



# Test Report

**Applicant** : HARDWARIO a.s.  
**Address** : U Jezu 525/4, 460 01 Liberec, CZECHIA

**Manufacturer** : HARDWARIO a.s.  
**Address** : U Jezu 525/4, 460 01 Liberec, CZECHIA

**Sample Name** : CHESTER  
**Sample Model** : CHESTER

**Received Date** : June 2, 2022  
**Testing Period** : June 2, 2022 ~ June 16, 2022

**Test Requested** : As specified by client, with reference to RoHS Directive 2011/65/EU and (EU) 2015/863 to determine the Lead (Pb), Cadmium (Cd), Mercury (Hg), Hexavalent Chromium (Cr(VI)), Polybrominated biphenyls (PBBs), Polybrominated diphenyl ethers (PBDEs), Dibutyl Phthalate (DBP), Benzyl butyl phthalate (BBP), Bis-(2-ethyl hexyl)-phthalate (DEHP) and Diisobutyl phthalate (DIBP) content in the submitted sample.

**Test Method** : Please refer to next page.  
**Test Results** : Please refer to next page(s).  
**Conclusion** : Based on the performed tests on submitted sample(s), the results Comply with the RoHS Directive 2011/65/EU and (EU) 2015/863.

CCIC (Shenzhen) Environmental Service Co., Ltd.

Completed by:

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Reviewed by:

*Andy.Zhou*

Andy.Zhou

Approved by:

*Renyou.Yang*

Renyou.Yang





**1. Test Method(s):**

As requested by the client, Reference to IEC 62321-3-1-2013 (Ed1.0) Procedures for the screening analysis of Lead (Pb), Cadmium (Cd), Mercury (Hg), total Chromium (Cr), and Bromine (Br) by XRF. If the screening analysis results exceed the screening limits of IEC 62321-3-1-2013 (Ed1.0) Annex A, use the chemical methods for testing.

*Table1 IEC 62321-3-1-2013 (Ed1.0) Annex A screening limits of XRF (mg/kg)*

Element	Polymer	Metal	Composite Materials
Cd	$BL \leq (70-3\sigma) < X < (130+3\sigma) \leq OL$	$BL \leq (70-3\sigma) < X < (130+3\sigma) \leq OL$	$LOD < X < (150+3\sigma) \leq OL$
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	$BL \leq (700-3\sigma) < X < (1300+3\sigma) \leq OL$	$BL \leq (700-3\sigma) < X < (1300+3\sigma) \leq OL$	$BL \leq (500-3\sigma) < X < (1500+3\sigma) \leq OL$
Br	$BL \leq (300-3\sigma) < X$	Not applicable	$BL \leq (250-3\sigma) < X$
Cr	$BL \leq (700-3\sigma) < X$	$BL \leq (700-3\sigma) < X$	$BL \leq (500-3\sigma) < X$

BL = Less than screening limits of XRF

OL = More than screening limits of XRF

X = The results of screening analysis by XRF are within this range, requiring further chemical testing.

LOD = Limit of Detection

*Table2 testing methods & Equipments*

Testing Item	Testing Method	Equipment
Screening analysis by XRF		
Lead (Pb) Cadmium (Cd) Mercury (Hg) Chromium (Cr) Bromine (Br)	IEC 62321-3-1-2013 (Ed1.0)	ED-XRF
Chemical testing		
Lead (Pb)	IEC 62321-5-2013 (Ed1.0)	ICP-OES
Hexavalent chromium (Cr(VI)) for plastic	IEC 62321-7-2-2017 (Ed1.0)	UV-VIS
Hexavalent chromium (Cr(VI)) for coating on metals	IEC 62321-7-1-2015 (Ed1.0)	UV-VIS
PBBs	IEC 62321-6-2015 (Ed1.0)	GC-MS
PBDEs	IEC 62321-6-2015 (Ed1.0)	GC-MS



DBP	IEC 62321-8-2017 (Ed1.0)	GC-MS
BBP	IEC 62321-8-2017 (Ed1.0)	GC-MS
DEHP	IEC 62321-8-2017 (Ed1.0)	GC-MS
DIBP	IEC 62321-8-2017 (Ed1.0)	GC-MS

**2. Test Result(s):**

Part No.	Part Description	Restricted Substances	Results (mg/kg)			Conclusion (P/F)	Resubmitted Date/ Source of Data
			EDXRF (P/F/D)	PHTH Screening	Chemical testing		
1	Silvery metal screw	Cd	P			P	\
		Pb	P			P	
		Hg	P	\	\	P	
		Cr(VI)	P	\	\	P	
		PBBs	\			\	
		PBDEs	\			\	
2	White sticker	DEHP	\	\	\	\	\
		DBP	\	\	\	\	
		BBP	\	\	\	\	
		DIBP	\	\	\	\	
		Cd	P			P	
		Pb	P			P	
2	White sticker	Hg	P	\	\	P	\
		Cr(VI)	P	\	\	P	
		PBBs	P			P	
		PBDEs	P			P	
		DEHP	\	P	\	P	
		DBP	\	P	\	P	
2	White sticker	BBP	\	P	\	P	\
		DIBP	\	P	\	P	



Part No.	Part Description	Restricted Substances	Results (mg/kg)			Conclusion (P/F)	Resubmitted Date/ Source of Data
			EDXRF (P/F/D)	PHTH Screening	Chemical testing		
3	White sticker	Cd	P			P	\
		Pb	P			P	
		Hg	P	\	\	P	
		Cr(VI)	P			P	
		PBBs	P			P	
PBDEs	P			P			
		DEHP	\	P	\	P	
		DBP	\	P	\	P	
		BBP	\	P	\	P	
		DIBP	\	P	\	P	
4	White sticker	Cd	P			P	\
		Pb	P			P	
		Hg	P	\	\	P	
		Cr(VI)	P			P	
		PBBs	P			P	
PBDEs	P			P			
		DEHP	\	P	\	P	
		DBP	\	P	\	P	
		BBP	\	P	\	P	
		DIBP	\	P	\	P	
5	White plastic	Cd	P			P	\
		Pb	P			P	
		Hg	P	\	\	P	
		Cr(VI)	P			P	
		PBBs	P			P	
PBDEs	P			P			
		DEHP	\	P	\	P	
		DBP	\	P	\	P	
		BBP	\	P	\	P	
		DIBP	\	P	\	P	



Part No.	Part Description	Restricted Substances	Results (mg/kg)			Conclusion (P/F)	Resubmitted Date/ Source of Data
			EDXRF (P/F/D)	PHTH Screening	Chemical testing		
6	Transparent plastic	Cd	P			P	\
		Pb	P			P	
		Hg	P	\	\	P	
		Cr(VI)	P			P	
		PBBs	P			P	
PBDEs	P			P			
		DEHP	\	P	\	P	
		DBP	\	P	\	P	
		BBP	\	P	\	P	
		DIBP	\	P	\	P	
7	White plastic	Cd	P			P	\
		Pb	P			P	
		Hg	P	\	\	P	
		Cr(VI)	P			P	
		PBBs	P			P	
PBDEs	P			P			
		DEHP	\	P	\	P	
		DBP	\	P	\	P	
		BBP	\	P	\	P	
		DIBP	\	P	\	P	
8	White plastic	Cd	P			P	\
		Pb	P			P	
		Hg	P	\	\	P	
		Cr(VI)	P			P	
		PBBs	P			P	
PBDEs	P			P			
		DEHP	\	P	\	P	
		DBP	\	P	\	P	
		BBP	\	P	\	P	
		DIBP	\	P	\	P	



Part No.	Part Description	Restricted Substances	Results (mg/kg)			Conclusion (P/F)	Resubmitted Date/ Source of Data
			EDXRF (P/F/D)	PHTH Screening	Chemical testing		
9	Black soft plastic	Cd	P			P	\
		Pb	P			P	
		Hg	P	\	\	P	
		Cr(VI)	P	\	\	P	
		PBBs	P			P	
PBDEs	P			P			
		DEHP	\	P	\	P	
		DBP	\	P	\	P	
		BBP	\	P	\	P	
		DIBP	\	P	\	P	
10	Silvery metal screw	Cd	P			P	\
		Pb	P			P	
		Hg	P	\	Cr(VI): Negative (< 0.10 µg/cm <sup>2</sup> )	P	
		Cr(VI)	D	\		P	
		PBBs	\			\	
PBDEs	\			\			
		DEHP	\	\	\	\	
		DBP	\	\	\	\	
		BBP	\	\	\	\	
		DIBP	\	\	\	\	
11	Golden metal	Cd	P			P	\
		Pb	F			P	
		Hg	P	\	Pb: 3.02×10 <sup>4</sup> See remark (5)	P	
		Cr(VI)	P	\		P	
		PBBs	\			\	
PBDEs	\			\			
		DEHP	\	\	\	\	
		DBP	\	\	\	\	
		BBP	\	\	\	\	
		DIBP	\	\	\	\	



