



中国认可
国际互认
检测
TESTING
CNAS L5950

Test Report

No.:SPF20035135

Date: Oct. 19, 2020

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BCS Automotive Interface Solutions (Suzhou) Co., Ltd.

No.2052 Taidong Road Xiangcheng Economic Development District, 215143 Suzhou China

The following samples were submitted and identified by/on behalf of client as:

Name of product/item : Wireless Charger

Item No. : WPC003-1

Sample received date: Oct. 12, 2020

Testing period: From Oct. 12, 2020 to Oct. 19, 2020

Test conclusion:

Summary

Result

According to RoHS Directive 2011/65/EU with amendment Directive 2015/863/EU to test Lead (Pb), Cadmium (Cd), Mercury (Hg), Hexavalent chromium (Cr(VI)), Polybrominated biphenyls (PBBs), Polybrominated diphenylethers (PBDEs), Phthalates (DBP, BBP, DEHP, DIBP) in the tested materials of the submitted sample(s).

Pass

Tested by :

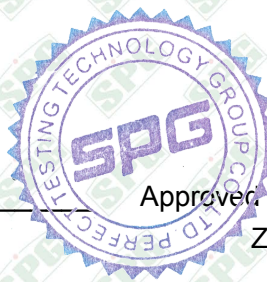
Zhang PeiXun, Potter

Inspected by :

Lin JiaSheng, Lin

Approved by :

Zhang Feng, Jee
Lab Manager



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1. Summary of permissible limits of requirements:

RoHS Restricted substances	Maximum concentration value (By weight in homogeneous materials)
Lead (Pb)	1000 mg/kg
Cadmium (Cd)	100 mg/kg
Mercury (Hg)	1000 mg/kg
Hexavalent chromium (Cr(VI))	1000 mg/kg
Polybrominated biphenyls (PBBs)	1000 mg/kg
Polybrominated diphenylethers (PBDEs)	1000 mg/kg
Bis(2-ethylhexyl) phthalate (DEHP)	1000 mg/kg
Butyl benzyl phthalate (BBP)	1000 mg/kg
Dibutyl phthalate (DBP)	1000 mg/kg
Diisobutyl phthalate (DIBP)	1000 mg/kg

1.1 XRF screening limits in mg/kg for regulated elements in various matrices:

Element	Non-metal (Polymers material) (Unit: mg/kg)	Metals (Unit: mg/kg)	Composite material (Unit: mg/kg)
Pb	$BL < (700-3\sigma) < X < (1300+3\sigma) < OL$	$BL < (700-3\sigma) < X < (1300+3\sigma) < OL$	$BL < (500-3\sigma) < X < (1500+3\sigma) < OL$
Cd	$BL < (70-3\sigma) < X < (130+3\sigma) < OL$	$BL < (70-3\sigma) < X < (130+3\sigma) < OL$	$BL < X < (150+3\sigma) < OL$
Hg	$BL < (700-3\sigma) < X < (1300+3\sigma) < OL$	$BL < (700-3\sigma) < X < (1300+3\sigma) < OL$	$BL < (500-3\sigma) < X < (1500+3\sigma) < OL$
Cr	$BL < (700-3\sigma) < X$	$BL < (700-3\sigma) < X$	$BL < (500-3\sigma) < X$
Br	$BL < (250-3\sigma) < X$	NA	$BL < (250-3\sigma) < X$

Note:

- (1) Screening results of XRF are for primary screening, and further chemical testing by wet chemical are to be performed if the concentration exceeds the below warning value.
- (2) The XRF results show the total Br content, the restricted substances are PBBs and PBDEs.
The XRF results show the total Cr content, the restricted substance are Cr(VI).
- (3) The measurement data is located in the BL area, and the result is qualified. Located in the X and OL areas, the results are uncertain and require further testing.

