

# TEST REPORT

NO.: A001R140709014001

Date: Jul 15, 2014

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**Applicant:** SISO A/S

**Address:** Mileparken 11, DK-2740 Skovlunde (Copenhagen), Denmark

**Report on the submitted sample said to be:**
**Sample name:** Wireless Charger

**Brand:** SISO

**Model:** WT1, WT\* ("\*" can be number 0~9. It represents different appearance)

**Item/Lot No.:** /

**Material:** /

**Buyer:** /

**Supplier:** /

**Manufacturer:** SISO A/S

**Sample received date:** Jul 09, 2014

**Testing period:** From Jul 09, 2014 to Jul 15, 2014

**Testing Method:**

 (1) Screening by X-ray Fluorescence Spectrometry (XRF) :With reference to IEC 62321-3-1:2013 Ed 1.0 Screening – Lead, mercury, cadmium, total chromium and total bromine by X-ray fluorescence spectrometry

 (2) Chemical test:

Test Item	Pretreatment Method	Measuring Instrument	MDL
Lead (Pb)	IEC 62321-5:2013 Ed 1.0 Section 7	ICP-OES	2 mg/kg
Cadmium (Cd)	IEC 62321-5:2013 Ed 1.0 Section 7	ICP-OES	2 mg/kg
Mercury (Hg)	IEC 62321-4:2013 Ed 1.0 Section 7	ICP-OES	2 mg/kg
Hexavalent Chromium (Cr <sup>6+</sup> )	IEC 62321:2008 Ed 1.0 Annex C	UV-VIS	2 mg/kg
Hexavalent Chromium (Cr <sup>6+</sup> )	IEC 62321:2008 Ed 1.0 Annex B	UV-VIS	/
Polybrominated Biphenyls (PBBs) / Polybrominated Diphenyl Ethers (PBDEs)	IEC 62321:2008 Ed 1.0 Annex A	GC-MS	5 mg/kg

**Conclusion:**

<u>Tested samples</u>	<u>Standard</u>	<u>Conclusion</u>
Screening components of submitted samples	Screening by XRF spectroscopy and chemical confirmation test for RoHS directive (2011/65/EU)	PASS

