

Applicant:



Manufacturer:



Factory:



Product Name : Smart Watch

Trade mark : N/A

Model : 97136, AP-0720

Prepared By : Shenzhen RCT Testing Technology Co., Ltd.
Room 2301 and 1305, No.2 Building, Lixiang Kewang Industrial Park, No.35 Guanlan Road, Longhua District, Shenzhen, China

Test Date: Nov. 10, 2023 - Nov. 28, 2023

Date of Report : Nov. 28, 2023

Report No.: RCT202311100105R

Results: Please refer to next page(s).

TEST REQUEST

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

CONCLUSION

Pass

Shenzhen RCT Testing Technology Co.,Ltd

Room 2301 and 1305, No.2 Building, Lixiang Kewang Industrial Park, No.35 Guanlan Road, Longhua District, Shenzhen, China

Signed for and on behalf of RCT



Lab manager



Results:

RoHS Directive 2011/65/EU and its amendment directives on XRF

Test method: With reference to IEC 62321-3-1:2013, Screening by X-ray Fluorescence Spectroscopy (XRF)

Seq. No.	Tested Part(s)	Results					
		Cd	Pb	Hg	Cr▼	Br▼	
						PBBs	PBDEs
1	Black Plastic strap	BL	BL	BL	BL	BL	BL
2	Black Plastic strap	BL	BL	BL	BL	BL	BL
3	Metal frame	BL	BL	BL	BL	/	/
4	Plastic bottom cover	BL	BL	BL	BL	BL	BL
5	Screw	BL	BL	BL	BL	/	/
6	Metallic material	BL	BL	BL	BL	/	/
7	Square metal sheet	BL	BL	BL	BL	/	/
8	Glass dial	BL	BL	BL	BL	BL	BL
9	White Plastic sheet	BL	BL	BL	BL	BL	BL
10	Copper cable	BL	BL	BL	BL	BL	BL
11	Black material	BL	BL	BL	BL	BL	BL
12	Blue PCB board	BL	BL	BL	BL	BL	BL
13	Capacitance	BL	BL	BL	BL	BL	BL
14	Resistance	BL	BL	BL	BL	BL	BL
15	IC	BL	BL	BL	BL	BL	BL
16	Electronic Components	BL	BL	BL	BL	BL	BL
17	Yellow insulating tape	BL	BL	BL	BL	BL	BL
18	Battery	BL	BL	BL	BL	BL	BL
19	PCB board	BL	BL	BL	BL	BL	BL
20	IC	BL	BL	BL	BL	BL	BL

Note:

- (1) Results were obtained by XRF for primary screening, and further chemical testing by ICP (for Cd, Pb, Hg), UV-Vis (for Cr(VI)) and GC-MS (for PBBs, PBDEs) are recommended to be performed, if the concentration exceeds the below warning value according to IEC 62321-3-1:2013.

Element	Unit	Non-metal	Metal	Composite Material
Cd	mg/kg	$BL \leq 70 - 3\sigma < X < 130 + 3\sigma \leq OL$	$BL \leq 70 - 3\sigma < X < 130 + 3\sigma \leq OL$	$BL \leq 50 - 3\sigma < X < 150 + 3\sigma \leq OL$
Pb	mg/kg	$BL \leq 700 - 3\sigma < X < 1300 + 3\sigma \leq OL$	$BL \leq 700 - 3\sigma < X < 1300 + 3\sigma \leq OL$	$BL \leq 500 - 3\sigma < X < 1500 + 3\sigma \leq OL$
Hg	mg/kg	$BL \leq 700 - 3\sigma < X < 1300 + 3\sigma \leq OL$	$BL \leq 700 - 3\sigma < X < 1300 + 3\sigma \leq OL$	$BL \leq 500 - 3\sigma < X < 1500 + 3\sigma \leq OL$
Cr	mg/kg	$BL \leq 700 - 3\sigma < X$	$BL \leq 700 - 3\sigma < X$	$BL \leq 500 - 3\sigma < X$
Br	mg/kg	$BL \leq 300 - 3\sigma < X$	--	$BL \leq 250 - 3\sigma < X$