Part No.	Part Description	Restricted Substances	Results (mg/kg)			Conclusion (P/F)	Resubmitted Date/ Source of Data
			EDXRF (P/F/D)	PHTH Screening	Chemical testing		
12	Green PCB	Cd	P			P	\
		Pb	P			P	
		Hg	P	\	\	P	
		Cr(VI)	P	\	\	P	
		PBBs	P			P	
PBDEs	P			P			
		DEHP	\	P	\	P	
		DBP	\	P	\	P	
		BBP	\	P	\	P	
		DIBP	\	P	\	P	
13	White sticker	Cd	P			P	\
		Pb	P			P	
		Hg	P	\	\	P	
		Cr(VI)	P	\	\	P	
		PBBs	P			P	
PBDEs	P			P			
		DEHP	\	P	\	P	
		DBP	\	P	\	P	
		BBP	\	P	\	P	
		DIBP	\	P	\	P	
14	Green plastic	Cd	P			P	\
		Pb	P			P	
		Hg	P	\	\	P	
		Cr(VI)	P	\	\	P	
		PBBs	P			P	
PBDEs	P			P			
		DEHP	\	P	\	P	
		DBP	\	P	\	P	
		BBP	\	P	\	P	
		DIBP	\	P	\	P	



Part No.	Part Description	Restricted Substances	Results (mg/kg)			Conclusion (P/F)	Resubmitted Date/ Source of Data
			EDXRF (P/F/D)	PHTH Screening	Chemical testing		
15	Green plastic	Cd	P			P	\
		Pb	P			P	
		Hg	P	\	\	P	
		Cr(VI)	P	\	\	P	
		PBBs	P			P	
		PBDEs	P			P	
		DEHP	\	P	\	P	
		DBP	\	P	\	P	
		BBP	\	P	\	P	
		DIBP	\	P	\	P	
16	Silvery metal	Cd	P			P	\
		Pb	P			P	
		Hg	P	\	\	P	
		Cr(VI)	P	\	\	P	
		PBBs	\			\	
		PBDEs	\			\	
		DEHP	\	\	\	\	
		DBP	\	\	\	\	
		BBP	\	\	\	\	
		DIBP	\	\	\	\	
17	White plastic	Cd	P			P	\
		Pb	P			P	
		Hg	P	\	\	P	
		Cr(VI)	P	\	\	P	
		PBBs	P			P	
		PBDEs	P			P	
		DEHP	\	P	\	P	
		DBP	\	P	\	P	
		BBP	\	P	\	P	
		DIBP	\	P	\	P	





Part No.	Part Description	Restricted Substances	Results (mg/kg)			Conclusion (P/F)	Resubmitted Date/ Source of Data
			EDXRF (P/F/D)	PHTH Screening	Chemical testing		
18	Silvery metal	Cd	P			P	\
		Pb	P			P	
		Hg	P	\	\	P	
		Cr(VI)	P	\	\	P	
		PBBs	\			\	
PBDEs	\			\			
		DEHP	\	\	\	\	
		DBP	\	\	\	\	
		BBP	\	\	\	\	
		DIBP	\	\	\	\	
19	Black plastic	Cd	P			P	\
		Pb	P			P	
		Hg	P	\		P	
		Cr(VI)	P	\		P	
		PBBs	D		PBBs: ND	P	
PBDEs	D		PBDEs: ND	P			
		DEHP	\	P	\	P	
		DBP	\	P	\	P	
		BBP	\	P	\	P	
		DIBP	\	P	\	P	
20	Silvery metal	Cd	P			P	\
		Pb	P			P	
		Hg	P	\	\	P	
		Cr(VI)	P	\	\	P	
		PBBs	\			\	
PBDEs	\			\			
		DEHP	\	\	\	\	
		DBP	\	\	\	\	
		BBP	\	\	\	\	
		DIBP	\	\	\	\	



Part No.	Part Description	Restricted Substances	Results (mg/kg)			Conclusion (P/F)	Resubmitted Date/ Source of Data
			EDXRF (P/F/D)	PHTH Screening	Chemical testing		
21	Silvery metal	Cd	P			P	\
		Pb	P			P	
		Hg	P	\	\	P	
		Cr(VI)	P	\	\	P	
		PBBs	\			\	
PBDEs	\			\			
		DEHP	\	\	\	\	
		DBP	\	\	\	\	
		BBP	\	\	\	\	
		DIBP	\	\	\	\	
22	Black plastic	Cd	P			P	\
		Pb	P			P	
		Hg	P	\	\	P	
		Cr(VI)	P	\	\	P	
		PBBs	P			P	
PBDEs	P			P			
		DEHP	\	P	\	P	
		DBP	\	P	\	P	
		BBP	\	P	\	P	
		DIBP	\	P	\	P	
23	Black IC	Cd	P			P	\
		Pb	P			P	
		Hg	P	\	\	P	
		Cr(VI)	P	\	\	P	
		PBBs	P			P	
PBDEs	P			P			
		DEHP	\	P	\	P	
		DBP	\	P	\	P	
		BBP	\	P	\	P	
		DIBP	\	P	\	P	



Part No.	Part Description	Restricted Substances	Results (mg/kg)			Conclusion (P/F)	Resubmitted Date/ Source of Data
			EDXRF (P/F/D)	PHTH Screening	Chemical testing		
24	Silvery metal	Cd	P			P	\
		Pb	P			P	
		Hg	P	\	\	P	
		Cr(VI)	P	\	\	P	
		PBBs	\			\	
PBDEs	\			\			
		DEHP	\	\	\	\	
		DBP	\	\	\	\	
		BBP	\	\	\	\	
		DIBP	\	\	\	\	
25	Black IC	Cd	P			P	\
		Pb	P			P	
		Hg	P	\	\	P	
		Cr(VI)	P	\	\	P	
		PBBs	P			P	
PBDEs	P			P			
		DEHP	\	P	\	P	
		DBP	\	P	\	P	
		BBP	\	P	\	P	
		DIBP	\	P	\	P	
26	Blue PCB	Cd	P			P	\
		Pb	P			P	
		Hg	P	\		P	
		Cr(VI)	P	\		P	
		PBBs	D		PBBs: ND	P	
PBDEs	D		PBDEs: ND	P			
		DEHP	\	P	\	P	
		DBP	\	P	\	P	
		BBP	\	P	\	P	
		DIBP	\	P	\	P	



Part No.	Part Description	Restricted Substances	Results (mg/kg)			Conclusion (P/F)	Resubmitted Date/ Source of Data
			EDXRF (P/F/D)	PHTH Screening	Chemical testing		
27	Black inductance	Cd	P			P	\
		Pb	P			P	
		Hg	P	\	\	P	
		Cr(VI)	P	\	\	P	
		PBBs	P			P	
		PBDEs	P			P	
		DEHP	\	P	\	P	
		DBP	\	P	\	P	
		BBP	\	P	\	P	
		DIBP	\	P	\	P	
28	Silvery metal crystal oscillator	Cd	P			P	\
		Pb	P			P	
		Hg	P	\	\	P	
		Cr(VI)	P	\	\	P	
		PBBs	\			\	
		PBDEs	\			\	
		DEHP	\	\	\	\	
		DBP	\	\	\	\	
		BBP	\	\	\	\	
		DIBP	\	\	\	\	
29	Black IC	Cd	P			P	\
		Pb	P			P	
		Hg	P	\	\	P	
		Cr(VI)	P	\	\	P	
		PBBs	P			P	
		PBDEs	P			P	
		DEHP	\	P	\	P	
		DBP	\	P	\	P	
		BBP	\	P	\	P	
		DIBP	\	P	\	P	



