



中国认可  
国际互认  
检测  
TESTING  
CNAS L6478



# TEST REPORT

**Report No.** ..... : WTF20F07044004A1C

**Applicant** ..... : Mid Ocean Brands B.V.

**Address** ..... : 7/F., Kings Tower, 111 King Lam Street, Cheung Sha Wan, Kowloon, Hong Kong

**Manufacturer** ..... : 103941

**Sample Name** ..... : Round shape wall clock

**Model No.** ..... : KC2669

**Sample Receiving Date** .... : 2020-07-09 & 2020-07-28

**Testing Period**..... : 2020-07-09 to 2020-07-14 & 2020-07-28 to 2020-07-30

**Date of Issue** ..... : 2020-07-30

**Test Result** ..... : Please refer to next page (s)

**Remarks:**

The results shown in this test report refer only to the sample(s) tested; this test report cannot be reproduced, except in full, without prior written permission of the company. The report would be invalid without specific stamp of test institute and the signatures of compiler and approver.  
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- Test Requested**..... : In accordance with the RoHS Directive 2011/65/EU and its amendment (EU) No. 2015/863.
- Test Method**..... :
  - 1) With Reference to IEC 62321-2:2013, disassembly, disjunction and mechanical sample preparation
  - 2) With Reference to IEC 62321-3-1:2013, screening - Lead, mercury, cadmium, total chromium and total bromine by X-ray fluorescence spectrometry
  - 3) With reference to IEC 62321-4:2013+AMD1:2017 CSV, determination of Mercury by ICP-OES
  - 4) With reference to IEC 62321-5:2013, determination of Lead and Cadmium by ICP-OES
  - 5) With reference to IEC 62321-7-2: 2017 and IEC 62321-7-1: 2015, determination of Hexavalent Chromium by UV-Vis
  - 6) With reference to IEC 62321-6:2015, determination of PBBs and PBDEs by GC-MS
  - 7) With reference to IEC 62321-8:2017, determination of Phthalates content by GC-MS.
- Test Conclusion**..... : **Pass** (Based on the performed tests on the submitted samples, the results comply with the RoHS Directive 2011/65/EU and its amendment (EU) No. 2015/863)



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**Test Results:****1. Lead, Mercury, Cadmium, Hexavalent Chromium, PBBs and PBDEs**

Part No.	Part Description	Result of XRF					Result of Wet Chemical Testing (mg/kg)
		Cd	Pb	Hg	Cr	Br	
1	White plastic gear	BL	BL	BL	BL	BL	NA
2	Transparent soft plastic gear	BL	BL	BL	BL	BL	NA
3	Black magnetic	BL	BL	BL	IN	BL	Cr <sup>6+</sup> : ND
4	Transparent plastic gear	BL	BL	BL	BL	BL	NA
5	White plastic sheet with silvery plating	BL	BL	BL	BL	BL	NA
6	Silvery metal strip	BL	BL	BL	IN	BL	Cr <sup>6+</sup> : Negative
7	Silvery metal sheet	BL	BL	BL	BL	BL	NA
8	Golden metal nut	BL	BL	BL	BL	BL	NA
9	Black plastic gear	BL	BL	BL	BL	BL	NA
10	Coppery metal winding	BL	BL	BL	BL	BL	NA
11	Beige plastic bobbin	BL	BL	BL	BL	BL	NA
12	Silvery metal sheet	BL	BL	BL	IN	BL	Cr <sup>6+</sup> : Negative
13	Beige plastic sheet	BL	BL	BL	BL	BL	NA
14	Silvery metal nut	BL	BL	BL	BL	BL	NA
15	Silvery metal sheet	BL	BL	BL	IN	BL	Cr <sup>6+</sup> : Negative
16	Silvery metal washer	BL	BL	BL	BL	BL	NA
17	Transparent glass sheet	BL	BL	BL	BL	BL	NA
18	Silvery coating	BL	BL	BL	BL	BL	NA
19	Black plastic shell without silvery coating	BL	BL	BL	BL	BL	NA