Note:

- BL = Below Limit
OL = Over Limit
X = Inconclusive

- (2) The XRF screening test for RoHS elements – The reading may be different to the actual content in the sample be of non-uniformity composition.
- (3) The maximum permissible limit is quoted from the document 2015/863/EC amending RoHS directive 2011/65/EU:
- (4) ▼=For restricted substances PBBs and PBDEs, the results show the total Br content; The restricted substance was Cr(VI), and the results showed the total Cr content

RoHS Restricted Substances	Maximum Concentration Value (mg/kg) (by weight in homogenous materials)
Cadmium (Cd)	100
Lead (Pb)	1000
Mercury (Hg)	1000
Hexavalent Chromium (Cr(VI))	1000
Polybrominated biphenyls (PBBs)	1000
Polybrominated diphenyl ethers (PBDEs)	1000
Dibutyl Phthalate (DBP)	1000
Benzyl butyl Phthalate (BBP)	1000
Bis(2-ethylhexyl) Phthalate (DEHP)	1000
Diisobutyl phthalate (DIBP)	1000

Disclaimers:

This XRF Screening report is for reference purposes only. The applicant shall make its/his/her own judgment as to whether the information provided in this XRF screening report is sufficient for its/his/her purposes.

The result shown in this XRF screening report will differ based on various factors, including but not limited to, the sample size, thickness, area, surface flatness, equipment parameters and matrix effect (e.g. plastic, rubber, metal, glass, ceramic etc.). Further wet chemical pre-treatment with relevant chemical equipment analysis are required to obtain quantitative data.

B. EU RoHS Directive 2011/65/EU and its amendment Directives 2015/863/EU on Lead, Cadmium, Mercury, Hexavalent Chromium, PBBs, PBDEs, DBP, BBP, DEHP, DIBP content.

Test method:

Lead (Pb) & Cadmium (Cd) Content:

With reference to IEC 62321-5:2013, by acid digestion and analysis was performed by inductively coupled plasma atomic emission spectrometer (ICP-OES)

Mercury (Hg) Content:

With reference to IEC 62321-4:2013+AMD1:2017 CSV, by acid digestion and analysis was performed by inductively coupled plasma atomic emission spectrometer (ICP-OES)

Hexavalent Chromium (Cr⁶⁺) Content:

With reference to IEC 62321-7-1:2015 or IEC 62321-7-2:2017, by alkaline digestion and analysis was performed by UV-visible spectrophotometer (UV-Vis)

PBBs & PBDEs Content:

With reference to IEC 62321-6:2015, by solvent extraction and analysis was performed by gas chromatographic-mass spectrometer (GC-MS)

BBP DBP DEHP & DIBP Content:

With reference to IEC 62321-8:2017, by solvent extraction and analysis was performed by gas chromatographic-mass spectrometer (GC-MS)

1) The test results of Hexavalent Chromium (Cr⁶⁺) (metal)

Item	Unit	MDL	Results		Limit
			15	20	
Hexavalent Chromium(Cr (VI))▼	ug/cm ₂	0.10	Negative	Negative	-

Note:

- MDL = Method Detection Limit
 - /= Not apply
 - LOQ = Limit of Quantification, The LOQ of Hexavalent chromium is $0.10 \mu\text{g}/\text{cm}^2$
 - $\text{mg}/\text{kg} = \text{ppm} = \text{parts per million}$
 - N.D.=Not Detected (<MDL or LOQ)
 - ▼ = a. The sample is positive for Cr (VI) if the Cr (VI) concentration is greater than $0.13 \mu\text{g}/\text{cm}^2$. The sample coating is considered to contain Cr (VI)
b. The sample is negative for Cr (VI) if Cr (VI) is N.D. (concentration less than $0.10 \mu\text{g}/\text{cm}^2$). The sample coating is considered a non- Cr (VI) based coating
c. The result between $0.10 \mu\text{g}/\text{cm}^2$ and $0.13 \mu\text{g}/\text{cm}^2$ is considered to be inconclusive, unavoidable coating variations may influence the determination
- #1 According to RoHS directive 2011/65/EU and its amendments, Lead is exempted in glass of cathode ray tubes, electronic components and fluorescent tubes.
- #2 According to RoHS directive 2011/65/EU and its amendments, Lead is exempted in electronic ceramic parts (e.g. piezo electronic devices).
- #3 According to RoHS directive 2011/65/EU and its amendments, Lead is exempted as an alloying element in Copper containing up to 4% (40000ppm) by weight.
- #4 According to RoHS directive 2011/65/EU and its amendments, Lead is exempted in high melting temperature type solders (i.e. lead-based alloys containing 85 % by weight or more lead).
- #5 According to the statement provided by the customer, according to RoHS directive 2011/65/EU and its amendments, Lead is exempted as an alloying element in Aluminum containing up to 0.4% (4000ppm) by weight.
- #6 According to the statement provided by the customer, according to RoHS directive 2011/65/EU and its amendments, Cadmium and its compounds in electrical contact is exempted.
- #7 According to the statement provided by the customer, according to RoHS directive 2011/65/EU and its Amendments, Lead is exempted in steel for machining purposes and in galvanized steel containing up to 0.35% (3500ppm) by weight.

2) The test results of DBP, BBP, DEHP & DIBP

Item	Unit	MDL	Results					Limit
			1	2	3	4	5	
Dibutyl Phthalate (DBP)	mg/kg	50	N.D.	N.D.	N.D.	N.D.	N.D.	1000
Benzyl butyl Phthalate (BBP)	mg/kg	50	N.D.	N.D.	N.D.	N.D.	N.D.	1000
Bis(2-ethylhexyl) Phthalate (DEHP)	mg/kg	50	N.D.	N.D.	/	N.D.	/	1000
Diisobutyl phthalate (DIBP)	mg/kg	50	N.D.	N.D.	/	N.D.	/	1000

Item	Unit	MDL	Results					Limit
			6	7	8	9	10	
Dibutyl Phthalate (DBP)	mg/kg	50	N.D.	N.D.	N.D.	N.D.	N.D.	1000
Benzyl butyl Phthalate (BBP)	mg/kg	50	N.D.	N.D.	N.D.	N.D.	N.D.	1000
Bis(2-ethylhexyl) Phthalate (DEHP)	mg/kg	50	/	/	N.D.	N.D.	N.D.	1000
Diisobutyl phthalate (DIBP)	mg/kg	50	/	/	N.D.	N.D.	N.D.	1000

Item	Unit	MDL	Results					Limit
			11	12	13	14	15	
Dibutyl Phthalate (DBP)	mg/kg	50	N.D.	N.D.	N.D.	N.D.	N.D.	1000
Benzyl butyl Phthalate (BBP)	mg/kg	50	N.D.	N.D.	N.D.	N.D.	N.D.	1000
Bis(2-ethylhexyl) Phthalate (DEHP)	mg/kg	50	N.D.	N.D.	N.D.	N.D.	N.D.	1000
Diisobutyl phthalate (DIBP)	mg/kg	50	N.D.	N.D.	N.D.	N.D.	N.D.	1000

Item	Unit	MDL	Results					Limit
			16	17	18	19	20	
Dibutyl Phthalate (DBP)	mg/kg	50	N.D.	N.D.	N.D.	N.D.	N.D.	1000
Benzyl butyl Phthalate (BBP)	mg/kg	50	N.D.	N.D.	N.D.	N.D.	N.D.	1000
Bis(2-ethylhexyl) Phthalate (DEHP)	mg/kg	50	N.D.	N.D.	N.D.	N.D.	N.D.	1000
Diisobutyl phthalate (DIBP)	mg/kg	50	N.D.	N.D.	N.D.	N.D.	N.D.	1000

