

# TEST REPORT

**Applicant:** Shanghai SenkyLaser Optoelectronics Technology Co., Ltd.  
**Address:** Room 302, building A, no. 838, Guangji road, Hongkou District, Shanghai

**The following sample(s) was/were submitted and identified on behalf of the client as:**

Product name: ToF distance sensor

Model: MVR2EB

Serial model: MVR2EA

Trade mark: MOEVISION

Manufacturer: ShangHai MoeVision Information Technology Co., Ltd.

Address: Room 1012, No. 39, SenhongQizhen, Lane 1200, Changqing Road,  
Pudong New Area, Shanghai

Factory: ShangHai MoeVision Information Technology Co., Ltd.

Address: Room 1012, No. 39, SenhongQizhen, Lane 1200, Changqing Road,  
Pudong New Area, Shanghai

Sample Received  
Date: Jan. 21, 2021

Testing Period: Jan. 21, 2021~ Jan. 28, 2021

**Test Requirement:**

As specified by client, to determine the Lead(Pb), Cadmium(Cd), Mercury(Hg), Hexavalent Chromium(Cr(VI)), Polybrominated Biphenyls(PBBs), Polybrominated, Diphenyl Ethers(PBDEs), Bis-(2-ethylhexyl) Phthalate (DEHP), Benzylbutyl Phthalate (BBP), Dibutyl Phthalate (DBP) and Diisobutyl Phthalate(DIBP) contents in the submitted sample in accordance with RoHS directive 2011/65/EU and the amendment directive (EU) 2015/863.

**Conclusion:**

Pass

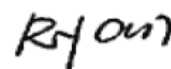
**Test Result(s):** Please refer to the following page(s);

**Test Method:** Please refer to the following page(s);

Compiled by:



Reviewed by:



Approved by:



Date:

2021-03-01

**Test Result(s):**

## 1.Shell of MVR2EA lens module

Part No.	Part Description	Test Items	XRF Screening Result(mg/kg)	Chemical Test Result(mg/kg)	Conclusion
1	Black plastic shell	Pb	BL	/	Pass
		Cd	BL	/	
		Hg	BL	/	
		Cr(Cr(VI))	BL	/	
		Br(PBBs&PBDEs)	IN	N.D.	
		DIBP	/	N.D.	
		DEHP	/	N.D.	
		BBP	/	N.D.	
		DBP	/	N.D.	
2	White label	Pb	BL	/	Pass
		Cd	BL	/	
		Hg	BL	/	
		Cr(Cr(VI))	BL	/	
		Br(PBBs&PBDEs)	BL	/	
		DIBP	/	N.D.	
		DEHP	/	N.D.	
		BBP	/	N.D.	
		DBP	/	N.D.	
3	Golden metal nut	Pb	OL	34800 <sup>#1</sup>	Pass
		Cd	IN	10	
		Hg	BL	/	
		Cr(Cr(VI))	BL	/	
		Br(PBBs&PBDEs)	/	/	
		DIBP	/	/	
		DEHP	/	/	
		BBP	/	/	
		DBP	/	/	

4	Black lenses	Pb	BL	/	Pass
		Cd	BL	/	
		Hg	BL	/	
		Cr(Cr(VI))	BL	/	
		Br(PBBs&PBDEs)	BL	/	
		DIBP	/	N.D.	
		DEHP	/	N.D.	
		BBP	/	N.D.	
5	Black foam	Pb	BL	/	Pass
		Cd	BL	/	
		Hg	BL	/	
		Cr(Cr(VI))	BL	/	
		Br(PBBs&PBDEs)	IN	N.D.	
		DIBP	/	N.D.	
		DEHP	/	N.D.	
		BBP	/	N.D.	
6	Lens	Pb	BL	/	Pass
		Cd	BL	/	
		Hg	BL	/	
		Cr(Cr(VI))	BL	/	
		Br(PBBs&PBDEs)	BL	/	
		DIBP	/	N.D.	
		DEHP	/	N.D.	
		BBP	/	N.D.	
7	Red paper	Pb	BL	/	Pass
		Cd	BL	/	
		Hg	BL	/	
		Cr(Cr(VI))	BL	/	
		Br(PBBs&PBDEs)	BL	/	
		DIBP	/	N.D.	
		DEHP	/	N.D.	
		BBP	/	N.D.	
DBP	/	N.D.			

8	Black metal screw	Pb	BL	/	Pass
		Cd	BL	/	
		Hg	BL	/	
		Cr(Cr(VI))	BL	/	
		Br(PBBs&PBDEs)	/	/	
		DIBP	/	/	
		DEHP	/	/	
		BBP	/	/	
DBP	/	/			

## 2.PCBA

9	Black PCB	Pb	BL	/	Pass
		Cd	BL	/	
		Hg	BL	/	
		Cr(Cr(VI))	BL	/	
		Br(PBBs&PBDEs)	IN	N.D.	
		DIBP	/	N.D.	
		DEHP	/	N.D.	
		BBP	/	N.D.	
DBP	/	N.D.			
10	Beige interface	Pb	BL	/	Pass
		Cd	BL	/	
		Hg	BL	/	
		Cr(Cr(VI))	BL	/	
		Br(PBBs&PBDEs)	IN	N.D.	
		DIBP	/	N.D.	
		DEHP	/	N.D.	
		BBP	/	N.D.	
DBP	/	N.D.			
11	Metal pin	Pb	BL	/	Pass
		Cd	BL	/	
		Hg	BL	/	
		Cr(Cr(VI))	BL	/	
		Br(PBBs&PBDEs)	/	/	
		DIBP	/	/	
		DEHP	/	/	
		BBP	/	/	
DBP	/	/			

