	DBP	P	
	DIBP	P	
(60a)	DEHP	P	NT
	BBP	P	
	DBP	P	
	DIBP	P	
(61a)	DEHP	P	NT
	BBP	P	
	DBP	P	
	DIBP	P	





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Screened Components	Items	Screened Results(phthalates)	Chemical Confirmation Result
(64)	DEHP	P	NT
	BBP	P	
	DBP	P	
	DIBP	P	
(66a)	DEHP	P	NT
	BBP	P	
	DBP	P	
	DIBP	P	
(71)	DEHP	P	NT
	BBP	P	
	DBP	P	
	DIBP	P	
(79)	DEHP	P	NT
	BBP	P	
	DBP	P	
	DIBP	P	
(80)	DEHP	P	NT
	BBP	P	
	DBP	P	
	DIBP	P	
(81)	DEHP	P	NT
	BBP	P	
	DBP	P	
	DIBP	P	
(82)	DEHP	P	NT
	BBP	P	
	DBP	P	
	DIBP	P	
(83)	DEHP	P	NT
	BBP	P	
	DBP	P	
	DIBP	P	

DBP =Dibutyl phthalate  
 DEHP = Di-(2-ethyl hexyl) phthalate  
 BBP = Benzyl butyl phthalate  
 DIBP = Di-(iso-butyl) phthalate

Detected = Below the lower screening limit of table (C) and pass  
 ND = Not detected  
 NT = Not tested  
 P = Pass



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### Tests Conducted

Negative = A negative test result indicated the concentration of Cr(VI) is less than threshold of 0.10 µg/cm<sup>2</sup> for boiling-water-extraction procedures by UV-VIS Spectrophotometer analysis. The coating is considered a non-Cr(VI) based coating.

Remark:

(#) = As claimed by the declaration submitted from supplier of applicant, the Lead content of the component comes from Copper alloy only. According to The Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment Regulations 2012 (S.I. 2012 No. 3032) as amended, Regulation 3(4), Lead in Copper alloy containing up to 4% (40,000 mg/kg) Lead by weight can be exempted.

### (C) Screening Limits

#### (C1) XRF Screening limits in mg/kg for Regulated Elements in Various Matrices

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

#### (C2) Preliminary Screening limits in mg/kg for phthalates test.

Phthalates	Polymer Materials
Dibutyl phthalate (DBP)	$P \leq 600 < X$
Di-(2-ethyl hexyl) phthalate (DEHP)	$P \leq 600 < X$
Benzyl butyl phthalate (BBP)	$P \leq 600 < X$
Di-(iso-butyl) phthalate (DIBP)	$P \leq 600 < X$

P = Pass

X = Inconclusive result

**F = Fail**

mg/kg = milligram per kilogram = ppm



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(D) 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 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 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.

(E) Chemical Test Methods:

Testing Item	Testing Method	Detection Limit
Lead (Pb) Content	With reference to IEC 62321-5 Edition 1.0:2013, by acid digestion and determined by ICP - OES	2 mg/kg
Polybrominated Biphenyls (PBBs) & Polybrominated Diphenyl Ethers (PBDEs)	With reference to IEC 62321-6 Edition 1.0:2015, by solvent extraction and determined by GC/MS and further HPLC confirmation when necessary	5 mg/kg
Chromium (VI) (Cr <sup>6+</sup> ) 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 <sup>2</sup>
Chromium (VI)(Cr <sup>6+</sup> ) 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
Dibutyl phthalate (DBP) & Di-(2-ethyl hexyl) phthalate (DEHP) & Benzyl butyl phthalate (BBP) & Di-(iso-butyl) phthalate (DIBP)	With reference to IEC 62321-8 Edition 1.0:2017, by Gas Chromatographic-Mass Spectrometric (GC-MS) analysis	50 mg/kg



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(F) 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 <sup>6+</sup> )	0.1% (1000 mg/kg)
Polybrominated Biphenyls (PBBs)	0.1% (1000 mg/kg)
Polybrominated Diphenyl Ethers (PBDEs)	0.1% (1000 mg/kg)
Dibutyl phthalate (DBP)	0.1% (1000 mg/kg)
Di-(2-ethyl hexyl) phthalate (DEHP)	0.1% (1000 mg/kg)
Benzyl butyl phthalate (BBP)	0.1% (1000 mg/kg)
Di-(iso-butyl) phthalate (DIBP)	0.1% (1000 mg/kg)

The above limits were quoted from The Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment Regulations 2012 (S.I. 2012 No. 3032) as amended, Regulation 3(1) on restricted substances content in homogeneous materials.