3) The test results of PBBs & PBDEs

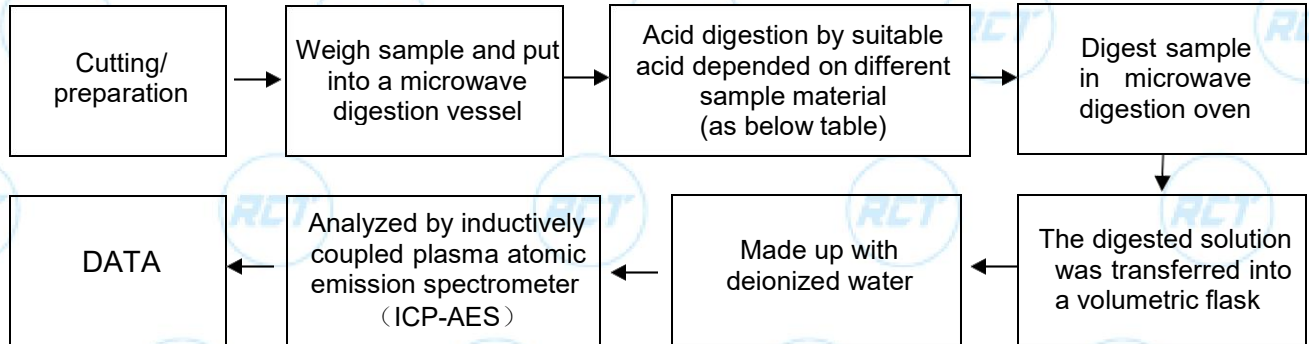
Item	Unit	MDL	Results		Limit
			15	20	
Polybrominated Biphenyls (PBBs)					
Monobromobiphenyl	mg/kg	5	N.D.	N.D.	/
Dibromobiphenyl	mg/kg	5	N.D.	N.D.	/
Tribromobiphenyl	mg/kg	5	N.D.	N.D.	/
Tetrabromobiphenyl	mg/kg	5	N.D.	N.D.	/
Pentabromobiphenyl	mg/kg	5	N.D.	N.D.	/
Hexabromobiphenyl	mg/kg	5	N.D.	N.D.	/
Heptabromobiphenyl	mg/kg	5	N.D.	N.D.	/
Octabromobiphenyl	mg/kg	5	N.D.	N.D.	/
Nonabromodiphenyl	mg/kg	5	N.D.	N.D.	/
Decabromodiphenyl	mg/kg	5	N.D.	N.D.	/
Total content	mg/kg	/	N.D.	N.D.	1000
Polybrominated Diphenyl ethers (PBDEs)(Mon-Deca)					
Monobromodiphenyl ether	mg/kg	5	N.D.	N.D.	/
Dibromodiphenyl ether	mg/kg	5	N.D.	N.D.	/
Tribromodiphenyl ether	mg/kg	5	N.D.	N.D.	/
Tetrabromodiphenyl ether	mg/kg	5	N.D.	N.D.	/
Pentabromodiphenyl ether	mg/kg	5	N.D.	N.D.	/
Hexabromodiphenyl ether	mg/kg	5	N.D.	N.D.	/
Heptabromodiphenyl ether	mg/kg	5	N.D.	N.D.	/
Octabromodiphenyl ether	mg/kg	5	N.D.	N.D.	/
Nonabromodiphenyl ether	mg/kg	5	N.D.	N.D.	/
Decabromodiphenyl ether	mg/kg	5	N.D.	N.D.	/
Total content	mg/kg	/	N.D.	N.D.	1000

Remark:

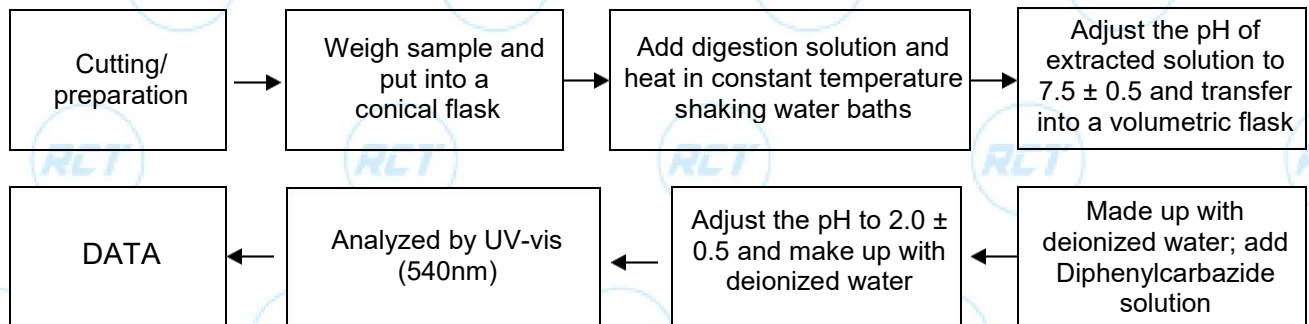
- mg/kg = ppm
- N.D. = Not detected
- MDL=Method detected limited
- Flow chart appendix is included
- Photo appendix is included.

Appendix

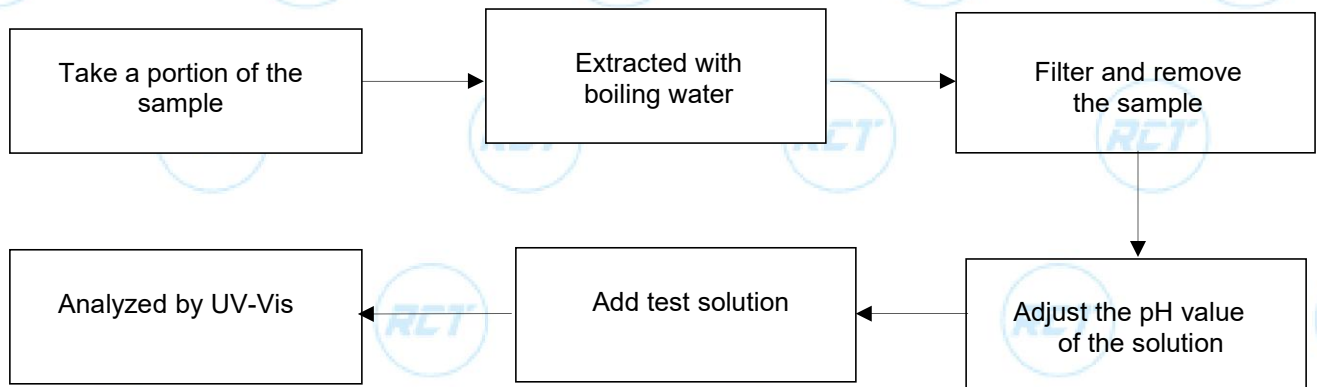
1. Test Flow chart for Cd/Pb /Hg content



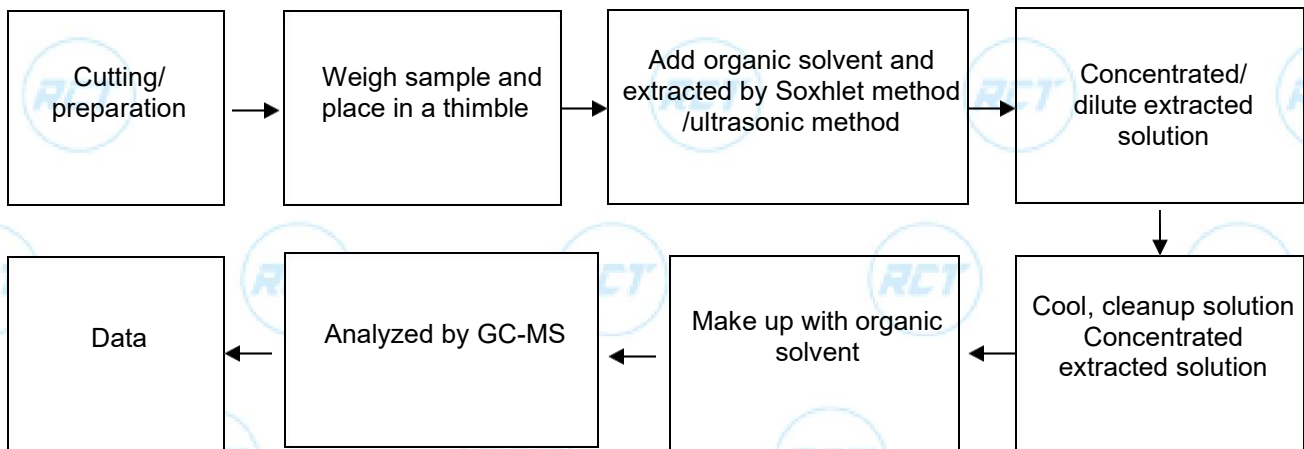
2. Test Flowchart for Cr⁶⁺ content (For non-metal material)