\*\*\*\*\*FOR FURTHER DETAILS, PLEASE REFER TO THE FOLLOWING PAGE(S)\*\*\*\*\*


 Signed for and on behalf of  
 Shenzhen AOV Testing Technology Co., Ltd

 Tested by: Leif  
 Li Xian Yong, Leif  
 Project Leader

 Reviewed by: Rosary  
 Luo Jun, Rosary  
 Vice Technical Supervisor

 Approved by: Lewis  
 Liu Lin Wen, Lewis  
 Technical Supervisor



# TEST REPORT

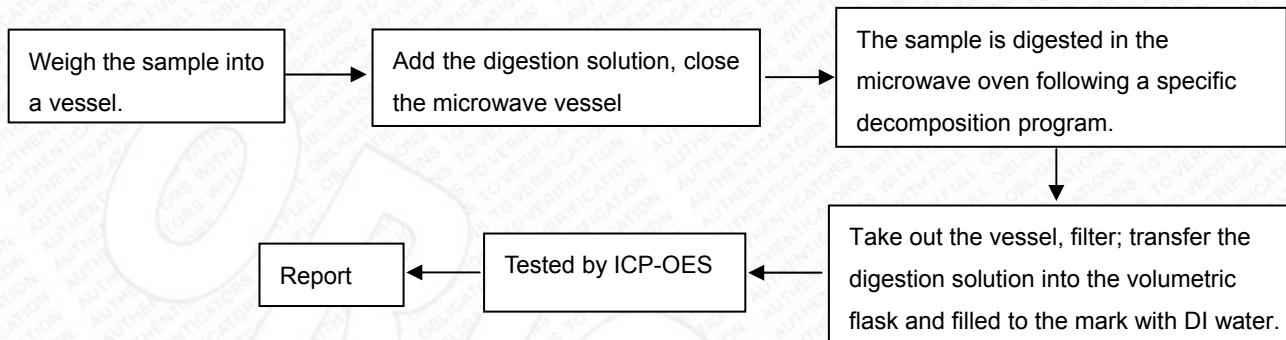
NO.: A001R140709014001

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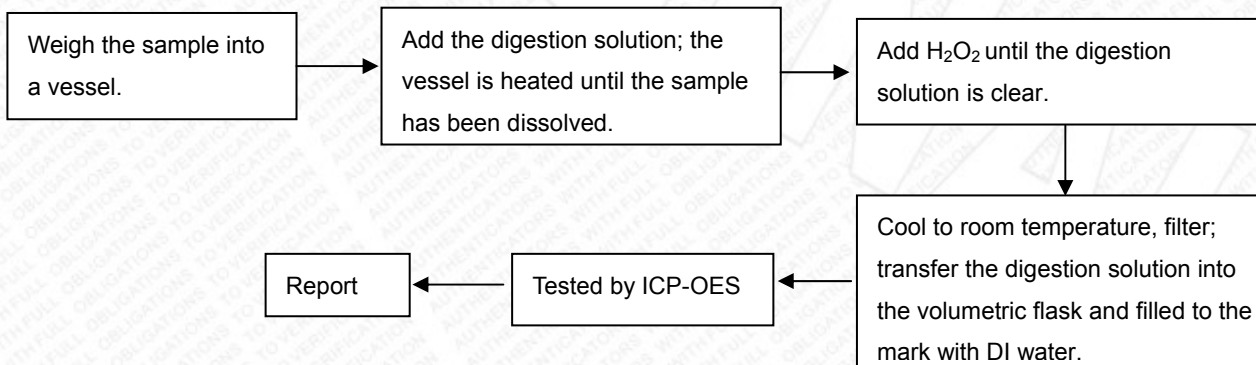
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## Test Flow (Chemical Test):

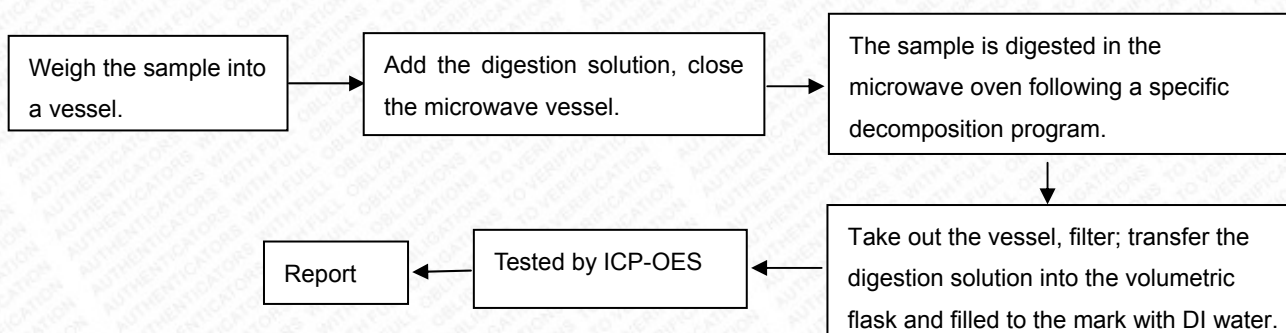
1. To Determine Lead, Cadmium Content(for Polymer, Electronics):