Tested Components: See component list in the last section of this report

### Component list:

- (1) White wet paint.
- (2) Red wet paint.
- (3) Red soft plastic.
- (4) Black plastic.
- (5) Grey soft plastic.
- (6) Yellow soft plastic.
- (7) Black soft plastic.
- (8) Black plastic.
- (9) Black soft plastic.
- (10) Black plastic.
- (11) Transparent soft plastic.
- (12) Silver color metal.
- (13) Silver color metal.
- (14) Silver color metal.
- (15) Silver color metal.
- (16) Black magnet.
- (17) Black treated metal.
- (18) Silver color metal.
- (19) Silver color metal.
- (20) Silver color metal.
- (21) Gold color metal.
- (22) Gold color metal.
- (23) Silver color metal.



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- (24) Transparent plastic with printings (light orange, black).
- (25) Transparent double sides adhesive tape
- (26) Transparent plastic with printings (black, white).
- (27) Transparent glass.
- (28) Grey/dark grey soft plastic.
- (29) Transparent plastic.
- (30) Transparent black plastic.
- (31) Silver color plastic.
- (32) Transparent plastic with white printing.
- (33) Silver color plastic with adhesive.
- (34) Bright white plastic.
- (35) White plastic.
- (36) Conformal coating with white solder mask & silver color metal pad & fibreboard.
- (37) Transparent plastic & white fibreboard with yellow coating & silver color metal.
- (38) Black plastic.
- (39) Transparen plastic.
- (40) LED
- (40a) Transparent plastic.
- (40b) Silver color/copper metal with black printing.
- (40c) Silver color/copper metal.
- (41) Red soft plastic with black printing.
- (42) Silver color metal.
- (43) Black soft plastic with grey printing.
- (44) Silver color metal.
- (45) White plastic.
- (46) swtich
- (46a) Black plastic.
- (46b) Silver color metal sheet.
- (46c) Silver color metal sheet.
- (46d) Black plastic.
- (46e) Silver color metal.  
triode
- (47a) Black body.
- (47b) Silver color metal.
- (48) Conformal coating with green solder mask & copper color metal pad & fibreboard.
- (49) Brown ceramic with silver color metal.
- (50) Grey-brown ceramic with silver color metal.
- (51) Black ceramic with silver color metal.
- (52) IC
- (52a) Black body.
- (52b) Silver color metal.
- (53) Silver color metal & quartz & green material



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- (54) Conformal coating with blue solder mask & copper color metal pad & fibreboard.
- (55) Black body with beige printing & silver color metal
- (56) White ceramic with black material & white printing & silver color metal.
- (57) Silver color solder
- (58) Conformal coating with green solder mask & copper color metal pad & fibreboard.
- (59) capacitor
- (59a) Silver color metal with black printing
- (59b) Grey-white paper.
- (59c) Dull silver-grey metal sheet.
- (59d) Silver-grey metal sheet.
- (59e) Black plastic.
- (59f) Black soft plastic.
- (59g) Silver color metal.
- (60) IC
- (60a) Black body.
- (60b) Silver color metal.
- (61) IC
- (61a) Black body.
- (61b) Silver color metal.
- (62) Silvery metal & quartz & green material.
- (63) White ceramic with silver color metal.
- (64) Khaki color plastic.
- (65) Silver color metal.
- (66) diode
- (66a) Black body
- (66b) Silver color metal
- (67) Silver color metal.
- (68) Silver color metal.
- (69) Silver color metal.
- (70) Silver color metal.
- (71) White paper label with black printing.
- (72) Silver color metal.
- (73) Silver color metal.
- (74) Silver color metal.
- (75) Silver color metal.
- (76) Silver color metal.
- (77) Gold color metal.
- (78) Gold color metal.
- (79) Transparent plastic.
- (80) Transarent double sides adheisve tape.
- (81) Transparent plastic excluding coating.
- (82) Coatings (grey, red, white) on plastic.
- (83) Dark grey soft plastic.



