Microtest
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Test Report

Report No.: MTi220629014-09C1

Date of Issue: July 19, 2022

Client: Wireless-Tag Technology Co., Ltd

Product: WIFI Module

Test Type: Commissioned Inspection

Shenzhen Microtest Co., Ltd.

http://www.mtitest.com

Tel: (86-755)88850135 Fax: (86-755) 88850136 Web:www.mtitest.com E-mail: mti@51mti.com
Address: 101, No. 7, Zone 2, Xinxing Industrial Park, Fuhai Avenue, Xinhe Community, Fuhai Street, Bao' an District, Shenzhen, Guangdong, China.

Instructions

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2. The test results of this report are only responsible for the samples submitted；
3. This report is invalid without the seal and signature of the laboratory；
4. This report is invalid if transferred, altered or tampered with in any form without authorization；
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TEST REPORT

Basic Information			
Client	Wireless-Tag Technology Co., Ltd		
Client Address	801, Block A, Building 6, Shenzhen International Innovation Valley, Dashi Road, Xili Community, Xili Street, Nanshan District, Shenzhen		
Manufacturer	Wireless-Tag Technology Co., Ltd		
Manufacturer Address	801, Block A, Building 6, Shenzhen International Innovation Valley, Dashi Road, Xili Community, Xili Street, Nanshan District, Shenzhen		
Sample Information			
Product	WIFI Module	Model	WT018684-S1
Serial Model	WT018684-S1U,WT018684-S6 WT018684-S6U,WT018684-S5 WT018684-S5U,WT-018684-S2	Brand/ Trademark	wireless-tag
Sample Number	1	Sample Description	/
Testing Information			
Sample Receive Date	July 12, 2022	Sample Source	Customer provided
Test Specification	With reference to RoHS Directive (EU) 2015/863 amending 2011/65/EU(RoHS 2.0) .		
Date of Tests	July 12, 2022-July 15, 2022		
Test Address	Chemistry lab		
Test Results:	Please refer to next page(s).		
Conclusion:	The submitted sample(s) complied with the Lead, Cadmium, Mercury, Hexavalent Chromium, PBBs, PBDEs, DBP, BBP, DEHP, DIBP content requirement according to RoHS Directive (EU) 2015/863 amending 2011/65/EU(RoHS 2.0).		

Compiled: Noah Zhang	Reviewed: Lyna chen	Approved: olina Feng

Test Method:

1. **With reference to IEC 62321-3-1:2013, screening by XRF spectroscopy.**
2. **Wet chemical test method.**

a. With reference to IEC 62321-5:2013, determination of Cadmium by ICP-OES.

b. With reference to IEC 62321-5:2013, determination of Lead by ICP-OES.

c. With reference to IEC 62321-4:2017, determination of Mercury by ICP-OES.

d.With reference to IEC 62321-7-1:2015 & IEC 62321-7-2:2017, determination of Hexavalent chromium by Colorimetric method using UV-Vis.

e. With reference to IEC 62321-6:2015, determination of PBBs and PBDEs by GC-MS.

3. **With reference to IEC 62321-8: 2017, determination of phthalates by GC-MS.**

Testing Result:

Part No.	Sample Description	Test item	XRF Result	Chemical Test (mg/kg)	Conclusion
1	Silvery metal	Pb	BL	/	Pass
		Cd	BL	/	
		Hg	BL	/	
		Cr(Cr(VI)	BL	/	
		Br(PBBs&PBDEs)	--	--	
		Phthalate(DBP\BBP \DEHP\DIBP)	--	--	
2	Silvery metal	Pb	BL	/	Pass
		Cd	BL	/	
		Hg	BL	/	
		Cr(Cr(VI)	BL	/	
		Br(PBBs&PBDEs)	--	--	
		Phthalate(DBP\BBP \DEHP\DIBP)	--	--	
3	Yellow capacitance	Pb	BL	/	Pass
		Cd	BL	/	
		Hg	BL	/	
		Cr(Cr(VI)	BL	/	
		Br(PBBs&PBDEs)	X	N.D.	
		Phthalate(DBP\BBP \DEHP\DIBP)	--	N.D.	
4	Solder	Pb	BL	/	Pass
		Cd	BL	/	
		Hg	BL	/	
		Cr(Cr(VI)	BL	/	
		Br(PBBs&PBDEs)	--	--	
		Phthalate(DBP\BBP \DEHP\DIBP)	--	--	