2. To Determine Lead, Cadmium Content (for Metals):



3. To Determine Mercury Content:



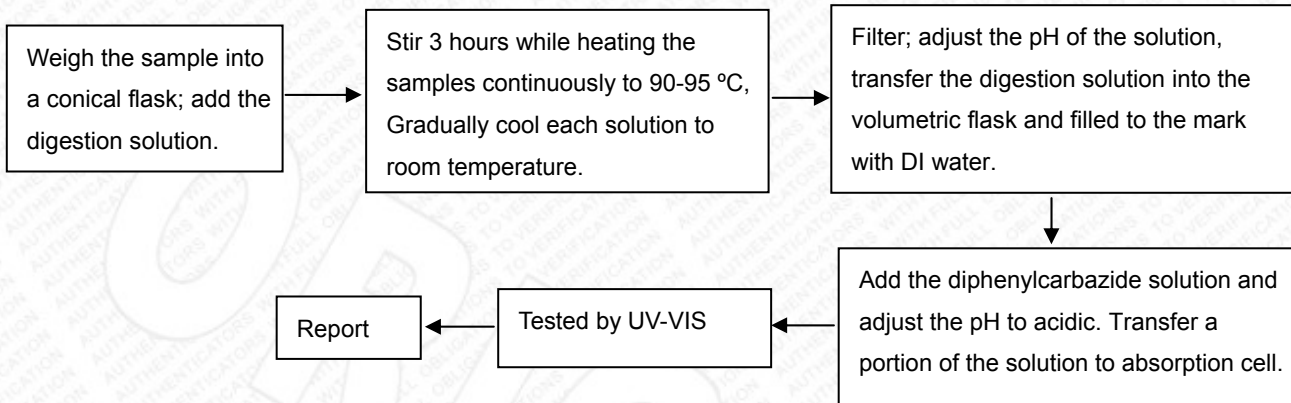
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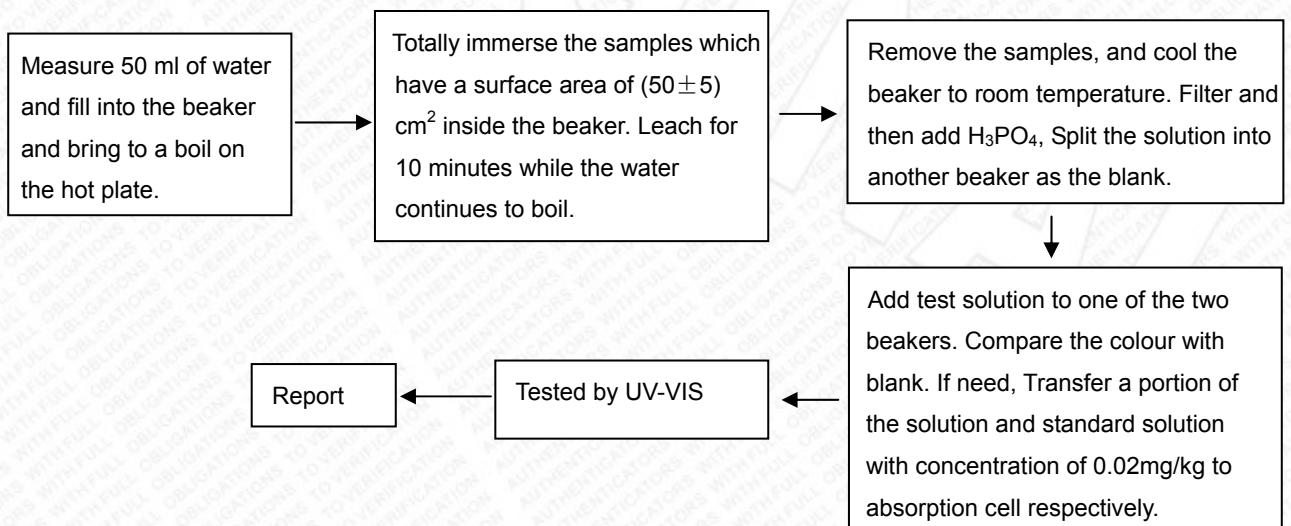
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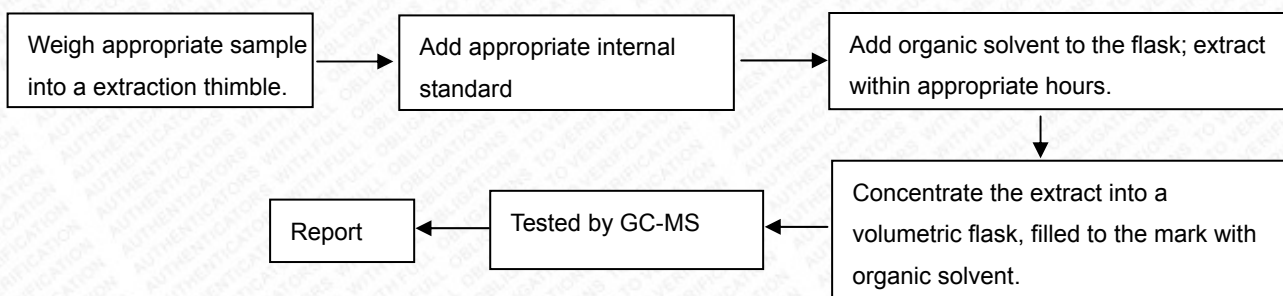
## 4. To Determine Hexavalent Chromium Content (for Polymer, Electronics):



