



Shenzhen LCS Compliance Testing Laboratory Ltd.
Add: Unit F-G, Floor 23, Kechuang Building, Quanzhi Innovation Science and Technology Park,
Shajing Town, Bao'an District, Shenzhen, Guangdong, China
Tel: (86)755-23353209 Internet: Http://www.LCS-cert.com

Report No.: LCS180913080AR

TEST REPORT

Client company :
Client address :
Manufacturer :
Address :

Report on the submitted samples said to be:

Sample Name : Wireless light up logo earbud
Trade Mark : N/A
Tested Item No. : XO-9613
Style Item No. : N/A
Sample Receiving Date : September 13, 2018
Testing Period : September 13, 2018 ~ October 09, 2018
Results : Please refer to next page(s).

Summary of Test Results:

TEST REQUEST

According to the customer's request, based on the performed tests on submitted sample, the results of lead(Pb), mercury(Hg), cadmium(Cd), hexavalent chromium(Cr^{6+}), polybrominated biphenyls(PBBs), polybrominated diphenyl(PBDEs) comply with the limits as set by EU RoHS Directive 2011/65/EU

Signed for and on behalf of LCS

Written By: Linda Ning
Linda Ning

Checked by: Suez Su
Suez Su

Approved by: Lily Dan
Lily Dan
Manager



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Results:

Test method:

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

Lead & Cadmium 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 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 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)



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No.	Sample	Tested Item	XRF Screening results	Chemical test results (mg/kg)	Conclusion	Date of sample submission/re submission
1	Black plastic sheet	Lead (Pb)	BL	/	PASS	2018-09-13
		Cadmium Content (Cd)	BL	/		
		Mercury (Hg)	BL	/		
		Hexavalent Chromium (Cr ⁶⁺)	BL	/		
		PBBs	BL	/		
		PBDEs	BL	/		
2	Black plastic	Lead (Pb)	BL	/	PASS	2018-09-13
		Cadmium Content (Cd)	BL	/		
		Mercury (Hg)	BL	/		
		Hexavalent Chromium (Cr ⁶⁺)	BL	/		
		PBBs	BL	/		
		PBDEs	BL	/		
3	Silver magnet	Lead (Pb)	BL	/	PASS	2018-09-13
		Cadmium Content (Cd)	BL	/		
		Mercury (Hg)	BL	/		
		Hexavalent Chromium (Cr ⁶⁺)	BL	/		
		PBBs	BL	/		
		PBDEs	BL	/		
4	Silver sheet metal	Lead (Pb)	BL	/	PASS	2018-09-13
		Cadmium Content (Cd)	BL	/		
		Mercury (Hg)	BL	/		
		Hexavalent Chromium (Cr ⁶⁺)	BL	/		
		PBBs	BL	/		
		PBDEs	BL	/		
5	Gold metal coil	Lead (Pb)	BL	/	PASS	2018-09-13
		Cadmium Content (Cd)	BL	/		
		Mercury (Hg)	BL	/		
		Hexavalent Chromium (Cr ⁶⁺)	BL	/		
		PBBs	BL	/		
		PBDEs	BL	/		
6	White plastic sheet	Lead (Pb)	BL	/	PASS	2018-09-13
		Cadmium Content (Cd)	BL	/		
		Mercury (Hg)	BL	/		
		Hexavalent Chromium (Cr ⁶⁺)	BL	/		
		PBBs	BL	/		
		PBDEs	BL	/		
7	Tin solder	Lead (Pb)	X	N.D	PASS	2018-09-13
		Cadmium Content (Cd)	BL	/		
		Mercury (Hg)	BL	/		
		Hexavalent Chromium (Cr ⁶⁺)	BL	/		
		PBBs	BL	/		
		PBDEs	BL	/		



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8	Black plastic sheet	Lead (Pb)	BL	/	PASS	2018-09-13
		Cadmium Content (Cd)	BL	/		
		Mercury (Hg)	BL	/		
		Hexavalent Chromium (Cr ⁶⁺)	BL	/		
		PBBs	BL	/		
		PBDEs	BL	/		
9	White cotton thread	Lead (Pb)	BL	/	PASS	2018-09-13
		Cadmium Content (Cd)	BL	/		
		Mercury (Hg)	BL	/		
		Hexavalent Chromium (Cr ⁶⁺)	BL	/		
		PBBs	BL	/		
		PBDEs	BL	/		
10	Gold wire	Lead (Pb)	BL	/	PASS	2018-09-13
		Cadmium Content (Cd)	X	2		
		Mercury (Hg)	BL	/		
		Hexavalent Chromium (Cr ⁶⁺)	BL	/		
		PBBs	BL	/		
		PBDEs	BL	/		
11	Red metal wire	Lead (Pb)	BL	/	PASS	2018-09-13
		Cadmium Content (Cd)	BL	/		
		Mercury (Hg)	BL	/		
		Hexavalent Chromium (Cr ⁶⁺)	BL	/		
		PBBs	BL	/		
		PBDEs	BL	/		
12	Black plastic sheet	Lead (Pb)	BL	/	PASS	2018-09-13
		Cadmium Content (Cd)	BL	/		
		Mercury (Hg)	BL	/		
		Hexavalent Chromium (Cr ⁶⁺)	BL	/		
		PBBs	BL	/		
		PBDEs	BL	/		
13	White plastic sheet	Lead (Pb)	BL	/	PASS	2018-09-13
		Cadmium Content (Cd)	BL	/		
		Mercury (Hg)	BL	/		
		Hexavalent Chromium (Cr ⁶⁺)	BL	/		
		PBBs	BL	/		
		PBDEs	BL	/		
14	Red plastic lining	Lead (Pb)	BL	/	PASS	2018-09-13
		Cadmium Content (Cd)	BL	/		
		Mercury (Hg)	BL	/		
		Hexavalent Chromium (Cr ⁶⁺)	BL	/		
		PBBs	BL	/		
		PBDEs	BL	/		



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15	Gold plastic sheet	Lead (Pb)	BL	/	PASS	2018-09-13
		Cadmium Content (Cd)	BL	/		
		Mercury (Hg)	BL	/		
		Hexavalent Chromium (Cr ⁶⁺)	BL	/		
		PBBs	BL	/		
		PBDEs	BL	/		
16	White plastic sheet	Lead (Pb)	BL	/	PASS	2018-09-13
		Cadmium Content (Cd)	BL	/		
		Mercury (Hg)	BL	/		
		Hexavalent Chromium (Cr ⁶⁺)	BL	/		
		PBBs	BL	/		
		PBDEs	BL	/		
17	Silver sheet metal	Lead (Pb)	BL	/	PASS	2018-09-13
		Cadmium Content (Cd)	BL	/		
		Mercury (Hg)	BL	/		
		Hexavalent Chromium (Cr ⁶⁺)	BL	/		
		PBBs	BL	/		
		PBDEs	BL	/		
18	Gold metal sheet	Lead (Pb)	BL	/	PASS	2018-09-13
		Cadmium Content (Cd)	BL	/		
		Mercury (Hg)	BL	/		
		Hexavalent Chromium (Cr ⁶⁺)	BL	/		
		PBBs	BL	/		
		PBDEs	BL	/		
19	Silver sheet metal	Lead (Pb)	BL	/	PASS	2018-09-13
		Cadmium Content (Cd)	BL	/		
		Mercury (Hg)	BL	/		
		Hexavalent Chromium (Cr ⁶⁺)	X	Negative		
		PBBs	BL	/		
		PBDEs	BL	/		
20	Silver sheet metal	Lead (Pb)	X	N.D	PASS	2018-09-13
		Cadmium Content (Cd)	X	N.D		
		Mercury (Hg)	BL	/		
		Hexavalent Chromium (Cr ⁶⁺)	X	Negative		
		PBBs	BL	/		
		PBDEs	BL	/		
21	Black carbon sheet	Lead (Pb)	BL	/	PASS	2018-09-13
		Cadmium Content (Cd)	BL	/		
		Mercury (Hg)	BL	/		
		Hexavalent Chromium (Cr ⁶⁺)	BL	/		
		PBBs	BL	/		
		PBDEs	BL	/		