TEST REPORT

Part No.	Sample Description	Test item	XRF Result	Chemical Test (mg/kg)	Conclusion
5	Black PCB	Pb	BL	/	Pass
		Cd	BL	/	
		Hg	BL	/	
		Cr(Cr(VI)	BL	/	
		Br(PBBs&PBDEs)	X	N.D.	
		Phthalate(DBP\BBP \DEHP\DIBP)	--	N.D.	
6	Crystal oscillator	Pb	BL	/	Pass
		Cd	BL	/	
		Hg	BL	/	
		Cr(Cr(VI)	BL	/	
		Br(PBBs&PBDEs)	X	N.D.	
		Phthalate(DBP\BBP \DEHP\DIBP)	--	N.D.	
7	White LED	Pb	BL	/	Pass
		Cd	BL	/	
		Hg	BL	/	
		Cr(Cr(VI)	BL	/	
		Br(PBBs&PBDEs)	X	N.D.	
		Phthalate(DBP\BBP \DEHP\DIBP)	--	N.D.	
8	Black IC	Pb	BL	/	Pass
		Cd	BL	/	
		Hg	BL	/	
		Cr(Cr(VI)	BL	/	
		Br(PBBs&PBDEs)	BL	/	
		Phthalate(DBP\BBP \DEHP\DIBP)	--	N.D.	
9	Black PCB	Pb	BL	/	Pass
		Cd	BL	/	
		Hg	BL	/	
		Cr(Cr(VI)	BL	/	
		Br(PBBs&PBDEs)	X	N.D.	
		Phthalate(DBP\BBP \DEHP\DIBP)	--	N.D.	

TEST REPORT

Part No.	Sample Description	Test item	XRF Result	Chemical Test (mg/kg)	Conclusion
10	Yellow capacitance	Pb	BL	/	Pass
		Cd	BL	/	
		Hg	BL	/	
		Cr(Cr(VI)	BL	/	
		Br(PBBs&PBDEs)	BL	/	
		Phthalate(DBP\BBP \DEHP\DIBP)	--	N.D.	
11	Black IC	Pb	BL	/	Pass
		Cd	BL	/	
		Hg	BL	/	
		Cr(Cr(VI)	BL	/	
		Br(PBBs&PBDEs)	X	N.D.	
		Phthalate(DBP\BBP \DEHP\DIBP)	--	N.D.	
12	Solder	Pb	BL	/	Pass
		Cd	BL	/	
		Hg	BL	/	
		Cr(Cr(VI)	BL	/	
		Br(PBBs&PBDEs)	--	--	
		Phthalate(DBP\BBP \DEHP\DIBP)	--	--	
13	Crystal oscillator	Pb	BL	/	Pass
		Cd	BL	/	
		Hg	BL	/	
		Cr(Cr(VI)	BL	/	
		Br(PBBs&PBDEs)	X	N.D.	
		Phthalate(DBP\BBP \DEHP\DIBP)	--	N.D.	

Remark:

(1) (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 Cr^{6+}.

(b) Results are obtained by XRF for primary screening, and further chemical testing by ICP-OES (for Cd, Pb, Hg), UV-Vis (for Cr(VI)) and GC-MS (for PBBs, PBDEs) is recommended to be performed, if the concentration exceeds the below warning value according to IEC62321-3-1:2013 (unit: mg/kg).

Element	Polymers	Metals	Composite Material
Cd	BL ≤ (70-3σ) < X < (130+3σ) ≤ OL	BL ≤ (70-3σ) < X < (130+3σ) ≤ OL	LOD < X < (150+3σ) ≤ OL
Pb	BL ≤ (700-3σ) < X < (1300+3σ) ≤ OL	BL ≤ (700-3σ) < X < (1300+3σ) ≤ OL	BL ≤ *(500-3σ) < X < (1500+3σ)* ≤ OL
Hg	BL ≤ (700-3σ) < X < (1300+3σ) ≤ OL	BL ≤ (700-3σ) < X < (1300+3σ) ≤ OL	BL ≤ *(500-3σ) < X < (1500+3σ)* ≤ OL
Cr	BL ≤ (700-3σ) < X	BL ≤ (700-3σ) < X	BL ≤ *(500-3σ) < X*
Br	BL ≤ (300-3σ) < X	NA	BL ≤ *(250-3σ) < X*