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1.2 Estimated detection limits in mg/kg for regulated elements in various matrices:

Element	Non-metal (Polymers material) (Unit: mg/kg)	Metals (Unit: mg/kg)	Composite material (Unit: mg/kg)
Pb	100	200	200
Cd	50	70	70
Hg	100	200	200
Cr	100	200	200
Br	200	NA	200

1.3 Chemical test content:

Test item	Test method	Instrument	Report limit
Lead (Pb)	IEC 62321-5:2013	ICP-OES	10 mg/kg
Cadmium (Cd)	IEC 62321-5:2013	ICP-OES	10 mg/kg
Mercury (Hg)	IEC 62321-4:2013+A1:2017	ICP-OES	10 mg/kg
Hexavalent chromium (Cr(VI))	IEC 62321-7-2:2017 (Non-metal)	UV-Vis	10 mg/kg
	IEC 62321-7-1:2015 (Metal)	UV-Vis	0.10 ($\mu\text{g}/\text{cm}^2$) See remark
Polybrominated biphenyls (PBBs)	IEC 62321-6:2015	GC-MS	50 mg/kg
Polybrominated diphenyl ethers (PBDEs)	IEC 62321-6:2015	GC-MS	50 mg/kg
Phthalates (DBP, BBP, DEHP, DIBP)	IEC 62321-8:2017	GC-MS	150 mg/kg

Remark:

- (1) Negative = The Cr(VI) concentration is below $0.10 (\mu\text{g}/\text{cm}^2)$. The coating is considered a non-Cr(VI) based coating.
- (2) Positive = The Cr(VI) concentration is above $0.13 (\mu\text{g}/\text{cm}^2)$ and the statistical margin of error. The coating is considered to contain Cr(VI).
- (3) Inconclusive = The Cr(VI) concentration is between the value of $0.10 (\mu\text{g}/\text{cm}^2)$ to $0.13 (\mu\text{g}/\text{cm}^2)$. Unavoidable coating variations may influence the determination. Additional 3 trials should be tested, use the averaged result of the 3 trials for the final determination.
- (4) Storage conditions and production date of the tested sample are unavailable and thus results of Cr(VI) represent status of the sample at the time of testing.
- (5) 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.

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2. Restriction of Hazardous Substances (RoHS) analysis:

2.1 Tested component(s):

Code	Specimen name	Code	Specimen name
1	Black plastic (shell)	19	Black mixtures (contents of electrolytic capacitor)
2	Light yellow coating (on shell)	20	Silvery metal (pin of electrolytic capacitor)
3	Silvery metal (screw)	21	Black mixtures (components)
4	Silvery metal	22	Black plastic (fastener)
5	Black plastic (wire skin)	23	Coppery metal (pin)
6	Blue plastic (wire skin)	24	Silvery metal (solder)
7	Silvery metal (wire core)	25	Coppery metal (copper foil)
8	Silvery metal (fastener)	26	Green coating (on PCB)
9	Silvery metal (solder)	27	Khaki polymers (base material of PCB)
10	Silvery metal	28	Black plastic (shell of FPC Connector)
11	Black mixtures	29	Silvery metal (pin of FPC Connector)
12	Coppery metal (wire core)	30	Silvery metal (shell)
13	Pink fabric	31	Brown mixtures (capacitor)
14	Silvery metal (fastener on PCB)	32	Light brown mixtures (components)
15	Green mixtures (PCB)	33	Black mixtures (diode)
16	Black plastic (pedestal of electrolytic capacitor)	34	Black mixtures (triode)
17	Silvery metal (shell of electrolytic capacitor)	35	Black mixtures (components)
18	Black soft plastic (plug of electrolytic capacitor)	36	Gray mixtures (capacitor)

2.2 Screening test by XRF spectroscopy analysis:

With reference to IEC 62321-3-1:2013, by X-ray fluorescence spectrometry analysis.

Sample No. Item(s)	XRF Result (mg/kg)								
	1	2	3	4	5	6	7	8	9
Pb	BL	BL	BL	BL	BL	BL	BL	BL	BL
Cd	BL	BL	BL	BL	BL	BL	X	BL	X
Hg	BL	BL	BL	BL	BL	BL	BL	BL	BL
Cr	BL	BL	BL	BL	BL	BL	BL	X	BL
Br	BL	BL	NA	NA	BL	BL	NA	NA	NA

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Sample No. Item(s)	XRF Result (mg/kg)								
	10	11	12	13	14	15	16	17	18
Pb	BL	BL	BL	BL	BL	BL	BL	BL	BL
Cd	BL	BL	BL	BL	BL	BL	BL	BL	BL
Hg	BL	BL	BL	BL	BL	BL	BL	BL	BL
Cr	X	BL	BL	X	BL	BL	BL	BL	BL
Br	NA	BL	NA	BL	NA	BL	BL	NA	BL

