**SHENZHEN YARUI TESTING CO., LTD.**

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# RoHS TEST REPORT

| | |
|---|---|
| **Product name..... :** | Banana Pi BPI-R4 |
| **Trademark.....:** | BPI |
| **Model No.....:** | BPI-R4 |
| **Test Standards.....:** | **IEC62321-3-1:2013**<br>**IEC62321-4:2013+A1:2017**<br>**IEC62321-5:2013**<br>**IEC62321-6:2015**<br>**IEC62321-7-1:2015**<br>**IEC62321-7-2:2017**<br>**IEC62321-8:2017** |
| **Applicant.....:** | GUANGDONG BIPAI KEJI.CPA., LTD. |
| **Address.....:** | Room 701, RongYi Building, Songshan Lake High-tech Industrial Development Zone, Dongguan, Guangdong, China |
| **Manufacturer:.....:** | Bipai Electronic Technology (Dongguan) Co., LTD |
| **Address.....:** | Room 301, Building 3, No. 31 Lixiang Road, Dalang Town, Dong guan City,Guangdong Province, China |
| **Tested Date.....:** | Nov. 30, 2023 - Dec. 06, 2023 |
| **Issued Date.....:** | Dec. 06, 2023 |
| **Report No.....:** | YRT202312206R |
| **Tested By.....:** | Lynn Chen / Engineer |
| **Approved By.....:** | Lily Yu /Manager |




| TEST REQUEST | CONCLUSION |
|---|---|
| **According to the customer's request, based on the performed tests on submitted sample, the result of Lead, Cadmium, Mercury, Hexavalent Chromium, PBBs, PBDEs, Dibuyl Phthalate(DBP), Benzylbutyl Phthalate(BBP), Bis(2-ethylhexyl) Phthalate(DEHP), Diispbutyl phthalate(DIBP) content comply with the limit as set of RoHS Directive (EU) 2015/863 amending Annex II to Directive 2011/65/EU.** | **Pass** |

## Test Method：

(1)With reference to as follows:

| Testing item | Pretreatment method | Measuring instrument | MDL |
|---|---|---|---|
| Lead(Pb) | IEC 62321-5:2013 | ICP-OES | 2 mg/kg |
| Cadmium(Cd) | IEC 62321-5:2013 | ICP-OES | 2 mg/kg |
| Mercury(Hg) | IEC 62321-4:2013+A1:2017 | ICP-OES | 2 mg/kg |
| Chromium(Cr VI) | IEC62321-7-1: 2015<br>IEC62321-7-2: 2017 | UV-Vis | 2 mg/kg |
| PBBs/ PBDEs | IEC 62321-6:2015 | GC-MS | 5 mg/kg |

(2) With reference to IEC 62321-8:2017

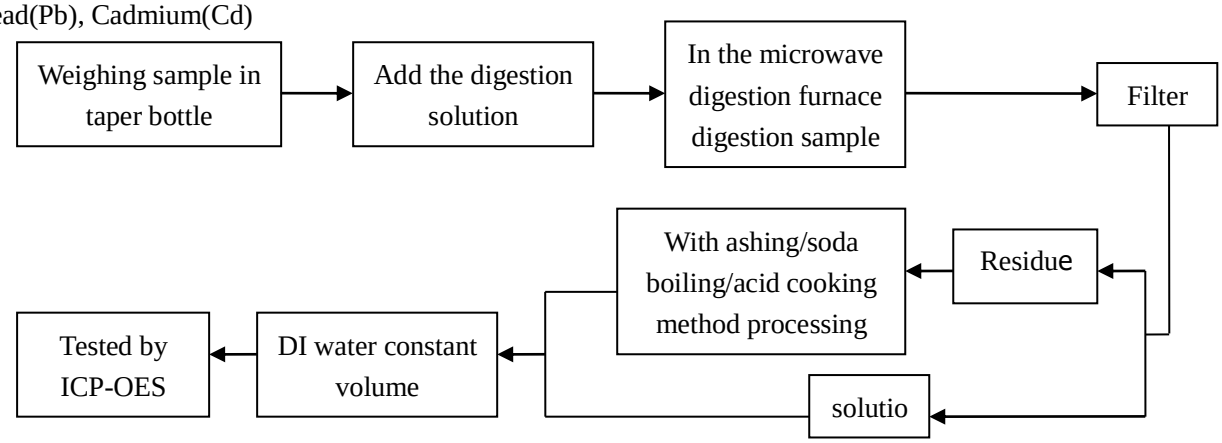
| Testing item | Pretreatment method | Measuring instrument | MDL |
|---|---|---|---|
| DIBP | EPA3540:1996 | GC-MS | 10 mg/kg |

