



# Test Report

Report No: KEYS240517106001RH-03

Date: May 23, 2024

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**Applicant** : Shenzhen Xinnanming Electronic Co., Ltd.  
**Address** : NO. 407, Building F, Tianyou Maker Industrial Park, No. 2 Lixin Road, Qiaotou Community, Fuhai Street, Baoan District, Shenzhen.  
**Manufacturer** : Shenzhen Xinnanming Electronic Co., Ltd.  
**Address** : NO. 407, Building F, Tianyou Maker Industrial Park, No. 2 Lixin Road, Qiaotou Community, Fuhai Street, Baoan District, Shenzhen.

The following sample(s) was /were submitted and identified on behalf of the clients as:

**Sample Name** : Mobile Phone Cable  
**Sample Model** : 3 In 1-01, 3 In 1-02, 3 in 1-03, 3 in 1-04, 3 in 1-05, 3 In 1-06,  
3in1-XY ( "X" represents 0-9 "Y" represents 1-9 )  
**Sample Received Date** : May 18, 2024  
**Testing Period** : May 18, 2024 To May 23, 2024  
**Test Requested** : Selected test (s) in the selected parts as requested by client with the RoHS 2 Directive 2011/65/EU Annex II (EU) 2015/863 as last amended by Directive (EU) 2017/2102.  
**Test Method** : 1. As specified by client, to screen Lead(Pb), Cadmium(Cd), Mercury(Hg), Chromium(Cr) and Bromine(Br) in the submitted sample(s) by XRF.  
2. As specified by client, when screening results exceed the XRF screening limit in IEC 62321-3-1: 2013, further use of wet chemical methods are required to test Lead(Pb), Cadmium(Cd), Mercury(Hg), Hexavalent Chromium(Cr(VI)), Polybrominated Biphenyls(PBBs), Polybrominated Diphenyl Ethers(PBDEs), Bis(2-ethylhexyl) phthalate (DEHP) ,Butyl benzyl phthalate (BBP), Dibutylphthalate (DBP) ,and Diisobutyl phthalate (DIBP) in the submitted sample(s).  
**Test Result** : Please refer to next page(s).  
**Conclusion** : PASS (Based on test results)

Signed for and on behalf of

Tony Qian/Approved Signatory

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**Summary of Test Results:**

TEST REQUEST	CONCLUSION
RoHS Directive 2011/65/EU and its subsequent amendments Directive (EU) 2015/863	
(1)To determine Lead (Pb), Cadmium(Cd), Mercury(Hg), Hexavalent Chromium(Cr(VI)),Polybrominated Biphenyls (PBBs) and Polybrominated DiphenylEthers (PBDEs)content by screening test and chemical test	<b>PASS</b>
(2) To determine Phthalates (DBP, BBP, DEHP, DIBP) content by chemical test	<b>PASS</b>



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## Sample Description:

No.	Name
1	Red Outer Wire Skin
2	Yellow Outer Wire Skin
3	Black Wire Skin
4	Black And White Outer Wire Skin
5	Pink Outer Wire Skin
6	Gray Outer Wire Skin
7	Black Wire Skin
8	Red Plastic
9	Black Plastic
10	Yellow Plastic
11	Black Plastic
12	Gray Plastic
13	Black Plastic
14	Transparent Plastic
15	PCB
16	LED
17	Resistors
18	IC
19	Diode
20	Black Plastic

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No.	Name
21	Black Plastic
22	Pink Plastic
23	Pink Plastic
24	Silver Plastic
25	Black Plastic
26	Gray Plastic
27	Black Plastic
28	Transparent Plastic
29	PCB
30	LED
31	Resistors
32	IC
33	Diode
34	USB Socket
35	Type-c Socket
36	Lightning Socket
37	Micro USB Socket
38	Silver Metal
39	Black Plastic
40	Gold Finger
41	Thread Core

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## 1. XRF Test Result:

No.	XRF Result(mg/kg)					Chemical Test (mg/kg)	Conclusion
	Pb	Cd	Hg	Cr	Br		
1	BL	BL	BL	BL	BL	--	Pass
2	BL	BL	BL	BL	BL	--	Pass
3	BL	BL	BL	BL	BL	--	Pass
4	BL	BL	BL	BL	BL	--	Pass
5	BL	BL	BL	BL	BL	--	Pass
6	BL	BL	BL	BL	BL	--	Pass
7	BL	BL	BL	BL	BL	--	Pass
8	BL	BL	BL	BL	BL	--	Pass
9	BL	BL	BL	BL	BL	--	Pass
10	BL	BL	BL	BL	BL	--	Pass
11	BL	BL	BL	BL	BL	--	Pass
12	BL	BL	BL	BL	BL	--	Pass
13	BL	BL	BL	BL	BL	--	Pass
14	BL	BL	BL	BL	BL	--	Pass
15	BL	BL	BL	BL	BL	--	Pass
16	BL	BL	BL	BL	BL	--	Pass
17	BL	BL	BL	BL	--	--	Pass
18	BL	BL	BL	BL	--	--	Pass

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Guangdong KEYS Testing Technology Co., Ltd.

