Test Report

NO.: MNCQ6FCH02095704 Date: Jul 15, 2019 Page 1 of 10

Applicant: HARMONY ELECTRONICS(SHEN ZHEN)
Address: JU YUAN INDUSTRIAL PARK, QIAO TANG ROAD, TANG WEI COMMUNITY,FUYONG, BAOAN DISTRICT, SHEN ZHEN CITY, PEOPLE’S REPUBLIC OF CHINA.

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

Sample Name: QUARTZ CRYSTAL RESONATORS
Sample Model: D/HSX840G(A)&630G&530G&421G&321G&221G&211G
Manufacturer: HARMONY ELECTRONICS CORP.
Sample Description: Iron+Cobalt+Nickel+Tungsten+Gold
Test Component: Overall test
Sample Received Date: Jul 05, 2019
Testing Period: Jul 05, 2019, TO Jul 15, 2019

Test Items:
(1) Pb, Cd, Hg, Cr₆⁺, PBBS, PBDEs, Phthalates
(2) F, Cl, Br, I
(3) Sb, Be
(4) PFOS, PFOA
(5) DINP

Reference Method:
   a. IEC 62321-5 Edition 1.0:2013 method, Lead Analysis is performed by AAS
   b. IEC 62321-5 Edition 1.0:2013 method, Cadmium Analysis is performed by AAS
   c. IEC 62321-4:2013+AMD1:2017 CSV method, Mercury Analysis is performed by ICP-OES
   d. IEC 62321-7-2 Edition 1.0:2017 method, Hexavalent Chromium Analysis is performed by UV-Vis
   e. IEC 62321-6 Edition 1.0:2015 method, PBBs and PBDEs Analysis is performed by GC-MS
   f. IEC 62321-8 Edition 1.0:2017 method, Phthalates Analysis is performed by GC-MS
(2) EN 14582:2016 method, Analysis is performed by IC
(3) EPA 6010D:2018&EPA 3052:1996 method, Analysis is performed by ICP-OES
(4) EPA3550C:2007&EPA8321B:2007 method, Analysis is performed by LC-MS
(5) IEC 62321-8 Edition 1.0:2017 method, DINP Analysis is performed by GC-MS

Testing Results: Please refer to next page(s)

Approved by: [Signature]
Code: f3nx87by
## Test Report

**NO.:** MNCQ6FCH02095704  
**Date:** Jul 15, 2019  
**Page 2 of 10**

### Test Result (Unit: mg/kg)

<table>
<thead>
<tr>
<th>Test Item</th>
<th>MDL</th>
<th>Test Result</th>
<th>RoHS Limit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lead (Pb)</td>
<td>1</td>
<td>$9.52 \times 10^4$</td>
<td>1000</td>
</tr>
<tr>
<td>Cadmium (Cd)</td>
<td>1</td>
<td>N.D.</td>
<td>100</td>
</tr>
<tr>
<td>Mercury (Hg)</td>
<td>1</td>
<td>N.D.</td>
<td>1000</td>
</tr>
<tr>
<td>Hexavalent Chromium (Cr&lt;sup&gt;6+&lt;/sup&gt;)</td>
<td>8</td>
<td>N.D.</td>
<td>1000</td>
</tr>
<tr>
<td>Sum of PBBs</td>
<td></td>
<td>N.D.</td>
<td>1000</td>
</tr>
<tr>
<td>Bromobiphenyl</td>
<td>5</td>
<td>N.D.</td>
<td></td>
</tr>
<tr>
<td>Dibromobiphenyl</td>
<td>5</td>
<td>N.D.</td>
<td></td>
</tr>
<tr>
<td>Tribromobiphenyl</td>
<td>5</td>
<td>N.D.</td>
<td></td>
</tr>
<tr>
<td>Tetramobiphenyl</td>
<td>5</td>
<td>N.D.</td>
<td></td>
</tr>
<tr>
<td>Pentabromobiphenyl</td>
<td>5</td>
<td>N.D.</td>
<td></td>
</tr>
<tr>
<td>Hexabromobiphenyl</td>
<td>5</td>
<td>N.D.</td>
<td></td>
</tr>
<tr>
<td>Heptabromobiphenyl</td>
<td>5</td>
<td>N.D.</td>
<td></td>
</tr>
<tr>
<td>Octabromobiphenyl</td>
<td>5</td>
<td>N.D.</td>
<td></td>
</tr>
<tr>
<td>Nonabromobiphenyl</td>
<td>5</td>
<td>N.D.</td>
<td></td>
</tr>
<tr>
<td>Decabromobiphenyl</td>
<td>5</td>
<td>N.D.</td>
<td></td>
</tr>
<tr>
<td>Sum of PBDEs</td>
<td></td>
<td>N.D.</td>
<td>1000</td>
</tr>
<tr>
<td>Bromodiphenyl ether</td>
<td>5</td>
<td>N.D.</td>
<td></td>
</tr>
<tr>
<td>Dibromodiphenyl ether</td>
<td>5</td>
<td>N.D.</td>
<td></td>
</tr>
<tr>
<td>Tribromodiphenyl ether</td>
<td>5</td>
<td>N.D.</td>
<td></td>
</tr>
<tr>
<td>Tetrabromodiphenyl ether</td>
<td>5</td>
<td>N.D.</td>
<td></td>
</tr>
<tr>
<td>Pentabromodiphenyl ether</td>
<td>5</td>
<td>N.D.</td>
<td></td>
</tr>
<tr>
<td>Hexabromodiphenyl ether</td>
<td>5</td>
<td>N.D.</td>
<td></td>
</tr>
<tr>
<td>Heptabromodiphenyl ether</td>
<td>5</td>
<td>N.D.</td>
<td></td>
</tr>
<tr>
<td>Octabromodiphenyl ether</td>
<td>5</td>
<td>N.D.</td>
<td></td>
</tr>
<tr>
<td>Nonabromodiphenyl ether</td>
<td>5</td>
<td>N.D.</td>
<td></td>
</tr>
<tr>
<td>Decabromodiphenyl ether</td>
<td>5</td>
<td>N.D.</td>
<td></td>
</tr>
</tbody>
</table>
### Test Results (Unit: mg/kg)