Test Flowchart for Cr⁶⁺ content (For metal material)



3. Test Flow chart for PBBs & PBDEs & DBP & BBP & DEHP & DIBP content



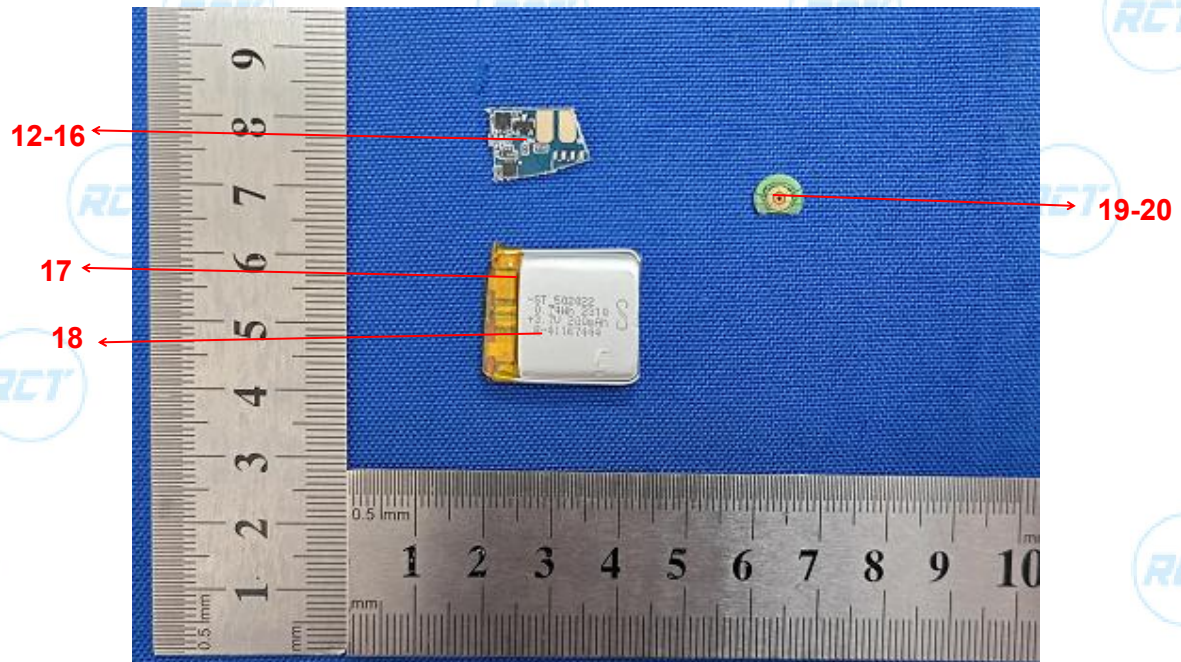
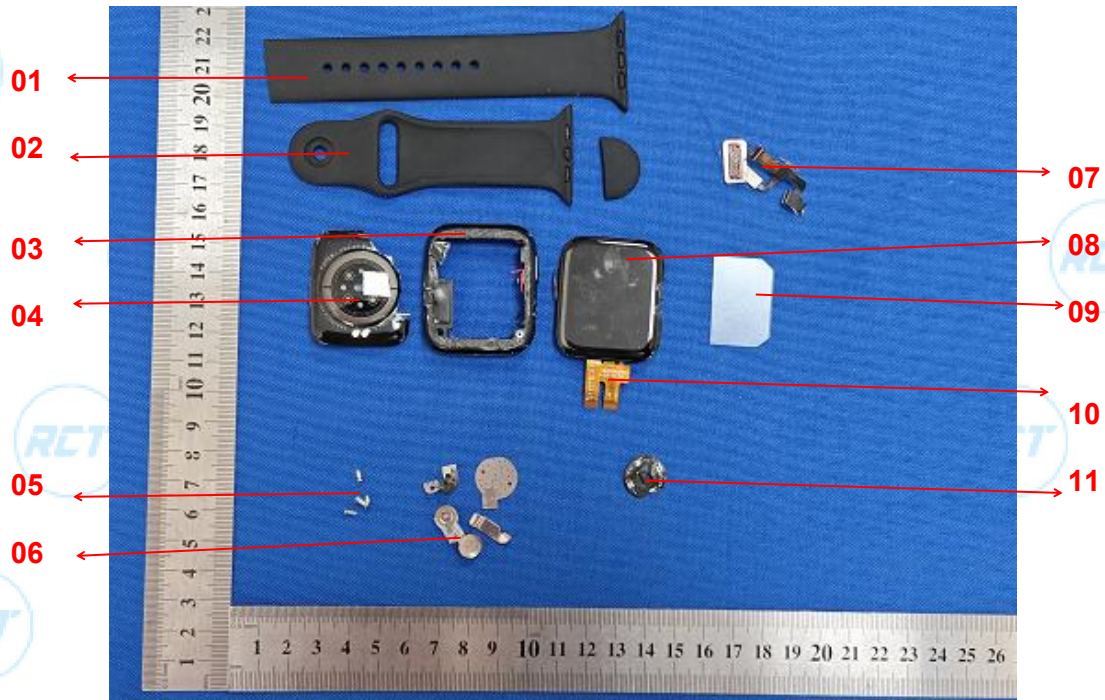
TEST REPORT