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No.	XRF Result(mg/kg)					Chemical Test (mg/kg)	Conclusion
	Pb	Cd	Hg	Cr	Br		
19	BL	BL	BL	BL	--	--	Pass
20	BL	BL	BL	BL	BL	--	Pass
21	BL	BL	BL	BL	BL	--	Pass
22	BL	BL	BL	BL	BL	--	Pass
23	BL	BL	BL	BL	BL	--	Pass
24	BL	BL	BL	BL	BL	--	Pass
25	BL	BL	BL	BL	BL	--	Pass
26	BL	BL	BL	BL	BL	--	Pass
27	BL	BL	BL	BL	BL	--	Pass
28	BL	BL	BL	BL	BL	--	Pass
29	BL	BL	BL	BL	BL	--	Pass
30	BL	BL	BL	BL	BL	--	Pass
31	BL	BL	BL	BL	--	--	Pass
32	BL	BL	BL	BL	--	--	Pass
33	BL	BL	BL	BL	--	--	Pass
34	BL	BL	BL	BL	--	--	Pass
35	BL	BL	BL	BL	--	--	Pass
36	BL	BL	BL	BL	--	--	Pass
37	BL	BL	BL	BL	--	--	Pass

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No.	XRF Result(mg/kg)					Chemical Test (mg/kg)	Conclusion
	Pb	Cd	Hg	Cr	Br		
38	BL	BL	BL	BL	--	--	Pass
39	BL	BL	BL	BL	BL	--	Pass
40	BL	BL	BL	BL	--	--	Pass
41	BL	BL	BL	BL	--	--	Pass



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## Remark:

1. It is the result on total Br while test item on restricted substances in PBBs/PBDEs. It is the result on total Cr while test item on restricted substances is Cr(VI).

2. Screening test by XRF spectroscopy

XRF screening limits in mg/kg for regulated elements according to IEC 62321-3-1: 2013 Annex A.

Element	Polymer Material	Metallic Material	Composite Material
Pb	$BL \leq 700 - 3\sigma \leq X < 1300 + 3\sigma \leq OL$	$BL \leq 700 - 3\sigma \leq X < 1300 + 3\sigma \leq OL$	$BL \leq 500 - 3\sigma \leq X < 1500 + 3\sigma \leq OL$
Cd	$BL \leq 70 - 3\sigma \leq X < 130 + 3\sigma \leq OL$	$BL \leq 70 - 3\sigma \leq X < 130 + 3\sigma \leq OL$	$LOD < X < 150 + 3\sigma \leq OL$
Hg	$BL \leq 700 - 3\sigma \leq X < 1300 + 3\sigma \leq OL$	$BL \leq 700 - 3\sigma \leq X < 1300 + 3\sigma \leq OL$	$BL \leq 500 - 3\sigma \leq X < 1500 + 3\sigma \leq OL$
Cr	$BL \leq 700 - 3\sigma < X$	$BL \leq 700 - 3\sigma < X$	$BL \leq 500 - 3\sigma < X$
Br	$BL \leq 300 - 3\sigma < X$	--	$BL \leq 250 - 3\sigma < X$

## XRF detection limits in mg/kg for regulated elements in various material

Element	Polymer Material	Metallic Material	Composite Material
Pb	10	50	50
Cd	10	50	50
Hg	10	50	50
Cr	10	50	50
Br	10	50	50

## Note:

-BL = Under the XRF screening limit

-OL = Future chemical test will be conducted while result is above the screening limit

