Test Report
NO.: MNCQ6FCH02096704       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: H(D)SO211S&221S&H(D)SO321S(K)&H(D)SO323S(K)(J)(SD)
&H(D)SO531S&751S(J) &HSV531S&HSV753S
Manufacturer: HARMONY ELECTRONICS CORP.

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: gnsymjx
<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>N.D.</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^{6+})</td>
<td>8</td>
<td>N.D.</td>
<td>1000</td>
</tr>
<tr>
<td><strong>Sum of PBBs</strong></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>Tetrabromobiphenyl</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><strong>Sum of PBDEs</strong></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>
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<tr>
<td>Pentabromodiphenyl ether</td>
<td>5</td>
<td>N.D.</td>
<td></td>
</tr>
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<td>Hexabromodiphenyl ether</td>
<td>5</td>
<td>N.D.</td>
<td></td>
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<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>37.8</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>

### Test Results

**Diisononyl phthalate (DINP)**

<table>
<thead>
<tr>
<th>Test Item</th>
<th>CAS number</th>
<th>MDL</th>
<th>Test Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>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$^{6+}$ Test Method Excluded)

Sample Preparation

- Pb/Cd/Hg
  - Acid digestion with digestion high-pressure tank / hotplate
  - Filtration
    - Solution
    - Residue
      - Dissolve totally

- Cr$^{6+}$
  - Nonmetallic material
    - Soluble polymer
      - Adding digestion solution for ultrasonic
      - Heating to 150~160 °C
      - Cooling, and separation
      - Adding the extracted solution for ultrasonic, then extraction
      - Filtration and pH adjustment

  - Insoluble/Unknown polymer
    - Adding digestion solution and toluene
    - Filtering and pH adjustment

  - Metallic material
    - Boiling water extraction
    - Filtration and pH adjustment
      - Adding 1,5-diphenylcarbazide for color development
      - UV-Vis
        - DATA
Measurement Flow-chart

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

Sample Preparation

Sample Measurement

PBBs/PBDEs

Sample solvent extraction

Concentration/ Dilution

Filtration

GC-MS

DATA

Address: 1F., Building 6, Zhongxing Industry City, Chuangye Road, Nanshan District, Shenzhen, Guangdong, China
Phthalates Measurement Flow-chart

Tested by: Jiang Yuejiao   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. Concentration / Dilution of extraction solution
5. GC-MS analysis
6. Data
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.

Sb Be Measurement Flow-chart

Sample Preparation

Sample Measurement

Sb Be

Acid digestion with microwave

Filtration

Solution

Residue

dissolved totally ashing

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***