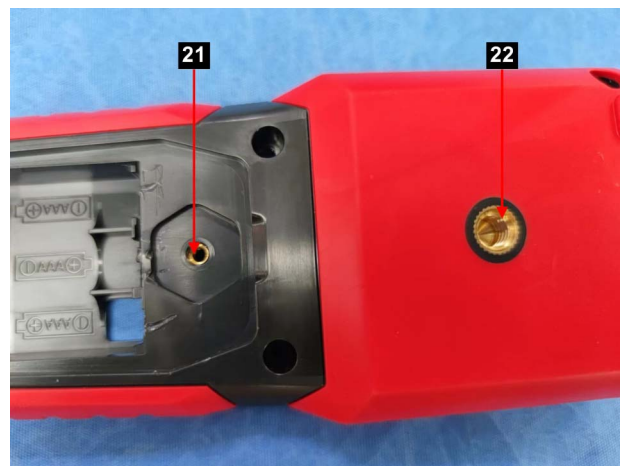
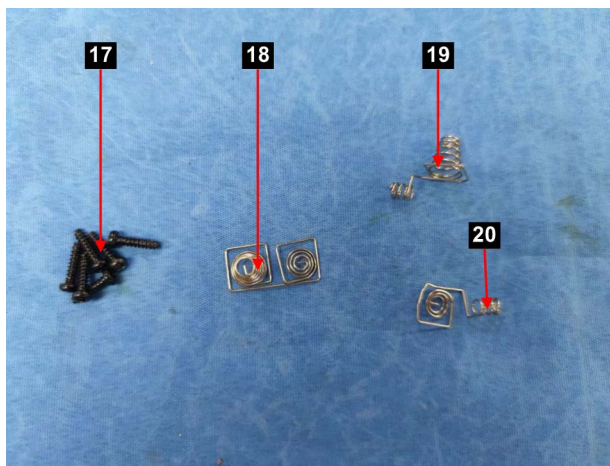
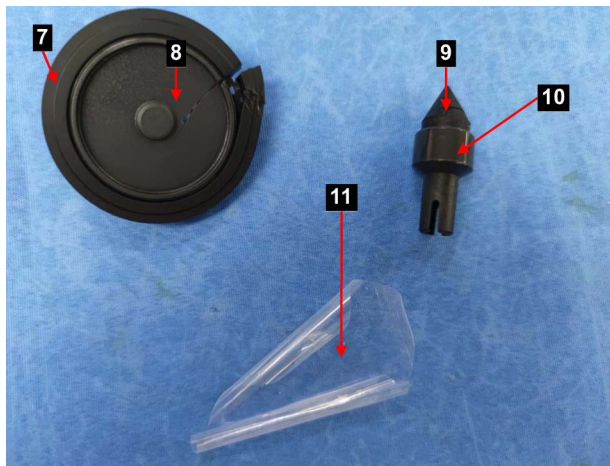
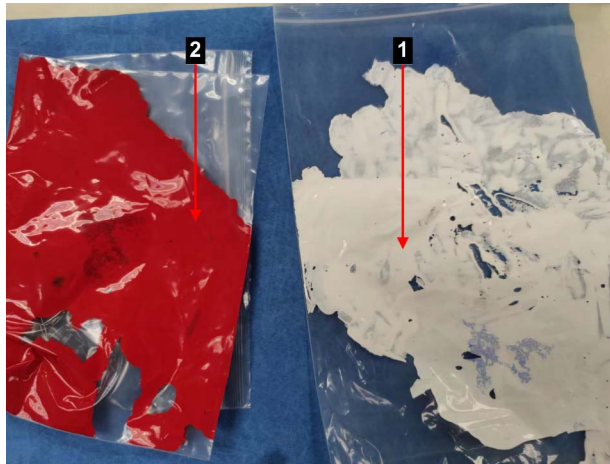