Part No.	Part Description	Result of XRF					Result of Wet Chemical Testing (mg/kg)
		Cd	Pb	Hg	Cr	Br	
20	White plastic sheet	BL	BL	BL	BL	BL	NA
21	Black plastic shell	BL	BL	BL	BL	BL	NA
22	Transparent glue	BL	BL	BL	BL	BL	NA
23	Black plastic sheet with silvery plating	BL	BL	BL	BL	IN	PBBs : ND PBDEs : 444
24	Silvery body of crystal oscillator	BL	BL	BL	BL	BL	NA
25	Silvery metal pin of crystal oscillator	BL	BL	BL	BL	BL	NA
26	Green PCB	BL	BL	BL	BL	BL	NA
27	Chip IC	BL	BL	BL	BL	BL	NA
28	Solder	BL	BL	BL	BL	BL	NA

**Remark:**

- (1) Results are obtained by EDXRF for primary screening, and further chemical testing by ICP (for Cd, Pb, Hg), UV-VIS (for Cr<sup>6+</sup>) 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 ≤ (70-3σ) < IN < (130+3σ) ≤ OL	BL ≤ (70-3σ) < IN < (130+3σ) ≤ OL	LOD < IN < (150+3σ) ≤ OL
Pb	BL ≤ (700-3σ) < IN < (1300+3σ) ≤ OL	BL ≤ (700-3σ) < IN < (1300+3σ) ≤ OL	BL ≤ (500-3σ) < IN < (1500+3σ) ≤ OL
Hg	BL ≤ (700-3σ) < IN < (1300+3σ) ≤ OL	BL ≤ (700-3σ) < IN < (1300+3σ) ≤ OL	BL ≤ (500-3σ) < IN < (1500+3σ) ≤ OL
Cr	BL ≤ (700-3σ) < IN	BL ≤ (700-3σ) < IN	BL ≤ (500-3σ) < IN
Br	BL ≤ (300-3σ) < IN	--	BL ≤ (250-3σ) < IN

BL= Below Limit      OL= Over Limit      LOD = Limit of Detection      -- = Not Regulated

- (2) "IN" expresses the inconclusive region, and further chemical testing to confirm whether it complies with the requirement of RoHS Directive.
- (3) The XRF screening test for RoHS elements – the reading may be different to the actual content in the sample be of non-uniformity composition.
- (4) mg / kg =milligram per kilogram=ppm, μg/cm<sup>2</sup>= Micrograms per square centimetre.
- (5) ND = Not Detected or lower than limit of quantitation.
- (6) NA = Not Applicable, as the XRF screening test result was below the limit or as the XRF screening directly determine that test result was over the limit, it was not need to conduct the wet chemical testing.



(7) LOQ = Limit of quantitation.

Test Items	Pb	Cd	Hg	Cr <sup>6+</sup>	PBB	PBDE
Units	mg/kg	mg/kg	mg/kg	mg/kg	μg/cm <sup>2</sup>	mg/kg
LOQ	2	2	2	8	0.1	5

The LOQ for single compound of PBBs and PBDEs is 5mg/kg, LOQ of Cr<sup>6+</sup> for polymer and composite sample is 8mg/kg and LOQ of Cr<sup>6+</sup> for metal sample is 0.1μg/cm<sup>2</sup>.

(8) RoHS Requirement

Restricted Substances	Limits
Cadmium (Cd)	0.01% (100 mg/kg)
Lead (Pb)	0.1% (1000 mg/kg)
Mercury (Hg)	0.1% (1000 mg/kg)
Chromium (VI) (Cr <sup>6+</sup> )	0.1% (1000 mg/kg)
Polybrominated Biphenyls (PBBs)	0.1% (1000 mg/kg)
Polybrominated Diphenyl Ethers (PBDEs)	0.1% (1000 mg/kg)

(9) According to IEC 62321-7-1:2015, determined of Cr<sup>6+</sup> on metal sample by boiling water extraction test method, and result is shown as Positive/Negative.

Boiling water extraction:

Negative = Absence of Cr<sup>6+</sup> coating, the detected concentration in boiling water extraction solution is less than 0.10ug/cm<sup>2</sup>.

