

Test Report

Applicant:**Address:****Report on the submitted sample(s) said to be:**

Sample Name : TWS Airbuds

Sample Model :

Trademark : N/A

Manufacturer :

Address :

Sample Received Date : Sep. 03, 2019

Testing Period : Sep. 03, 2019 to Sep. 11, 2019

Test Method : 1. Screening test method: IEC62321-3-1:2013/XRF

2. Wet chemical test method

Lead(Pb): IEC62321-5:2013/ICP-OES

Cadmium(Cd): IEC62321-5:2013/ICP-OES

Mercury(Hg): IEC62321-4:2013+A1: 2017/ICP-OES

Hexavalent Chromium(CrVI): IEC62321-7-1:2015/UV-VIS and

IEC62321-7-2:2017/UV-VIS

Polybrominated Biphenyls (PBBs): IEC62321-6:2015 /GC-MS

Polybrominated Biphenyl Ethers(PBDEs): IEC62321-6:2015 /GC-MS

3. Phthalates: IEC62321-8:2017 /GC-MS

Test Results : Refer to the next page(s).

| Test Requested | Conclusion |
|---|------------|
| {1} RoHS Directive 2011/65/EU Annex II – Lead(Pb), Cadmium(Cd), Mercury(Hg), Hexavalent Chromium(CrVI), Polybrominated Biphenyls (PBBs), Polybrominated Biphenyl Ethers(PBDEs) | PASS |
| {2} RoHS Directive (EU)2015/863 amending Annex II - Dibutyl phthalate (DBP), Butyl benzyl phthalate(BBP), Bis-(2-ethylhexyl)phthalate(DEHP), Di-iso-butyl ortho-phthalate(DIBP) | PASS |

Test Report

Test by:



Inspected by:

May Chen

Approved by:

Date: Sep. 23, 2019

{1} Pb, Cd, Hg, CrVI, PBBs, PBDEs Test Results:

| Part No. | Results | Cd | Pb | Hg | Cr ⁶⁺ | PBBs | PBDEs | Conclusion on RoHS |
|----------|----------------------|----|----|----|------------------|------|-------|--------------------|
| 1 | EDXRF | BL | BL | BL | BL | BL | BL | -- |
| | Wet Chemical Testing | -- | -- | -- | -- | -- | -- | Comply |
| 2 | EDXRF | BL | BL | BL | BL | BL | BL | -- |
| | Wet Chemical Testing | -- | -- | -- | -- | -- | -- | Comply |
| 3 | EDXRF | BL | BL | BL | BL | BL | BL | -- |
| | Wet Chemical Testing | -- | -- | -- | -- | -- | -- | Comply |
| 4 | EDXRF | BL | BL | BL | BL | BL | BL | -- |
| | Wet Chemical Testing | -- | -- | -- | -- | -- | -- | Comply |
| 5 | EDXRF | BL | BL | BL | BL | BL | BL | -- |
| | Wet Chemical Testing | -- | -- | -- | -- | -- | -- | Comply |
| 6 | EDXRF | BL | BL | BL | BL | BL | BL | -- |
| | Wet Chemical Testing | -- | -- | -- | -- | -- | -- | Comply |
| 7 | EDXRF | BL | BL | BL | BL | BL | BL | -- |
| | Wet Chemical Testing | -- | -- | -- | -- | -- | -- | Comply |
| 8 | EDXRF | BL | BL | BL | BL | BL | BL | -- |
| | Wet Chemical Testing | -- | -- | -- | -- | -- | -- | Comply |
| 9 | EDXRF | BL | BL | BL | BL | BL | BL | -- |
| | Wet Chemical Testing | -- | -- | -- | -- | -- | -- | Comply |
| 10 | EDXRF | BL | BL | BL | BL | BL | BL | -- |
| | Wet Chemical Testing | -- | -- | -- | -- | -- | -- | Comply |
| 11 | EDXRF | BL | BL | BL | BL | BL | BL | -- |
| | Wet Chemical Testing | -- | -- | -- | -- | -- | -- | Comply |