## 5. To Determine Hexavalent Chromium Content (for Metals/boiling water extraction):



## 6. To Determine Polybrominated Biphenyls/Polybrominated Diphenyl Ethers Content:






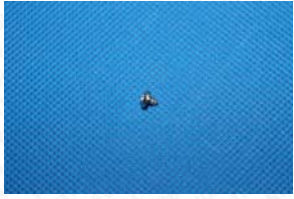




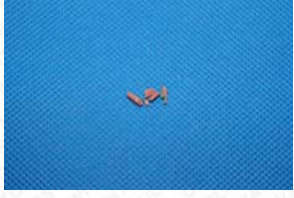
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**Test Results:**

Part no.	Sample name	XRF results		Chemical confirmation result(mg/kg)	Photo
1	Black plastic shell	Pb	BL	PBBs: N.D. PBDEs: N.D.	
		Cd	BL		
		Hg	BL		
		Cr	BL		
		Br	(#2) Inconclusive		
2	Screw	Pb	BL	---	
		Cd	BL		
		Hg	BL		
		Cr	BL		
		Br	N.A.		
3	Lamp pole	Pb	BL	---	
		Cd	BL		
		Hg	BL		
		Cr	BL		
		Br	BL		
4	Black sponge	Pb	BL	---	
		Cd	BL		
		Hg	BL		
		Cr	BL		
		Br	BL		
5	PCB Soldering flux	Pb	BL	PBBs: N.D. PBDEs: N.D.	
		Cd	BL		
		Hg	BL		
		Cr	BL		
		Br	(#2) Inconclusive		
6	Substrate	Pb	BL	PBBs: N.D. PBDEs: N.D.	
		Cd	BL		
		Hg	BL		
		Cr	BL		
		Br	(#2) Inconclusive		
7	Copper foil	Pb	BL	---	
		Cd	BL		
		Hg	BL		
		Cr	BL		
		Br	BL		


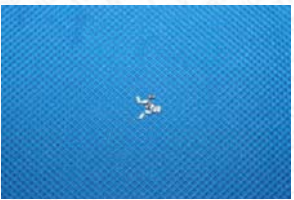
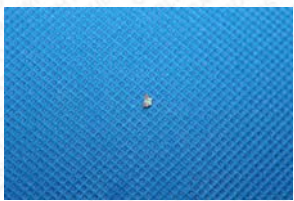