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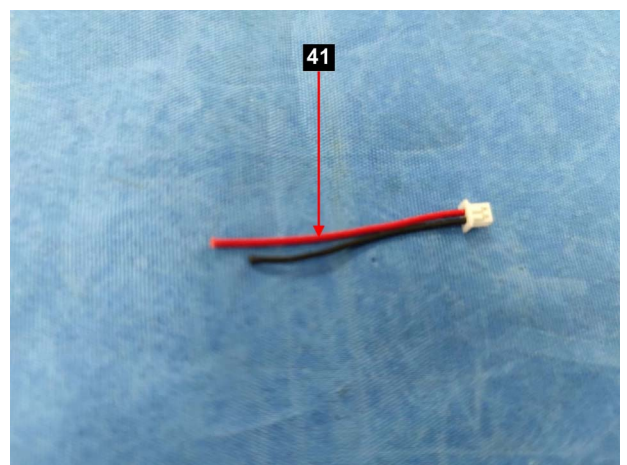
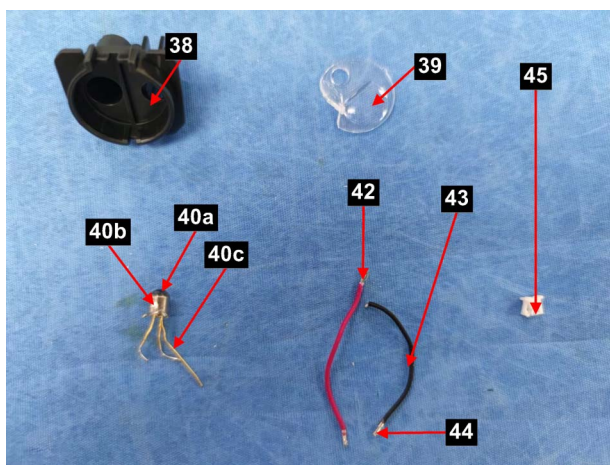
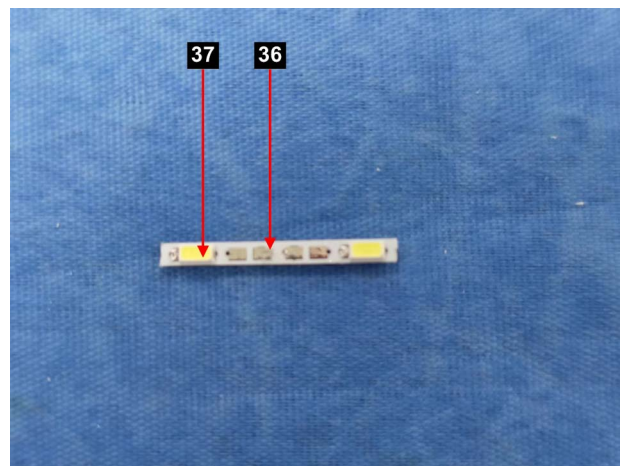