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22	Black IC	Lead (Pb)	BL	/	PASS	2018-09-13
		Cadmium Content (Cd)	BL	/		
		Mercury (Hg)	BL	/		
		Hexavalent Chromium (Cr ⁶⁺)	BL	/		
		PBBs	BL	/		
		PBDEs	BL	/		
23	Brown resistor	Lead (Pb)	BL	/	PASS	2018-09-13
		Cadmium Content (Cd)	BL	/		
		Mercury (Hg)	BL	/		
		Hexavalent Chromium (Cr ⁶⁺)	BL	/		
		PBBs	BL	/		
		PBDEs	BL	/		
24	Silver sheet metal	Lead (Pb)	BL	/	PASS	2018-09-13
		Cadmium Content (Cd)	BL	/		
		Mercury (Hg)	BL	/		
		Hexavalent Chromium (Cr ⁶⁺)	BL	/		
		PBBs	BL	/		
		PBDEs	BL	/		
25	Silver sheet metal	Lead (Pb)	BL	/	PASS	2018-09-13
		Cadmium Content (Cd)	X	2		
		Mercury (Hg)	BL	/		
		Hexavalent Chromium (Cr ⁶⁺)	BL	/		
		PBBs	BL	/		
		PBDEs	BL	/		
26	Black plastic sheet	Lead (Pb)	BL	/	PASS	2018-09-13
		Cadmium Content (Cd)	BL	/		
		Mercury (Hg)	BL	/		
		Hexavalent Chromium (Cr ⁶⁺)	BL	/		
		PBBs	BL	/		
		PBDEs	BL	/		
27	Silver needle	Lead (Pb)	BL	/	PASS	2018-09-13
		Cadmium Content (Cd)	BL	/		
		Mercury (Hg)	BL	/		
		Hexavalent Chromium (Cr ⁶⁺)	BL	/		
		PBBs	BL	/		
		PBDEs	BL	/		
28	White LED	Lead (Pb)	BL	/	PASS	2018-09-13
		Cadmium Content (Cd)	BL	/		
		Mercury (Hg)	BL	/		
		Hexavalent Chromium (Cr ⁶⁺)	BL	/		
		PBBs	BL	/		
		PBDEs	BL	/		



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29	Silver needle	Lead (Pb)	BL	/	PASS	2018-09-13
		Cadmium Content (Cd)	X	N.D		
		Mercury (Hg)	BL	/		
		Hexavalent Chromium (Cr ⁶⁺)	BL	/		
		PBBs	BL	/		
		PBDEs	BL	/		
30	Tin solder	Lead (Pb)	X	N.D	PASS	2018-09-13
		Cadmium Content (Cd)	BL	/		
		Mercury (Hg)	BL	/		
		Hexavalent Chromium (Cr ⁶⁺)	BL	/		
		PBBs	BL	/		
		PBDEs	BL	/		
31	Gold metal shrapnel	Lead (Pb)	X	N.D	PASS	2018-09-13
		Cadmium Content (Cd)	BL	/		
		Mercury (Hg)	BL	/		
		Hexavalent Chromium (Cr ⁶⁺)	X	Negative		
		PBBs	BL	/		
		PBDEs	BL	/		
32	Crystal oscillator	Lead (Pb)	BL	/	PASS	2018-09-13
		Cadmium Content (Cd)	X	N.D		
		Mercury (Hg)	BL	/		
		Hexavalent Chromium (Cr ⁶⁺)	BL	/		
		PBBs	BL	/		
		PBDEs	BL	/		
33	PCB board	Lead (Pb)	BL	/	PASS	2018-09-13
		Cadmium Content (Cd)	BL	/		
		Mercury (Hg)	BL	/		
		Hexavalent Chromium (Cr ⁶⁺)	BL	/		
		PBBs	BL	/		
		PBDEs	BL	/		
34	LED lamp	Lead (Pb)	BL	/	PASS	2018-09-13
		Cadmium Content (Cd)	BL	/		
		Mercury (Hg)	BL	/		
		Hexavalent Chromium (Cr ⁶⁺)	BL	/		
		PBBs	BL	/		
		PBDEs	BL	/		
35	Black plastic cord	Lead (Pb)	BL	/	PASS	2018-09-13
		Cadmium Content (Cd)	BL	/		
		Mercury (Hg)	BL	/		
		Hexavalent Chromium (Cr ⁶⁺)	BL	/		
		PBBs	BL	/		
		PBDEs	BL	/		



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No.	Sample	Tested Item	XRF Screening results	Chemical test results (mg/kg)	Conclusion	Date of sample submission/re submission
36	Red plastic lining	Lead (Pb)	BL	/	PASS	2018-09-13
		Cadmium Content (Cd)	BL	/		
		Mercury (Hg)	BL	/		
		Hexavalent Chromium (Cr ⁶⁺)	BL	/		
		PBBs	BL	/		
		PBDEs	BL	/		
37	Black plastic cord	Lead (Pb)	BL	/	PASS	2018-09-13
		Cadmium Content (Cd)	BL	/		
		Mercury (Hg)	BL	/		
		Hexavalent Chromium (Cr ⁶⁺)	BL	/		
		PBBs	BL	/		
		PBDEs	BL	/		
38	Gold wire	Lead (Pb)	BL	/	PASS	2018-09-13
		Cadmium Content (Cd)	BL	/		
		Mercury (Hg)	BL	/		
		Hexavalent Chromium (Cr ⁶⁺)	BL	/		
		PBBs	BL	/		
		PBDEs	BL	/		
39	Black plastic sheet	Lead (Pb)	BL	/	PASS	2018-09-13
		Cadmium Content (Cd)	BL	/		
		Mercury (Hg)	BL	/		
		Hexavalent Chromium (Cr ⁶⁺)	BL	/		
		PBBs	BL	/		
		PBDEs	BL	/		
40	Silver sheet metal	Lead (Pb)	BL	/	PASS	2018-09-13
		Cadmium Content (Cd)	BL	/		
		Mercury (Hg)	BL	/		
		Hexavalent Chromium (Cr ⁶⁺)	BL	/		
		PBBs	BL	/		
		PBDEs	BL	/		
41	White plastic sheet	Lead (Pb)	BL	/	PASS	2018-09-13
		Cadmium Content (Cd)	BL	/		
		Mercury (Hg)	BL	/		
		Hexavalent Chromium (Cr ⁶⁺)	BL	/		
		PBBs	BL	/		
		PBDEs	BL	/		
42	Golden metal needle	Lead (Pb)	BL	/	PASS	2018-09-13
		Cadmium Content (Cd)	BL	/		
		Mercury (Hg)	BL	/		
		Hexavalent Chromium (Cr ⁶⁺)	BL	/		
		PBBs	BL	/		
		PBDEs	BL	/		



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No.	Sample	Tested Item	XRF Screening results	Chemical test results (mg/kg)	Conclusion	Date of sample submission/re submission
43	Silver sheet metal	Lead (Pb)	BL	/	PASS	2018-09-13
		Cadmium Content (Cd)	BL	/		
		Mercury (Hg)	BL	/		
		Hexavalent Chromium (Cr ⁶⁺)	X	Negative		
		PBBs	BL	/		
		PBDEs	BL	/		
44	Black plastic sheet	Lead (Pb)	BL	/	PASS	2018-09-13
		Cadmium Content (Cd)	BL	/		
		Mercury (Hg)	BL	/		
		Hexavalent Chromium (Cr ⁶⁺)	BL	/		
		PBBs	BL	/		
		PBDEs	BL	/		
45	Silver needle	Lead (Pb)	BL	/	PASS	2018-09-13
		Cadmium Content (Cd)	BL	/		
		Mercury (Hg)	BL	/		
		Hexavalent Chromium (Cr ⁶⁺)	X	Negative		
		PBBs	BL	/		
		PBDEs	BL	/		

Note:

- i 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	$BL \leq 300 - 3\sigma < X$	--	$BL \leq 250 - 3\sigma < X$



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Note:

BL = Below Limit

OL = Over Limit

X = Inconclusive

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

iii The maximum permissible limit is quoted from the document 2005/618/EC amending RoHS directive 2011/65/EU:

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 diphenylethers (PBDEs)	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.



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Note:

- Negative = Absence of Cr(VI) on the tested areas
- MDL = Method Detection Limit
- N/A = Not apply
- /= Undetected
- mg/kg = ppm
- ** = Spot-test:
Negative = Absence of Cr(VI) coating/ surface layer, Positive = Presence of Cr(VI) coating/ surface layer;
(The tested sample should be further verified by boiling-water-extraction method if the spot test result cannot be confirmed)
Boiling-water-extraction:
Negative = Absence of Cr(VI) coating/ surface layer, Positive = Presence of Cr(VI) coating/ surface layer;
(The detected concentration in boiling- water-extraction solution is equal or greater than 0.02 mg/kg with 50cm² sample surface areas.)
- # =
Positive indicates the presence of Cr(VI) on the tested areas and result be regarded as conflict with RoHS requirement.
Negative indicates the absence of Cr(VI) on the tested areas and result be regarded as no conflict with RoHS requirement.
- #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. piezoelectronic 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.
- Flow chart appendix is included.
- Photo appendix is included.