Test Report

| Part No. | Results | Cd | Pb | Hg | Cr ⁶⁺ | PBBs | PBDEs | Conclusion on RoHS |
|----------|----------------------|----|----|----|------------------|------|-------|--------------------|
| 12 | EDXRF | BL | BL | BL | BL | BL | BL | -- |
| | Wet Chemical Testing | -- | -- | -- | -- | -- | -- | Comply |
| 13 | EDXRF | BL | BL | BL | BL | BL | BL | -- |
| | Wet Chemical Testing | -- | -- | -- | -- | -- | -- | Comply |
| 14 | EDXRF | BL | BL | BL | BL | BL | BL | -- |
| | Wet Chemical Testing | -- | -- | -- | -- | -- | -- | Comply |
| 15 | EDXRF | BL | BL | BL | BL | BL | BL | -- |
| | Wet Chemical Testing | -- | -- | -- | -- | -- | -- | Comply |
| 16 | EDXRF | BL | BL | BL | BL | BL | BL | -- |
| | Wet Chemical Testing | -- | -- | -- | -- | -- | -- | Comply |
| 17 | EDXRF | BL | BL | BL | BL | BL | BL | -- |
| | Wet Chemical Testing | -- | -- | -- | -- | -- | -- | Comply |
| 18 | EDXRF | BL | BL | BL | BL | BL | BL | -- |
| | Wet Chemical Testing | -- | -- | -- | -- | -- | -- | Comply |
| 19 | EDXRF | BL | BL | BL | BL | BL | BL | -- |
| | Wet Chemical Testing | -- | -- | -- | -- | -- | -- | Comply |
| 20 | EDXRF | BL | BL | BL | BL | BL | BL | -- |
| | Wet Chemical Testing | -- | -- | -- | -- | -- | -- | Comply |
| 21 | EDXRF | BL | BL | BL | BL | BL | BL | -- |
| | Wet Chemical Testing | -- | -- | -- | -- | -- | -- | Comply |
| 22 | EDXRF | BL | BL | BL | BL | BL | BL | -- |
| | Wet Chemical Testing | -- | -- | -- | -- | -- | -- | Comply |
| 23 | EDXRF | BL | BL | BL | BL | BL | BL | -- |
| | Wet Chemical Testing | -- | -- | -- | -- | -- | -- | Comply |
| 24 | EDXRF | BL | BL | BL | BL | BL | BL | -- |
| | Wet Chemical Testing | -- | -- | -- | -- | -- | -- | Comply |
| 25 | EDXRF | BL | BL | BL | BL | BL | BL | -- |
| | Wet Chemical Testing | -- | -- | -- | -- | -- | -- | Comply |

Test Report

| Part No. | Results | Cd | Pb | Hg | Cr ⁶⁺ | PBBs | PBDEs | Conclusion on RoHS |
|----------|----------------------|----|----|----|------------------|------|-------|--------------------|
| 26 | EDXRF | BL | BL | BL | BL | BL | BL | -- |
| | Wet Chemical Testing | -- | -- | -- | -- | -- | -- | Comply |
| 27 | EDXRF | BL | BL | BL | BL | BL | BL | -- |
| | Wet Chemical Testing | -- | -- | -- | -- | -- | -- | Comply |
| 28 | EDXRF | BL | BL | BL | BL | BL | BL | -- |
| | Wet Chemical Testing | -- | -- | -- | -- | -- | -- | Comply |
| 29 | EDXRF | BL | BL | BL | BL | BL | BL | -- |
| | Wet Chemical Testing | -- | -- | -- | -- | -- | -- | Comply |
| 30 | EDXRF | BL | BL | BL | BL | BL | BL | -- |
| | Wet Chemical Testing | -- | -- | -- | -- | -- | -- | Comply |
| 31 | EDXRF | BL | BL | BL | BL | BL | BL | -- |
| | Wet Chemical Testing | -- | -- | -- | -- | -- | -- | Comply |
| 32 | EDXRF | BL | BL | BL | BL | BL | BL | -- |
| | Wet Chemical Testing | -- | -- | -- | -- | -- | -- | Comply |
| 33 | EDXRF | BL | BL | BL | BL | BL | BL | -- |
| | Wet Chemical Testing | -- | -- | -- | -- | -- | -- | Comply |

Test Report

Remark:

(a) It is the result on total Br while test item on restricted substances is PBBs/PBDEs. It is the result on total Cr while test item on restricted substances is Cr6+.