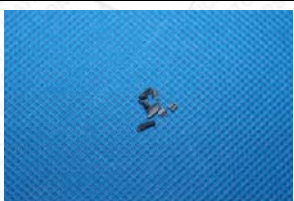

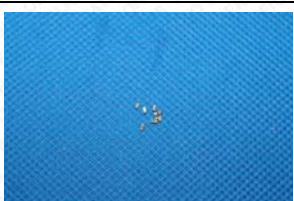


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Part no.	Sample name	XRF results		Chemical confirmation result(mg/kg)	Photo
		Pb	BL		
8	Screw	Cd	BL	---	
		Hg	BL		
		Cr	BL		
		Br	N.A.		
		Pb	BL		
9	Chip resistor	Pb	(#1) Inconclusive	Pb: 451 Cr <sup>6+</sup> : N.D.	
		Cd	BL		
		Hg	BL		
		Cr	(#2) Inconclusive		
		Br	BL		
10	Chip LED	Pb	BL	PBBs: N.D. PBDEs: N.D.	
		Cd	BL		
		Hg	BL		
		Cr	BL		
		Br	(#2) Inconclusive		
11	USB head Metal head	Pb	BL	---	
		Cd	BL		
		Hg	BL		
		Cr	BL		
		Br	N.A.		
12	Black inner plastic	Pb	BL	---	
		Cd	BL		
		Hg	BL		
		Cr	BL		
		Br	BL		
13	Contact pin	Pb	BL	---	
		Cd	BL		
		Hg	BL		
		Cr	BL		
		Br	N.A.		
14	Chip capacitor C8	Pb	BL	---	
		Cd	BL		
		Hg	BL		
		Cr	BL		
		Br	BL		



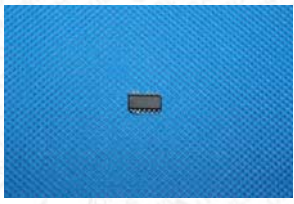
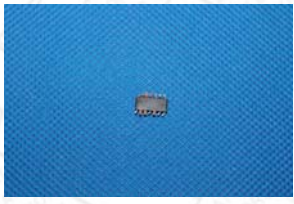
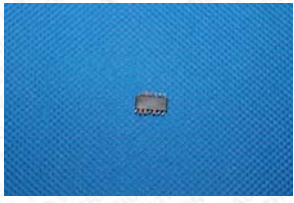
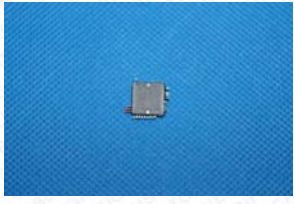
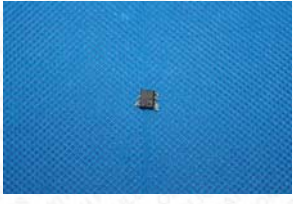


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Part no.	Sample name	XRF results		Chemical confirmation result(mg/kg)	Photo
		Pb	BL		
15	Chip audion	Cd	BL	PBBs: N.D. PBDEs: N.D.	
		Hg	BL		
		Cr	BL		
		Br	(#2) Inconclusive		
		Pb	BL		
16	Chip diode	Cd	BL	PBBs: N.D. PBDEs: N.D.	
		Hg	BL		
		Cr	BL		
		Br	(#2) Inconclusive		
		Pb	BL		
17	IC U13 Body	Cd	BL	---	
		Hg	BL		
		Cr	BL		
		Br	BL		
		Pb	BL		
18	IC U13 Pin	Cd	BL	---	
		Hg	BL		
		Cr	BL		
		Br	N.A.		
		Pb	BL		
19	IC U4 Body	Cd	BL	---	
		Hg	BL		
		Cr	BL		
		Br	BL		
		Pb	BL		
20	IC U4 Pin	Cd	BL	---	
		Hg	BL		
		Cr	BL		
		Br	N.A.		
		Pb	BL		
21	IC U12 Body	Cd	BL	---	
		Hg	BL		
		Cr	BL		
		Br	BL		
		Pb	BL		

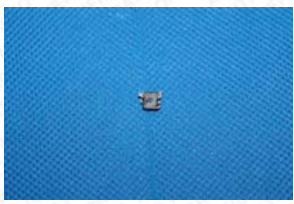
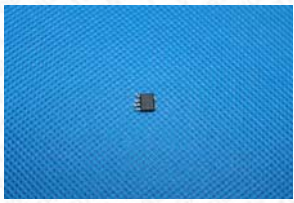
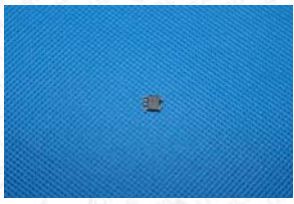