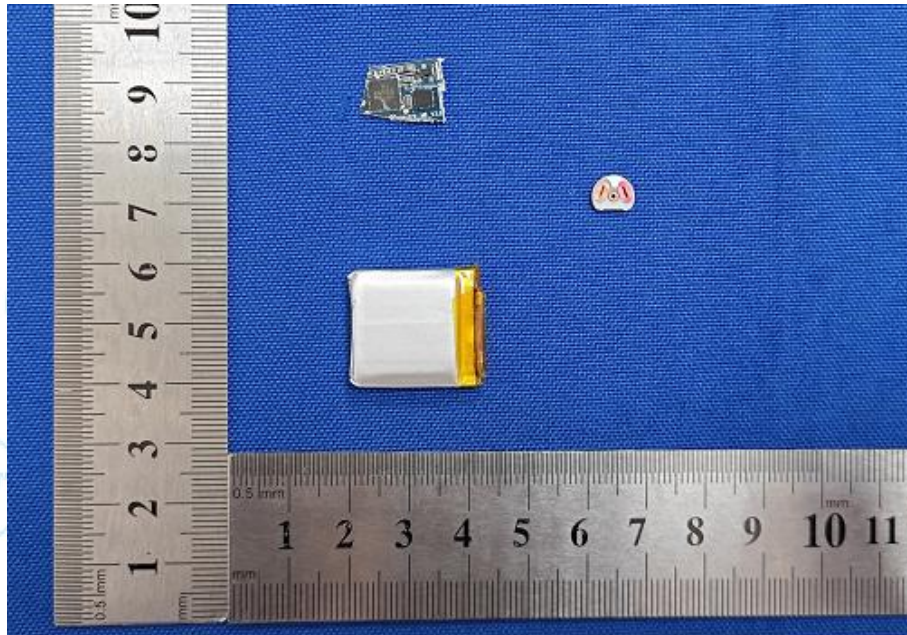
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The photo of the sample

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***** End of Report *****

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