Part No.	Part Description	Restricted Substances	Results (mg/kg)			Conclusion (P/F)	Resubmitted Date/ Source of Data
			EDXRF (P/F/D)	PHTH Screening	Chemical testing		
30	Black IC	Cd	P			P	\
		Pb	P			P	
		Hg	P	\	\	P	
		Cr(VI)	P	\	\	P	
		PBBs	P			P	
		PBDEs	P			P	
		DEHP	\	P	\	P	
		DBP	\	P	\	P	
		BBP	\	P	\	P	
		DIBP	\	P	\	P	
31	Blue capacitor	Cd	P			P	\
		Pb	P			P	
		Hg	P	\	\	P	
		Cr(VI)	P	\	\	P	
		PBBs	P			P	
		PBDEs	P			P	
		DEHP	\	P	\	P	
		DBP	\	P	\	P	
		BBP	\	P	\	P	
		DIBP	\	P	\	P	
32	White sticker	Cd	P			P	\
		Pb	P			P	
		Hg	P	\	\	P	
		Cr(VI)	P	\	\	P	
		PBBs	P			P	
		PBDEs	P			P	
		DEHP	\	P	\	P	
		DBP	\	P	\	P	
		BBP	\	P	\	P	
		DIBP	\	P	\	P	



Part No.	Part Description	Restricted Substances	Results (mg/kg)			Conclusion (P/F)	Resubmitted Date/ Source of Data
			EDXRF (P/F/D)	PHTH Screening	Chemical testing		
33	Brown PCB	Cd	P			P	\
		Pb	P			P	
		Hg	P	\	\	P	
		Cr(VI)	P	\	\	P	
		PBBs	P			P	
PBDEs	P			P			
		DEHP	\	P	\	P	
		DBP	\	P	\	P	
		BBP	\	P	\	P	
		DIBP	\	P	\	P	
34	Black IC	Cd	P			P	\
		Pb	P			P	
		Hg	P	\	\	P	
		Cr(VI)	P	\	\	P	
		PBBs	P			P	
PBDEs	P			P			
		DEHP	\	P	\	P	
		DBP	\	P	\	P	
		BBP	\	P	\	P	
		DIBP	\	P	\	P	
35	Black PCB	Cd	P			P	\
		Pb	P			P	
		Hg	P	\	\	P	
		Cr(VI)	P	\	\	P	
		PBBs	P			P	
PBDEs	P			P			
		DEHP	\	P	\	P	
		DBP	\	P	\	P	
		BBP	\	P	\	P	
		DIBP	\	P	\	P	



Part No.	Part Description	Restricted Substances	Results (mg/kg)			Conclusion (P/F)	Resubmitted Date/ Source of Data
			EDXRF (P/F/D)	PHTH Screening	Chemical testing		
36	Silvery metal	Cd	P			P	\
		Pb	P			P	
		Hg	P	\	\	P	
		Cr(VI)	P	\	\	P	
		PBBs	\			\	
		PBDEs	\			\	
37	Black IC	DEHP	\	\	\	\	\
		DBP	\	\	\	\	
		BBP	\	\	\	\	
		DIBP	\	\	\	\	
		Cd	P			P	
		Pb	P			P	
Hg	P	\	\	P			
Cr(VI)	P	\	\	P			
PBBs	P			P			
PBDEs	P			P			
38	Black IC	DEHP	\	P	\	P	\
		DBP	\	P	\	P	
		BBP	\	P	\	P	
		DIBP	\	P	\	P	
		Cd	P			P	
		Pb	P			P	
Hg	P	\	\	P			
Cr(VI)	P	\	\	P			
PBBs	P			P			
PBDEs	P			P			



Part No.	Part Description	Restricted Substances	Results (mg/kg)			Conclusion (P/F)	Resubmitted Date/ Source of Data
			EDXRF (P/F/D)	PHTH Screening	Chemical testing		
39	Silvery metal crystal oscillator	Cd	P			P	\
		Pb	P			P	
		Hg	P	\	\	P	
		Cr(VI)	P	\	\	P	
		PBBs	\			\	
		PBDEs	\			\	
		DEHP	\	\	\	\	
		DBP	\	\	\	\	
		BBP	\	\	\	\	
40	Black PCB	Cd	P			P	\
		Pb	P			P	
		Hg	P	\	\	P	
		Cr(VI)	P	\	\	P	
		PBBs	P			P	
		PBDEs	P			P	
		DEHP	\	P	\	P	
		DBP	\	P	\	P	
		BBP	\	P	\	P	
41	Silvery metal	Cd	P			P	\
		Pb	P			P	
		Hg	P	\	Cr(VI): Negative (< 0.10 µg/cm <sup>2</sup> )	P	
		Cr(VI)	D	\		P	
		PBBs	\			\	
		PBDEs	\			\	
		DEHP	\	\	\	\	
		DBP	\	\	\	\	
		BBP	\	\	\	\	
DIBP	\	\	\	\			





Part No.	Part Description	Restricted Substances	Results (mg/kg)			Conclusion (P/F)	Resubmitted Date/ Source of Data
			EDXRF (P/F/D)	PHTH Screening	Chemical testing		
42	Silvery metal	Cd	P		Cr(VI): Negative (< 0.10 µg/cm <sup>2</sup> )	P	\
		Pb	P			P	
		Hg	P	\		P	
		Cr(VI)	D	\		P	
		PBBs	\			\	
		PBDEs	\			\	
		DEHP	\	\	\	\	
		DBP	\	\	\	\	
		BBP	\	\	\	\	
		DIBP	\	\	\	\	
43	Black plastic	Cd	P			P	\
		Pb	P			P	
		Hg	P	\	\	P	
		Cr(VI)	P	\	\	P	
		PBBs	P			P	
		PBDEs	P			P	
		DEHP	\	P	\	P	
		DBP	\	P	\	P	
		BBP	\	P	\	P	
		DIBP	\	P	\	P	
44	Silvery metal	Cd	P			P	\
		Pb	P			P	
		Hg	P	\	\	P	
		Cr(VI)	P	\	\	P	
		PBBs	\			\	
		PBDEs	\			\	
		DEHP	\	\	\	\	
		DBP	\	\	\	\	
		BBP	\	\	\	\	
		DIBP	\	\	\	\	



Part No.	Part Description	Restricted Substances	Results (mg/kg)			Conclusion (P/F)	Resubmitted Date/ Source of Data
			EDXRF (P/F/D)	PHTH Screening	Chemical testing		
45	Black plastic	Cd	P			P	\
		Pb	P			P	
		Hg	P	\	\	P	
		Cr(VI)	P	\	\	P	
		PBBs	P			P	
		PBDEs	P			P	
		DEHP	\	P	\	P	
		DBP	\	P	\	P	
		BBP	\	P	\	P	
		DIBP	\	P	\	P	
46	Black plastic	Cd	P			P	\
		Pb	P			P	
		Hg	P	\	\	P	
		Cr(VI)	P	\	\	P	
		PBBs	P			P	
		PBDEs	P			P	
		DEHP	\	P	\	P	
		DBP	\	P	\	P	
		BBP	\	P	\	P	
		DIBP	\	P	\	P	
47	Silvery metal	Cd	P			P	\
		Pb	P			P	
		Hg	P	\	\	P	
		Cr(VI)	P	\	\	P	
		PBBs	\			\	
		PBDEs	\			\	
		DEHP	\	\	\	\	
		DBP	\	\	\	\	
		BBP	\	\	\	\	
		DIBP	\	\	\	\	



Part No.	Part Description	Restricted Substances	Results (mg/kg)			Conclusion (P/F)	Resubmitted Date/ Source of Data
			EDXRF (P/F/D)	PHTH Screening	Chemical testing		
48	Gray inductance	Cd	P			P	\
		Pb	P			P	
		Hg	P	\	\	P	
		Cr(VI)	P	\	\	P	
		PBBs	P			P	
		PBDEs	P			P	
		DEHP	\	P	\	P	
		DBP	\	P	\	P	
		BBP	\	P	\	P	
		DIBP	\	P	\	P	
49	Black IC	Cd	P			P	\
		Pb	P			P	
		Hg	P	\	\	P	
		Cr(VI)	P	\	\	P	
		PBBs	P			P	
		PBDEs	P			P	
		DEHP	\	P	\	P	
		DBP	\	P	\	P	
		BBP	\	P	\	P	
		DIBP	\	P	\	P	
50	Black IC	Cd	P			P	\
		Pb	P			P	
		Hg	P	\	\	P	
		Cr(VI)	P	\	\	P	
		PBBs	P			P	
		PBDEs	P			P	
		DEHP	\	P	\	P	
		DBP	\	P	\	P	
		BBP	\	P	\	P	
		DIBP	\	P	\	P	