12	Chip 1	Pb	BL	/	Pass
		Cd	BL	/	
		Hg	BL	/	
		Cr(Cr(VI))	BL	/	
		Br(PBBs&PBDEs)	BL	/	
		DIBP	/	N.D.	
		DEHP	/	N.D.	
		BBP	/	N.D.	
13	Chip 2	Pb	BL	/	Pass
		Cd	BL	/	
		Hg	BL	/	
		Cr(Cr(VI))	BL	/	
		Br(PBBs&PBDEs)	BL	/	
		DIBP	/	N.D.	
		DEHP	/	N.D.	
		BBP	/	N.D.	
14	Chip 3	Pb	BL	/	Pass
		Cd	BL	/	
		Hg	BL	/	
		Cr(Cr(VI))	BL	/	
		Br(PBBs&PBDEs)	BL	/	
		DIBP	/	N.D.	
		DEHP	/	N.D.	
		BBP	/	N.D.	
15	Chip 4	Pb	BL	/	Pass
		Cd	BL	/	
		Hg	BL	/	
		Cr(Cr(VI))	BL	/	
		Br(PBBs&PBDEs)	BL	/	
		DIBP	/	N.D.	
		DEHP	/	N.D.	
		BBP	/	N.D.	
DBP	/	N.D.			

16	Chip 5	Pb	BL	/	Pass
		Cd	BL	/	
		Hg	BL	/	
		Cr(Cr(VI))	BL	/	
		Br(PBBs&PBDEs)	BL	/	
		DIBP	/	N.D.	
		DEHP	/	N.D.	
		BBP	/	N.D.	
17	Magnet core of L2 inductance	Pb	BL	/	Pass
		Cd	BL	/	
		Hg	BL	/	
		Cr(Cr(VI))	BL	/	
		Br(PBBs&PBDEs)	/	/	
		DIBP	/	/	
		DEHP	/	/	
		BBP	/	/	
18	Coil of L2 inductance	Pb	BL	/	Pass
		Cd	BL	/	
		Hg	BL	/	
		Cr(Cr(VI))	BL	/	
		Br(PBBs&PBDEs)	/	/	
		DIBP	/	/	
		DEHP	/	/	
		BBP	/	/	
19	SMD resistor	Pb	BL	/	Pass
		Cd	BL	/	
		Hg	BL	/	
		Cr(Cr(VI))	BL	/	
		Br(PBBs&PBDEs)	BL	/	
		DIBP	/	N.D.	
		DEHP	/	N.D.	
		BBP	/	N.D.	
DBP	/	N.D.			

20	SMD capacitor	Pb	BL	/	Pass
		Cd	BL	/	
		Hg	BL	/	
		Cr(Cr(VI))	BL	/	
		Br(PBBs&PBDEs)	BL	/	
		DIBP	/	N.D.	
		DEHP	/	N.D.	
		BBP	/	N.D.	
21	SMD diode	Pb	BL	/	Pass
		Cd	BL	/	
		Hg	BL	/	
		Cr(Cr(VI))	BL	/	
		Br(PBBs&PBDEs)	BL	/	
		DIBP	/	N.D.	
		DEHP	/	N.D.	
		BBP	/	N.D.	
22	SMD inductor	Pb	BL	/	Pass
		Cd	BL	/	
		Hg	BL	/	
		Cr(Cr(VI))	BL	/	
		Br(PBBs&PBDEs)	/	/	
		DIBP	/	/	
		DEHP	/	/	
		BBP	/	/	
23	SMT LED lights	Pb	BL	/	Pass
		Cd	BL	/	
		Hg	BL	/	
		Cr(Cr(VI))	BL	/	
		Br(PBBs&PBDEs)	BL	/	
		DIBP	/	N.D.	
		DEHP	/	N.D.	
		BBP	/	N.D.	
DBP	/	N.D.			

24	Plug fuse	Pb	BL	/	Pass
		Cd	BL	/	
		Hg	BL	/	
		Cr(Cr(VI))	BL	/	
		Br(PBBs&PBDEs)	BL	/	
		DIBP	/	N.D.	
		DEHP	/	N.D.	
		BBP	/	N.D.	
DBP	/	N.D.			
25	SMD crystals	Pb	1844 <sup>#2</sup>	/	Pass
		Cd	BL	/	
		Hg	BL	/	
		Cr(Cr(VI))	BL	/	
		Br(PBBs&PBDEs)	BL	/	
		DIBP	/	N.D.	
		DEHP	/	N.D.	
		BBP	/	N.D.	
DBP	/	N.D.			

## 3. Shell of MVR2EB lens module

26	Black plastic shell	Pb	BL	/	Pass
		Cd	BL	/	
		Hg	BL	/	
		Cr(Cr(VI))	BL	/	
		Br(PBBs&PBDEs)	IN	N.D.	
		DIBP	/	N.D.	
		DEHP	/	N.D.	
		BBP	/	N.D.	
DBP	/	N.D.			
27	White label	Pb	BL	/	Pass
		Cd	BL	/	
		Hg	BL	/	
		Cr(Cr(VI))	BL	/	
		Br(PBBs&PBDEs)	BL	/	
		DIBP	/	N.D.	
		DEHP	/	N.D.	
		BBP	/	N.D.	
DBP	/	N.D.			