Positive = Presence of Cr<sup>6+</sup> coating, the detected concentration in boiling water extraction solution is greater than 0.13ug/cm<sup>2</sup>.

Information on storage conditions and production date of the tested sample is unavailable and thus Cr<sup>6+</sup> results represent status of the sample at the time of testing.

(10) Abbreviation:

“Pb” denotes Lead, “Cd” denotes Cadmium, “Hg” denotes Mercury, “Cr” denotes Chromium, “Cr (VI)” denotes Hexavalent Chromium, “Br” denotes Bromine, “PBBs” denotes Total Polybrominated Biphenyls, “PBDEs” denotes Total Polybrominated Diphenyl Ethers.

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## 2. Phthalates:

Serial No.	Part No.	Result (mg/kg)			
		DBP	BBP	DEHP	DIBP
T01	1+4+5+9+11 <sup>△</sup>	<50	<50	<50	<50
T02	2	<50	<50	<50	<50
T03	3+26+27 <sup>△</sup>	<50	<50	<50	<50
T04	13+23 <sup>△</sup>	<50	<50	206	<50
T05	18	<50	<50	<50	<50
T06	19	<50	<50	<50	<50
T07	20	<50	<50	<50	<50
T08	21	<50	<50	<50	<50
T09	22	<50	<50	128	<50

### Note:

- (1) "<" = less than
- (2) mg/kg = milligram per kilogram= ppm
- (3) Abbreviation:  
"DBP" denotes Dibutyl phthalate, "BBP" denotes Benzyl butyl phthalate (BBP), "DEHP" denotes Bis(2-ethylhexyl)-phthalate, "DIBP" denotes Diisobutyl phthalate, "PHT" denotes Phthalates.

- (4) RoHS requirement

Restricted Substances	Limits
Dibutyl phthalate (DBP)	0.1% (1000 mg/kg)
Benzyl butyl phthalate (BBP)	0.1% (1000 mg/kg)
Di(2-ethylhexyl) phthalate (DEHP)	0.1% (1000 mg/kg)
Di-iso-butyl phthalate (DIBP)	0.1% (1000 mg/kg)

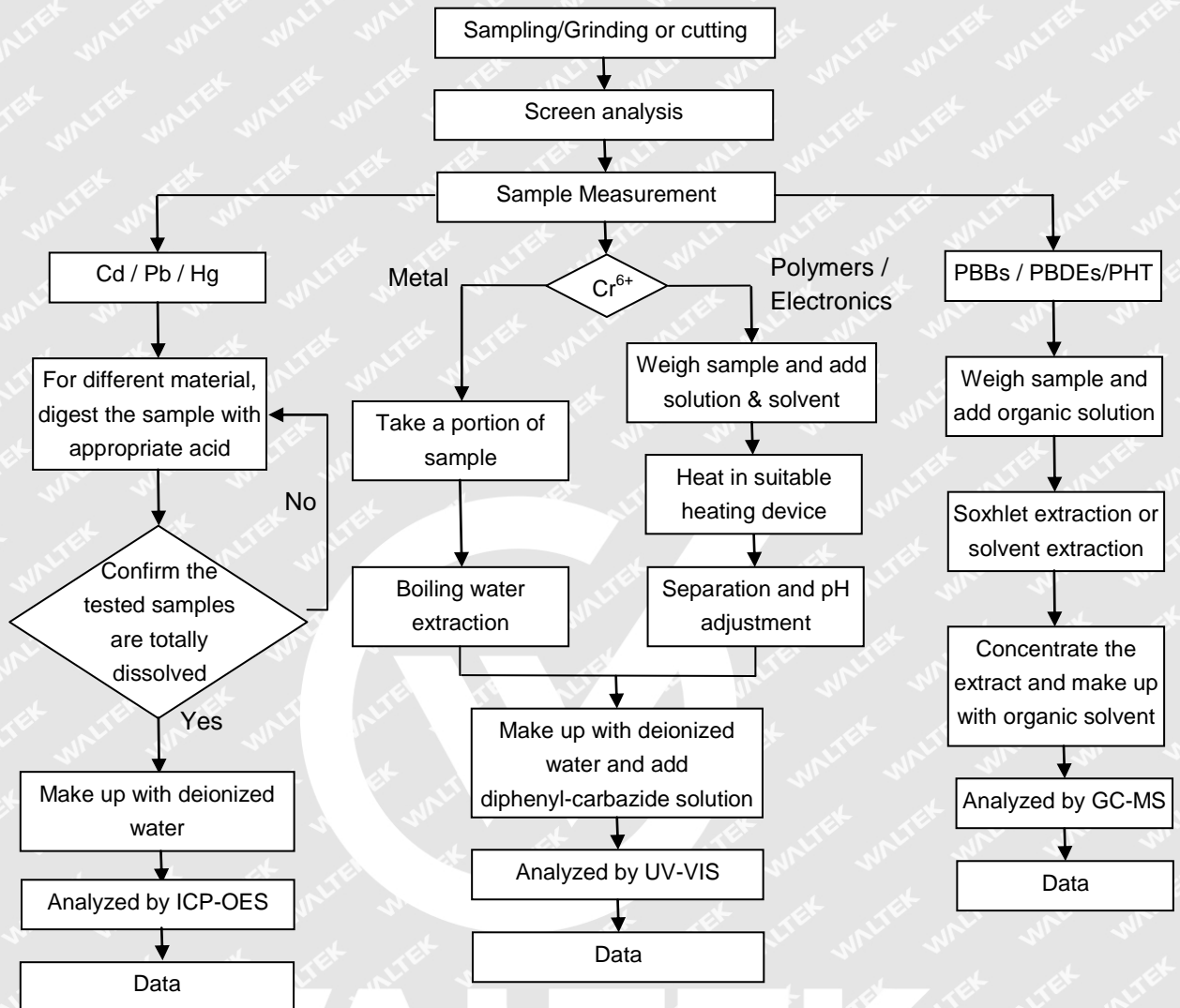
- (5) "△"= As client's requirement, the testing was conducted based on mixed components. Results are calculated by the minimum weight of mixed components.