Sample No. Item(s)	XRF Result (mg/kg)								
	19	20	21	22	23	24	25	26	27
Pb	BL	BL	BL	BL	BL	BL	BL	BL	BL
Cd	BL	BL	BL	BL	BL	BL	BL	BL	X
Hg	BL	BL	BL	BL	BL	BL	BL	BL	BL
Cr	BL	BL	BL	BL	BL	BL	BL	BL	BL
Br	BL	NA	X	BL	NA	NA	NA	X	X

Sample No. Item(s)	XRF Result (mg/kg)								
	28	29	30	31	32	33	34	35	36
Pb	BL	BL	BL	BL	BL	BL	BL	BL	BL
Cd	OL	X	BL	BL	BL	BL	BL	BL	BL
Hg	BL	BL	BL	BL	BL	BL	BL	BL	BL
Cr	X	BL	BL	BL	X	BL	BL	X	BL
Br	X	NA	NA	X	X	X	X	X	X

2.3 Test result for chemical confirmation analysis:

Sample No. Item(s)	Result (mg/kg)				
	7	9	27	28	29
Cd	ND.	ND.	ND.	ND.	ND.

Sample No. Item(s)	Result (mg/kg)			
	13	28	32	35
Cr(VI) ^[2]	<10	<10	<10	<10

Note: "[2]": Denotes report as total chromium. Result test less than 10 indicates that Hexavalent chromium (Non-metal) is below the reporting limit.

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Sample No.	Result	
Item(s)	8	10
Cr(VI)	Negative	Negative

2.4 Brominated Flame Retardants (PBBs, PBDEs) analysis:

Sample No.	Result (mg/kg)									
Item(s)	21	26	27	28	31	32	33	34	35	36
Monobromobiphenyl (MonoBB)	ND.	ND.	ND.	ND.	ND.	ND.	ND.	ND.	ND.	ND.
Dibromobiphenyl (DiBB)	ND.	ND.	ND.	ND.	ND.	ND.	ND.	ND.	ND.	ND.
Tribromobiphenyl (TriBB)	ND.	ND.	ND.	ND.	ND.	ND.	ND.	ND.	ND.	ND.
Tetrabromobiphenyl (TetraBB)	ND.	ND.	ND.	ND.	ND.	ND.	ND.	ND.	ND.	ND.
Pentabromobiphenyl (PentaBB)	ND.	ND.	ND.	ND.	ND.	ND.	ND.	ND.	ND.	ND.
Hexabromobiphenyl (HexaBB)	ND.	ND.	ND.	ND.	ND.	ND.	ND.	ND.	ND.	ND.
Heptabromobiphenyl (HeptaBB)	ND.	ND.	ND.	ND.	ND.	ND.	ND.	ND.	ND.	ND.
Octabromobiphenyl (OctaBB)	ND.	ND.	ND.	ND.	ND.	ND.	ND.	ND.	ND.	ND.
Nonabromobiphenyl (NonaBB)	ND.	ND.	ND.	ND.	ND.	ND.	ND.	ND.	ND.	ND.
Decabromobiphenyl (DecaBB)	ND.	ND.	ND.	ND.	ND.	ND.	ND.	ND.	ND.	ND.
Sum of (PBBs)	ND.	ND.	ND.	ND.	ND.	ND.	ND.	ND.	ND.	ND.
Monobromodiphenyl ether (MonoBDE)	ND.	ND.	ND.	ND.	ND.	ND.	ND.	ND.	ND.	ND.
Dibromodiphenyl ether (DiBDE)	ND.	ND.	ND.	ND.	ND.	ND.	ND.	ND.	ND.	ND.
Tribromodiphenyl ether (TriBDE)	ND.	ND.	ND.	ND.	ND.	ND.	ND.	ND.	ND.	ND.
Tetrabromodiphenyl ether (TetraBDE)	ND.	ND.	ND.	ND.	ND.	ND.	ND.	ND.	ND.	ND.
Pentabromodiphenyl ether (PentaBDE)	ND.	ND.	ND.	ND.	ND.	ND.	ND.	ND.	ND.	ND.
Hexabromodiphenyl ether (HexaBDE)	ND.	ND.	ND.	ND.	ND.	ND.	ND.	ND.	ND.	ND.
Heptabromodiphenyl ether (HeptaBDE)	ND.	ND.	ND.	ND.	ND.	ND.	ND.	ND.	ND.	ND.
Octabromodiphenyl ether (OctaBDE)	ND.	ND.	ND.	ND.	ND.	ND.	ND.	ND.	ND.	ND.
Nonabromodiphenyl ether (NonaBDE)	ND.	ND.	ND.	ND.	ND.	ND.	ND.	ND.	ND.	ND.
Decabromodiphenyl ether (DecaBDE)	ND.	ND.	ND.	ND.	ND.	ND.	ND.	ND.	ND.	ND.
Sum of (PBDEs)	ND.	ND.	ND.	ND.	ND.	ND.	ND.	ND.	ND.	ND.