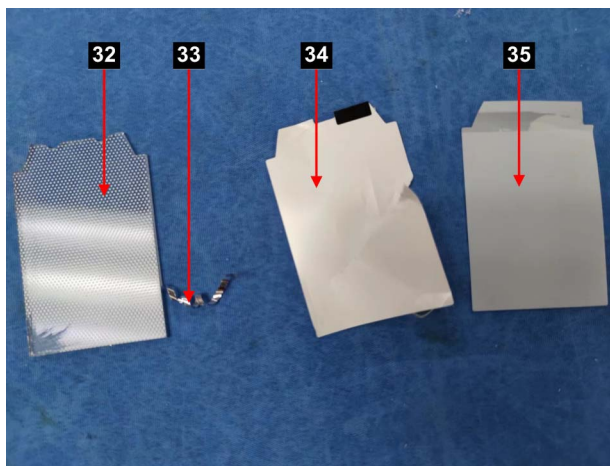
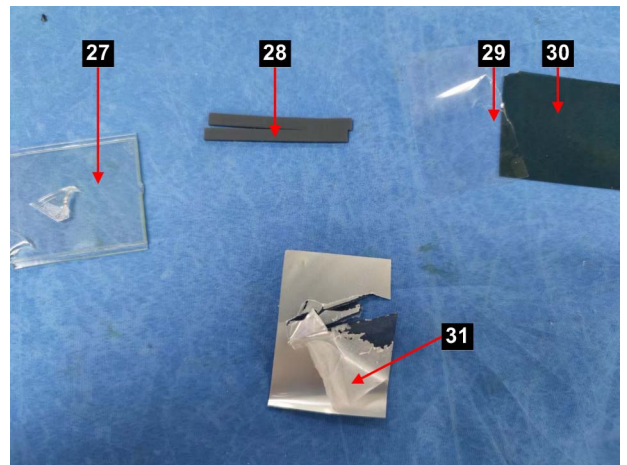
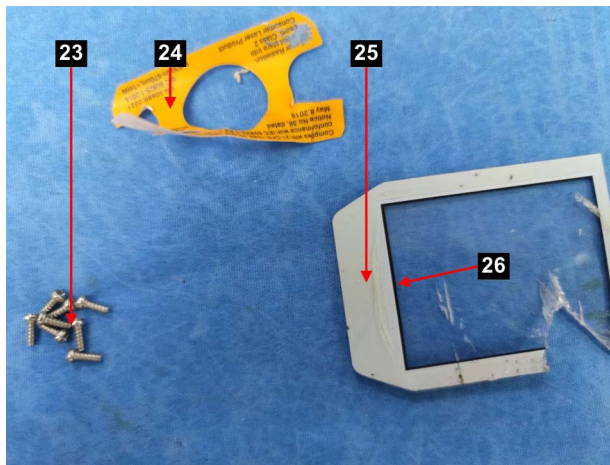
### Tests Conducted