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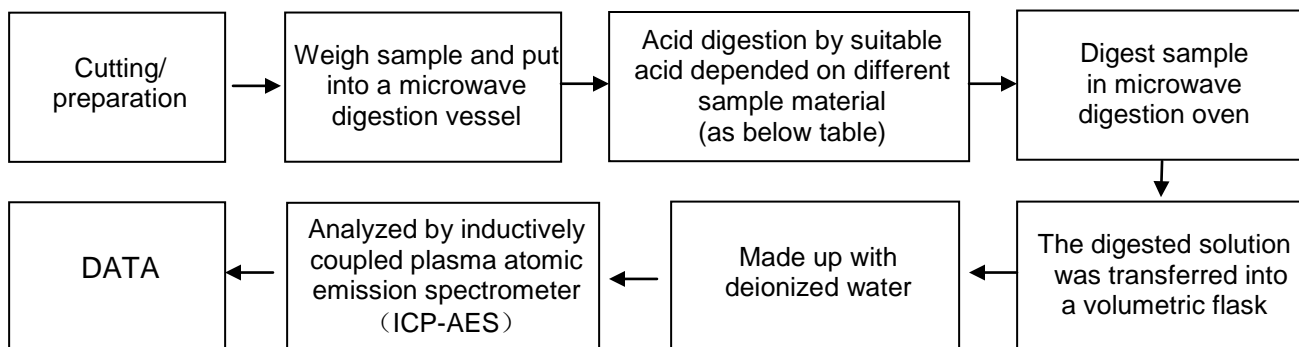
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AppendixI

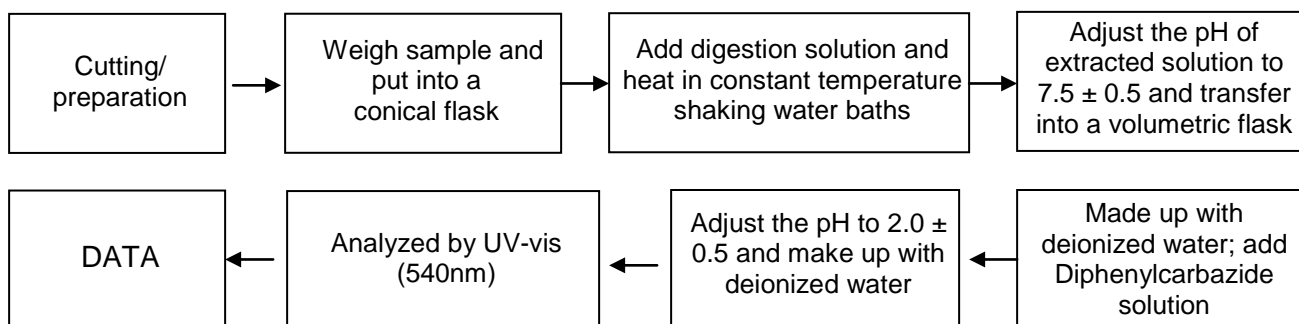
Test Flow chart

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

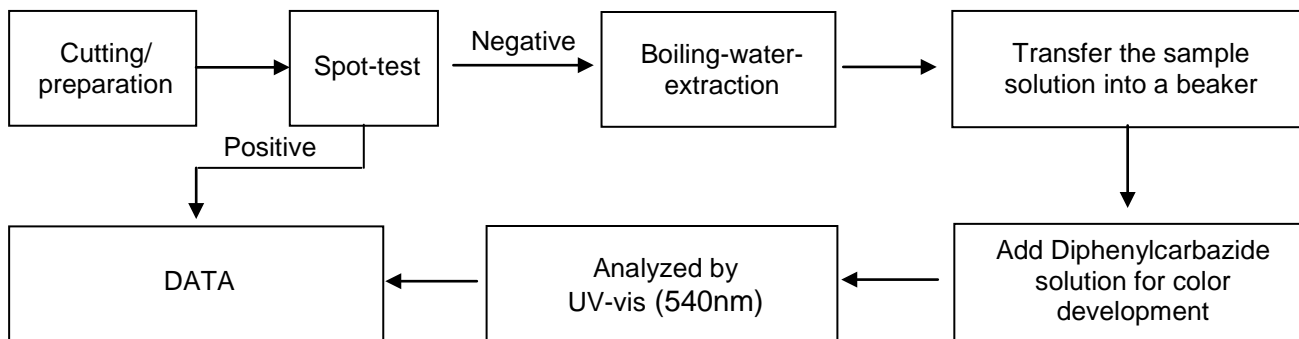
These samples were dissolved totally by pre-conditioning method according to below flow chart.



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



Test Flowchart for Cr⁶⁺ content (For metal material)

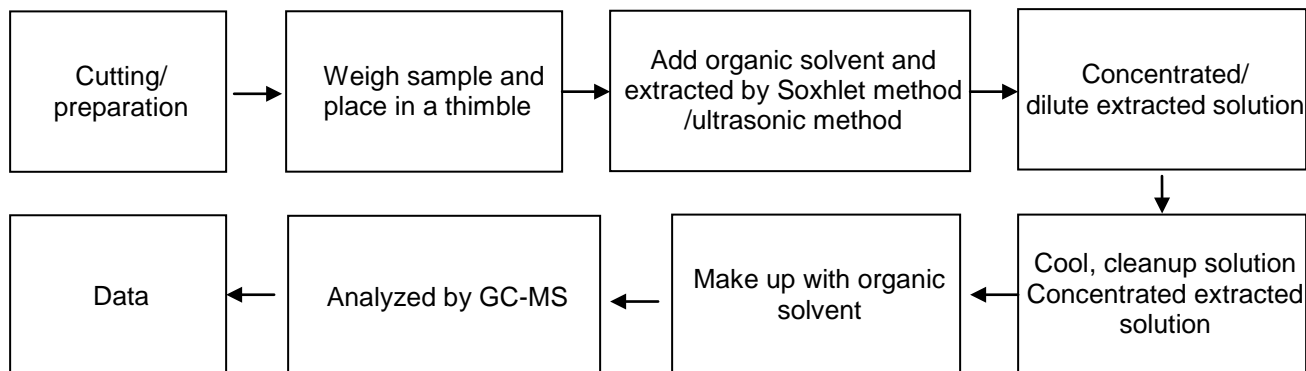




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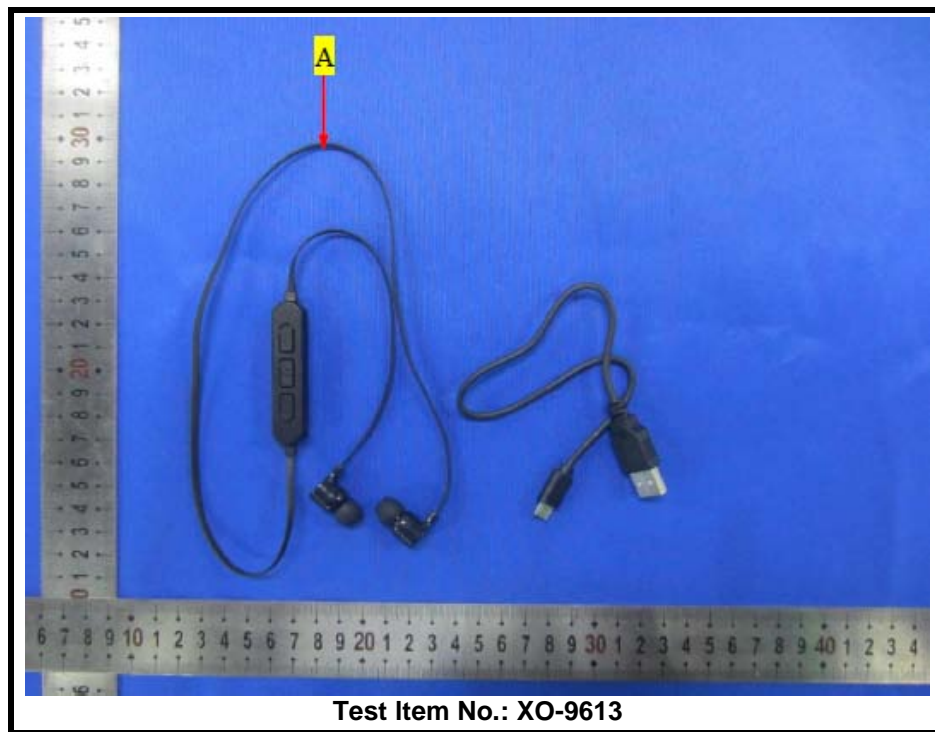
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3. Test Flowchart for PBBs & PBDEs content