(3) With reference to IEC 62321-8:2017

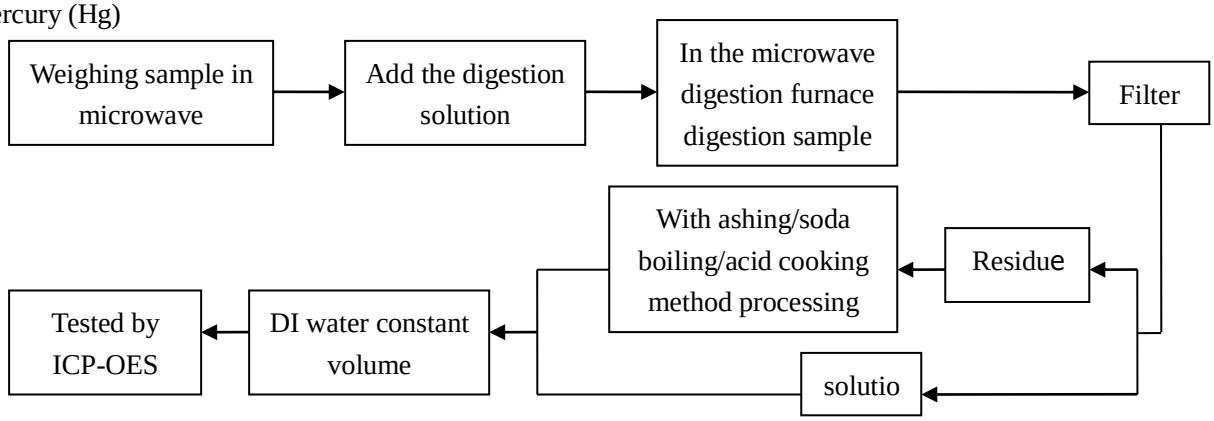
| Testing item | Pretreatment method | Measuring instrument | MDL |
|---|---|---|---|
| DEHP、DBP、BBP | EN 14372:2004 | GC-MS | 0.003 mg/kg |

## Test Flow：

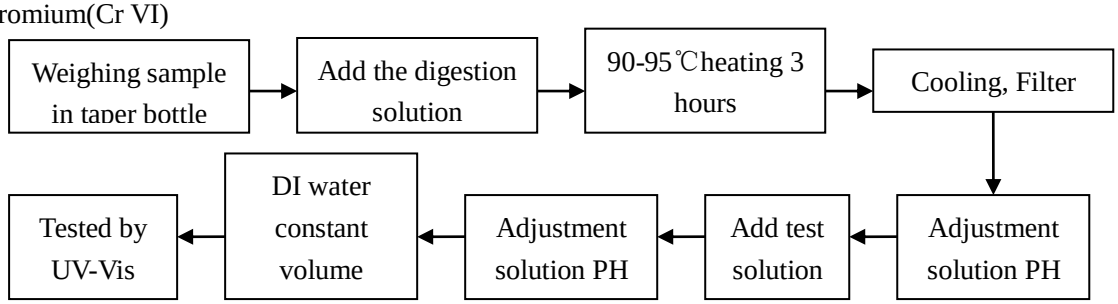
1. Lead(Pb), Cadmium(Cd)