Part No.	Part Description	Restricted Substances	Results (mg/kg)			Conclusion (P/F)	Resubmitted Date/ Source of Data
			EDXRF (P/F/D)	PHTH Screening	Chemical testing		
51	Black SMD resistor	Cd	P		Cr(VI): ND	P	\
		Pb	P			P	
		Hg	P	\		P	
		Cr(VI)	D			P	
		PBBs	P			P	
		PBDEs	P		P		
		DEHP	\	P	\	P	
		DBP	\	P	\	P	
		BBP	\	P	\	P	
		DIBP	\	P	\	P	
52	Black IC	Cd	P			P	\
		Pb	P			P	
		Hg	P	\	\	P	
		Cr(VI)	P			P	
		PBBs	P			P	
		PBDEs	P		P		
		DEHP	\	P	\	P	
		DBP	\	P	\	P	
		BBP	\	P	\	P	
		DIBP	\	P	\	P	
53	Black diode	Cd	P			P	\
		Pb	P			P	
		Hg	P	\	\	P	
		Cr(VI)	P			P	
		PBBs	P			P	
		PBDEs	P		P		
		DEHP	\	P	\	P	
		DBP	\	P	\	P	
		BBP	\	P	\	P	
		DIBP	\	P	\	P	



Part No.	Part Description	Restricted Substances	Results (mg/kg)			Conclusion (P/F)	Resubmitted Date/ Source of Data
			EDXRF (P/F/D)	PHTH Screening	Chemical testing		
54	Black IC	Cd	P			P	\
		Pb	P			P	
		Hg	P	\	\	P	
		Cr(VI)	P			P	
		PBBs	P			P	
		PBDEs	P			P	
		DEHP	\	P	\	P	
		DBP	\	P	\	P	
		BBP	\	P	\	P	
		DIBP	\	P	\	P	
55	Black IC	Cd	P			P	\
		Pb	P			P	
		Hg	P	\	\	P	
		Cr(VI)	P			P	
		PBBs	P			P	
		PBDEs	P			P	
		DEHP	\	P	\	P	
		DBP	\	P	\	P	
		BBP	\	P	\	P	
		DIBP	\	P	\	P	
56	Translucent LED	Cd	P			P	\
		Pb	P			P	
		Hg	P	\	\	P	
		Cr(VI)	P			P	
		PBBs	P			P	
		PBDEs	P			P	
		DEHP	\	P	\	P	
		DBP	\	P	\	P	
		BBP	\	P	\	P	
		DIBP	\	P	\	P	



Part No.	Part Description	Restricted Substances	Results (mg/kg)			Conclusion (P/F)	Resubmitted Date/ Source of Data
			EDXRF (P/F/D)	PHTH Screening	Chemical testing		
57	Beige plastic	Cd	P		PBBs: ND PBDEs: ND	P	\
		Pb	P			P	
		Hg	P	\		P	
		Cr(VI)	P			P	
		PBBs	D			P	
PBDEs	D		P				
		DEHP	\	P	\	P	
		DBP	\	P	\	P	
		BBP	\	P	\	P	
		DIBP	\	P	\	P	
58	Silvery metal	Cd	P			P	\
		Pb	P			P	
		Hg	P	\	\	P	
		Cr(VI)	P			P	
		PBBs	\			\	
PBDEs	\			\			
		DEHP	\	\	\	\	
		DBP	\	\	\	\	
		BBP	\	\	\	\	
		DIBP	\	\	\	\	
59	Black diode	Cd	P			P	\
		Pb	P			P	
		Hg	P	\	\	P	
		Cr(VI)	P			P	
		PBBs	P			P	
PBDEs	P			P			
		DEHP	\	P	\	P	
		DBP	\	P	\	P	
		BBP	\	P	\	P	
		DIBP	\	P	\	P	



Part No.	Part Description	Restricted Substances	Results (mg/kg)			Conclusion (P/F)	Resubmitted Date/ Source of Data
			EDXRF (P/F/D)	PHTH Screening	Chemical testing		
60	Black triode	Cd	P			P	\
		Pb	P			P	
		Hg	P	\	\	P	
		Cr(VI)	P	\	\	P	
		PBBs	P			P	
		PBDEs	P			P	
		DEHP	\	P	\	P	
		DBP	\	P	\	P	
		BBP	\	P	\	P	
		DIBP	\	P	\	P	
61	Solder	Cd	P			P	\
		Pb	P			P	
		Hg	P	\	\	P	
		Cr(VI)	P	\	\	P	
		PBBs	\			\	
		PBDEs	\			\	
		DEHP	\	\	\	\	
		DBP	\	\	\	\	
		BBP	\	\	\	\	
		DIBP	\	\	\	\	
62	Yellow PCB	Cd	P			P	\
		Pb	P			P	
		Hg	P	\		P	
		Cr(VI)	P	\		P	
		PBBs	D		PBBs: ND	P	
		PBDEs	D	PBDEs: ND	P		
		DEHP	\	P	\	P	
		DBP	\	P	\	P	
		BBP	\	P	\	P	
		DIBP	\	P	\	P	



Part No.	Part Description	Restricted Substances	Results (mg/kg)			Conclusion (P/F)	Resubmitted Date/ Source of Data
			EDXRF (P/F/D)	PHTH Screening	Chemical testing		
63	Green PCB	Cd	P		PBBs: ND PBDEs: ND	P	\
		Pb	P			P	
		Hg	P	\		P	
		Cr(VI)	P			P	
		PBBs	D			P	
PBDEs	D		P				
		DEHP	\	P	\	P	
		DBP	\	P	\	P	
		BBP	\	P	\	P	
		DIBP	\	P	\	P	
64	Golden metal	Cd	P		\	P	\
		Pb	P			P	
		Hg	P	\		P	
		Cr(VI)	P			P	
		PBBs	\			\	
PBDEs	\		\				
		DEHP	\	\	\	\	
		DBP	\	\	\	\	
		BBP	\	\	\	\	
		DIBP	\	\	\	\	

Note:

- mg/kg = milligram per kilogram = ppm
- ND = Not detected (<MDL)
- P = PASS = Less than screening limits of XRF
- F = FAIL = More than screening limits of XRF
- D = DETECTED = Inconclusive
- NA = Not applicable
- \ = Not available

Remark:

- (1) The results of XRF are only for reference;
- (2) For hexavalent chromium (Cr(VI)), XRF testing result is the content of Chromium (Cr) elements; for polybrominated biphenyls (PBBs) and polybrominated diphenyl ethers (PBDEs), XRF testing result is the content of Bromine (Br) elements;





- (3) Screening results of PHTH are for primary screening, and further chemical testing by GC-MS (for DBP, BBP, DEHP and DIBP) are recommended to be performed if the concentration (based on weight of a single sample) exceeds the below warning value.

TEST ITEM	Screening Limit (Unit: mg/kg)
Di-2-ethylhexyl phthalate (DEHP)	P≤600<D
Dibutyl phthalate (DBP)	P≤600<D
Benzylbutyl phthalate (BBP)	P≤600<D
Diisobutyl phthalate (DIBP)	P≤600<D

- (4) According to IEC 62321-7-1-2015, three types of Cr(VI) results for coating on metals is as follows:  
 Sample Cr(VI) concentration is < 0.10 µg/cm<sup>2</sup>, The coating is considered a non-Cr(VI) based coating, the sample is negative for Cr(VI);  
 Sample Cr(VI) concentration is between 0.10 µg/cm<sup>2</sup> and 0.13 µg/cm<sup>2</sup>, The result is considered to be inconclusive, if addition samples are available, perform a total of 3 trials to increase sampling surface area, use the averaged result of the 3 trials for the final determination;  
 Sample Cr(VI) concentration is > 0.13 µg/cm<sup>2</sup>, The sample coating is considered to contain Cr(VI), The sample is positive for Cr(VI).
- (5) According to the product specification from client, No. 11 is copper alloy, while Lead as an alloying element in copper alloy containing up to 4% Lead by weight is exempted by RoHS Directive 2011/65/EU of the European Parliament and of the council of 8 June 2011.

### 3. Method Detection Limit (MDL):

For XRF screening analysis (mg/kg)

Item	Pb	Cd	Hg	Br	Cr
Polymer	20	20	20	20	20
Other materials	50	50	50	50	50

For chemical testing (mg/kg)

Item	Pb	Cd	Hg	PBBs	PBDEs	DEHP	BBP	DBP	DIBP	Cr(VI)
General materials	2	2	2	5	5	50	50	50	50	See remark (2)

Remark:

- (1) PBBs and PBDEs method detection limit only for one substance;  
 (2) MDL for polymer and Composites is 8 mg/kg, MDL for coating on metals is 0.02 µg/cm<sup>2</sup>.