AppendixII

Photograph of Sample





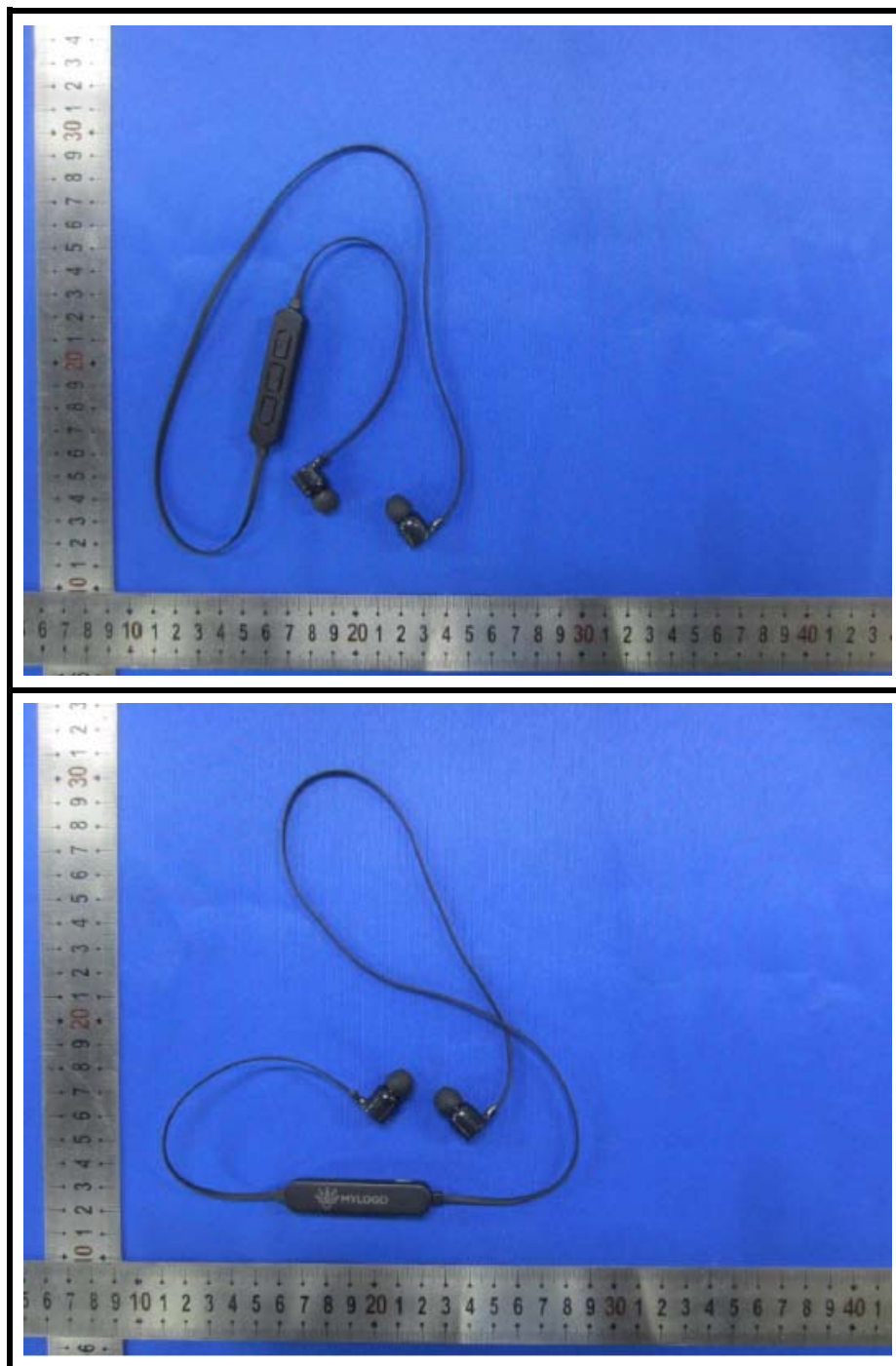
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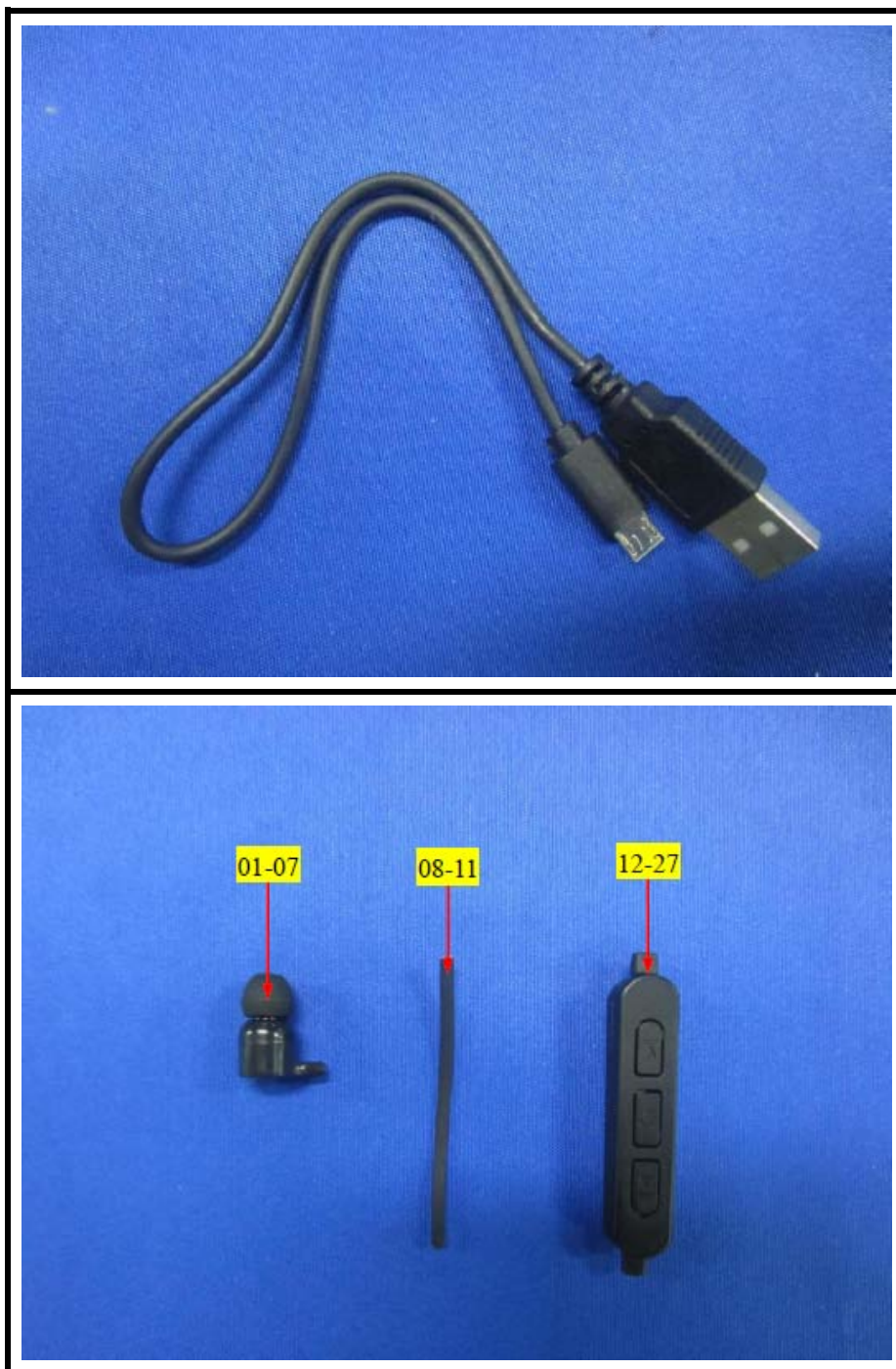
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