(c) OL=Over Limit, BL=Below Limit, X=inconclusive, LOD=Limit of Detection, NA=not applicable, -- = No Testing

(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

(2) (a) mg/kg=ppm=0.0001%, N.D.=not detected (＜MDL)

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

Test Items	Unit	MDL	Limit
Pb	mg/kg	2	1000
Cd	mg/kg	2	100
Hg	mg/kg	2	1000
Cr^{6+}	mg/kg	See below	1000
PBBs	mg/kg	See below	1000
PBDEs	mg/kg	See below	1000
DBP	mg/kg	50	1000
BBP	mg/kg	50	1000
DEHP	mg/kg	50	1000
DIBP	mg/kg	50	1000

The MDL for single compound of PBBs &PBDEs is 20mg/kg, MDL of Cr^{6+} for metal sample is 0.10μg/cm². and MDL of Cr^{6+} for polymer & composite sample is 8 mg/kg.

(c) Metal sample:

-The sample is positive for Cr^{6+} if the Cr^{6+} concentration is greater than 0.13 μg/cm². The sample coating is considered to contain Cr^{6+}.

-The sample is negative for Cr^{6+} if Cr^{6+} is ND (concentration less than 0.10 μg/cm²). The coating is considered a non- Cr^{6+} based coating

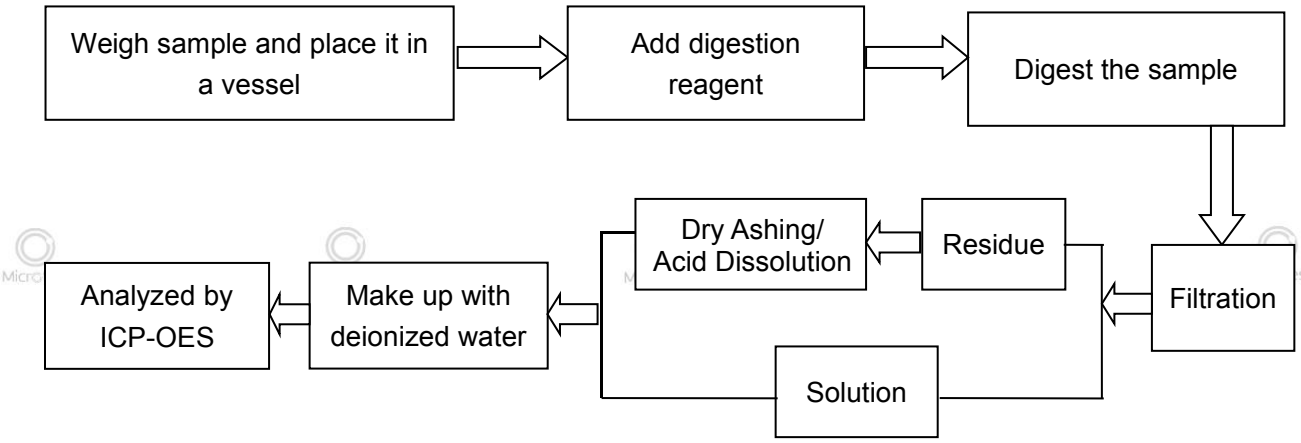
-The result between 0.10 μg/cm² and 0.13 μg/cm² is considered to be inconclusive, unavoidable coating variations may influence the determination

Information on storage conditions and production date of the tested sample is unavailable and thus Cr^{6+} results represent status of the sample at the time of testing.