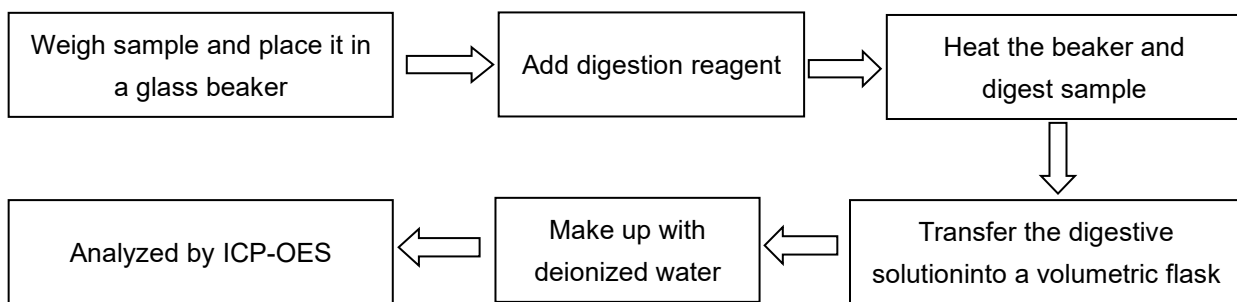


**4. RoHS Requirement (mg/kg):**

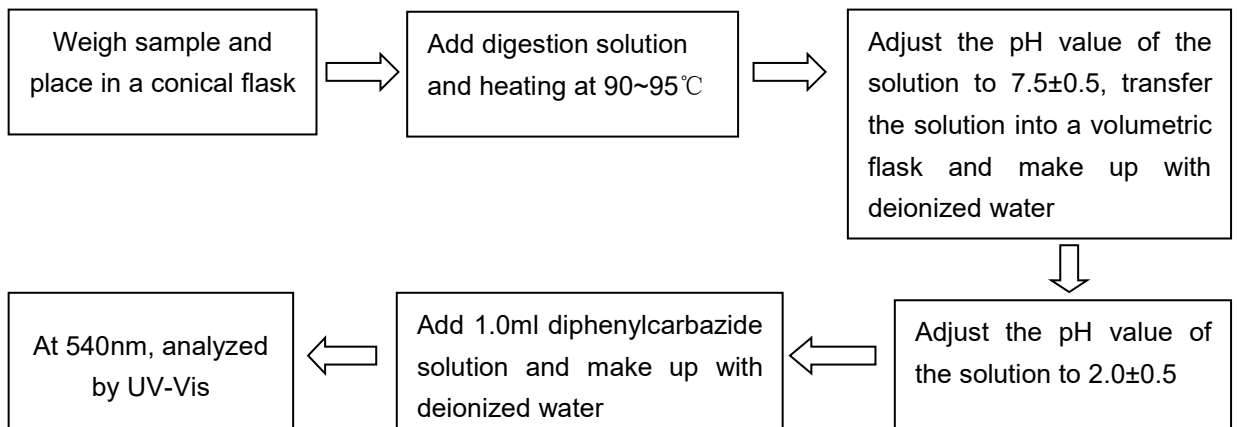
Restricted substances	Cd	Pb	Hg	Cr(VI)	PBBs	PBDEs	DEHP	BBP	DBP	DIBP
RoHS limit	100	1000	1000	1000	1000	1000	1000	1000	1000	1000

**5. Chemical Test Process:**

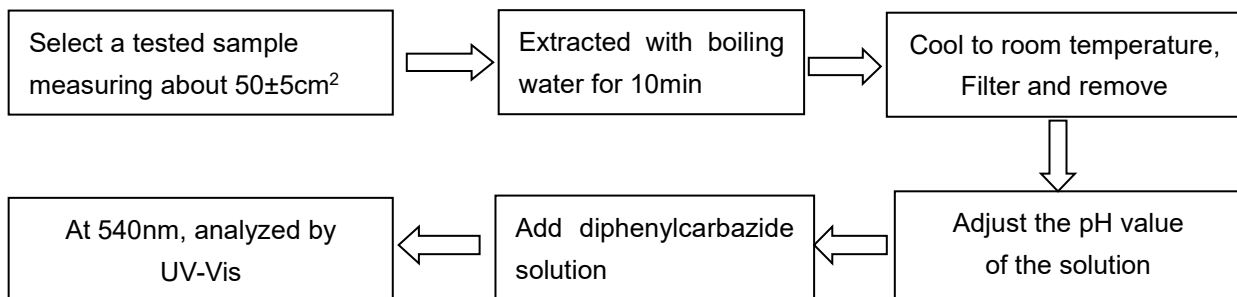
(1) Lead (Pb)



(2) Hexavalent Chromium (Cr(VI)) (Alkaline extraction)

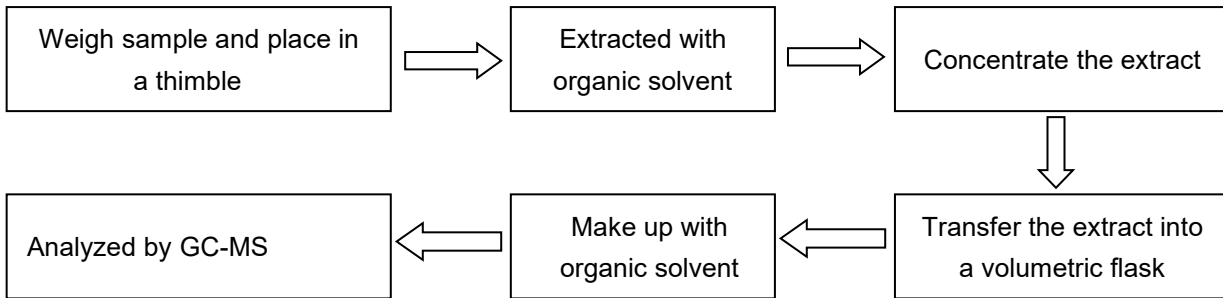


(3) Hexavalent Chromium (Cr(VI)) (Boiling water extraction)

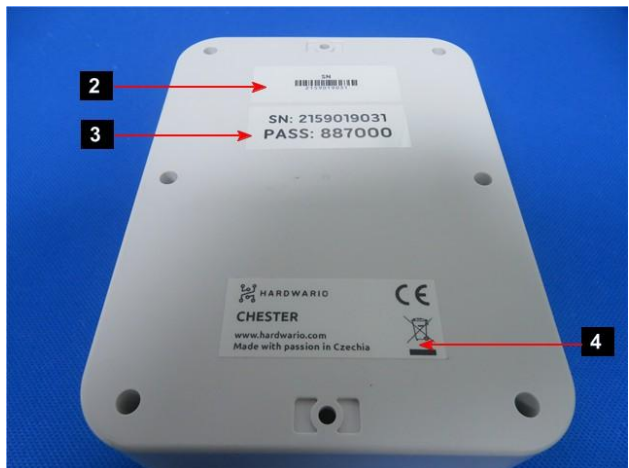
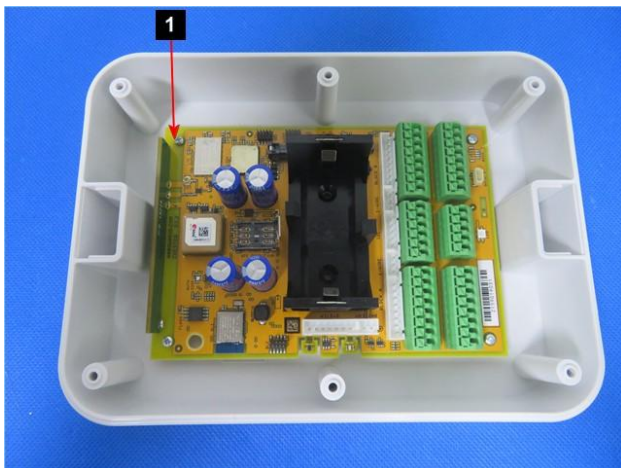