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2.5 Phthalates (PAEs) analysis:

Sample No. Item(s)	Result (mg/kg)						
	1	2	5	6	11	13	15
DBP	ND.	ND.	ND.	ND.	ND.	ND.	ND.
BBP	ND.	ND.	ND.	ND.	ND.	ND.	ND.
DEHP	ND.	ND.	330	ND.	ND.	ND.	ND.
DIBP	ND.	ND.	ND.	ND.	ND.	ND.	ND.

Sample No. Item(s)	Result (mg/kg)						
	16	18	19	21	22	26	27
DBP	ND.	ND.	ND.	ND.	ND.	ND.	ND.
BBP	ND.	ND.	ND.	ND.	ND.	ND.	ND.
DEHP	ND.	ND.	ND.	ND.	ND.	ND.	ND.
DIBP	ND.	ND.	ND.	ND.	ND.	ND.	ND.

Sample No. Item(s)	Result (mg/kg)						
	28	31	32	33	34	35	36
DBP	ND.	ND.	ND.	ND.	ND.	ND.	ND.
BBP	ND.	ND.	ND.	ND.	ND.	ND.	ND.
DEHP	ND.	ND.	ND.	ND.	ND.	ND.	ND.
DIBP	ND.	ND.	ND.	ND.	ND.	ND.	ND.

Note:

- (1) BL = Below limit by XRF analysis.
- (2) OL = Over limit by XRF analysis, the range of needing to do further testing.
- (3) X = Inconclusive result, the range of needing to do further testing.
- (4) σ = The reproducibility of analytical instruments.
- (5) NA = Not applicable.
- (6) MDL = Method detection limit.
- (7) mg/kg = ppm = part per million.
- (8) ND.= Not detected (less than report limit).
- (9) Negative = The negative test result indicated the concentration of Cr(VI) is less than threshold of $0.10(\mu\text{g}/\text{cm}^2)$ for boiling-water-extraction procedures by UV-VIS Spectrophotometer analysis. The coating is considered a non-Cr(VI) based coating.