<table>
<thead>
<tr>
<th>Test Item</th>
<th>MDL</th>
<th>Test Result</th>
<th>RoHS Limit</th>
</tr>
</thead>
<tbody>
<tr>
<td>DEHP</td>
<td>50</td>
<td>N.D.</td>
<td>1000</td>
</tr>
<tr>
<td>DBP</td>
<td>50</td>
<td>N.D.</td>
<td>1000</td>
</tr>
<tr>
<td>BBP</td>
<td>50</td>
<td>N.D.</td>
<td>1000</td>
</tr>
<tr>
<td>DIBP</td>
<td>50</td>
<td>N.D.</td>
<td>1000</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Test Item</th>
<th>MDL</th>
<th>Test Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>F</td>
<td>50</td>
<td>N.D.</td>
</tr>
<tr>
<td>Cl</td>
<td>50</td>
<td>N.D.</td>
</tr>
<tr>
<td>Br</td>
<td>50</td>
<td>N.D.</td>
</tr>
<tr>
<td>I</td>
<td>50</td>
<td>N.D.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Test Item</th>
<th>MDL</th>
<th>Test Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sb</td>
<td>1</td>
<td>237</td>
</tr>
<tr>
<td>Be</td>
<td>1</td>
<td>N.D.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Test Item</th>
<th>CAS number</th>
<th>MDL</th>
<th>Test Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>PFOS</td>
<td>2</td>
<td>N.D.</td>
<td></td>
</tr>
<tr>
<td>PFOA</td>
<td>2</td>
<td>N.D.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Test Item</th>
<th>CAS number</th>
<th>MDL</th>
<th>Test Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diisononyl phthalate (DINP)</td>
<td>28553-12-0</td>
<td>50</td>
<td>N.D.</td>
</tr>
</tbody>
</table>

**Note:**

1. mg/kg = ppm
2. "—" = Does not stipulate
3. N.D. = Not Detected (< MDL)
4. MDL = Method Detection Limit
Sample No. & Photo:

Pony authenticate the photo on original report only
These Samples Were Dissolved Totally By Pre-conditioning Method According To Below Flow Chart.

(Cr\textsuperscript{6+} Test Method Excluded)

**Sample Preparation**

1. Acid digestion with digestion high-pressure tank / hotplate
2. Filtration
3. Solution
4. Residue
5. Dissolve totally

**Sample Measurement**

- **Pb/Cd/Hg**
  - Nonmetallic material
    - Soluble polymer
      - Adding digestion solution for ultrasonic
      - Heating to 150~160 °C
      - Cooling, and separation
      - Filtration and pH adjustment
      - UV-Vis
      - DATA
    - Insoluble/Unknown polymer
      - Adding digestion solution and toluene
      - Filtration and pH adjustment
      - UV-Vis
      - DATA
  - Metallic material
    - Boiling water extraction
    - Insoluble polymer
      - Adding digestion solution and toluene
      - Filtration and pH adjustment
      - UV-Vis
      - DATA
    - Insoluble/Unknown polymer
      - Adding digestion solution and toluene
      - Filtration and pH adjustment
      - UV-Vis
      - DATA

**DATA**
Test Report

Tested by:  Wang Yaowei    Checked by:  Peng Pingping    Person in charge of the lab:  Mao Zuqing

Measurement Flow-chart

Sample Preparation

Sample Measurement

PBBs/PBDEs

Sample solvent extraction

Concentration/Dilution

Filtration

GC-MS

DATA
Phthalates Measurement Flow-chart

Sample preparation  
Weighing samples  
Extraction in organic solvent  
Concentration / Dilution of extraction solution  
GC-MS analysis  
data
Test Report  

Tested by: Guo Xiaoying  
Checked by: Peng Pingping  
Person in charge of the lab by: Mao Zuqing

Halogen measurement flow-chart

Sample preparation

Weighing sample

Oxygen bomb method preparation

IC analysis

Data
These Samples Were Dissolved Totally By Pre-conditioning Method According To Below Flow Chart.

1. **Sample Preparation**
   - Acid digestion with microwave
   - Filtration
   - Solution
   - Residue dissolved totally ashing

2. **Sample Measurement**
   - Sb Be
   - ICP-OES
   - DATA
**PFOS, PFOA Measurement Flow-chart**

Tested by: Huang Zhenjin  
Checked by: Peng Pingping  
Person in charge of the lab by: Mao Zuqing

1. **Sample preparation**
2. **Weighing samples**
3. **Extraction in organic solvent**
4. **Cleanup and concentration**
5. **LC-MS analysis**
6. **Data**

***End of Report***