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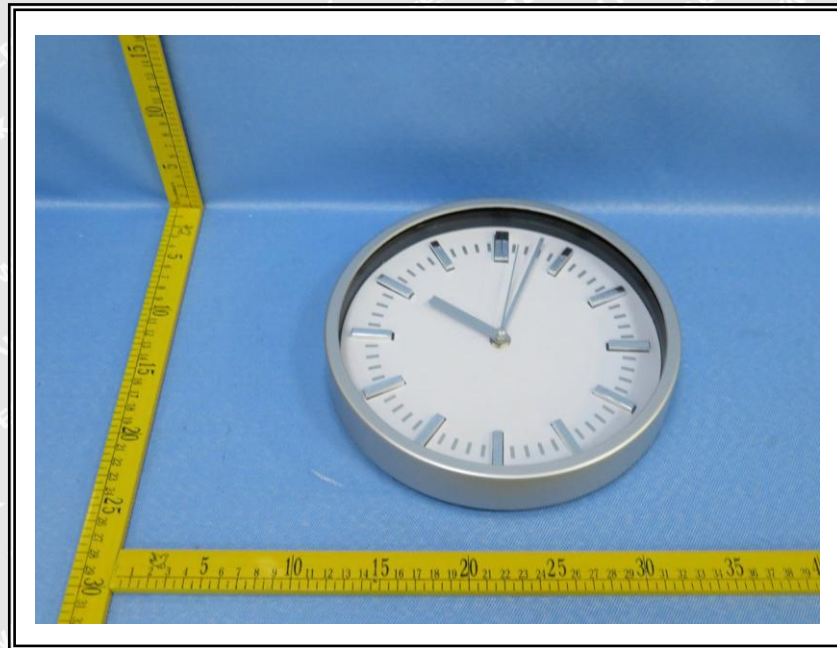