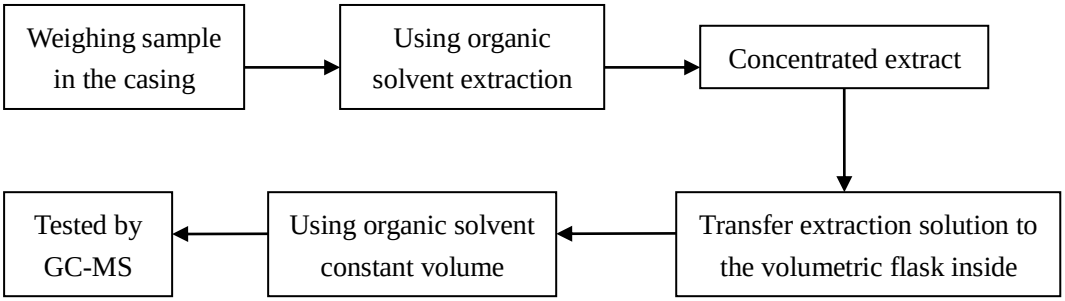

2. Mercury (Hg)



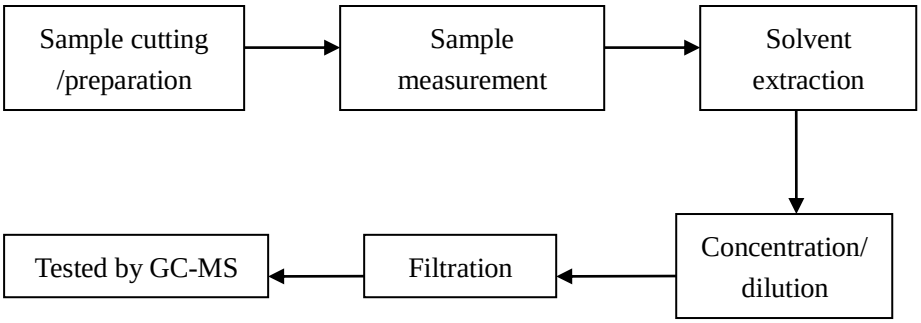

3. Chromium(Cr VI)



4. PBBs/ PBDEs




5. DIBP/ DEHP/ BBP/ DBP



## Test Data Summary:

| SAMPLE NO. | COMPONENTS | Item | Results of EDXRF (P/F/D) | Results of testing (mg/kg) | Chemical testing limit (mg/kg) | Conclusion (P/F) |
|---|---|---|---|---|---|---|
| 1 | Black plastic | Cd | P | N.D. | ＜100 | P |
| | | Cr | P | N.D. | ＜1000 | P |
| | | Hg | P | N.D. | ＜1000 | P |
| | | Pb | P | N.D. | ＜1000 | P |
| | | PBBs | P | N.D. | ＜1000 | P |
| | | PBDEs | P | N.D. | ＜1000 | P |
| | | DIBP | P | N.D. | ＜1000 | P |
| | | DEHP | P | N.D. | ＜1000 | P |
| | | DBP | P | N.D. | ＜1000 | P |
| | | BBP | P | N.D. | ＜1000 | P |
| 2 | PCB | Cd | P | N.D. | ＜100 | P |
| | | Cr | P | N.D. | ＜1000 | P |
| | | Hg | P | N.D. | ＜1000 | P |
| | | Pb | P | N.D. | ＜1000 | P |
| | | PBBs | P | N.D. | ＜1000 | P |
| | | PBDEs | P | N.D. | ＜1000 | P |
| | | DIBP | P | N.D. | ＜1000 | P |
| | | DEHP | P | N.D. | ＜1000 | P |
| | | DBP | P | N.D. | ＜1000 | P |
| | | BBP | P | N.D. | ＜1000 | P |
| 3 | IC | Cd | P | N.D. | ＜100 | P |
| | | Cr | P | N.D. | ＜1000 | P |
| | | Hg | P | N.D. | ＜1000 | P |
| | | Pb | P | N.D. | ＜1000 | P |
| | | PBBs | P | N.D. | ＜1000 | P |
| | | PBDEs | P | N.D. | ＜1000 | P |
| | | DIBP | P | N.D. | ＜1000 | P |
| | | DEHP | P | N.D. | ＜1000 | P |
| | | DBP | P | N.D. | ＜1000 | P |
| | | BBP | P | N.D. | ＜1000 | P |