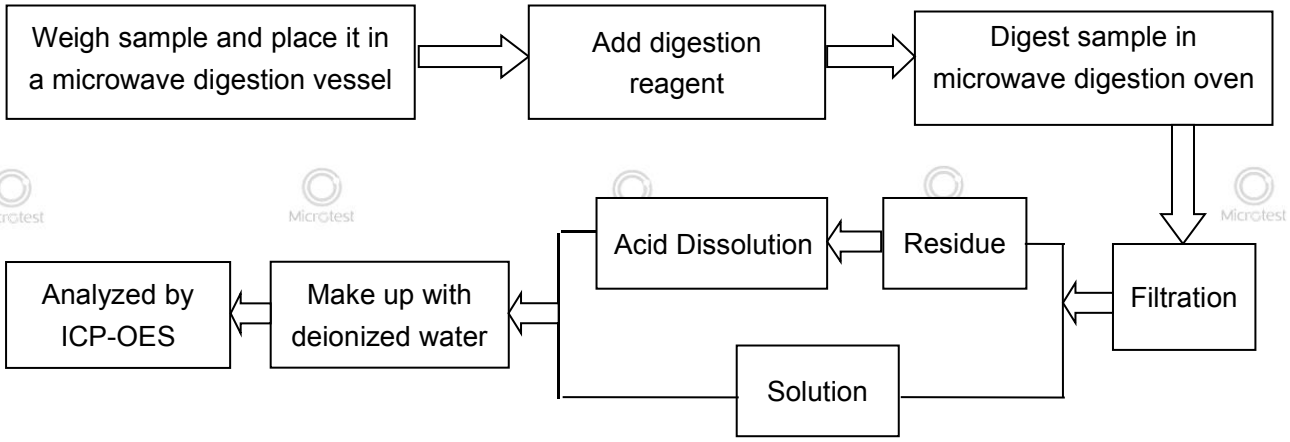
(3) As specified by client to test the specified materials only.

Testing flow chart:

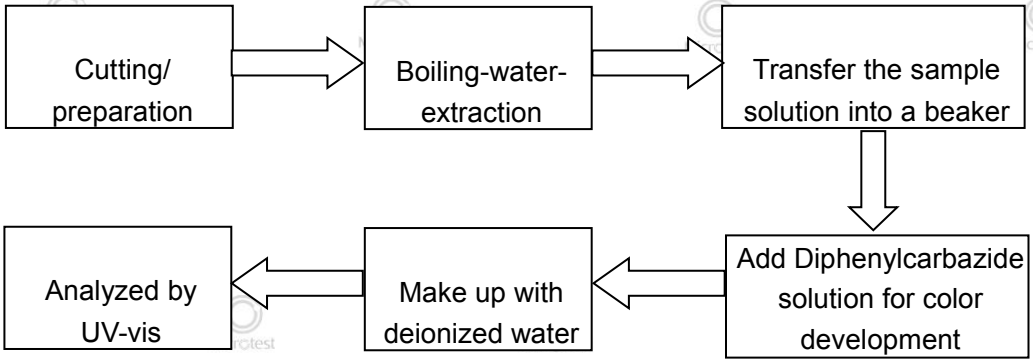
1. Lead, Cadmium



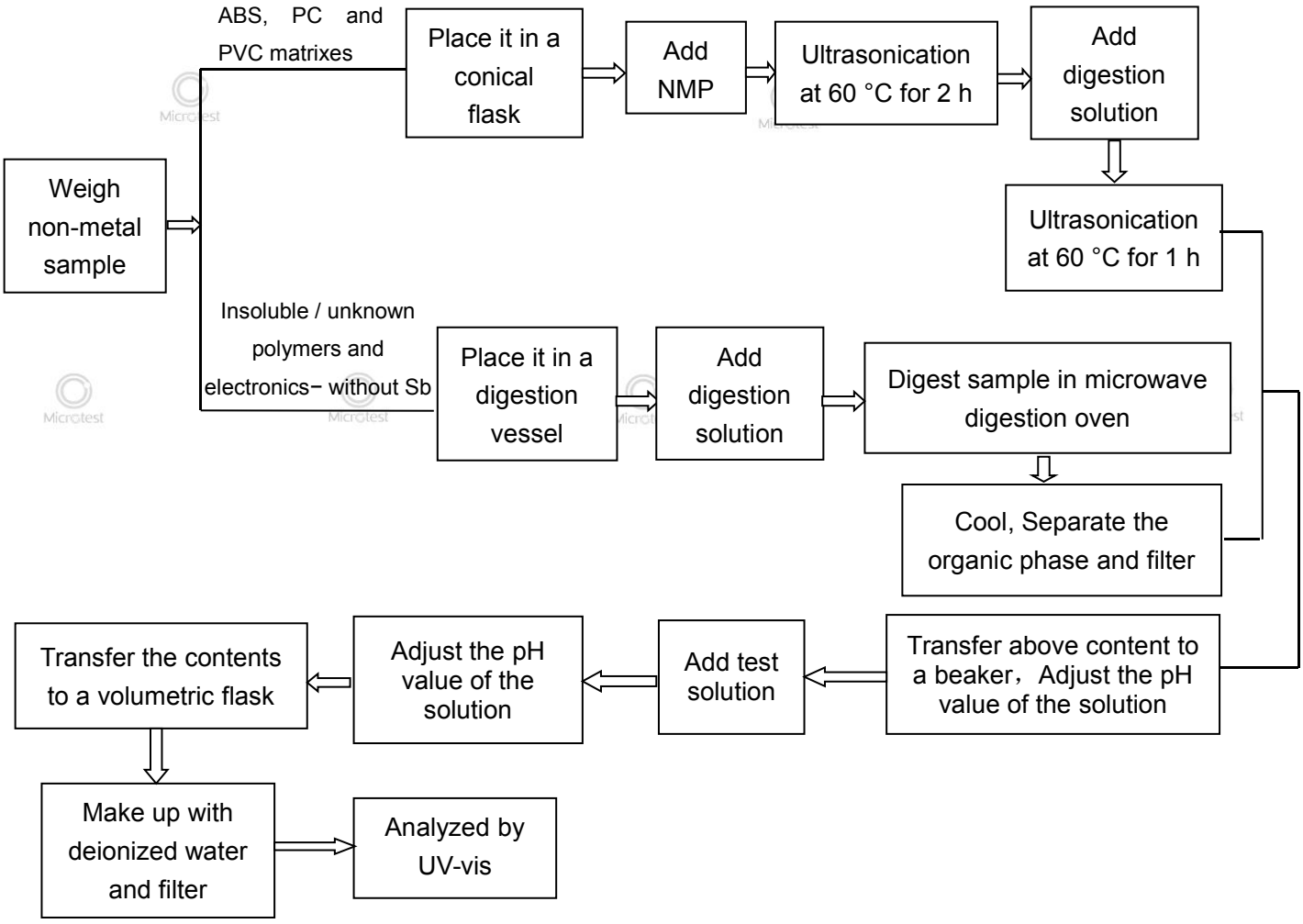
2. Mercury



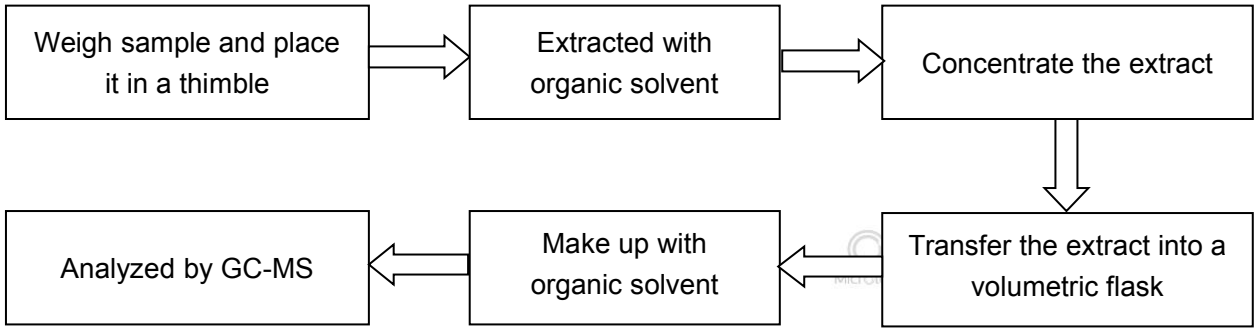
3. Hexavalent Chromium (For metal material)



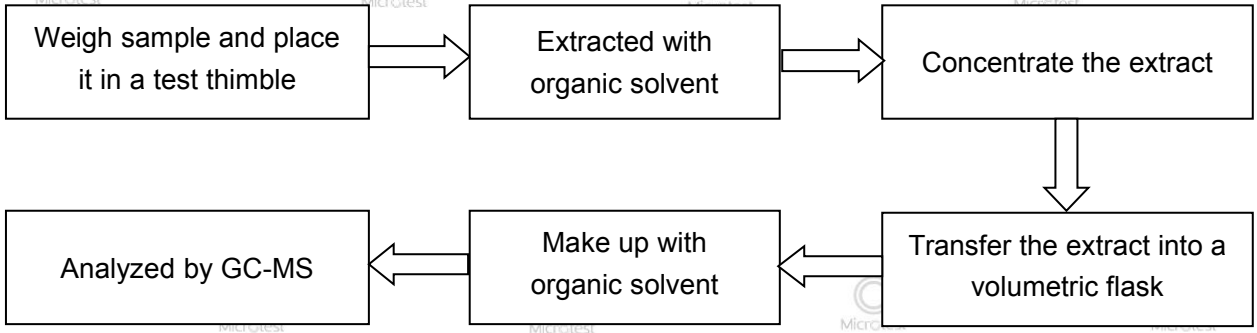
4. Hexavalent Chromium(For non-metal material):