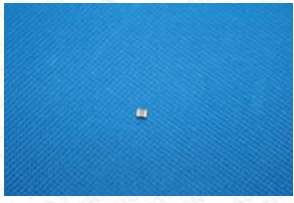

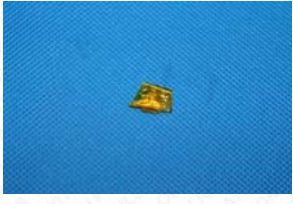


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Part no.	Sample name	XRF results		Chemical confirmation result(mg/kg)	Photo
22	IC U12 Pin	Pb	BL	---	
		Cd	BL		
		Hg	BL		
		Cr	BL		
		Br	N.A.		
23	IC U3 Body	Pb	BL	---	
		Cd	BL		
		Hg	BL		
		Cr	BL		
		Br	BL		
24	IC U3 Pin	Pb	BL	---	
		Cd	BL		
		Hg	BL		
		Cr	BL		
		Br	N.A.		
25	Chip capacitor C4	Pb	BL	Cd: N.D.	
		Cd	(#1) Inconclusive		
		Hg	BL		
		Cr	BL		
		Br	BL		
26	Chip capacitor	Pb	BL	---	
		Cd	BL		
		Hg	BL		
		Cr	BL		
		Br	BL		
27	Magnet	Pb	BL	---	
		Cd	BL		
		Hg	BL		
		Cr	BL		
		Br	BL		
28	Transparent adhesive tape	Pb	BL	---	
		Cd	BL		
		Hg	BL		
		Cr	BL		
		Br	BL		







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Part no.	Sample name	XRF results		Chemical confirmation result(mg/kg)	Photo
		Pb	BL		
29	Wire jacket	Cd	BL	---	
		Hg	BL		
		Cr	BL		
		Br	BL		
		Pb	BL		
30	Wire core	Cd	BL	---	
		Hg	BL		
		Cr	BL		
		Br	N.A.		
		Pb	BL		
31	Soldering tin	Cd	BL	---	
		Hg	BL		
		Cr	BL		
		Br	N.A.		
		Pb	BL		
32	Metal button	Cd	BL	Cr <sup>6+</sup> : ** Negative	
		Hg	BL		
		Cr	(#2) Inconclusive		
		Br	N.A.		
		Pb	BL		

**Remark:**

- Specimens, which requested to determine Cadmium, Lead Content by chemical test, have been dissolved completely.
- mg/kg = ppm
- N.D.=not detected(<MDL)
- MDL=Method Detection Limit
- N.A.= Not Applicable
- BL= BELOW LIMIT
- \*\*Boiling water extraction:  
Negative=Absence of Cr<sup>6+</sup>;  
Positive=Presence of Cr<sup>6+</sup>; the detected concentration in boiling water extraction solution is equal or greater than 0.02mg/kg with 50cm<sup>2</sup> sample surface area.
- Storage conditions and production date of the tested sample are unavailable and thus results of Cr<sup>6+</sup> represent status of the sample at the time of testing.
- “Homogeneous material” means one material of uniform composition throughout or a material, consisting of a combination of materials, that cannot be disjointed or separated into different materials by mechanical actions such as unscrewing, cutting, crushing, grinding and abrasive processes.



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- (#1) = The screening result was found in the region of inconclusive (See Table B) and further chemical tests were suggested.
- (#2) = Cr or Br were detected above the screening Limit (see table B) and further chemical tests were suggested.

\*\*\*\*\*

(B) XRF Screening Limit in mg/kg for regulated elements in various matrices.