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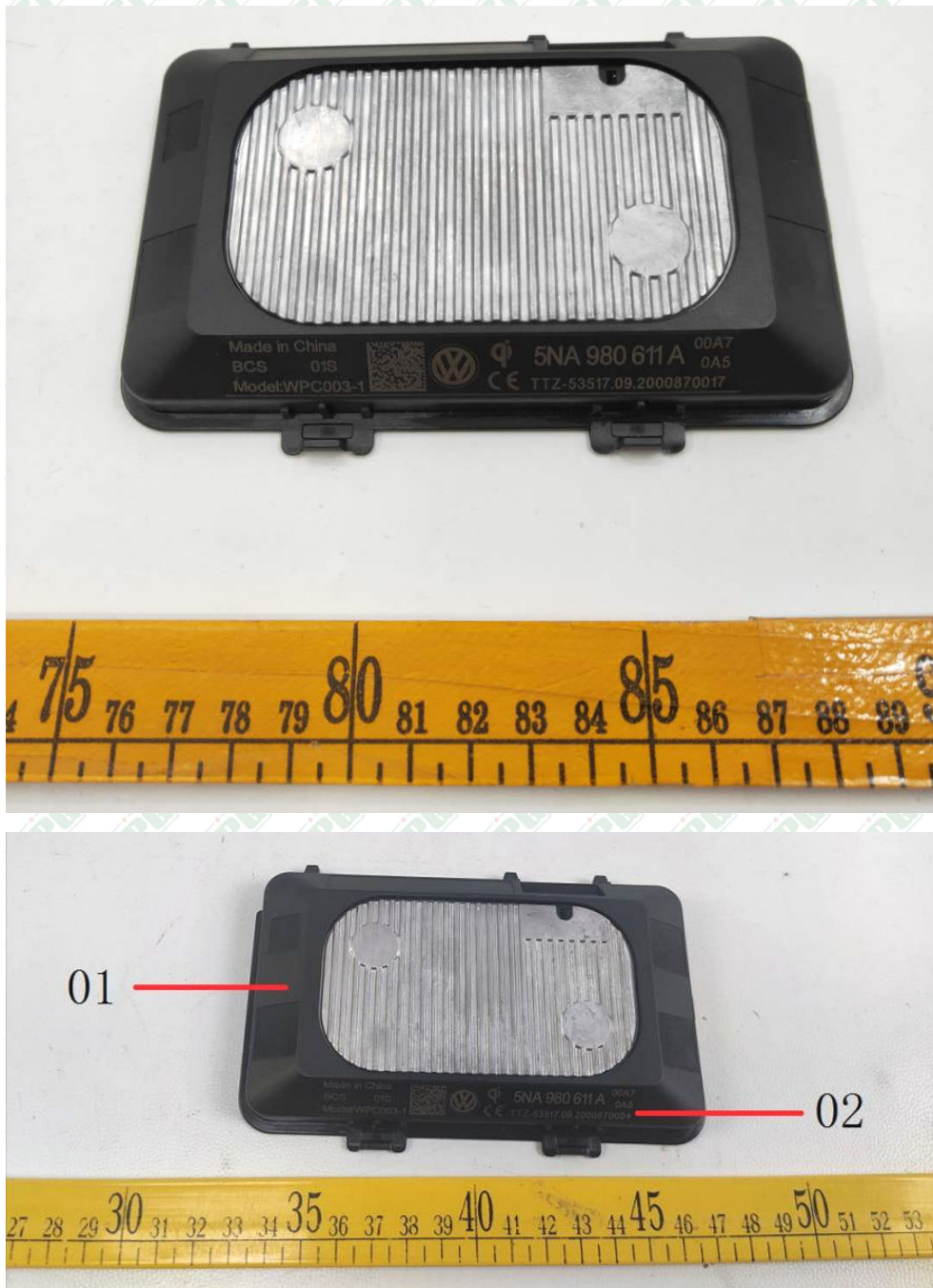
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(10) "<" = Less than.