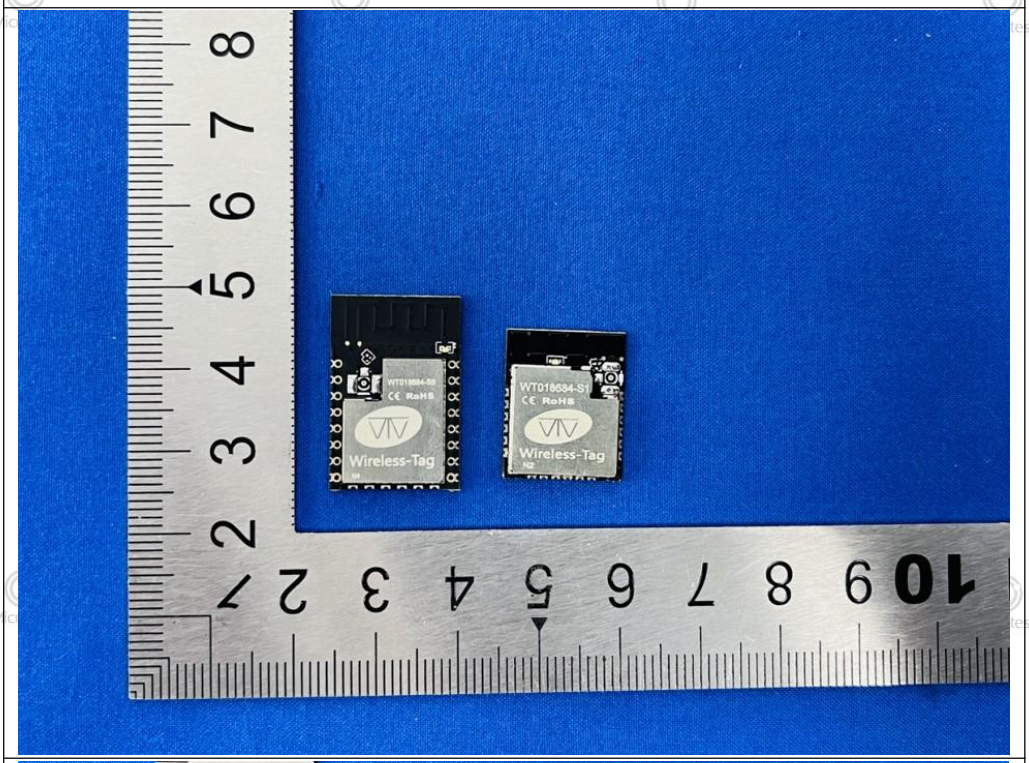
5. Polybromobiphenyls (PBBs), Polybromodiphenyl ethers (PBDEs)