28	Golden metal nut	Pb	OL	34850 <sup>#1</sup>	Pass
		Cd	IN	N.D.	
		Hg	BL	/	
		Cr(Cr(VI))	BL	/	
		Br(PBBs&PBDEs)	/	/	
		DIBP	/	/	
		DEHP	/	/	
		BBP	/	/	
29	Transparent lens	Pb	BL	/	Pass
		Cd	BL	/	
		Hg	BL	/	
		Cr(Cr(VI))	BL	/	
		Br(PBBs&PBDEs)	BL	/	
		DIBP	/	N.D.	
		DEHP	/	N.D.	
		BBP	/	N.D.	
30	Black foam	Pb	BL	/	Pass
		Cd	BL	/	
		Hg	BL	/	
		Cr(Cr(VI))	BL	/	
		Br(PBBs&PBDEs)	IN	N.D.	
		DIBP	/	N.D.	
		DEHP	/	N.D.	
		BBP	/	N.D.	
31	Lens	Pb	BL	/	Pass
		Cd	BL	/	
		Hg	BL	/	
		Cr(Cr(VI))	BL	/	
		Br(PBBs&PBDEs)	BL	/	
		DIBP	/	N.D.	
		DEHP	/	N.D.	
		BBP	/	N.D.	
		DBP	/	N.D.	

32	Red paper	Pb	BL	/	Pass
		Cd	BL	/	
		Hg	BL	/	
		Cr(Cr(VI))	BL	/	
		Br(PBBs&PBDEs)	BL	/	
		DIBP	/	N.D.	
		DEHP	/	N.D.	
		BBP	/	N.D.	
DBP	/	N.D.			
33	Black metal screw	Pb	BL	/	Pass
		Cd	BL	/	
		Hg	BL	/	
		Cr(Cr(VI))	BL	/	
		Br(PBBs&PBDEs)	/	/	
		DIBP	/	/	
		DEHP	/	/	
		BBP	/	/	
DBP	/	/			

## 4.PCBA

34	Black PCB	Pb	BL	/	Pass
		Cd	BL	/	
		Hg	BL	/	
		Cr(Cr(VI))	BL	/	
		Br(PBBs&PBDEs)	IN	N.D.	
		DIBP	/	N.D.	
		DEHP	/	N.D.	
		BBP	/	N.D.	
DBP	/	N.D.			
35	Beige interface	Pb	BL	/	Pass
		Cd	BL	/	
		Hg	BL	/	
		Cr(Cr(VI))	BL	/	
		Br(PBBs&PBDEs)	IN	N.D.	
		DIBP	/	N.D.	
		DEHP	/	N.D.	
		BBP	/	N.D.	
DBP	/	N.D.			

36	Metal pin	Pb	BL	/	Pass
		Cd	BL	/	
		Hg	BL	/	
		Cr(Cr(VI))	BL	/	
		Br(PBBs&PBDEs)	/	/	
		DIBP	/	/	
		DEHP	/	/	
		BBP	/	/	
37	IC 1	Pb	BL	/	Pass
		Cd	BL	/	
		Hg	BL	/	
		Cr(Cr(VI))	BL	/	
		Br(PBBs&PBDEs)	BL	/	
		DIBP	/	N.D.	
		DEHP	/	N.D.	
		BBP	/	N.D.	
38	IC 2	Pb	BL	/	Pass
		Cd	BL	/	
		Hg	BL	/	
		Cr(Cr(VI))	BL	/	
		Br(PBBs&PBDEs)	BL	/	
		DIBP	/	N.D.	
		DEHP	/	N.D.	
		BBP	/	N.D.	
39	IC 3	Pb	BL	/	Pass
		Cd	BL	/	
		Hg	BL	/	
		Cr(Cr(VI))	BL	/	
		Br(PBBs&PBDEs)	BL	/	
		DIBP	/	N.D.	
		DEHP	/	N.D.	
		BBP	/	N.D.	
DBP	/	N.D.			

40	IC 4	Pb	BL	/	Pass
		Cd	BL	/	
		Hg	BL	/	
		Cr(Cr(VI))	BL	/	
		Br(PBBs&PBDEs)	BL	/	
		DIBP	/	N.D.	
		DEHP	/	N.D.	
		BBP	/	N.D.	
41	Magnet core of L2 inductance	Pb	BL	/	Pass
		Cd	BL	/	
		Hg	BL	/	
		Cr(Cr(VI))	BL	/	
		Br(PBBs&PBDEs)	/	/	
		DIBP	/	/	
		DEHP	/	/	
		BBP	/	/	
42	Coil of L2 inductance	Pb	BL	/	Pass
		Cd	BL	/	
		Hg	BL	/	
		Cr(Cr(VI))	BL	/	
		Br(PBBs&PBDEs)	/	/	
		DIBP	/	/	
		DEHP	/	/	
		BBP	/	/	
43	SMD resistor	Pb	BL	/	Pass
		Cd	BL	/	
		Hg	BL	/	
		Cr(Cr(VI))	BL	/	
		Br(PBBs&PBDEs)	BL	/	
		DIBP	/	N.D.	
		DEHP	/	N.D.	
		BBP	/	N.D.	
DBP	/	N.D.			

44	SMD capacitor	Pb	BL	/	Pass
		Cd	BL	/	
		Hg	BL	/	
		Cr(Cr(VI))	BL	/	
		Br(PBBs&PBDEs)	BL	/	
		DIBP	/	N.D.	
		DEHP	/	N.D.	
		BBP	/	N.D.	
45	SMD diode	Pb	BL	/	Pass
		Cd	BL	/	
		Hg	BL	/	
		Cr(Cr(VI))	BL	/	
		Br(PBBs&PBDEs)	BL	/	
		DIBP	/	N.D.	
		DEHP	/	N.D.	
		BBP	/	N.D.	
46	SMD audion	Pb	BL	/	Pass
		Cd	BL	/	
		Hg	BL	/	
		Cr(Cr(VI))	BL	/	
		Br(PBBs&PBDEs)	BL	/	
		DIBP	/	N.D.	
		DEHP	/	N.D.	
		BBP	/	N.D.	
47	SMT LED lights	Pb	BL	/	Pass
		Cd	BL	/	
		Hg	BL	/	
		Cr(Cr(VI))	BL	/	
		Br(PBBs&PBDEs)	BL	/	
		DIBP	/	N.D.	
		DEHP	/	N.D.	
		BBP	/	N.D.	
DBP	/	N.D.			