**Measurement Flowchart:**





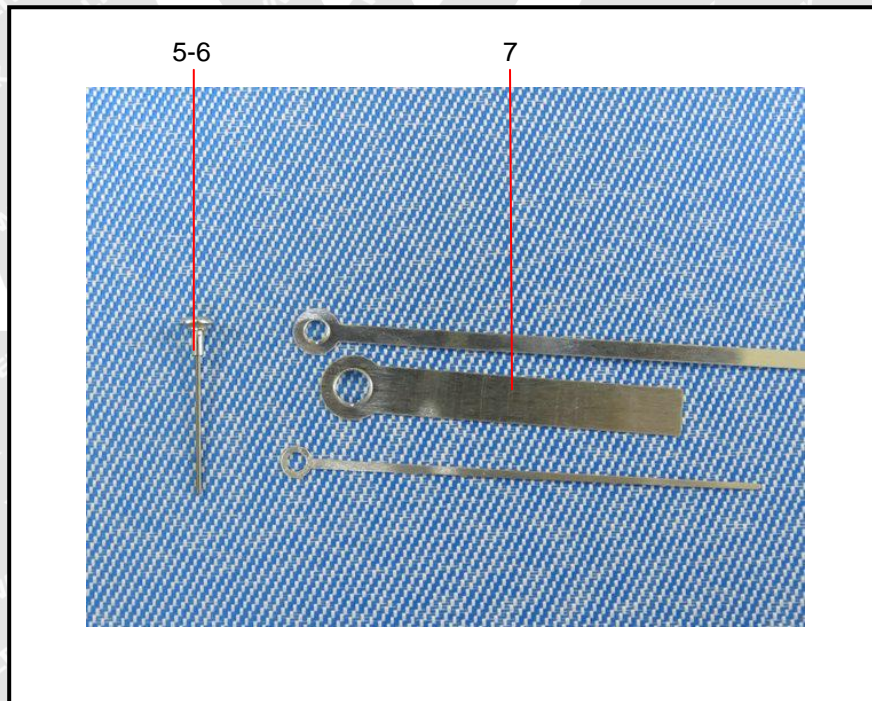
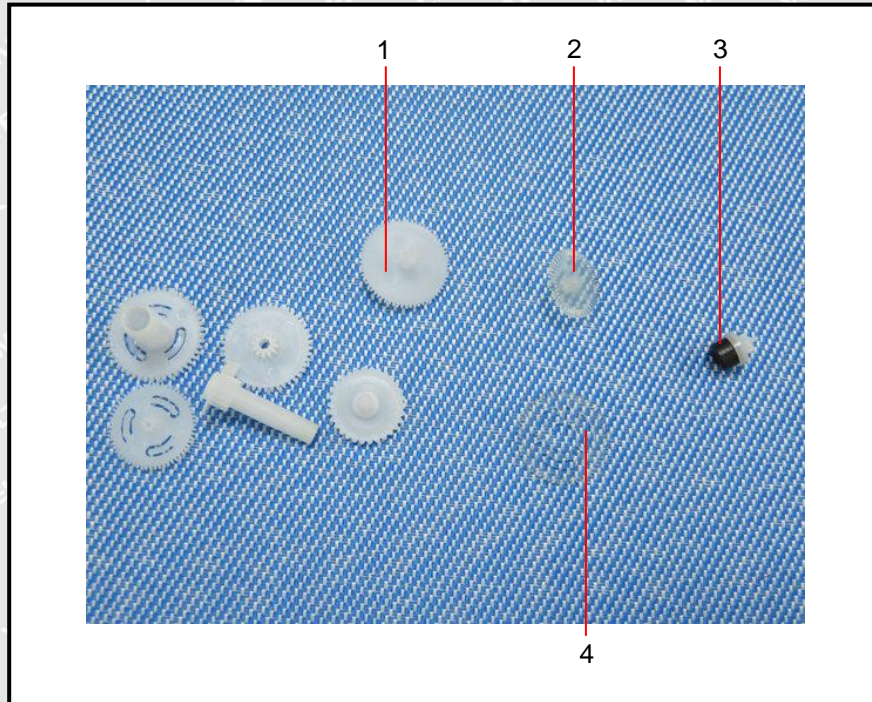
**Sample Photo(s):**