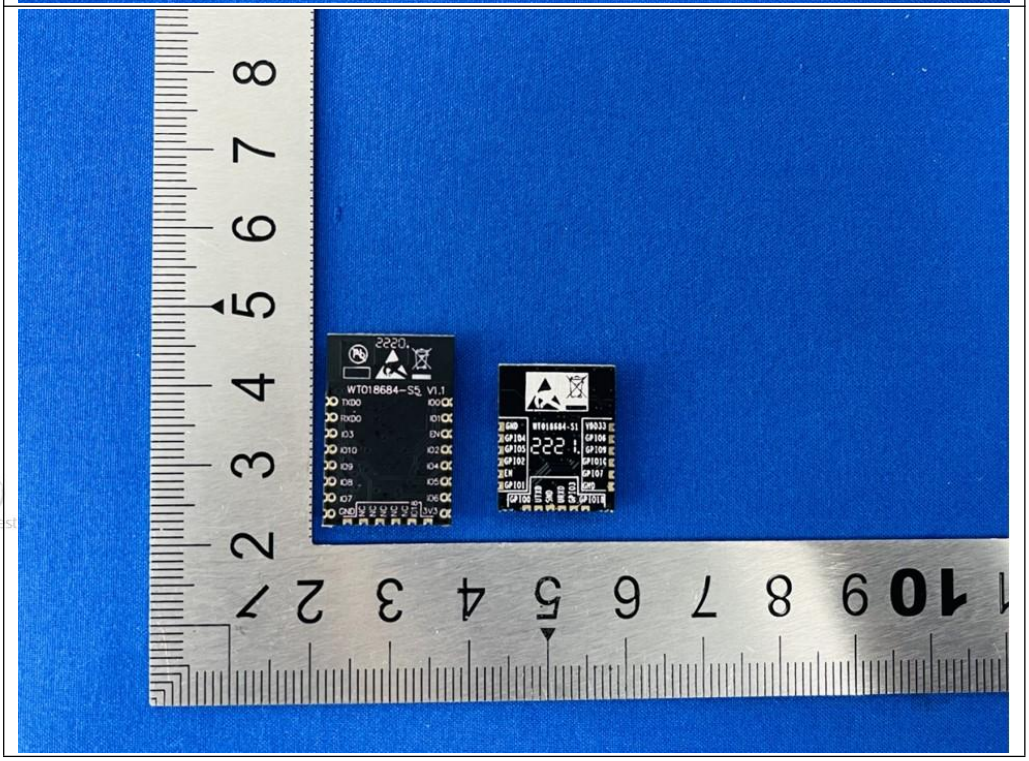


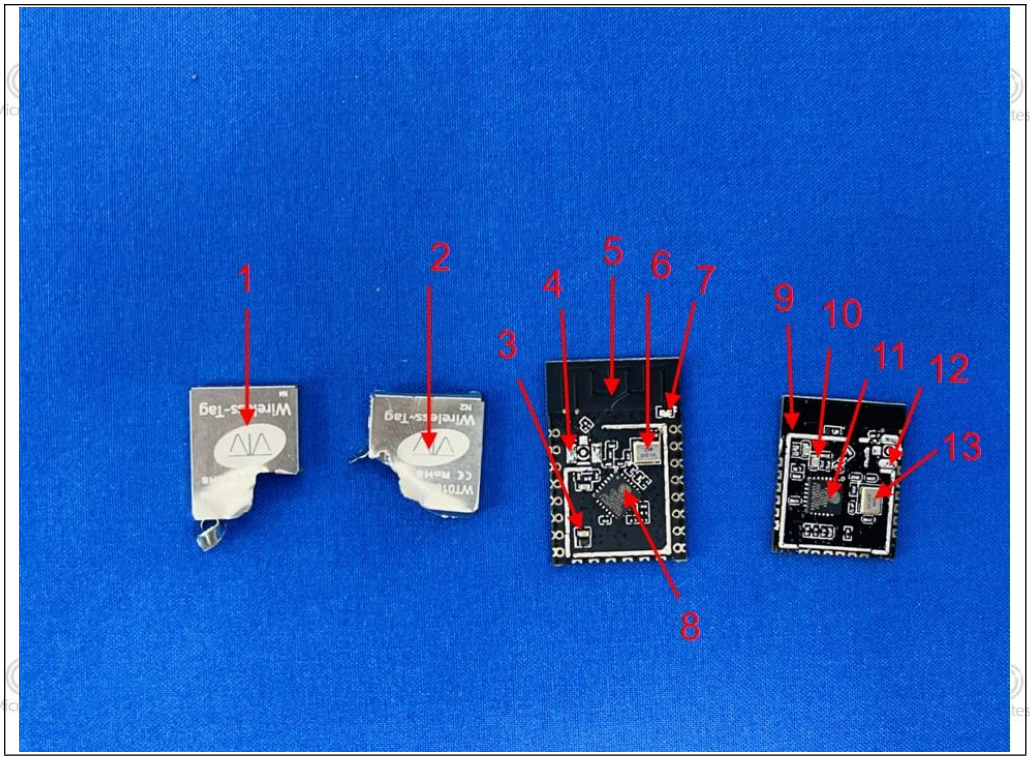
6. Phthalates(DBP, BBP, DEHP, DIBP)



Pictures







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