-X = The symbol "X" marks the region where further investigation is necessary

-3σ = The reproducibility of analytical instruments

-LOD = Detection limit

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## 2. Wet Chemical Test

Test Item(s)	Test Method/ Test Equipment	Unit	Limit	MDL
Cadmium(Cd)	IEC 62321-5:2013, ICP-OES	mg/kg	100	2
Lead(Pb)	IEC 62321-5:2013, ICP-OES	mg/kg	1000	2
Mercury(Hg)	IEC 62321-4:2013+AMD1:2017, ICP-OES	mg/kg	1000	2
Hexavalent Chromium(CrVI) (Metal)	IEC 62321-7-1:2015, UV-Vis	µg/cm <sup>2</sup>	0.13	0.1
Hexavalent Chromium(CrVI) (Nonmetal)	IEC 62321-7-2:2017, UV-Vis	mg/kg	1000	8
PBBs (Next form)	IEC 62321-6:2015, GC-MS	mg/kg	1000	5
PBDEs (Next form)	IEC 62321-6:2015, GC-MS	mg/kg	1000	5
Dibutyl Phthalate(DBP)	IEC 62321-8:2017, GC-MS	mg/kg	1000	30
Butyl benzyl phthalate (BBP)	IEC 62321-8:2017, GC-MS	mg/kg	1000	30
Di-(2-ethylhexyl) Phthalate(DEHP)	IEC 62321-8:2017, GC-MS	mg/kg	1000	30
Diisobutyl phthalate (DIBP)	IEC 62321-8:2017, GC-MS	mg/kg	1000	30

PBBs		PBDEs	
Monobromobiphenyl	Hexabromobiphenyl	Monobromodiphenyl ether	Hexabromodiphenyl ether
Dibromobiphenyl	Heptabromobiphenyl	Dibromodiphenyl ether	Heptabromodiphenyl ether
Tribromobiphenyl	Octabromobiphenyl	Tribromodiphenyl ether	Octabromodiphenyl ether
Tetrabromobiphenyl	Nonabromobiphenyl	Tetrabromodiphenyl ether	Nonabromodiphenyl ether
Pentabromobiphenyl	Decabromobiphenyl	Pentabromodiphenyl ether	Decabromodiphenyl ether

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**Note:**

1. mg/kg= ppm=0.0001%
2. N.D.= Not Detected(<MDL)
3. MDL = Method Detection Limit
4. -- = No Testing
5. When Cr (VI) in a sample is detected below the 0.10  $\mu\text{g}/\text{cm}^2$  LOQ (limit of quantification), the sample is considered to be negative for Cr (VI). Since Cr (VI) may not be uniformly distributed in the coating even within the same sample batch, a "grey zone" between 0.10  $\mu\text{g}/\text{cm}^2$  and 0.13  $\mu\text{g}/\text{cm}^2$  has been established as "inconclusive" to reduce inconsistent results due to unavoidable coating variations. In this case, additional testing may be necessary to confirm the presence of Cr (VI). When Cr (VI) is detected above 0.13  $\mu\text{g}/\text{cm}^2$ , the sample is considered to be positive for the presence of Cr (VI) in the coating layer. Unavoidable coating variations may influence the determination. Information on storage conditions and production date of the tested sample is unavailable and thus Cr (VI) results represent status of the sample at the time of testing.

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### 3. Phthalate, PBBs, PBDEs Test Result:

Test No.	Test Item(s)						Conclusion
	Dibutyl Phthalate (DBP)	Butyl benzyl phthalate (BBP)	Di-(2-ethylhexyl) Phthalate (DEHP)	Diisobutyl phthalate (DIBP)	PBBs	PBDEs	
1	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	Pass
2	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	Pass
3	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	Pass
4	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	Pass
5	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	Pass
6	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	Pass
7	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	Pass
8	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	Pass
9	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	Pass
10	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	Pass
11	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	Pass
12	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	Pass
13	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	Pass
14	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	Pass
15	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	Pass
16	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	Pass
20	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	Pass
21	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	Pass

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Test No.	Test Item(s)						Conclusion
	Dibutyl Phthalate (DBP)	Butyl benzyl phthalate (BBP)	Di-(2-ethylhexyl) Phthalate (DEHP)	Diisobutyl phthalate (DIBP)	PBBs	PBDEs	
22	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	Pass
23	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	Pass
24	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	Pass
25	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	Pass
26	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	Pass
27	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	Pass
28	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	Pass
29	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	Pass
30	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	Pass
39	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	Pass