48	Plug fuse	Pb	BL	/	Pass
		Cd	BL	/	
		Hg	BL	/	
		Cr(Cr(VI))	BL	/	
		Br(PBBs&PBDEs)	BL	/	
		DIBP	/	N.D.	
		DEHP	/	N.D.	
		BBP	/	N.D.	
DBP	/	N.D.			
49	SMD crystals	Pb	1511 <sup>#2</sup>	/	Pass
		Cd	BL	/	
		Hg	BL	/	
		Cr(Cr(VI))	BL	/	
		Br(PBBs&PBDEs)	BL	/	
		DIBP	/	N.D.	
		DEHP	/	N.D.	
		BBP	/	N.D.	
DBP	/	N.D.			

Note: 1.N.D. = Not Detected (<MDL)MDL = Method Detection Limit  
mg/kg = ppm =0.0001%    /=Not Regulated or Not Applicable  
2. BL = Under the XRF screening limit  
IN = Further chemical test will be conducted when the screening result inconclusive  
OL =Further chemical test will be conducted while the result is above the screening limit.  
3. For metal samples, the sample is negative for Cr(VI), if the Cr(VI) concentration is less than  
0.10  $\mu\text{g}/\text{cm}^2$ , the coating is considered a non- Cr(VI) based coating;  
The sample is positive for Cr(VI), if the Cr(VI) concentration is greater than 0.13  $\mu\text{g}/\text{cm}^2$ ,  
The sample coating is considered to contain Cr(VI);  
The result is considered to be inconclusive, the Cr(VI) concentration is between the  
0.10 $\mu\text{g}/\text{cm}^2$  and 0.13 $\mu\text{g}/\text{cm}^2$ ,Unavoidable coating variations may influence thedetermination.  
Because the storage condition and production date of the sample are not known, the test  
results of the sample of hexavalent chromium can only represent the state of hexavalent  
chromium in the samples tested.

Remark: 1.The screening results are only used for reference.  
2.When conducting the test for PBBs&PBDEs, XRF was introduced to screen Br  
Exclusively; When conducting the test for Hexavalent Chromium, XRF was introduced to  
screen Chromium exclusively.  
3.According to the client's statement , the material of the sample(s) comply with RoHS  
directive 2011/65/EU Annex III Exemption, Corresponding exemption clause:  
#1 6(c) Lead is exempted as copper alloy containing up to 4% lead by weight .  
#2 7(c)-I Lead is exempted as Electrical and electronic components containing lead in a glass  
or ceramic other than dielectric ceramic in capacitors, e.g. piezoelectronic devices, or in a glass  
or ceramic matrix compound.  
4.The test data and photos are from the report No. S21011901303001

**Test Method:**

when screening results exceed the XRF screening limit in IEC62321-3-1: 2013, further use of chemical methods are required to test the Lead(Pb), Cadmium(Cd), Mercury(Hg), Hexavalent Chromium(Cr(VI)), Polybrominated Biphenyls(PBBs) and Polybrominated Diphenyl Ethers(PBDEs)

**1.XRF screening limits in mg/kg for regulated elements according to IEC 62321-3-1:2013**

Element	Limit of IEC 62321-3-1:2013 (mg/kg)		
	Polymers	Metals	Composite material
Pb	$BL \leq (700-3\sigma) < X$ $< (1300+3\sigma) \leq OL$	$BL \leq (700-3\sigma) < X$ $< (1300+3\sigma) \leq OL$	$BL \leq (500-3\sigma) < X$ $< (1500+3\sigma) \leq OL$
Cd	$BL \leq (70-3\sigma) < X <$ $(130+3\sigma) \leq OL$	$BL \leq (70-3\sigma) < X <$ $(130+3\sigma) \leq OL$	$LOD < X < (150+3\sigma)$ $\leq OL$
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	$BL \leq (300-3\sigma) < X$	/	$BL \leq (250-3\sigma) < X$

Note: BL=Under the XRF screening limit OL=Over the XRF screening limit  
 X=The symbol "X" marks the region where further investigation is necessary.  
 3σ =The reproducibility of analytical instruments LOD= Detection limit