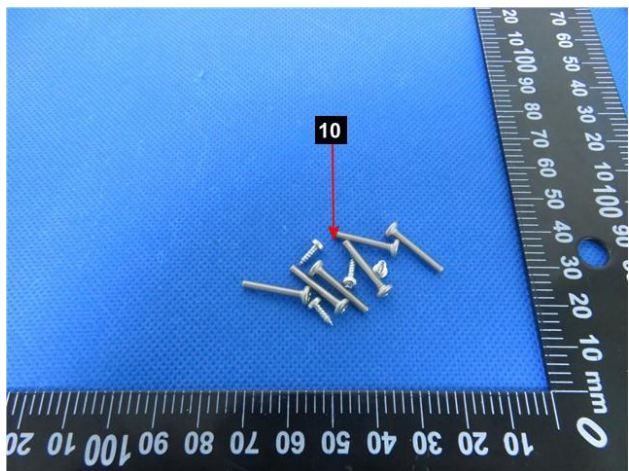
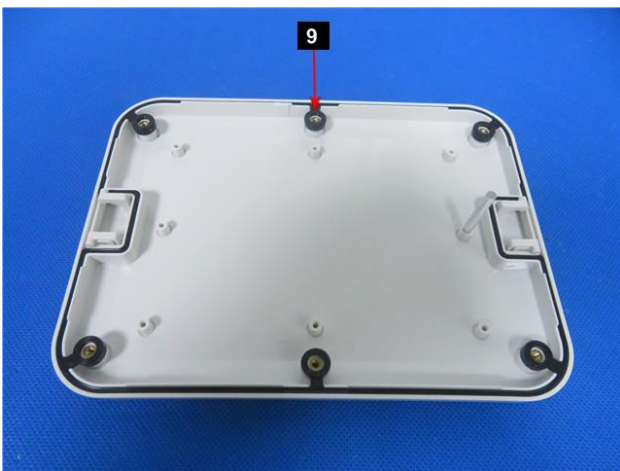
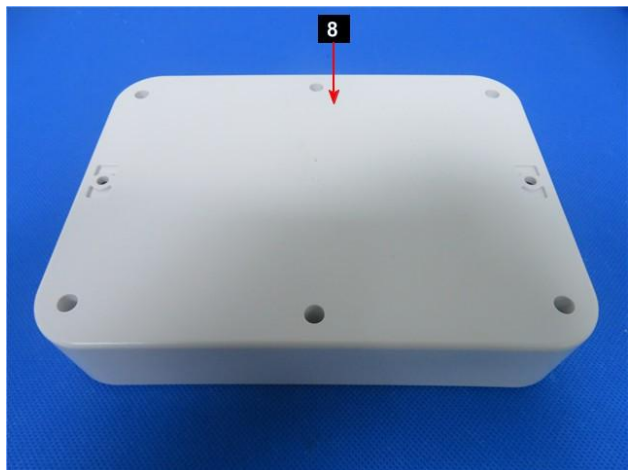
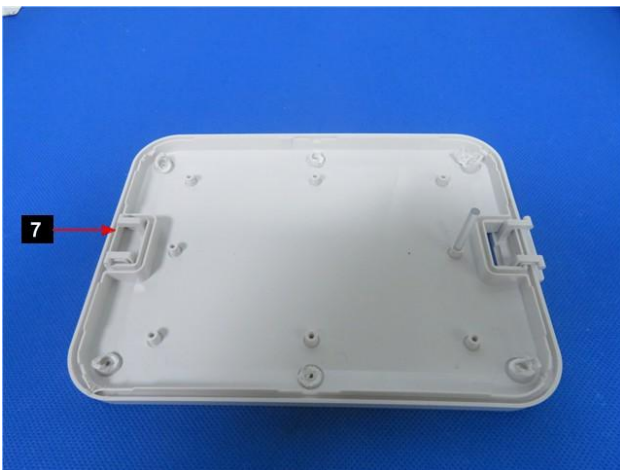
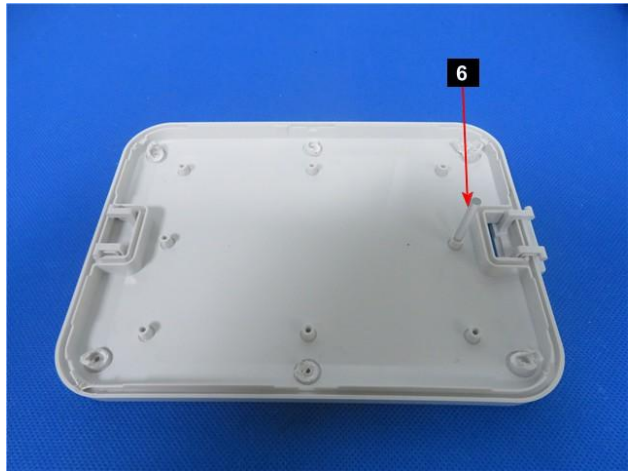


(4) PBBs /PBDEs, DEHP, BBP, DBP, DIBP

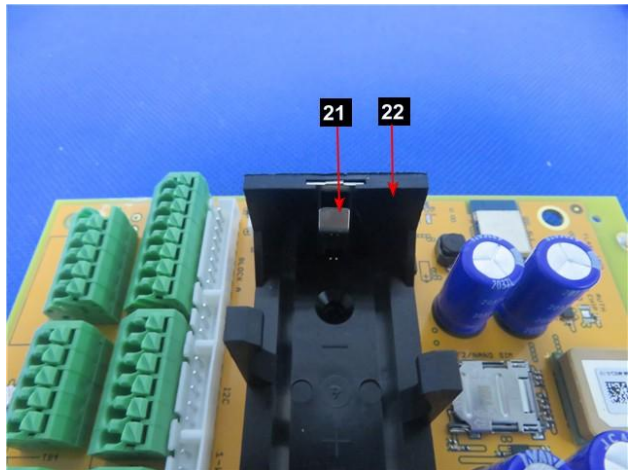
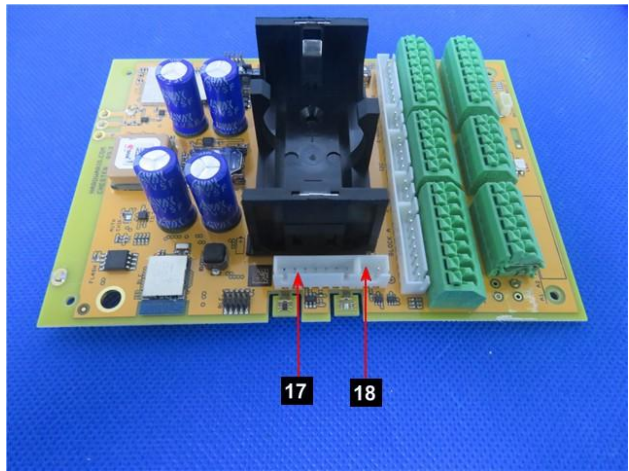
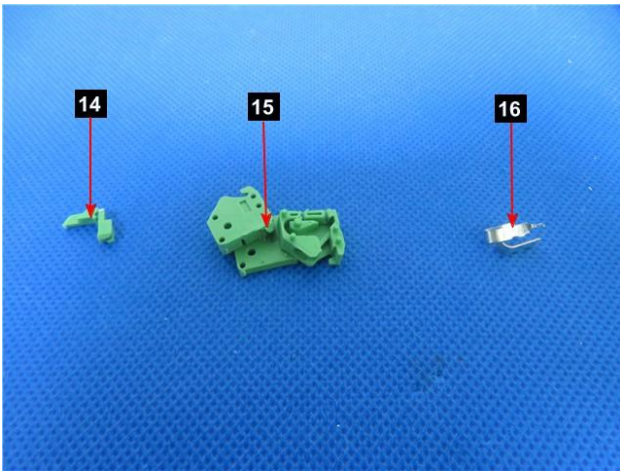
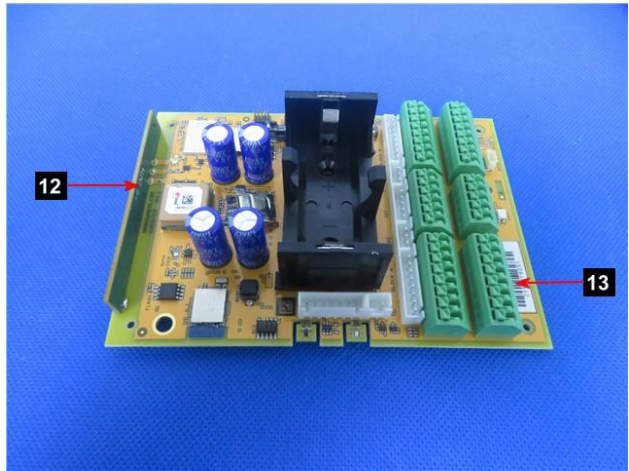
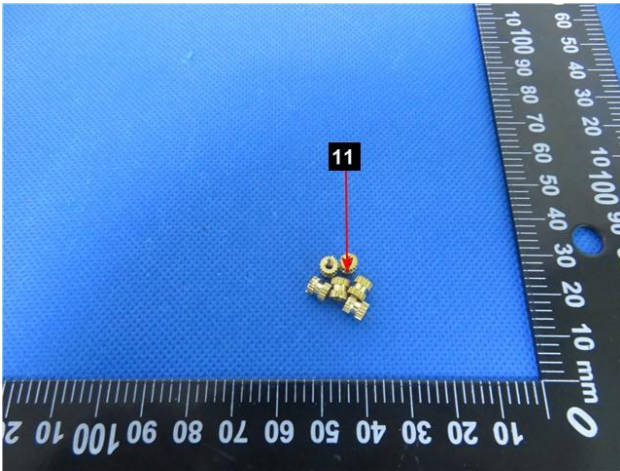