Element	Polymer materials	Metallic materials	Composite materials
Cd	$BL \leq (70 - 3\sigma) < X < (130 + 3\sigma) \leq OL$	$BL \leq (70 - 3\sigma) < X < (70 + 3\sigma) \leq OL$	$LOD < X < (150 + 3\sigma) \leq OL$
Pb	$BL \leq (700 - 3\sigma) < X < (1300 + 3\sigma) \leq OL$	$BL \leq (700 - 3\sigma) < X < (1300 + 3\sigma) \leq OL$	$BL \leq (500 - 3\sigma) < X < (1500 + 3\sigma) \leq OL$
Hg	$BL \leq (700 - 3\sigma) < X < (1300 + 3\sigma) \leq OL$	$BL \leq (700 - 3\sigma) < X < (1300 + 3\sigma) \leq OL$	$BL \leq (500 - 3\sigma) < X < (1500 + 3\sigma) \leq OL$
Cr	$BL \leq (700 - 3\sigma) < X$	$BL \leq (700 - 3\sigma) < X$	$BL \leq (500 - 3\sigma) < X$
Br	$BL \leq (300 - 3\sigma) < X$	Not Applicable	$BL \leq (250 - 3\sigma) < X$

**Remark:**

- A "BELOW LIMIT" (BL) or "OVER LIMIT" (OL) determination will be set at 30 % (50 % for composite materials) less than or greater than the limit, respectively. The margins of safety have been agreed upon based on the experience of many experts and practitioners in the industry. Further explanation for this approach to estimating uncertainty.
- The symbol "X" marks the region, where further investigation is necessary.
- LOD means Limit of Detection.
- The term " $\sigma$ " expresses the repeatability of the analyzer at the action level.

(C) RoHS Requirement

Restricted substances	Limits
Lead (Pb)	0.1% (1000 ppm)
Cadmium (Cd)	0.01% (100 ppm)
Mercury (Hg)	0.1% (1000 ppm)
Hexavalent Chromium ( $Cr^{6+}$ )	0.1% (1000 ppm)
Polybrominated biphenyls (PBBs)	0.1% (1000 ppm)
Polybrominated diphenyl ethers (PBDEs)	0.1% (1000 ppm)

The above limits were quoted from 2011/65/EU.

\*\*\*\*\*

**Remark:**

- Chemical confirmation tests were conducted to verify the inconclusive results, Hexavalent Chromium ( $Cr^{6+}$ ), Polybrominated biphenyls(PBBs) and Polybrominated diphenyl ethers(PBDEs) content.
- As requested by the applicant, only components shown in this report were screened by XRF spectroscopy for 2011/65/EU, other components were not screened included in this report.



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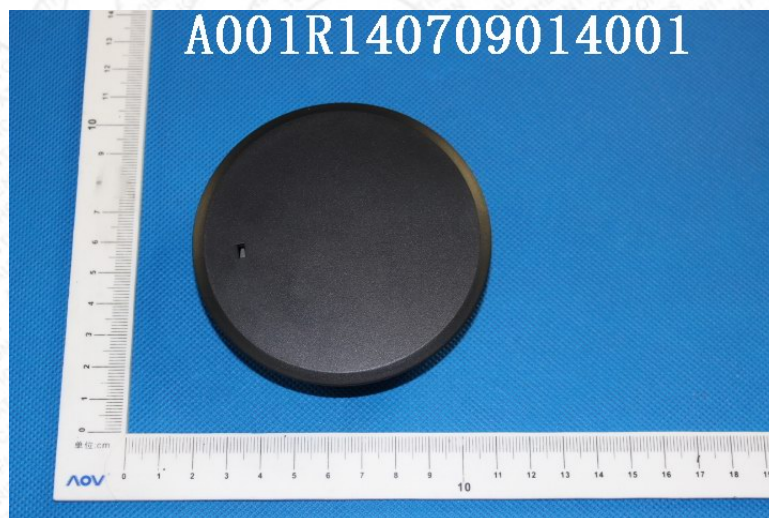
## Disclaimers:

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 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 are required to obtain quantitative data.

- Photo is included.

## Photographs of Samples



Wireless Charger

\*\*\*End of Report\*\*\*