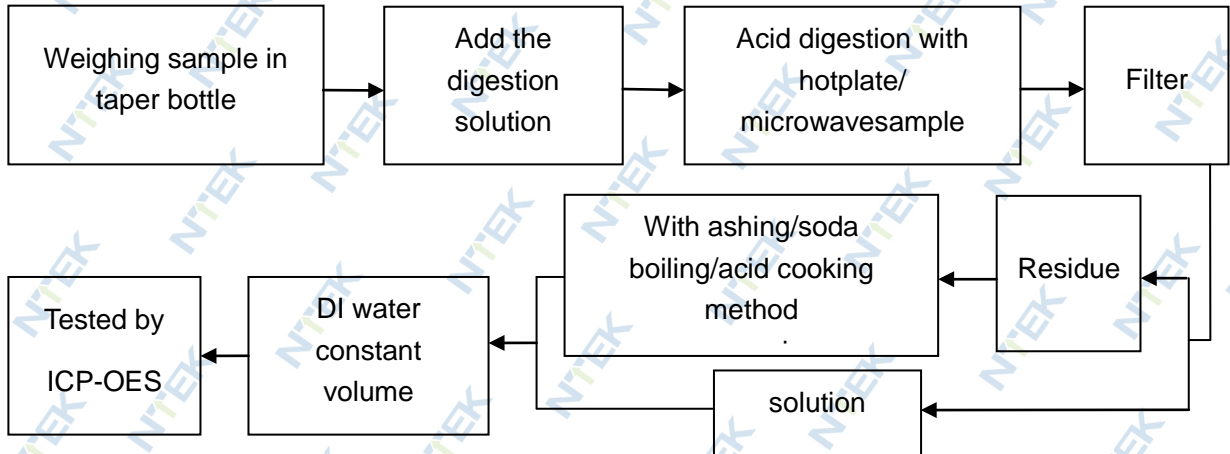
**2.Chemical Test**

Test item	Test method	Test instrument	MDL	Limit
Lead(Pb)	IEC 62321-5:2013 Ed.1.0	ICP-OES	10 mg/kg	1000 mg/kg
Cadmium(Cd)	IEC 62321-5:2013 Ed.1.0	ICP-OES	10mg/kg	100 mg/kg
Mercury(Hg)	IEC 62321-4:2013+AMD1:2017	ICP-OES	10mg/kg	1000 mg/kg
Hexavalent Chromium(Cr(VI))	IEC62321-7-1:2015 Ed.1.0	UV-Vis	0.10μg/cm <sup>2</sup>	1000 mg/kg
	IEC 62321-7-2:2017 Ed.1.0		10mg/kg	
Polybrominated Biphenyls(PBBs)	IEC 62321-6:2015 Ed.1.0	GC-MS	100mg/kg	1000 mg/kg
Polybrominated, Diphenyl Ethers(PBDEs)	IEC 62321-6:2015 Ed.1.0	GC-MS	100mg/kg	1000 mg/kg
Bis-(2-ethylhexyl) Phthalate (DEHP)	IEC 62321-8:2017 Ed.1.0	GC-MS	50mg/kg	1000 mg/kg
Benzylbutyl Phthalate (BBP)	IEC 62321-8:2017 Ed.1.0	GC-MS	50mg/kg	1000 mg/kg
Dibutyl Phthalate (DBP)	IEC 62321-8:2017 Ed.1.0	GC-MS	50mg/kg	1000 mg/kg
Diisobutyl Phthalate(DIBP)	IEC 62321-8:2017 Ed.1.0	GC-MS	50mg/kg	1000 mg/kg