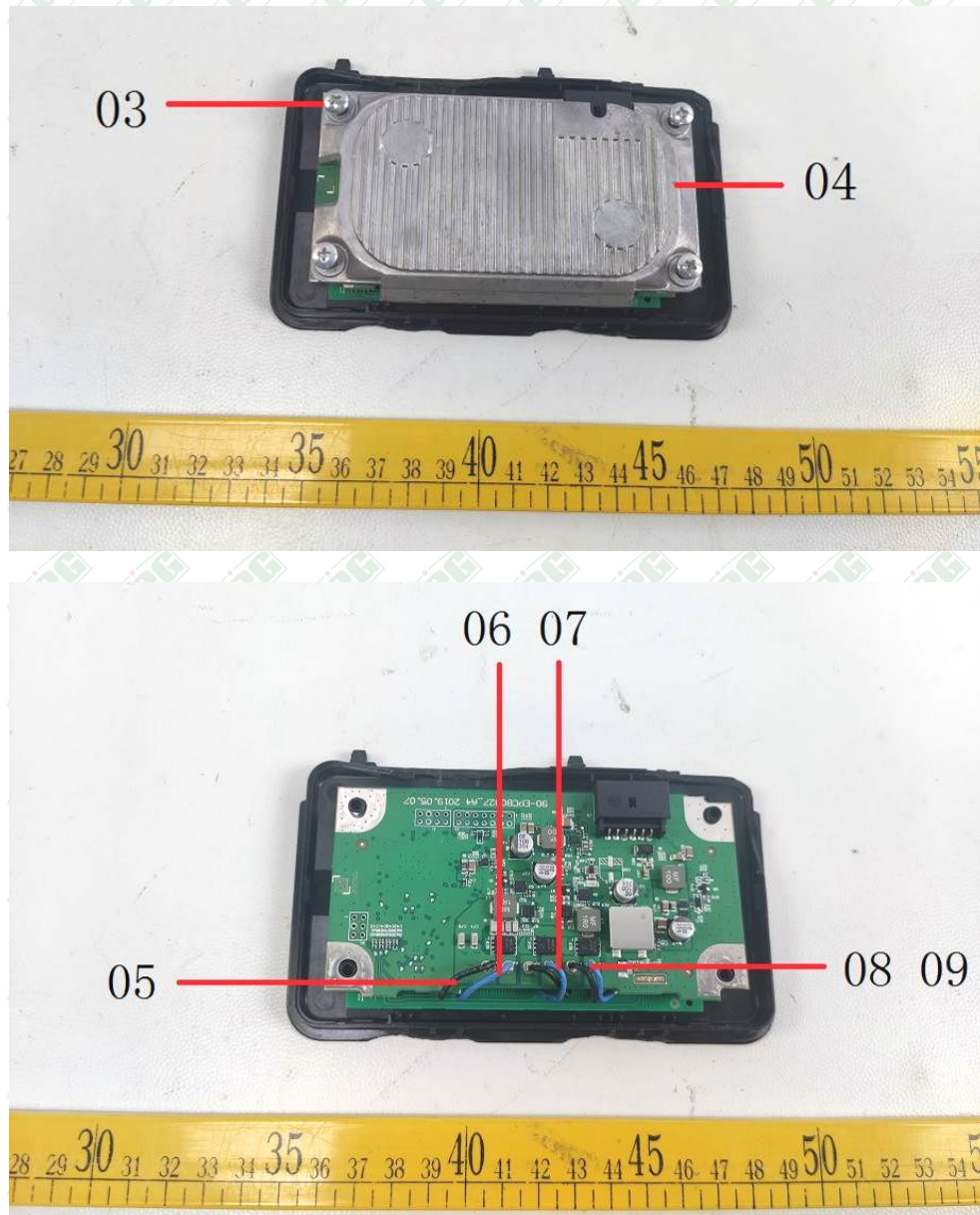
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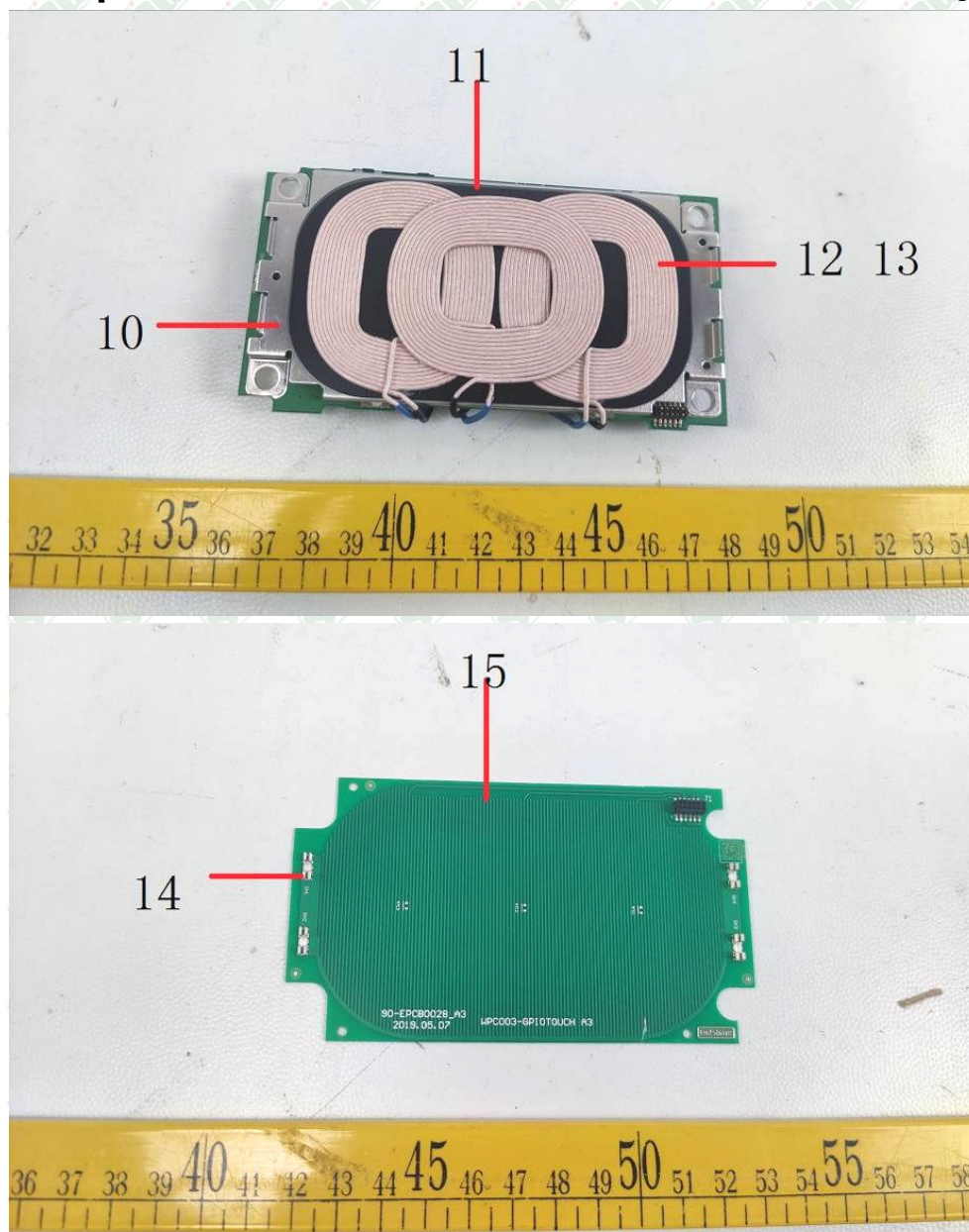