| SAMPLE NO. | COMPONENTS | Item | Results of EDXRF (P/F/D) | Results of testing (mg/kg) | Chemical testing limit (mg/kg) | Conclusion (P/F) |
|---|---|---|---|---|---|---|
| 4 | Capacitor | Cd | P | N.D. | ＜100 | P |
| | | Cr | P | N.D. | ＜1000 | P |
| | | Hg | P | N.D. | ＜1000 | P |
| | | Pb | P | N.D. | ＜1000 | P |
| | | PBBs | P | N.D. | ＜1000 | P |
| | | PBDEs | P | N.D. | ＜1000 | P |
| | | DIBP | P | N.D. | ＜1000 | P |
| | | DEHP | P | N.D. | ＜1000 | P |
| | | DBP | P | N.D. | ＜1000 | P |
| | | BBP | P | N.D. | ＜1000 | P |
| 5 | Diode | Cd | P | N.D. | ＜100 | P |
| | | Cr | P | N.D. | ＜1000 | P |
| | | Hg | P | N.D. | ＜1000 | P |
| | | Pb | P | N.D. | ＜1000 | P |
| | | PBBs | P | N.D. | ＜1000 | P |
| | | PBDEs | P | N.D. | ＜1000 | P |
| | | DIBP | P | N.D. | ＜1000 | P |
| | | DEHP | P | N.D. | ＜1000 | P |
| | | DBP | P | N.D. | ＜1000 | P |
| | | BBP | P | N.D. | ＜1000 | P |
| 6 | Metal parts of Connector | Cd | P | N.D. | ＜100 | P |
| | | Cr | P | N.D. | ＜1000 | P |
| | | Hg | P | N.D. | ＜1000 | P |
| | | Pb | P | N.D. | ＜1000 | P |
| | | PBBs | P | N.D. | ＜1000 | P |
| | | PBDEs | P | N.D. | ＜1000 | P |
| | | DIBP | P | N.D. | ＜1000 | P |
| | | DEHP | P | N.D. | ＜1000 | P |
| | | DBP | P | N.D. | ＜1000 | P |
| | | BBP | P | N.D. | ＜1000 | P |

| SAMPLE NO. | COMPONENTS | Item | Results of EDXRF (P/F/D) | Results of testing (mg/kg) | Chemical testing limit (mg/kg) | Conclusion (P/F) |
|---|---|---|---|---|---|---|
| 7 | Resistor | Cd | P | N.D. | ＜100 | P |
| | | Cr | P | N.D. | ＜1000 | P |
| | | Hg | P | N.D. | ＜1000 | P |
| | | Pb | P | N.D. | ＜1000 | P |
| | | PBBs | P | N.D. | ＜1000 | P |
| | | PBDEs | P | N.D. | ＜1000 | P |
| | | DIBP | P | N.D. | ＜1000 | P |
| | | DEHP | P | N.D. | ＜1000 | P |
| | | DBP | P | N.D. | ＜1000 | P |
| | | BBP | P | N.D. | ＜1000 | P |
| 8 | Mosfet | Cd | P | N.D. | ＜100 | P |
| | | Cr | P | N.D. | ＜1000 | P |
| | | Hg | P | N.D. | ＜1000 | P |
| | | Pb | P | N.D. | ＜1000 | P |
| | | PBBs | P | N.D. | ＜1000 | P |
| | | PBDEs | P | N.D. | ＜1000 | P |
| | | DIBP | P | N.D. | ＜1000 | P |
| | | DEHP | P | N.D. | ＜1000 | P |
| | | DBP | P | N.D. | ＜1000 | P |
| | | BBP | P | N.D. | ＜1000 | P |
| 9 | Copper hole | Cd | P | N.D. | ＜100 | P |
| | | Cr | P | N.D. | ＜1000 | P |
| | | Hg | P | N.D. | ＜1000 | P |
| | | Pb | P | N.D. | ＜1000 | P |
| | | PBBs | -- | N.D. | ＜1000 | P |
| | | PBDEs | -- | N.D. | ＜1000 | P |
| | | DIBP | -- | N.D. | ＜1000 | P |
| | | DEHP | -- | N.D. | ＜1000 | P |
| | | DBP | -- | N.D. | ＜1000 | P |
| | | BBP | -- | N.D. | ＜1000 | P |