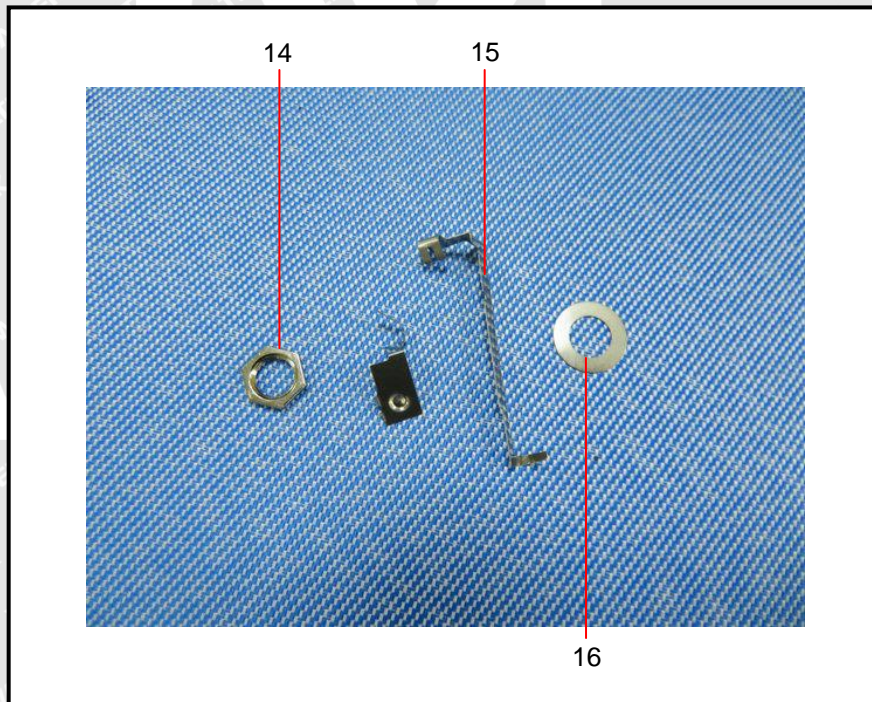
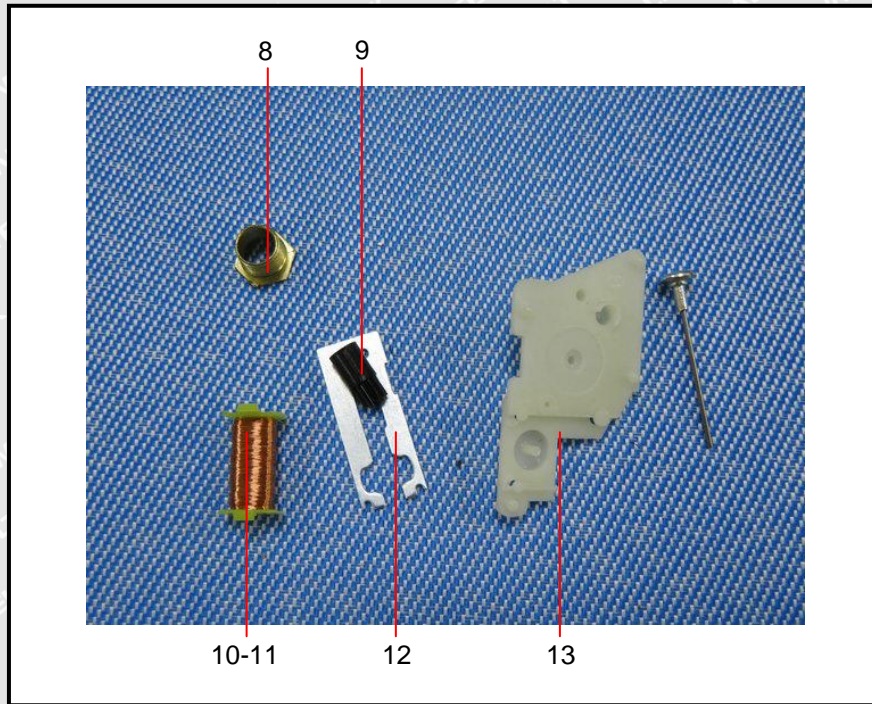