6. Appendix:

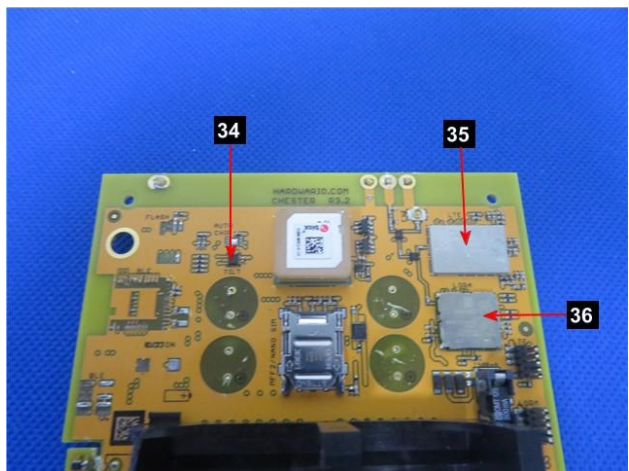
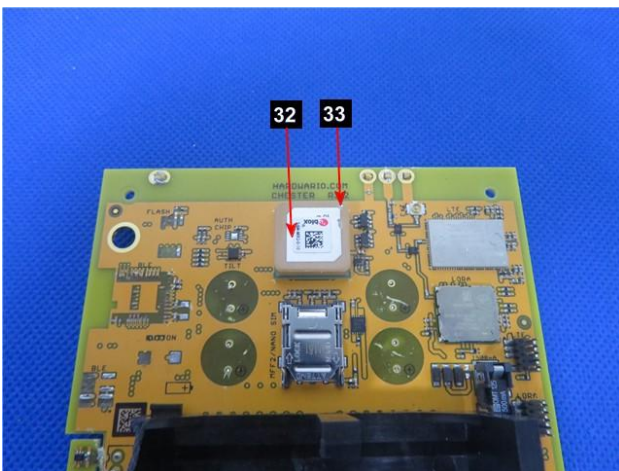
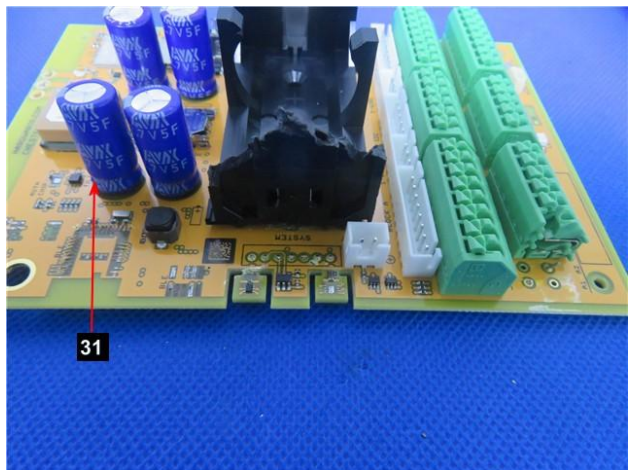
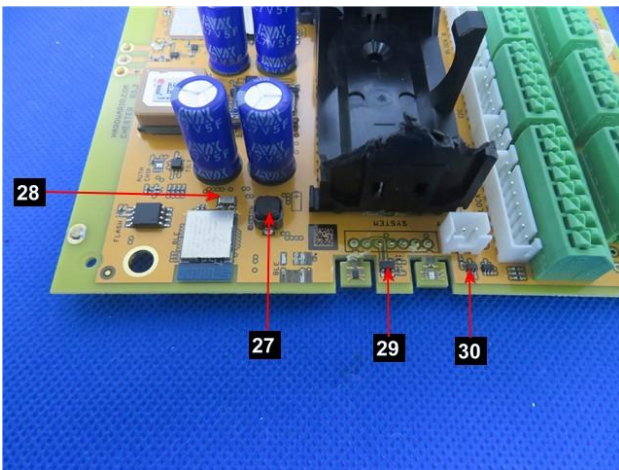
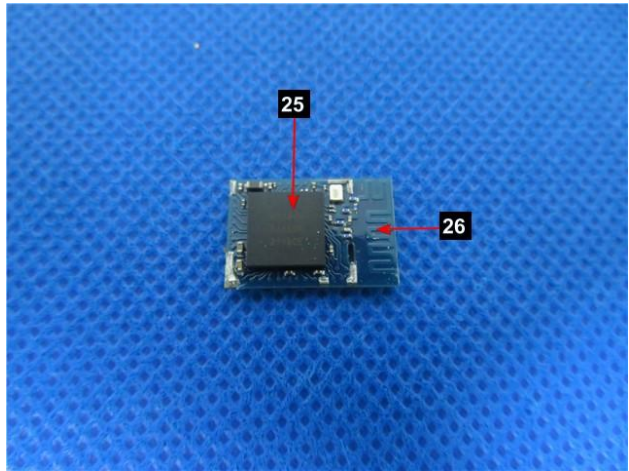
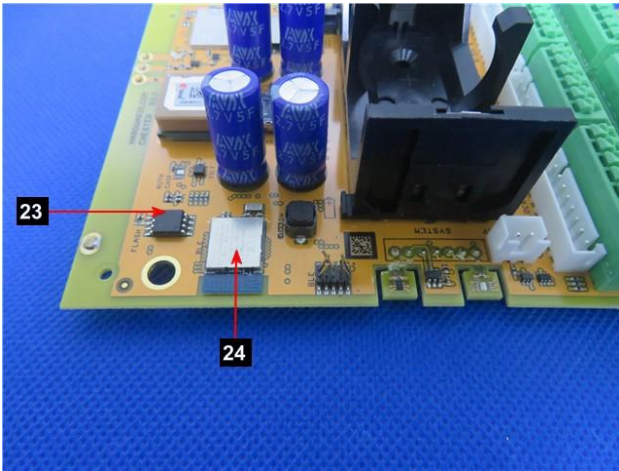