| SAMPLE NO. | COMPONENTS | Item | Results of EDXRF (P/F/D) | Results of testing (mg/kg) | Chemical testing limit (mg/kg) | Conclusion (P/F) |
|---|---|---|---|---|---|---|
| 10 | White plastic | Cd | P | N.D. | ＜100 | P |
| | | Cr | P | N.D. | ＜1000 | P |
| | | Hg | P | N.D. | ＜1000 | P |
| | | Pb | P | N.D. | ＜1000 | P |
| | | PBBs | P | N.D. | ＜1000 | P |
| | | PBDEs | P | N.D. | ＜1000 | P |
| | | DIBP | P | N.D. | ＜1000 | P |
| | | DEHP | P | N.D. | ＜1000 | P |
| | | DBP | P | N.D. | ＜1000 | P |
| | | BBP | P | N.D. | ＜1000 | P |
| 11 | Blue plastic | Cd | P | N.D. | ＜100 | P |
| | | Cr | P | N.D. | ＜1000 | P |
| | | Hg | P | N.D. | ＜1000 | P |
| | | Pb | P | N.D. | ＜1000 | P |
| | | PBBs | P | N.D. | ＜1000 | P |
| | | PBDEs | P | N.D. | ＜1000 | P |
| | | DIBP | P | N.D. | ＜1000 | P |
| | | DEHP | P | N.D. | ＜1000 | P |
| | | DBP | P | N.D. | ＜1000 | P |
| | | BBP | P | N.D. | ＜1000 | P |
| 12 | Soldering tin | Cd | P | N.D. | ＜100 | P |
| | | Cr | P | N.D. | ＜1000 | P |
| | | Hg | P | N.D. | ＜1000 | P |
| | | Pb | P | N.D. | ＜1000 | P |
| | | PBBs | -- | N.D. | ＜1000 | P |
| | | PBDEs | -- | N.D. | ＜1000 | P |
| | | DIBP | -- | N.D. | ＜1000 | P |
| | | DEHP | -- | N.D. | ＜1000 | P |
| | | DBP | -- | N.D. | ＜1000 | P |
| | | BBP | -- | N.D. | ＜1000 | P |

Notes:

1mg/kg=1ppm = 0.0001%

N.D. = Not Detected (<MDL)