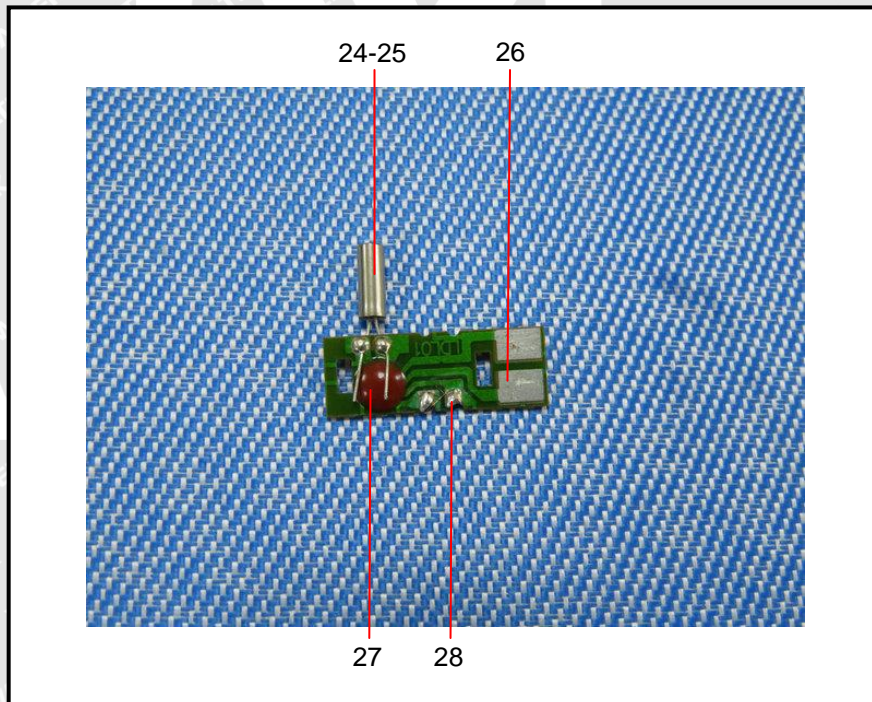
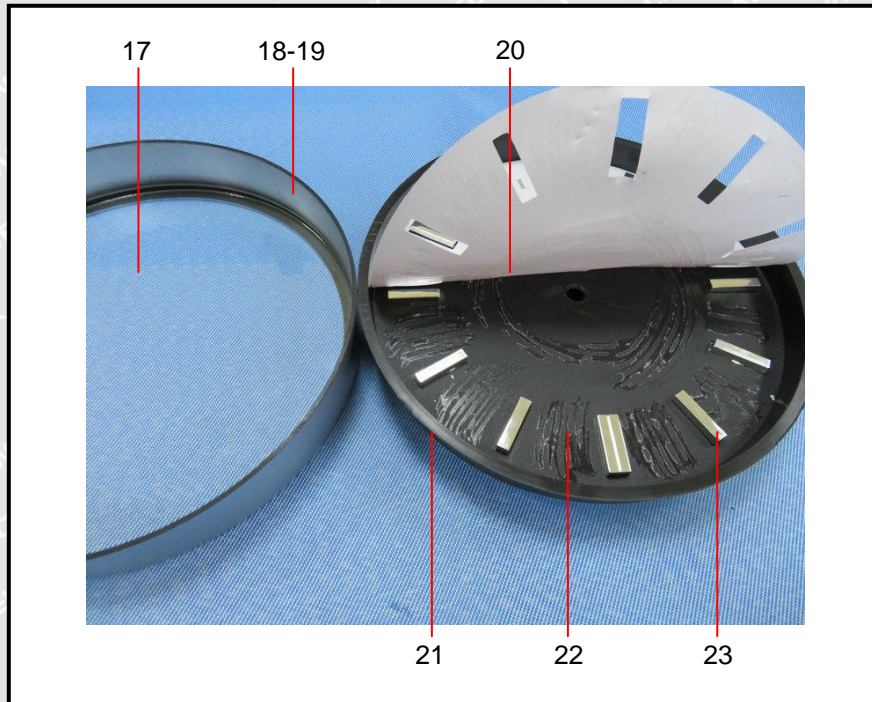
**Photograph(s) of parts tested:**











===== End of Report =====