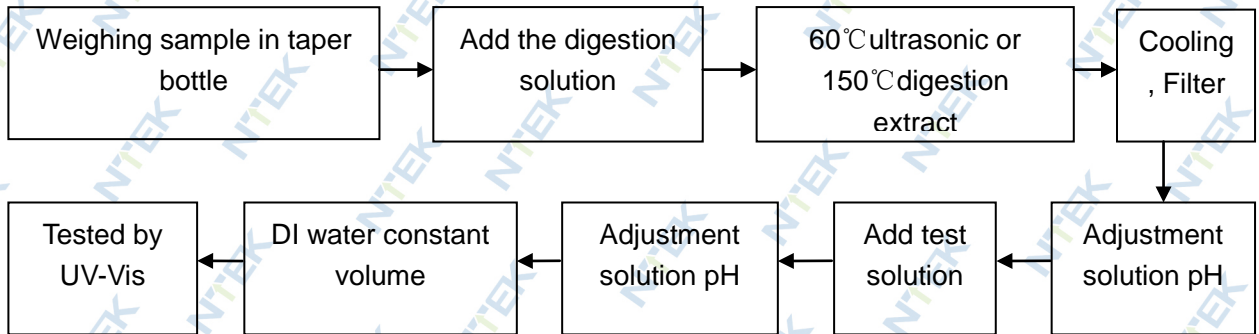
**Test Flow:**

1. Lead(Pb), Cadmium(Cd) , Mercury (Hg)

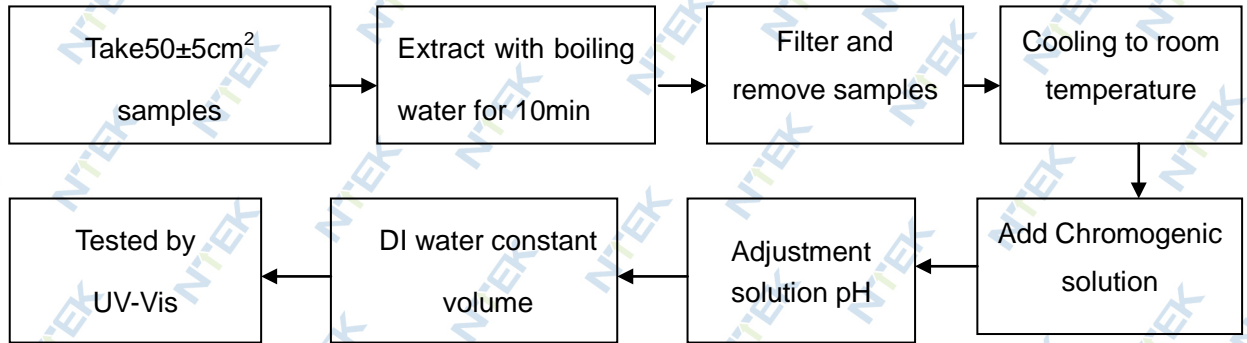


2. HexavalentChromium(Cr(VI))

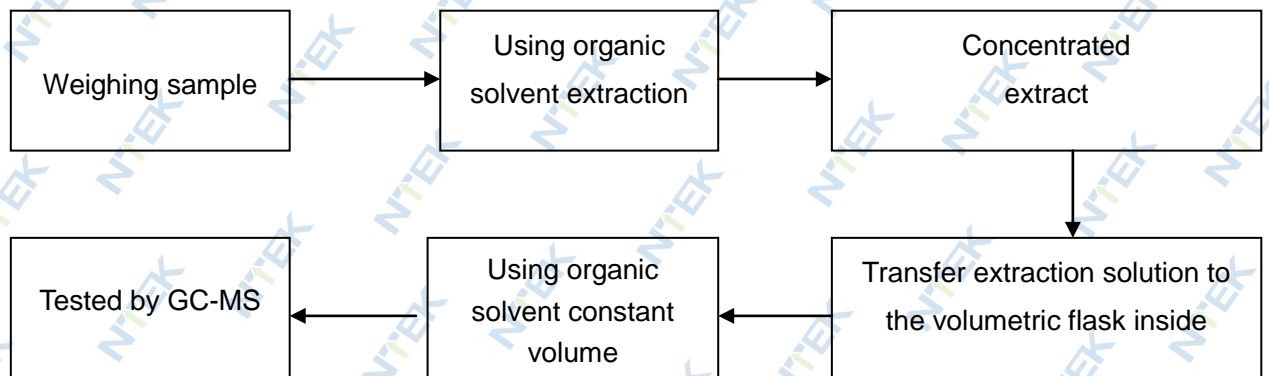
2.1 Non- metal sample(s)



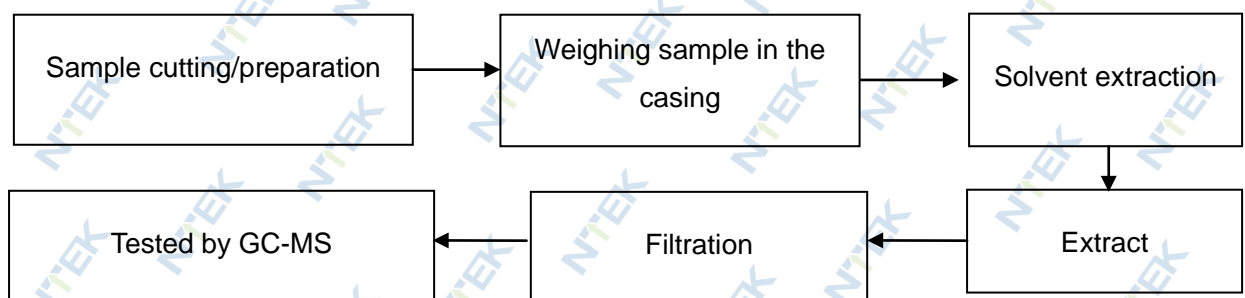
2.2 Metal sample(s)