MDL = Method Detection Limit

/=Not Regulated

---=Not Applicable

**Photo Documentation:**

*Photo 1*

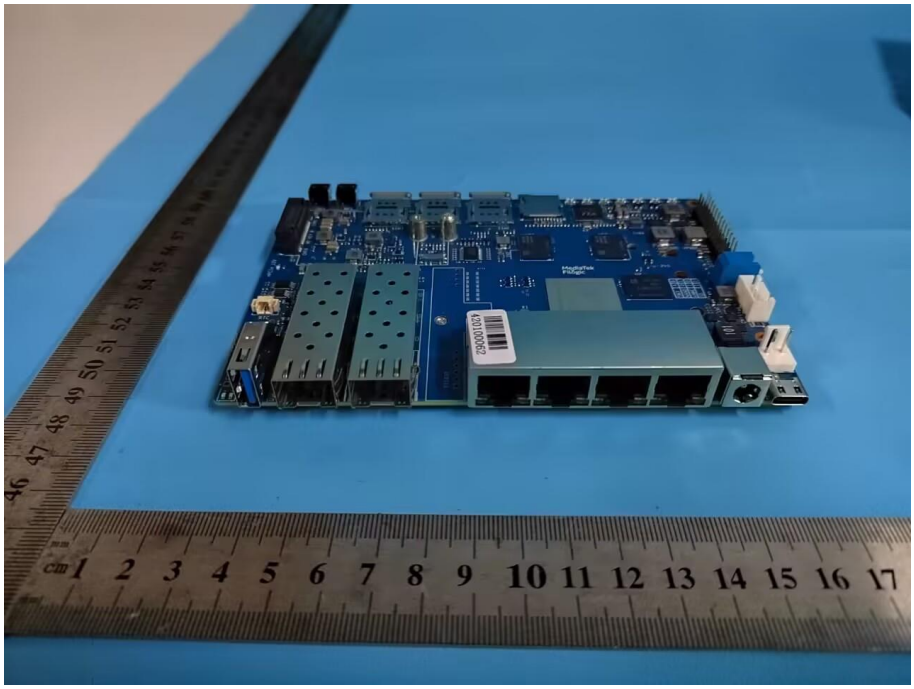


*Photo 2*

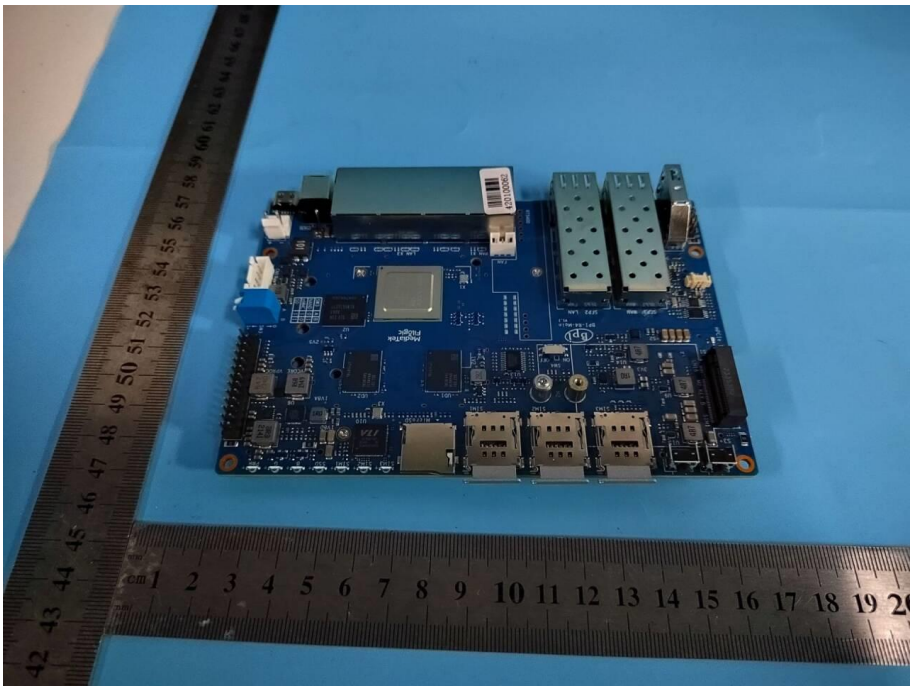
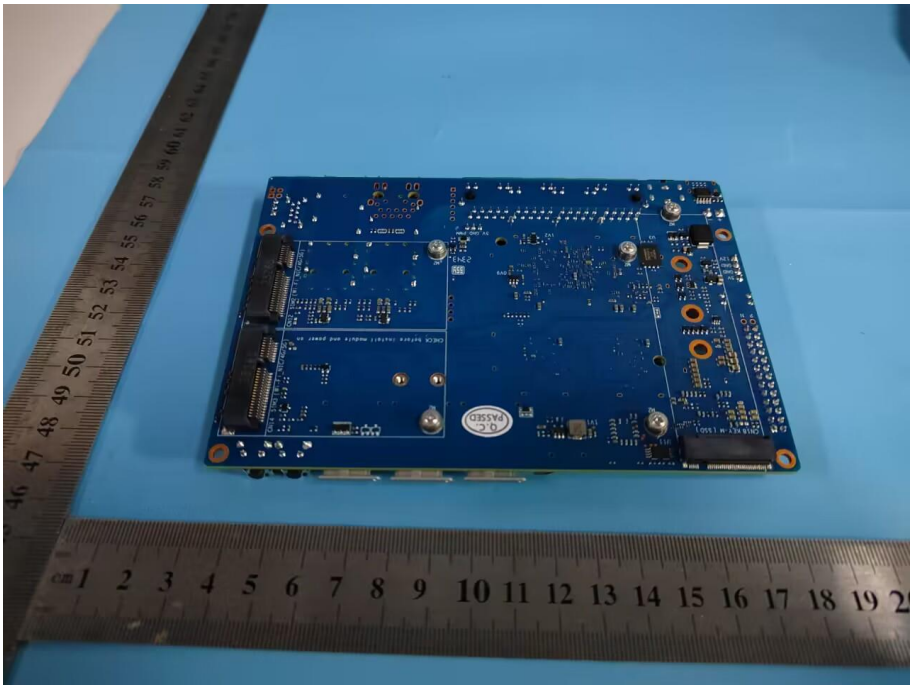


*Photo 3*



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