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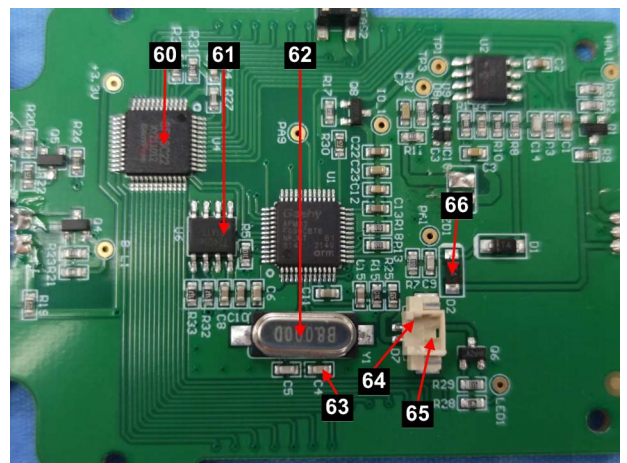
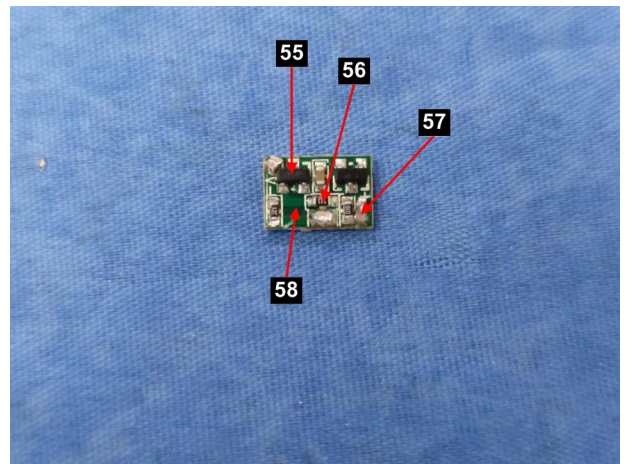
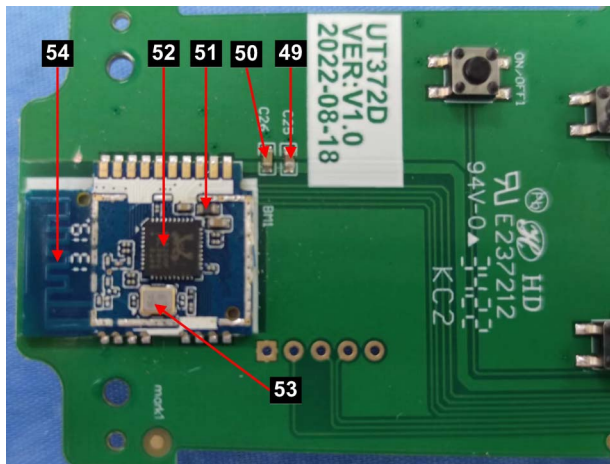
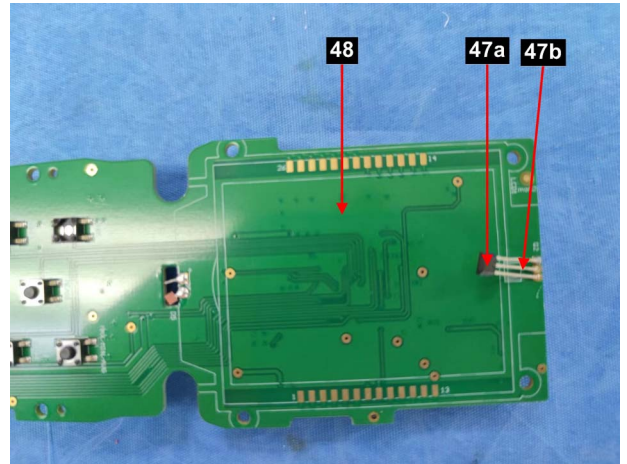
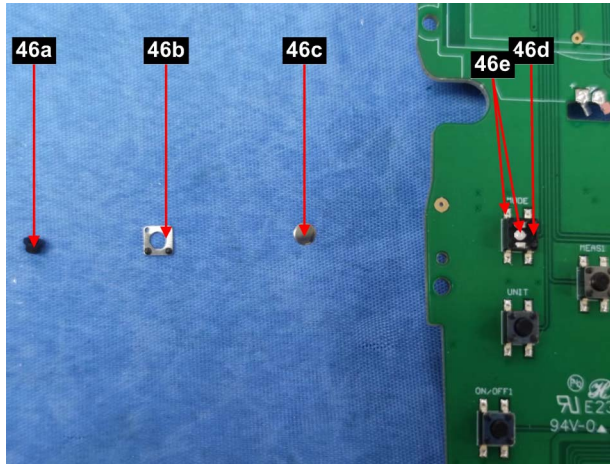