3. PBBs/ PBDEs



4. Phthalates



**Sample photo(s):**



Fig.1

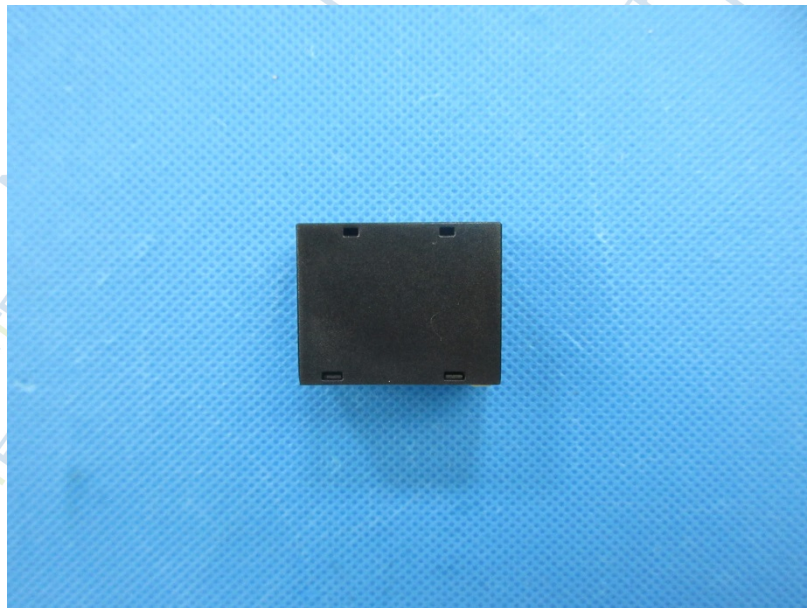


Fig.2



Fig.3

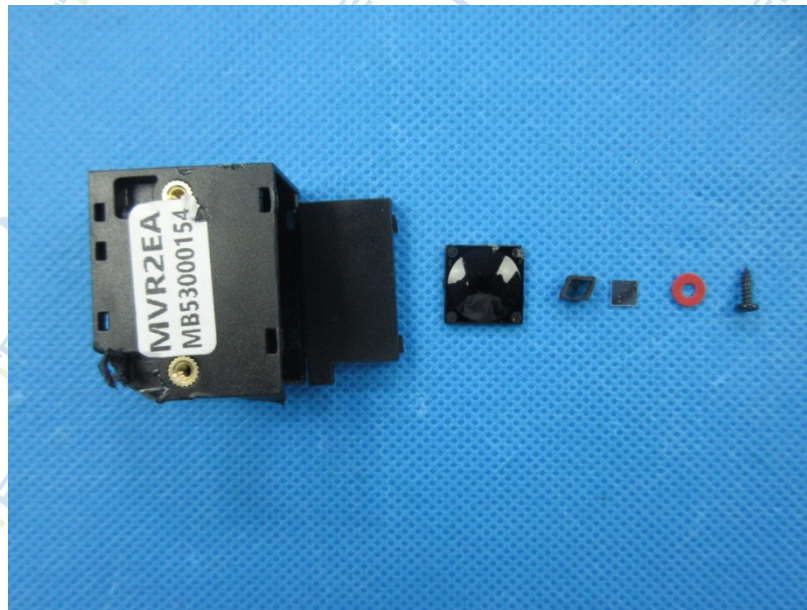


Fig.4

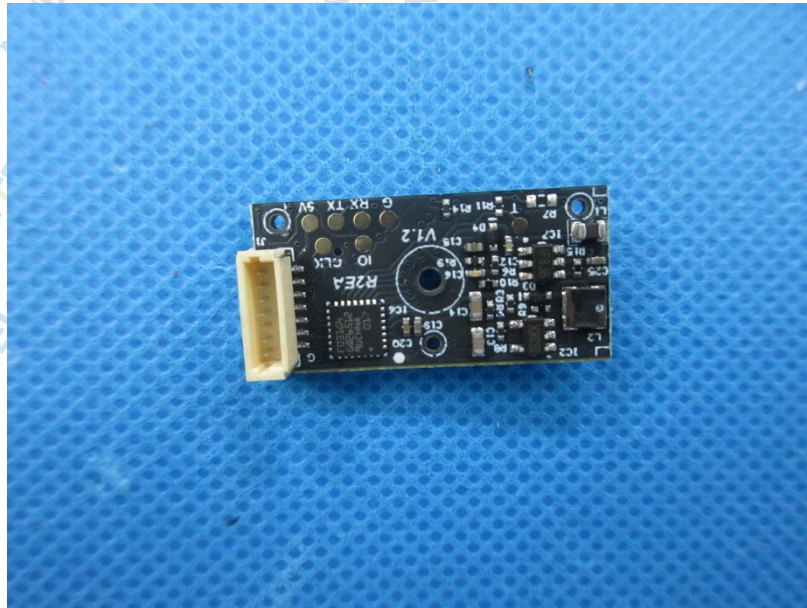


Fig.5

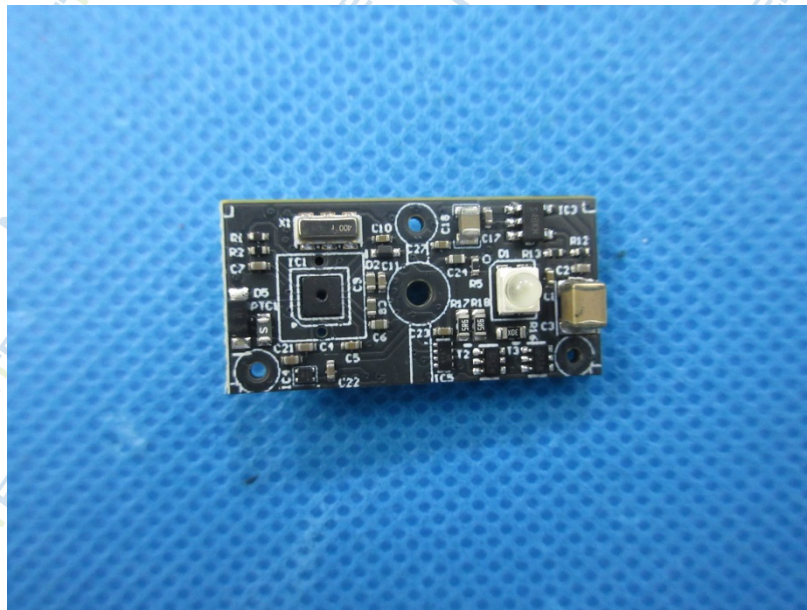


Fig.6

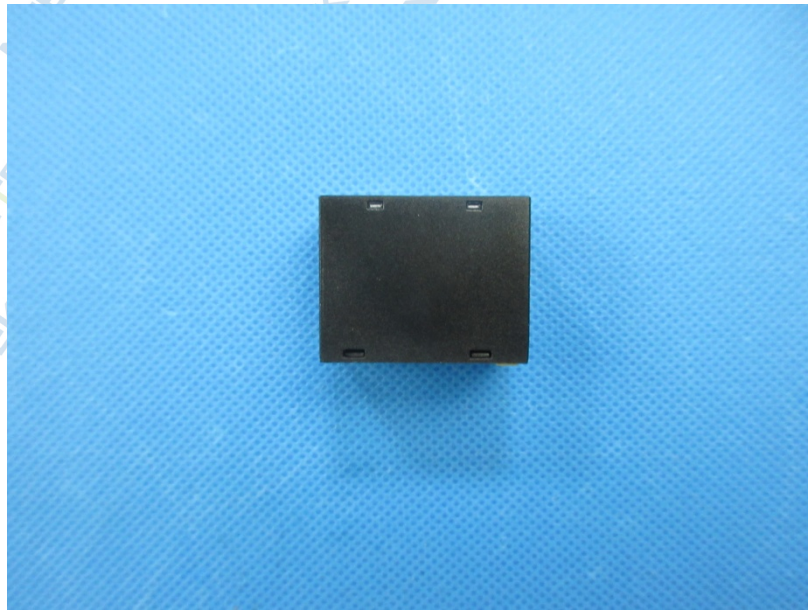