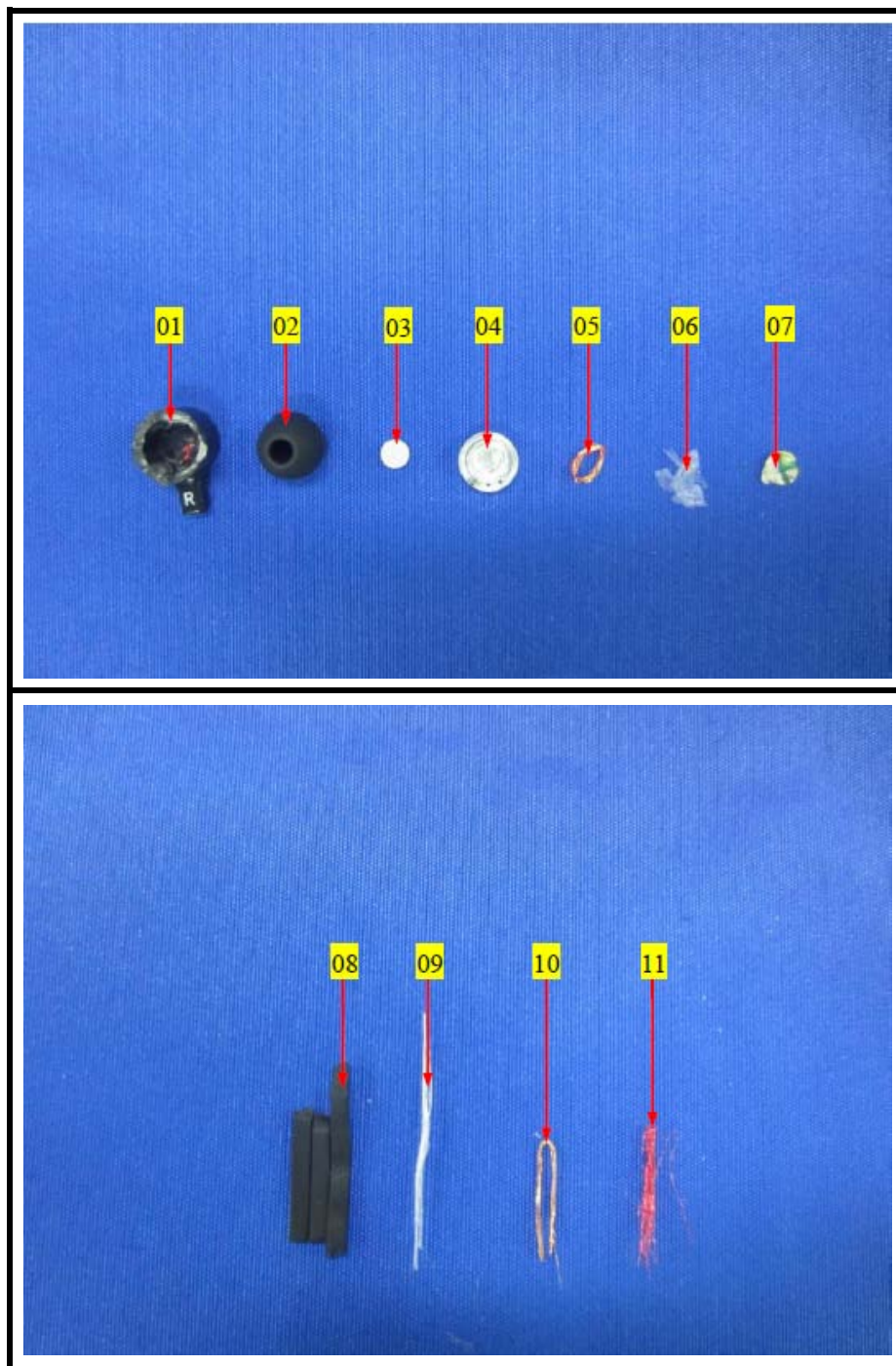
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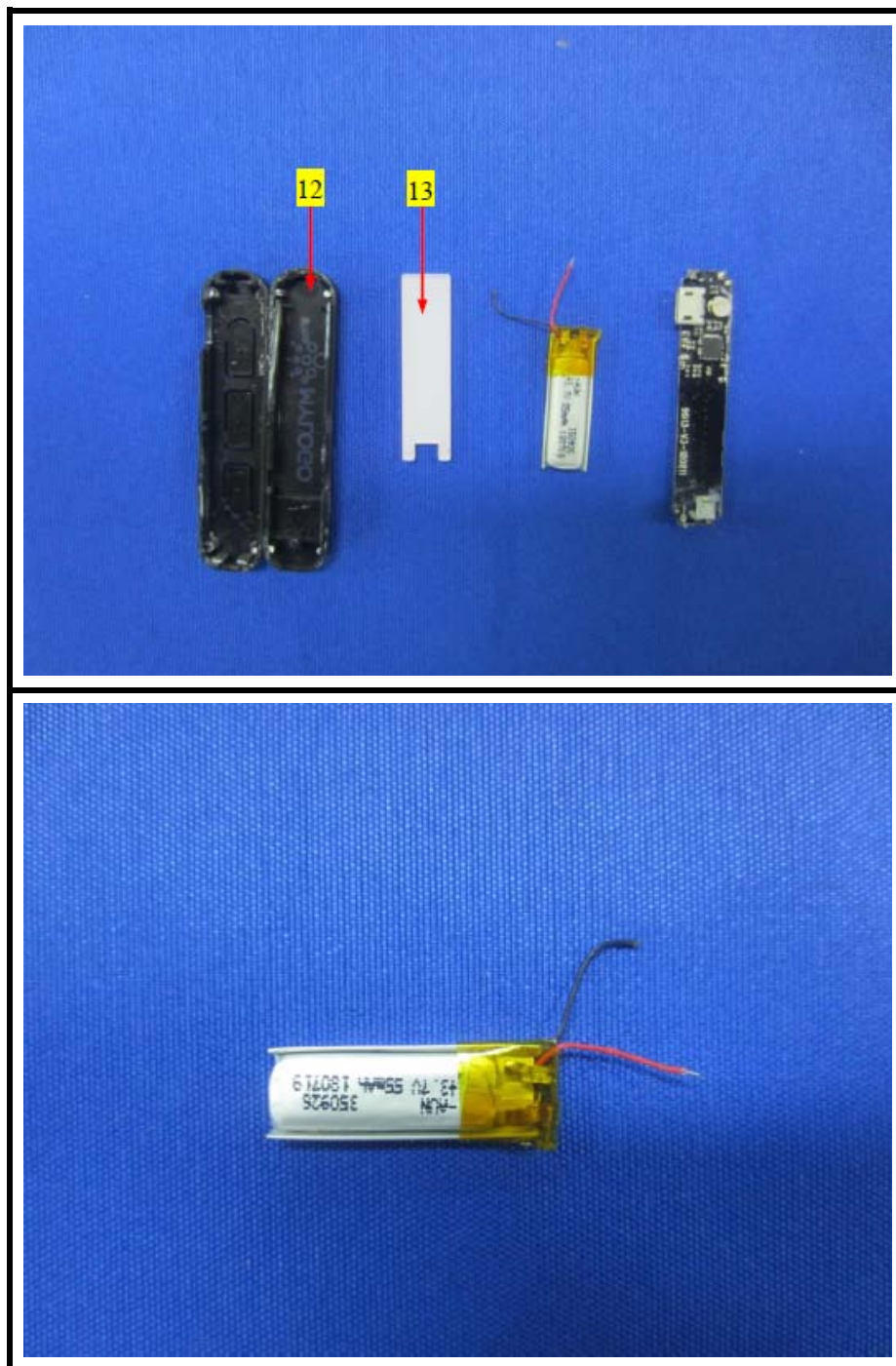
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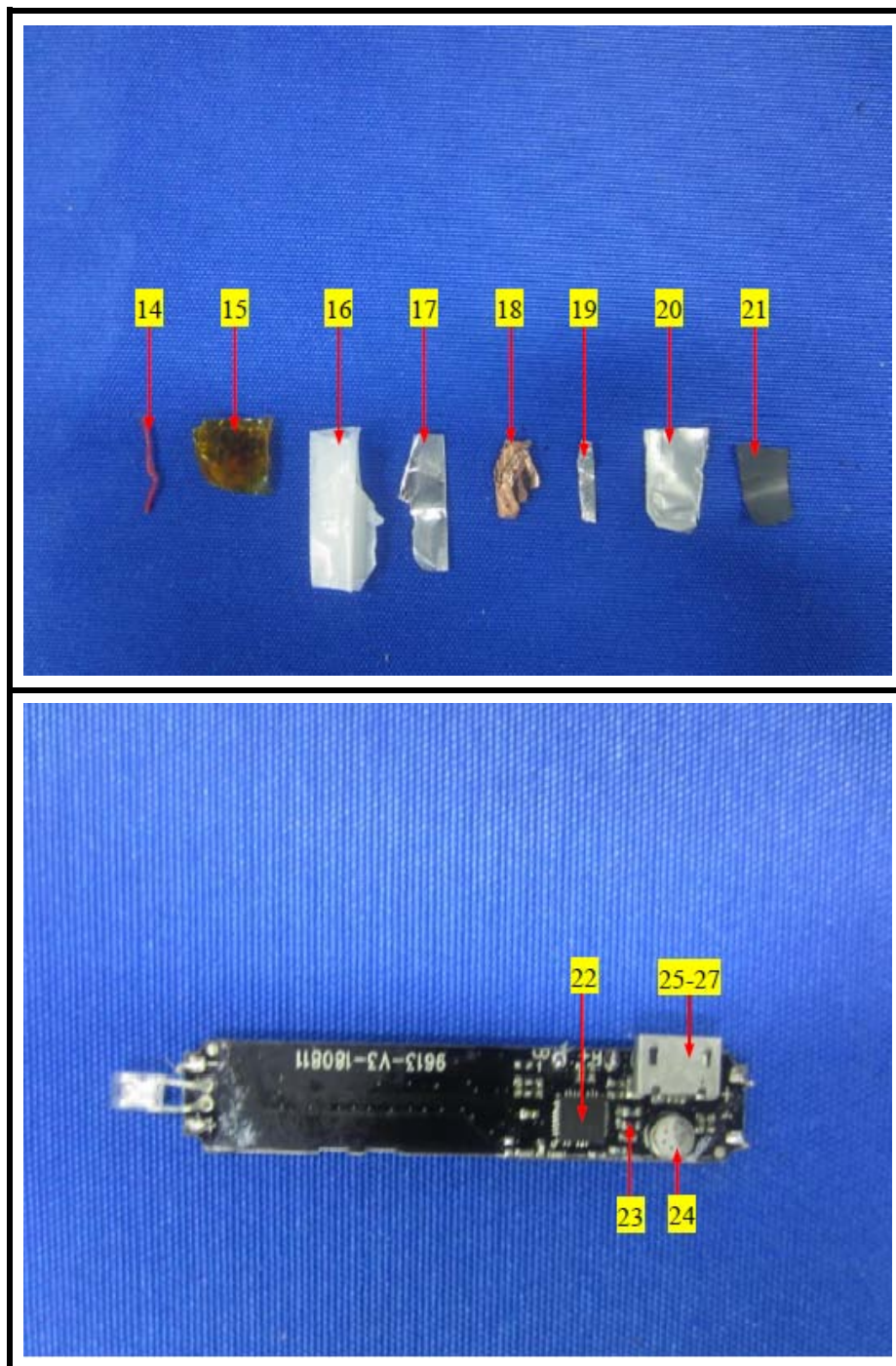