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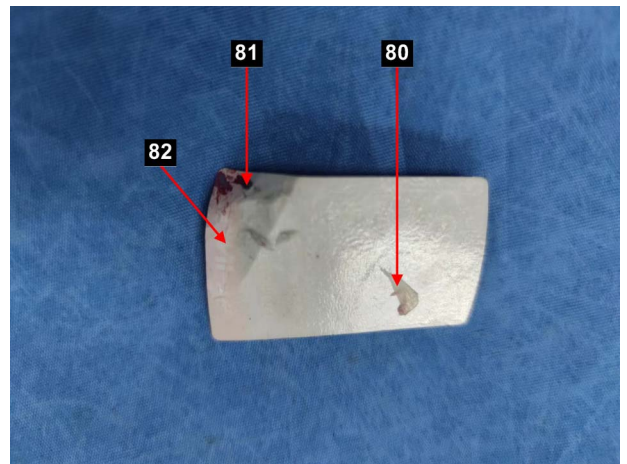
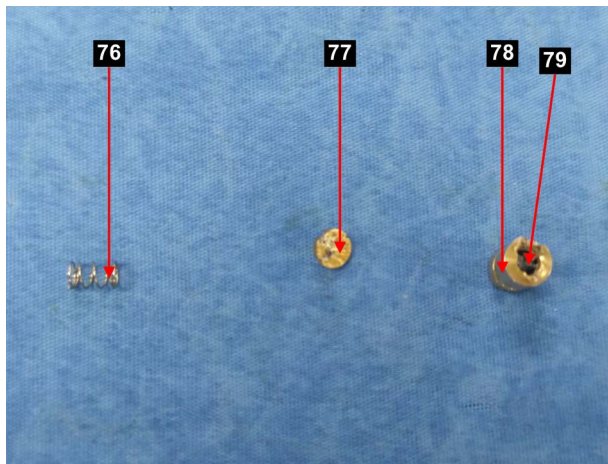
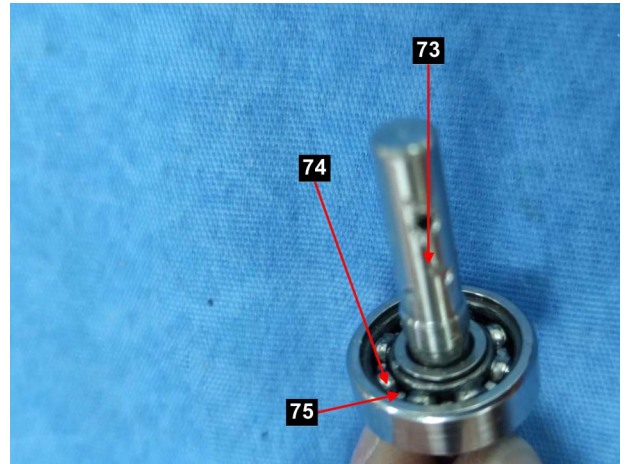
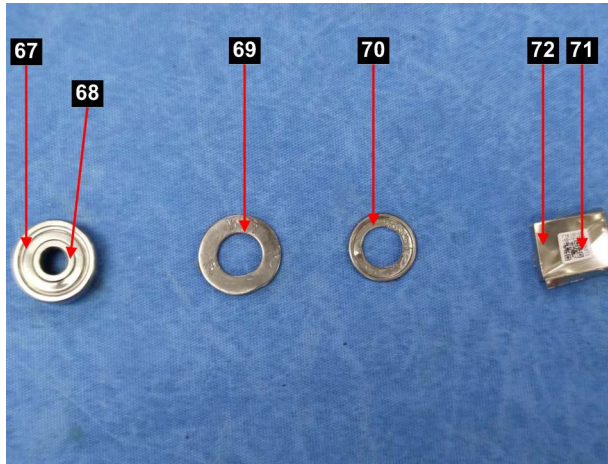
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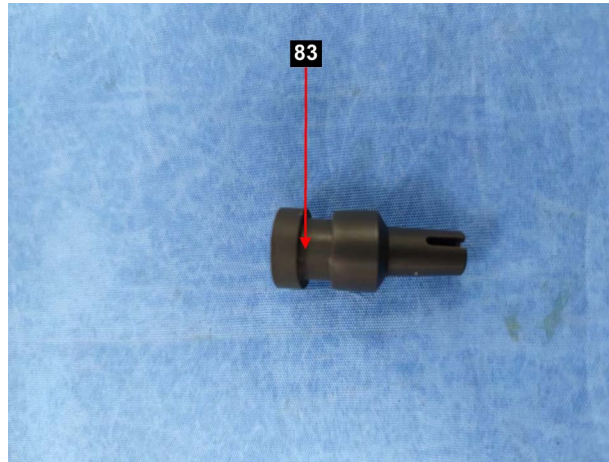
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### Tests Conducted



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End of report

*The statements of conformity reported have considered the decision rule agreed, namely that Intertek have taken account of measurement uncertainty as calculated by Intertek, and applied according to ILAC-G8/09:2019 (Non-binary acceptance based on guard band  $w = U$ ) except designation from the customer, regulation or test specification. This decision rule only applies to the numeric test results.*

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