Fig.7

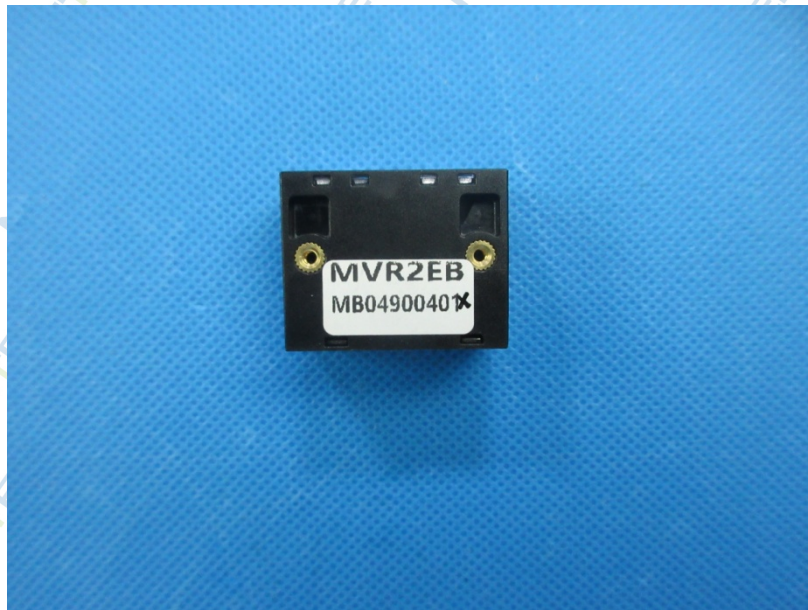


Fig.8

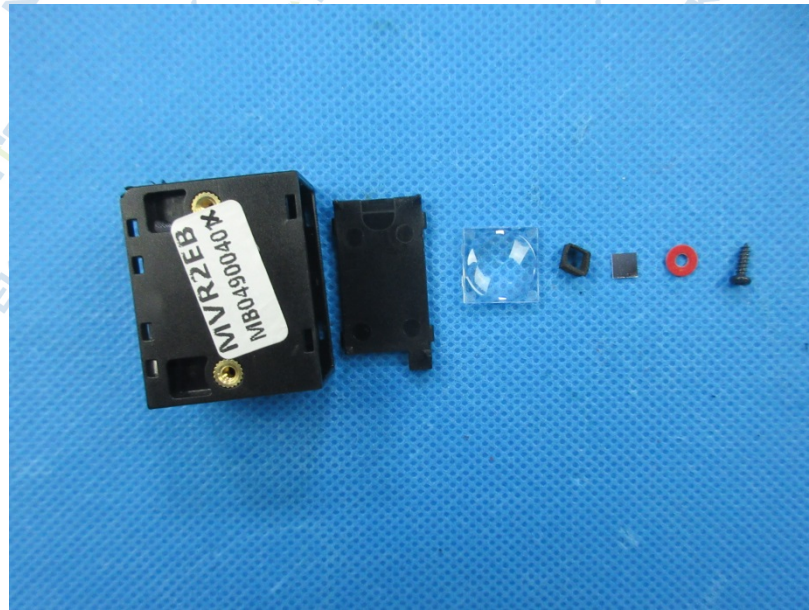


Fig.9

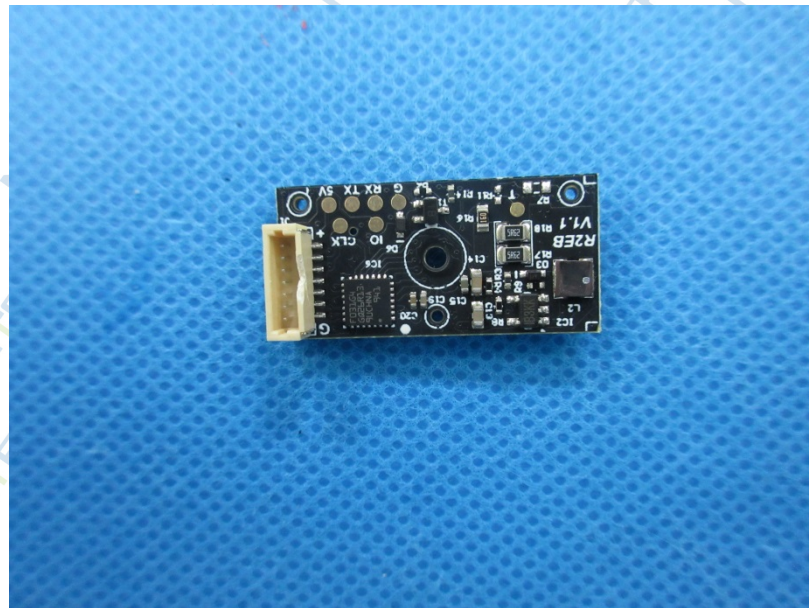


Fig.10

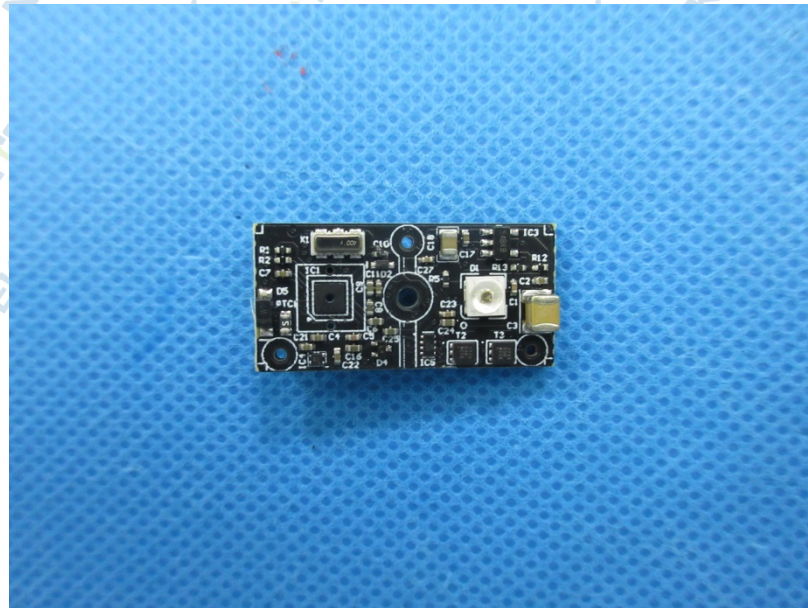


Fig.11

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

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