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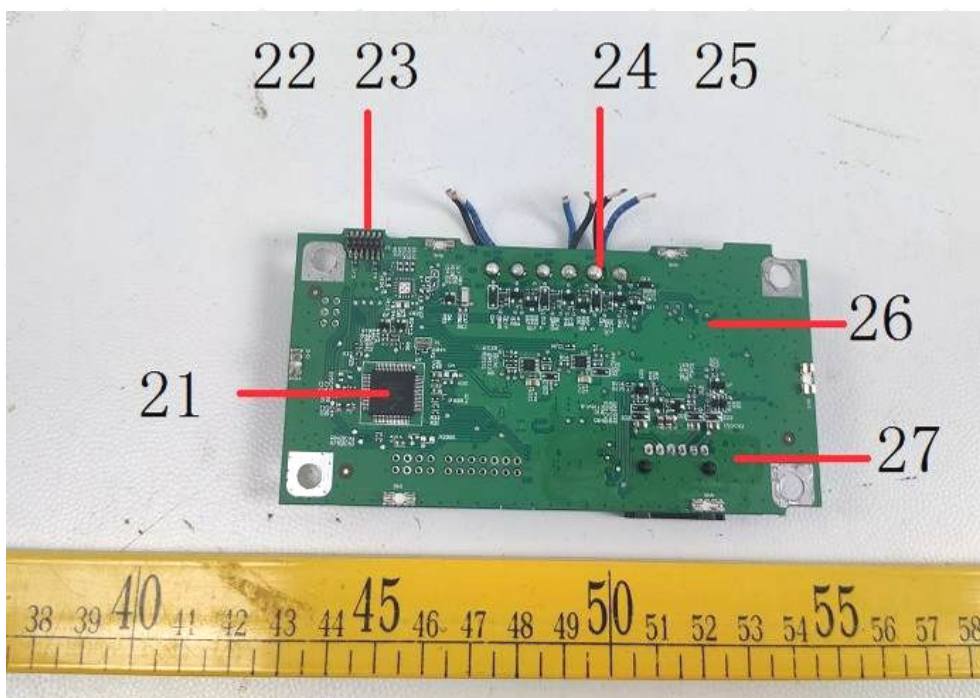
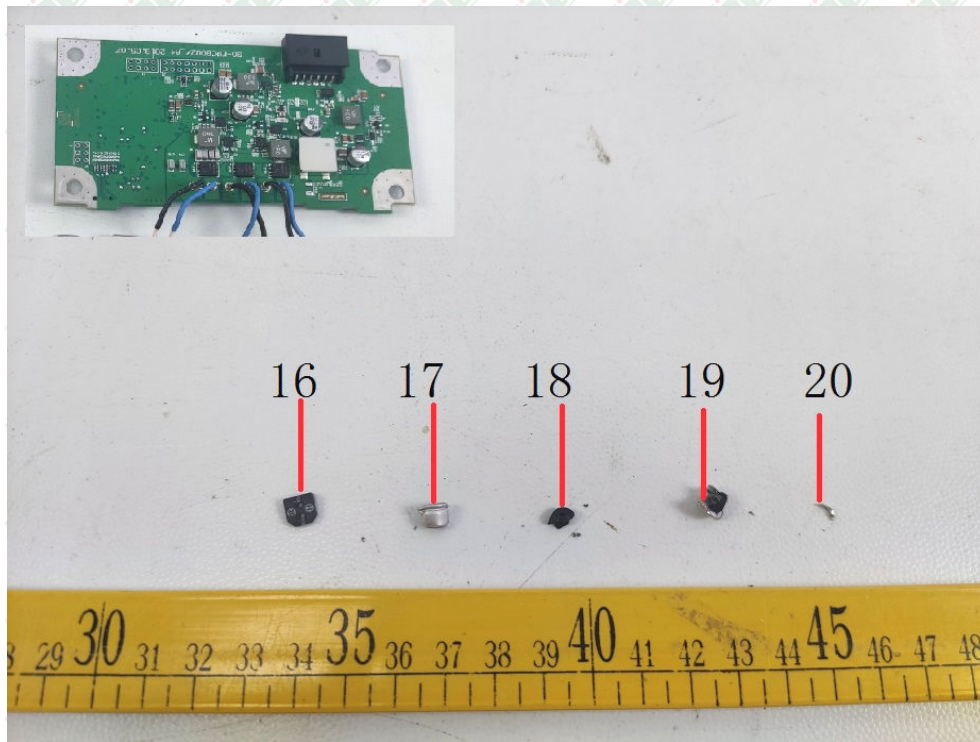