(b) Results are obtained by EDXRF for primary screening, and further chemical testing by ICP (for Cd, Pb, Hg), UV-VIS (for CrVI) and GC/MS (for PBBs, PBDEs) is recommended to be performed, if the concentration exceeds the below warning value according to IEC 62321-3-1: 2013 (Unit: mg/kg)

| Element | Polymer | Metal | Composite Materials |
|---------|---|---|---|
| Cd | $BL \leq (70-3\sigma) < X < (130+30\sigma) \leq OL$ | $BL \leq (70-3\sigma) < X < (130+30\sigma) \leq OL$ | $LOD < X < (150+30\sigma) \leq OL$ |
| Pb | $BL \leq (700-3\sigma) < X < (1300+30\sigma) \leq OL$ | $BL \leq (700-3\sigma) < X < (1300+30\sigma) \leq OL$ | $BL \leq (500-3\sigma) < X < (1300+30\sigma) \leq OL$ |
| Hg | $BL \leq (700-3\sigma) < X < (1300+30\sigma) \leq OL$ | $BL \leq (700-3\sigma) < X < (1300+30\sigma) \leq OL$ | $BL \leq (500-3\sigma) < X < (1300+30\sigma) \leq OL$ |
| Br | $BL \leq (300-3\sigma) < X$ | -- | $BL \leq (250-3\sigma) < X$ |
| Cr | $BL \leq (700-3\sigma) < X$ | $BL \leq (700-3\sigma) < X$ | $BL \leq (500-3\sigma) < X$ |

(c) BL=Below Limit, OL=Over Limit, IN=Inconclusive, LOD=Limit of Detection,

(d) The XRF screening test for RoHS elements – The reading may be different to the actual content in the sample be of non-uniformity composition

(e) mg/kg = ppm = 0.0001%, N.D. = not detected (<MDL), --- = not conducted

(f) Unit and Method Detection Limit (MDL) in wet chemical test:

| Test Items | Pb | Cd | Hg |
|------------|-------|-------|-------|
| Units | mg/kg | mg/kg | mg/kg |
| MDL | 2 | 2 | 2 |

The MDL for single compound of PBBs & PBDEs is 5 mg/kg and MDL of Cr6+ for polymer & composite sample is 2 mg/kg.

(g) According to IEC 62321:2008, result on Cr6+ for metal sample is shown as Positive/Negative.

Positive = Presence of Cr6+ coating, Negative = Absence of Cr6+ coating.

Test Report

{2} Phthalates Test Results

Test Method: Refer to EN14372:2004 and use GC-MS to perform the test

| Test Item | CAS No. | Test Method / Instrument | MDL (%) | Limit (%) |
|-------------------------------------|----------|--------------------------|---------|-----------|
| Dibutyl phthalate (DBP) | 84-74-2 | IEC 62321-8:2017 / GC-MS | 0.005 | 0.1 |
| Butyl benzyl phthalate (BBP) | 85-68-7 | IEC 62321-8:2017 / GC-MS | 0.005 | 0.1 |
| Bis-(2-ethylhexyl)phthalate (DEHP) | 117-81-7 | IEC 62321-8:2017 / GC-MS | 0.005 | 0.1 |
| Di-iso-butyl ortho-phthalate (DIBP) | 84-69-5 | IEC 62321-8:2017 / GC-MS | 0.005 | 0.1 |

| Test Item | CAS No. | Result (%) | | | | | | |
|--------------------------------------|----------|------------|-----|-----|-----|-----|-----|-----|
| | | 1 | 2 | 4 | 5 | 8 | 10 | 12 |
| Dibutyl phthalate (DBP) | 84-74-2 | N.D | N.D | N.D | N.D | N.D | N.D | N.D |
| Butyl benzyl phthalate(BBP) | 85-68-7 | N.D | N.D | N.D | N.D | N.D | N.D | N.D |
| Bi(s-(2-ethylhexyl) phthalate (DEHP) | 117-81-7 | N.D | N.D | N.D | N.D | N.D | N.D | N.D |
| Di-iso-butyl ortho-phthalate (DIBP) | 84-69-5 | N.D | N.D | N.D | N.D | N.D | N.D | N.D |