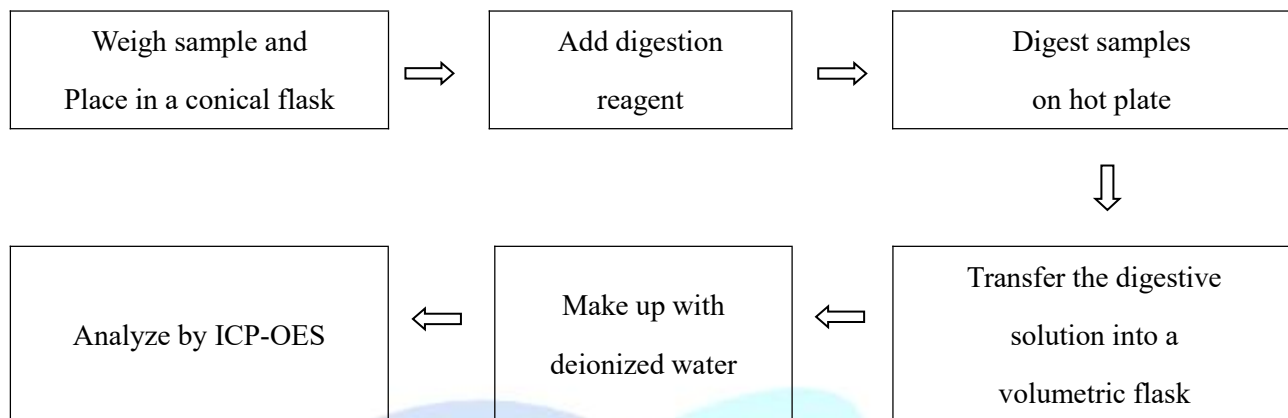
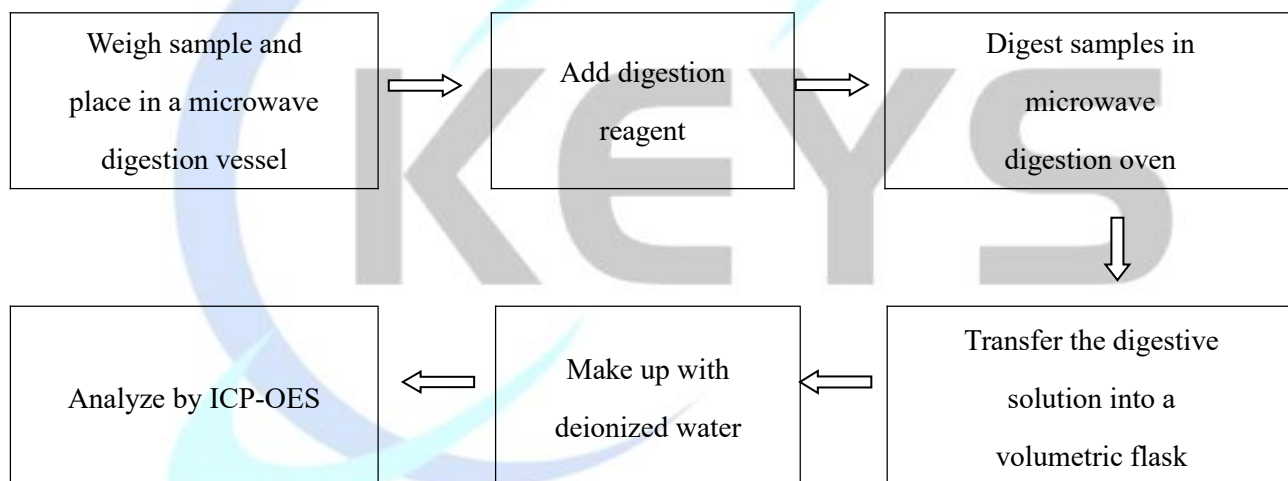
**Note:**

1. mg/kg= ppm=0.0001%
2. N.D.= Not Detected(<MDL)