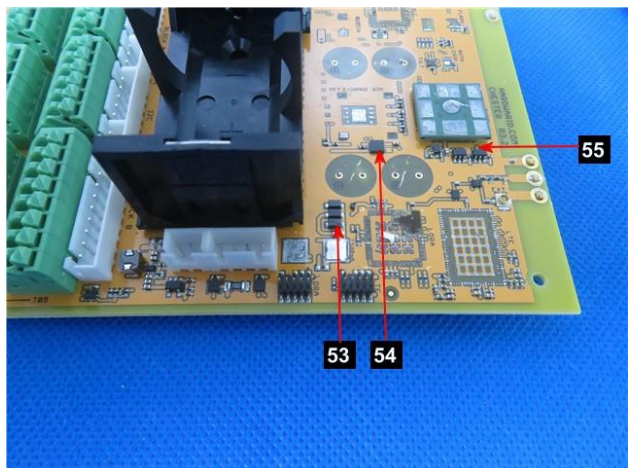
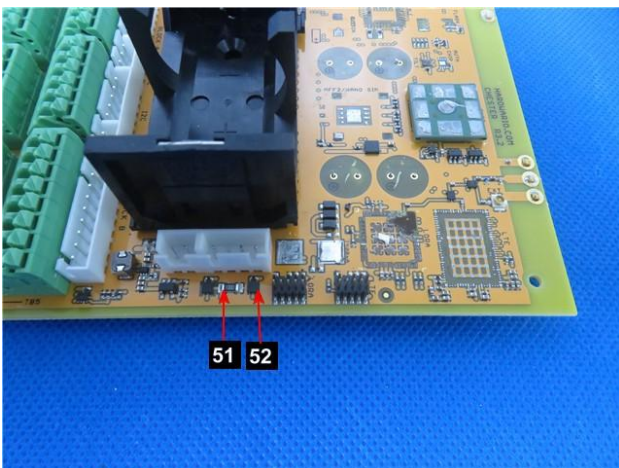
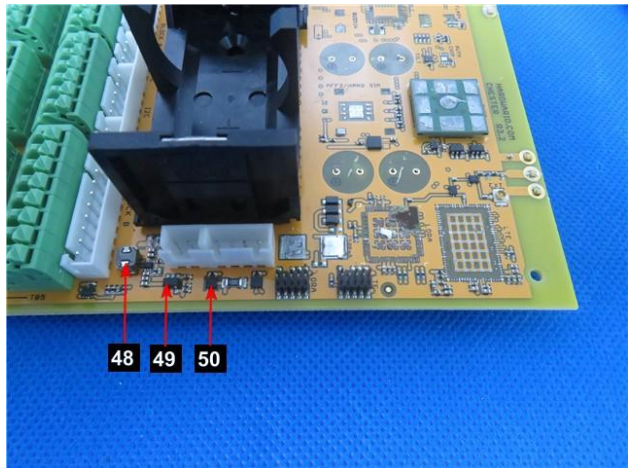
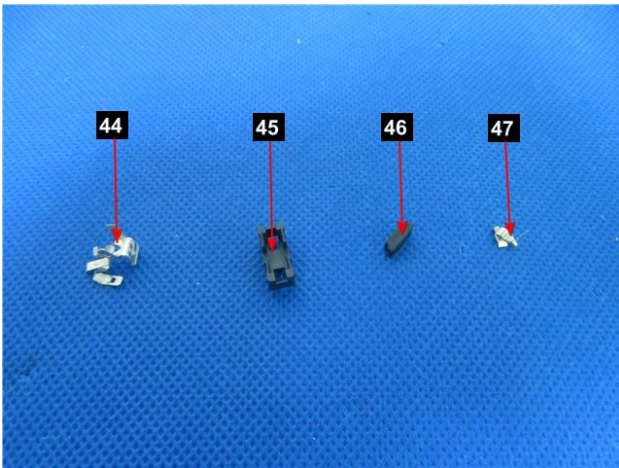
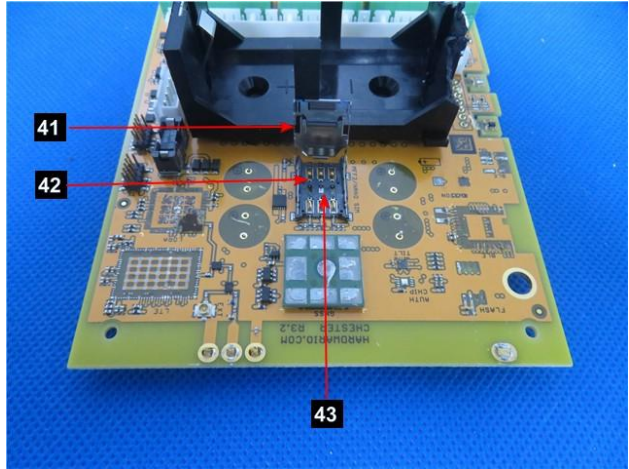
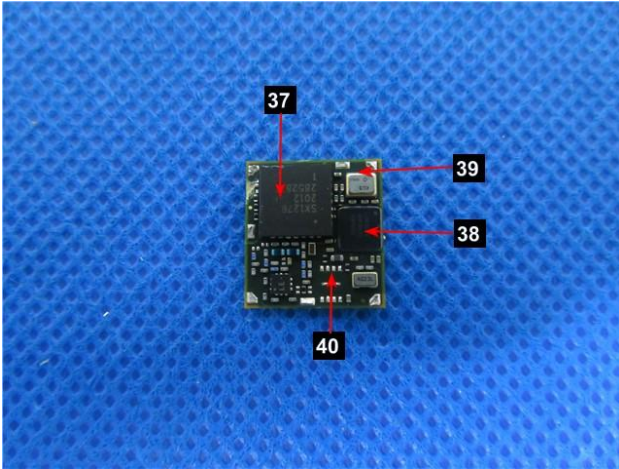




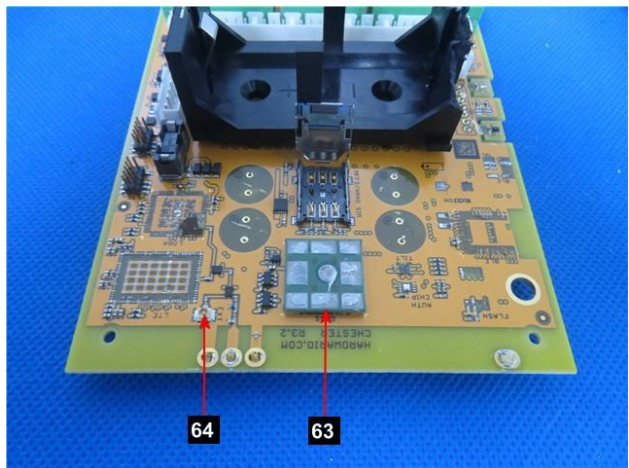
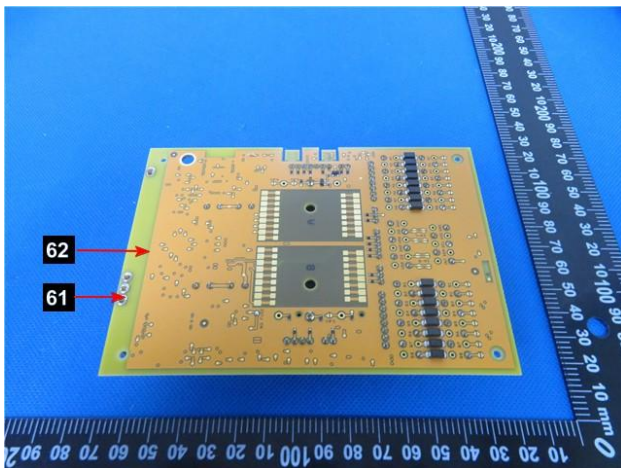
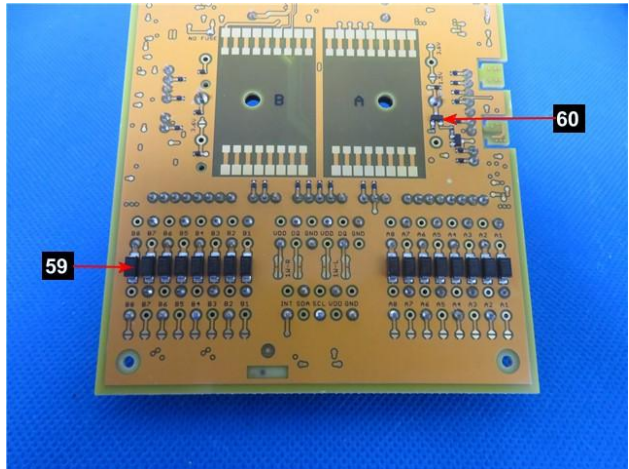
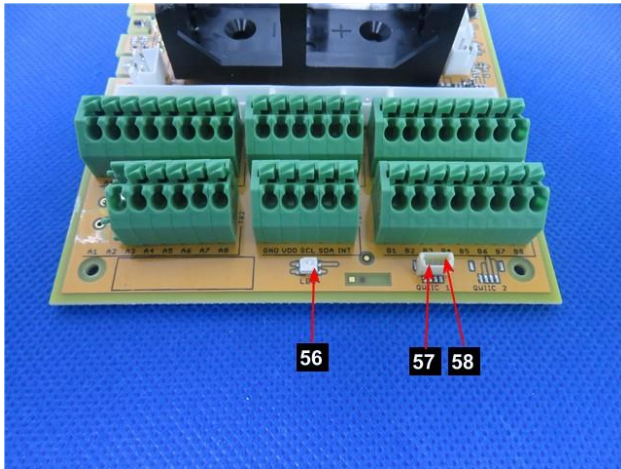












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\*\*\*\*\*End of Report\*\*\*\*\*