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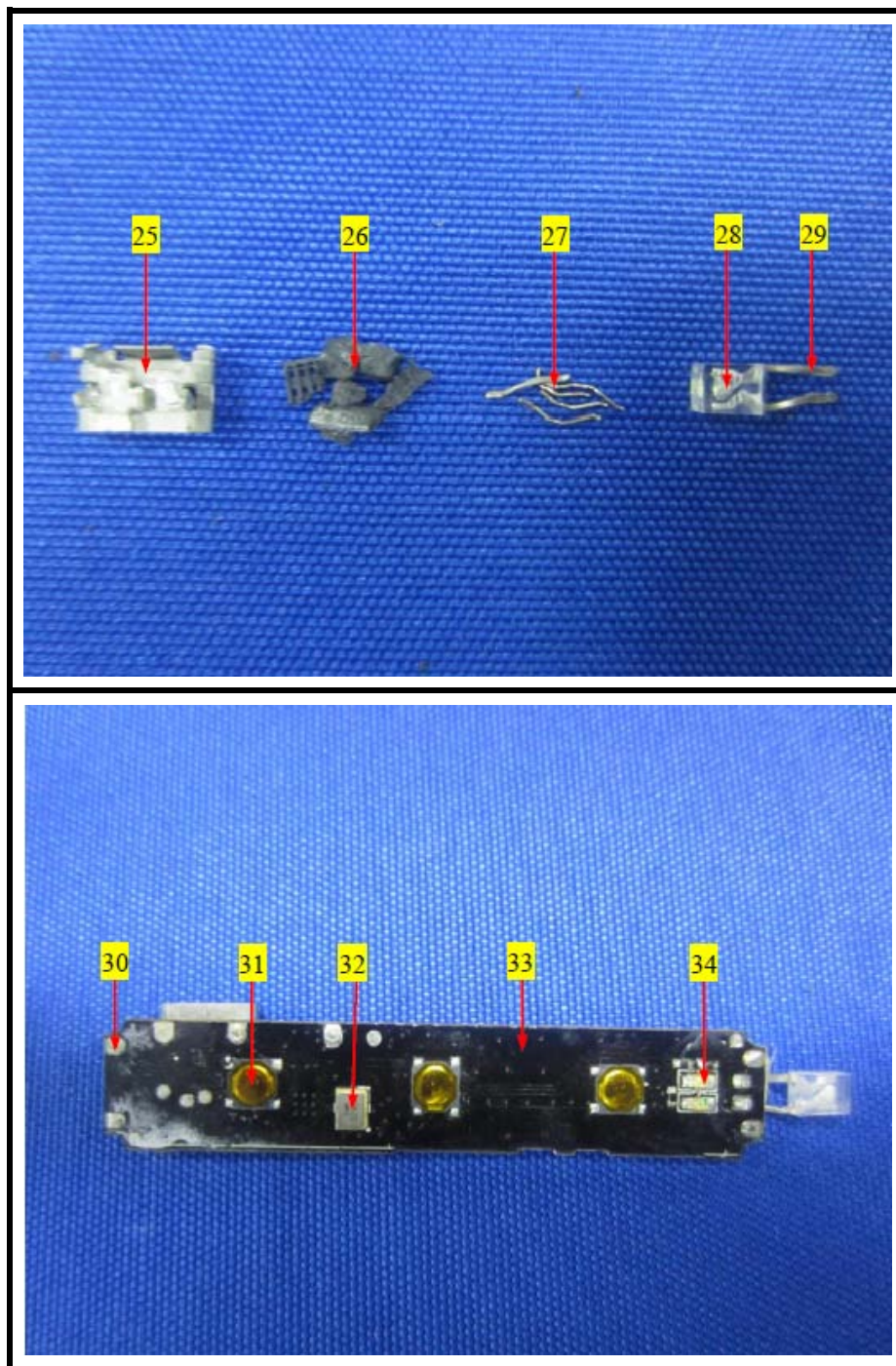
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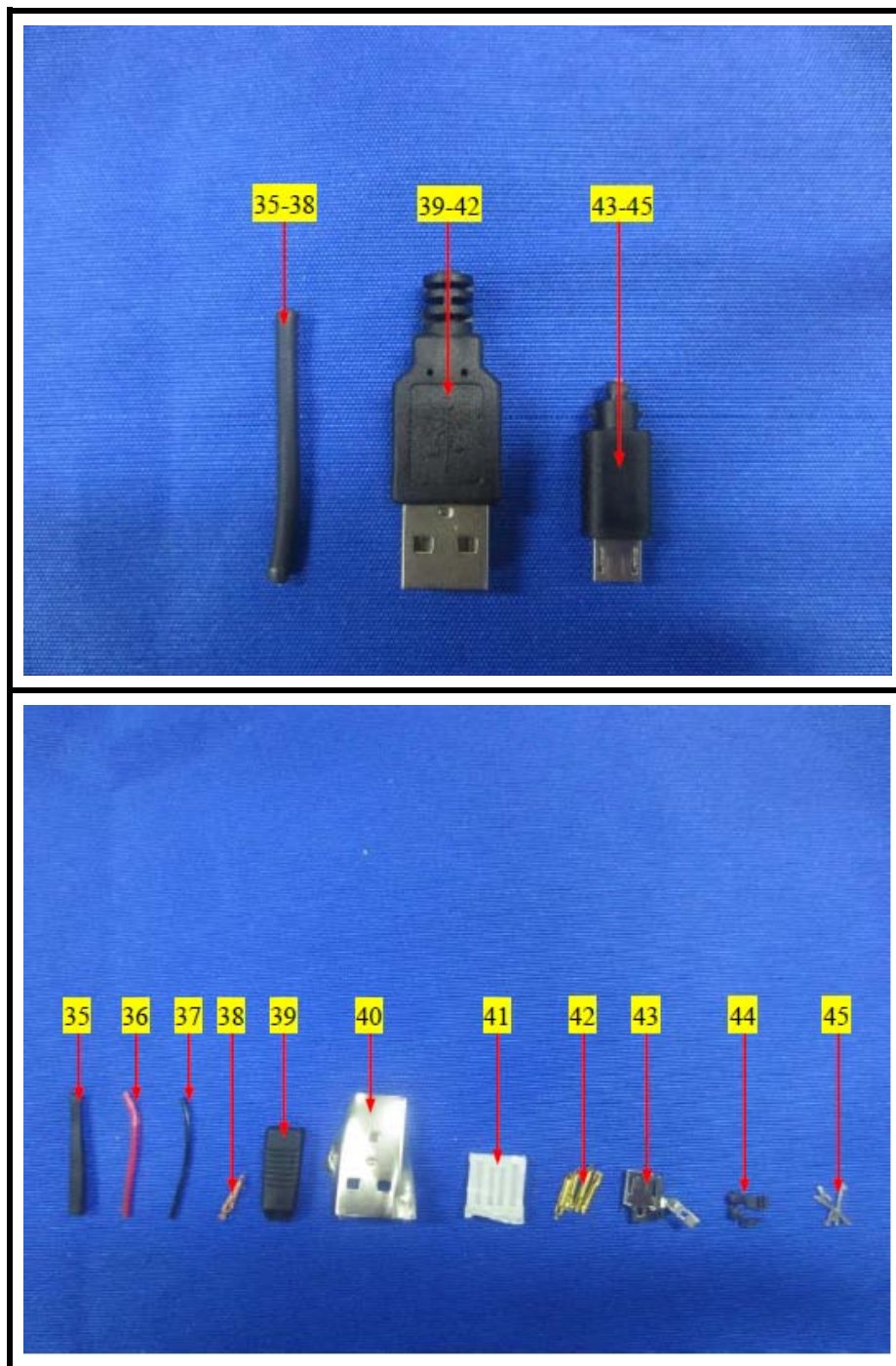