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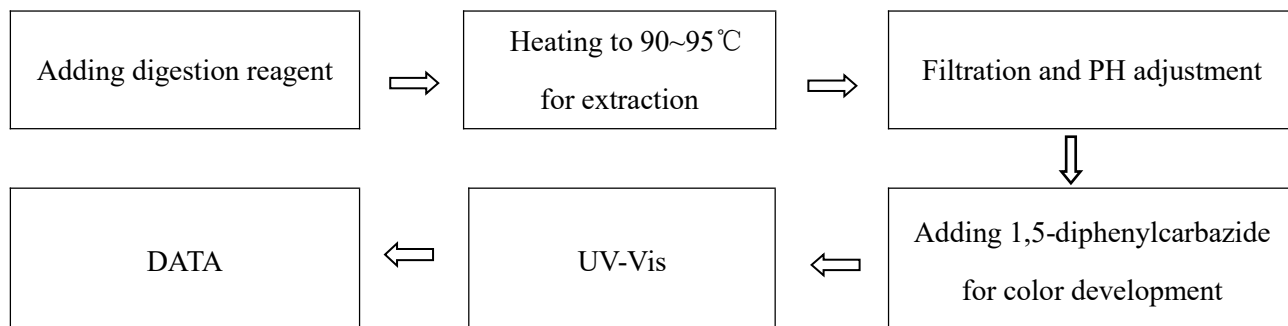
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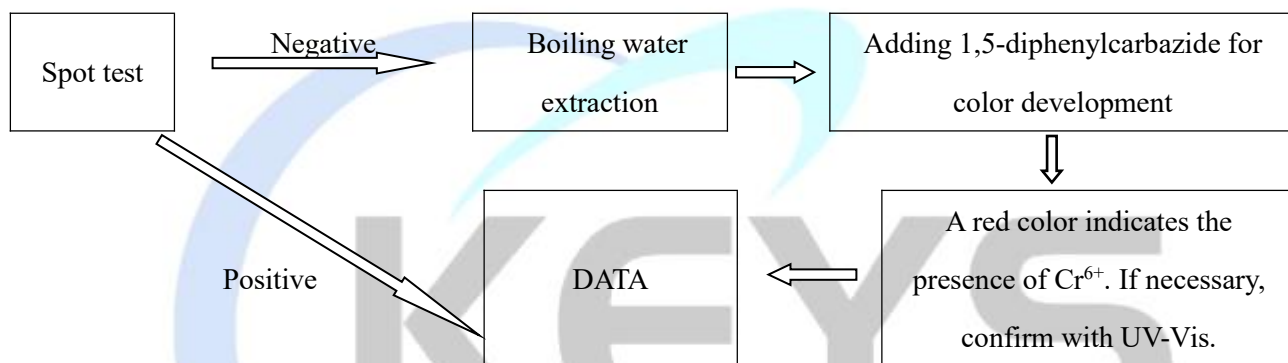
**Test Process:****1. Test for Cd/Pb Content****2. Test for Hg Content**

### 3. Test for Chromium (VI) Content

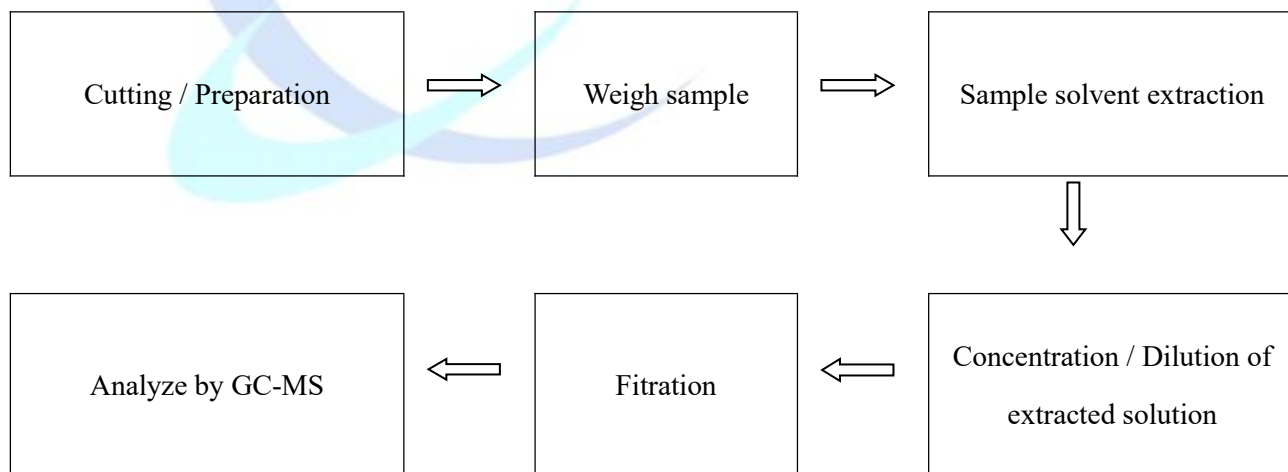
#### Nonmetal material



#### Metal material



### 4. Test for DBP, BBP, DEHP, DIBP, PBB, PBDE Content



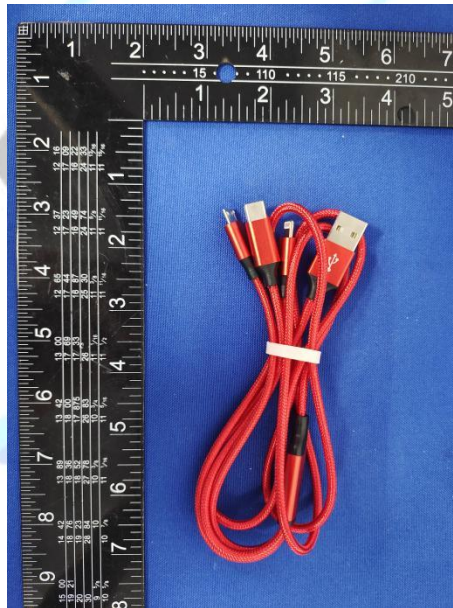
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