Test Report

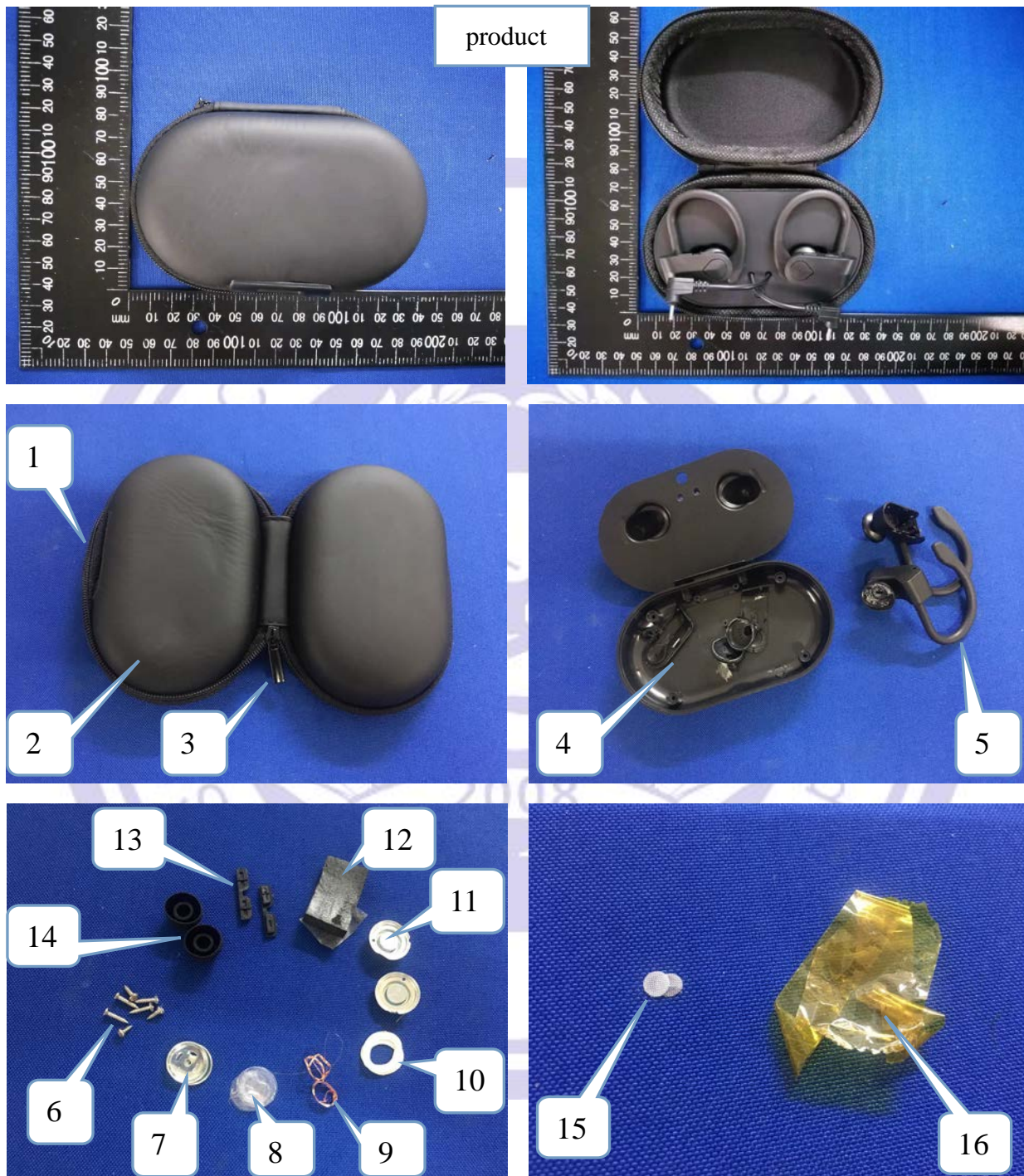
| Test Item | CAS No. | Result (%) | | | | | | | |
|--|----------|------------|-----|-----|-----|-----|-----|-----|-----|
| | | 12 | 13 | 14 | 15 | 16 | 31 | 32 | 33 |
| Dibutyl phthalate (DBP) | 84-74-2 | N.D | N.D | N.D | N.D | N.D | N.D | N.D | N.D |
| Butyl benzyl phthalate(BBP) | 85-68-7 | N.D | N.D | N.D | N.D | N.D | N.D | N.D | N.D |
| Bi(s-(2-ethylhexyl) phthalate (DEHP) | 117-81-7 | N.D | N.D | N.D | N.D | N.D | N.D | N.D | N.D |
| Di-iso-butyl ortho-phthalate (DIBP) | 84-69-5 | N.D | N.D | N.D | N.D | N.D | N.D | N.D | N.D |

Note:

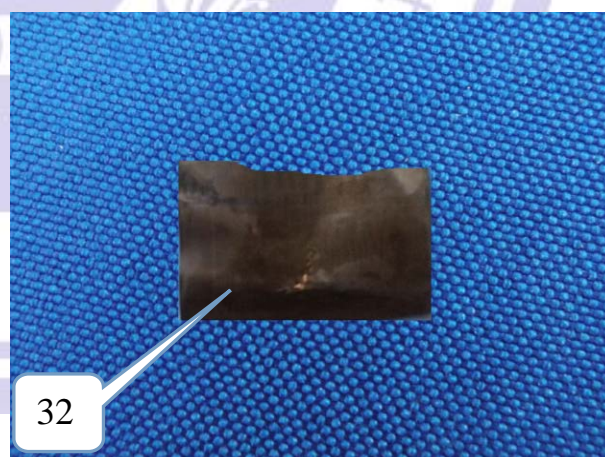
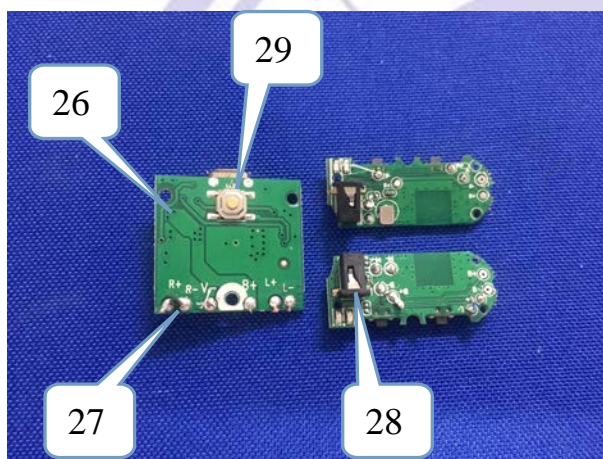
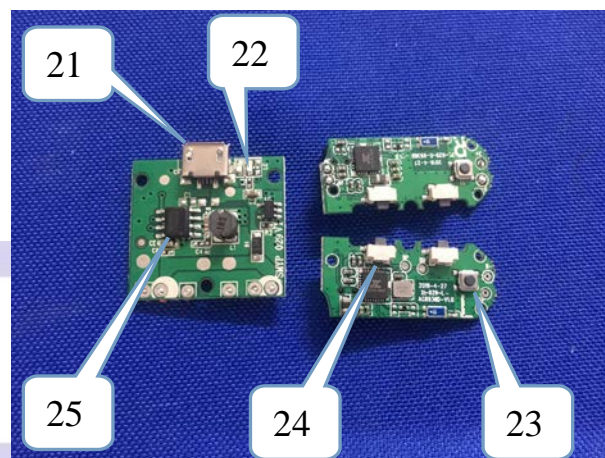
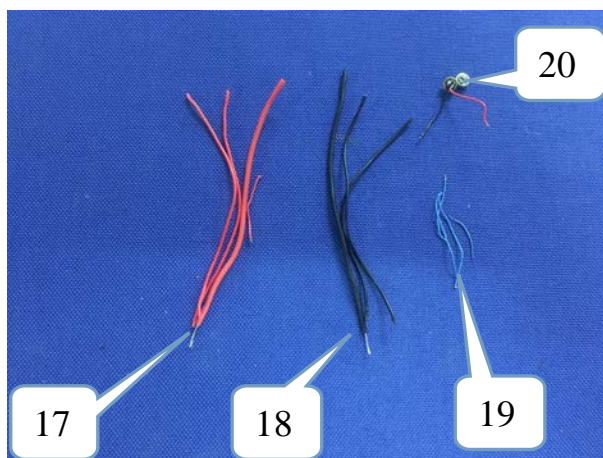
- (1) 1 mg/kg = 1 ppm = 0.0001%
 (2) N.D. = Not Detected (less than MDL)
 (3) MDL = Method Detection Limit

Test Report

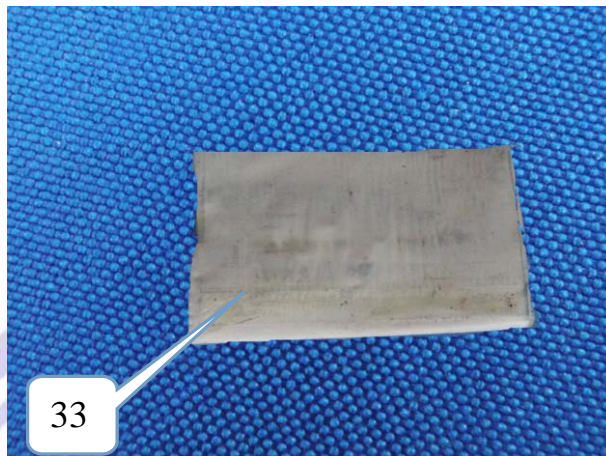
Photo(s) of the sample(s)



Test Report



Test Report



*** End of Report ***

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