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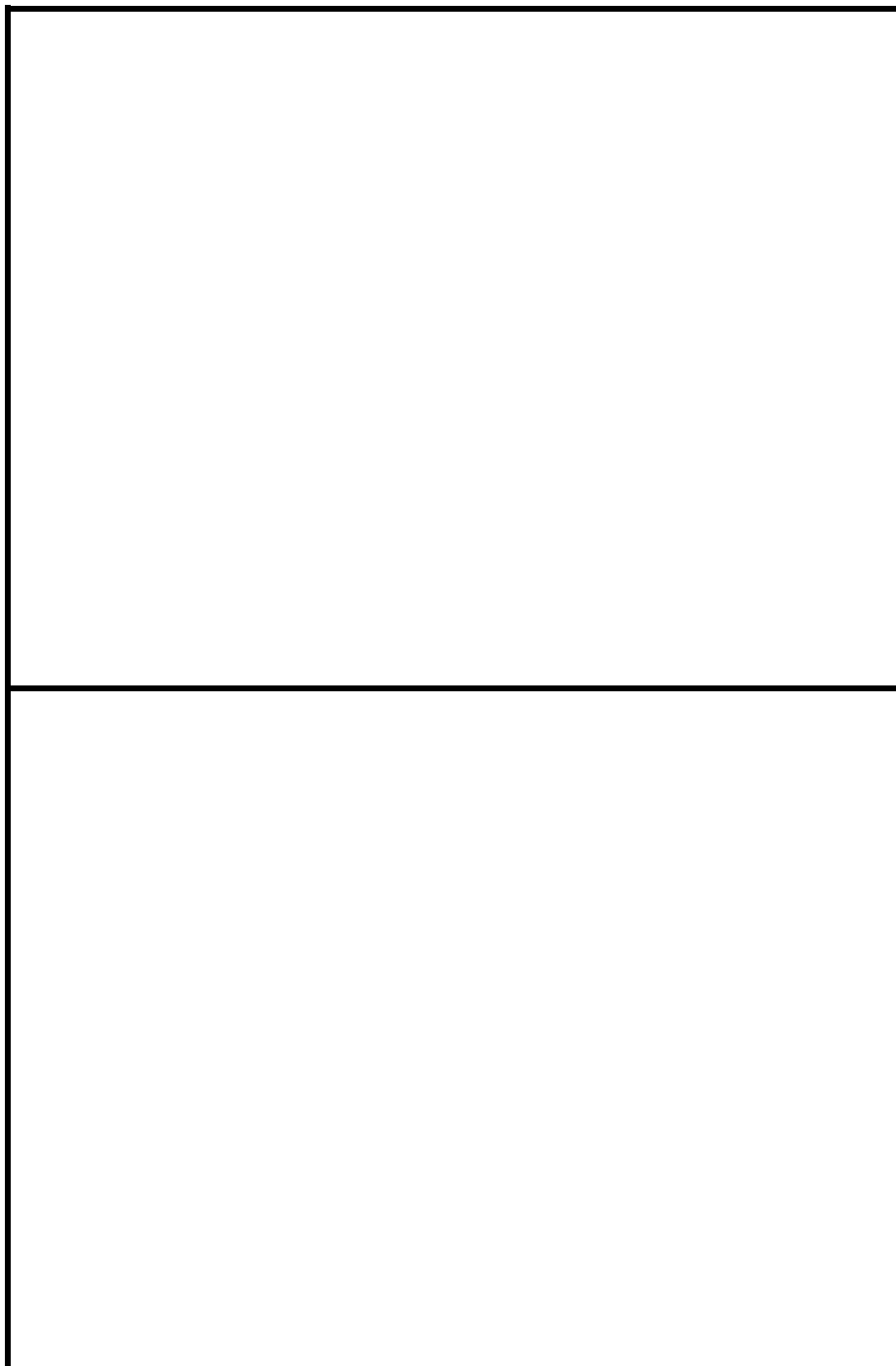
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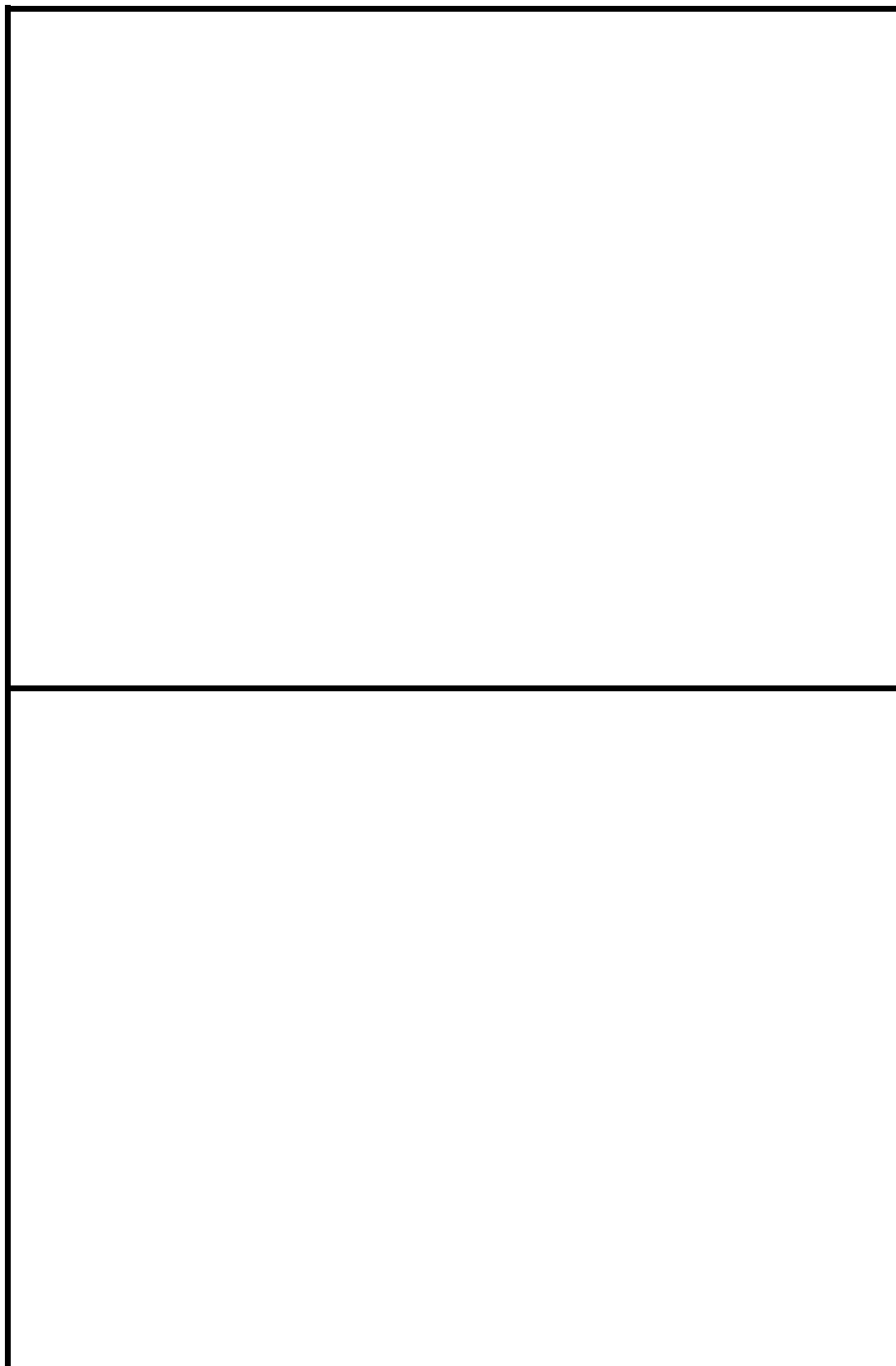
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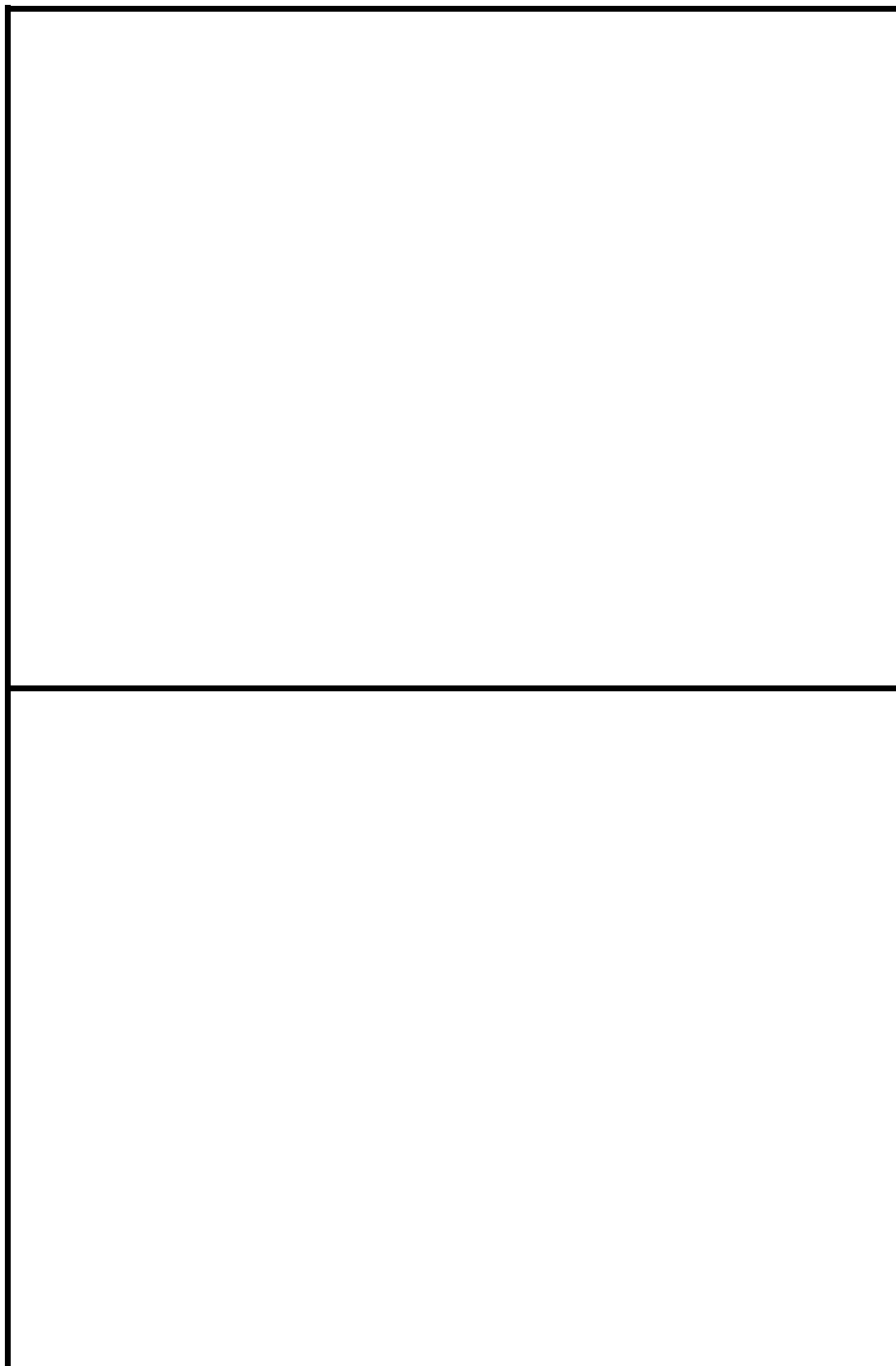
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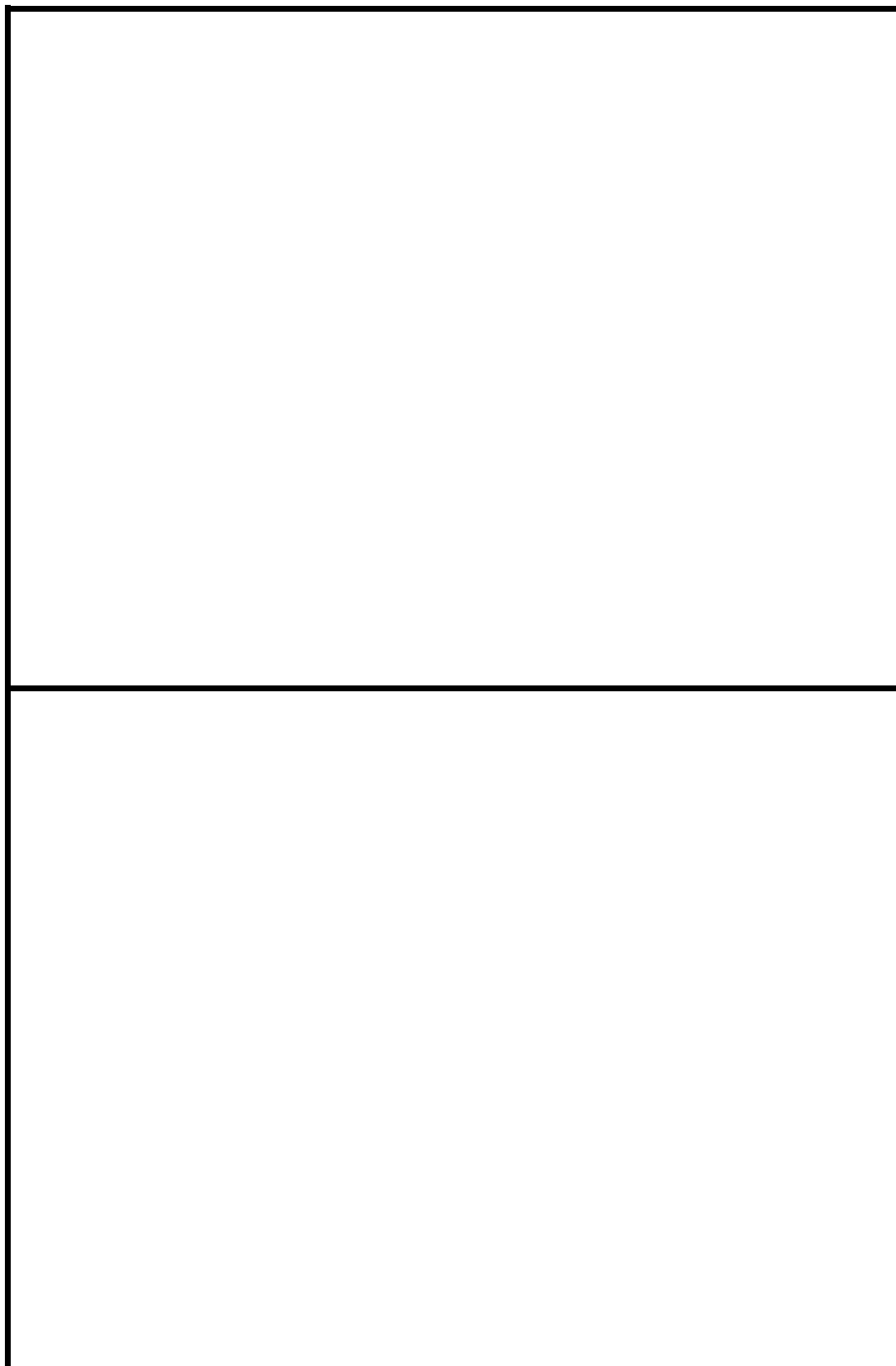
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