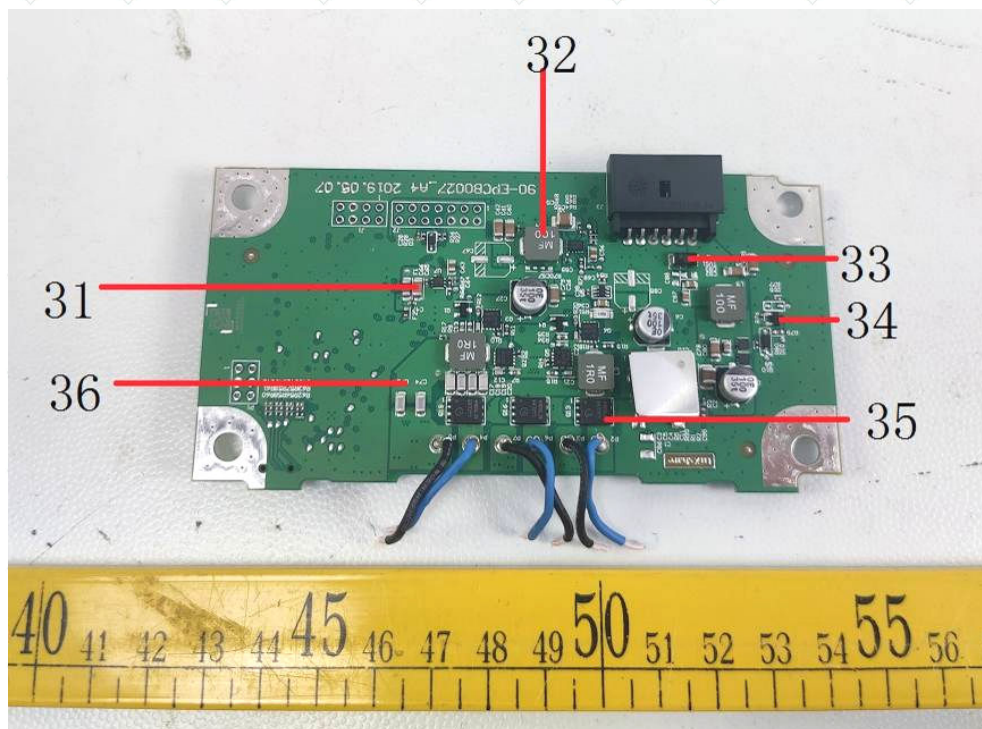
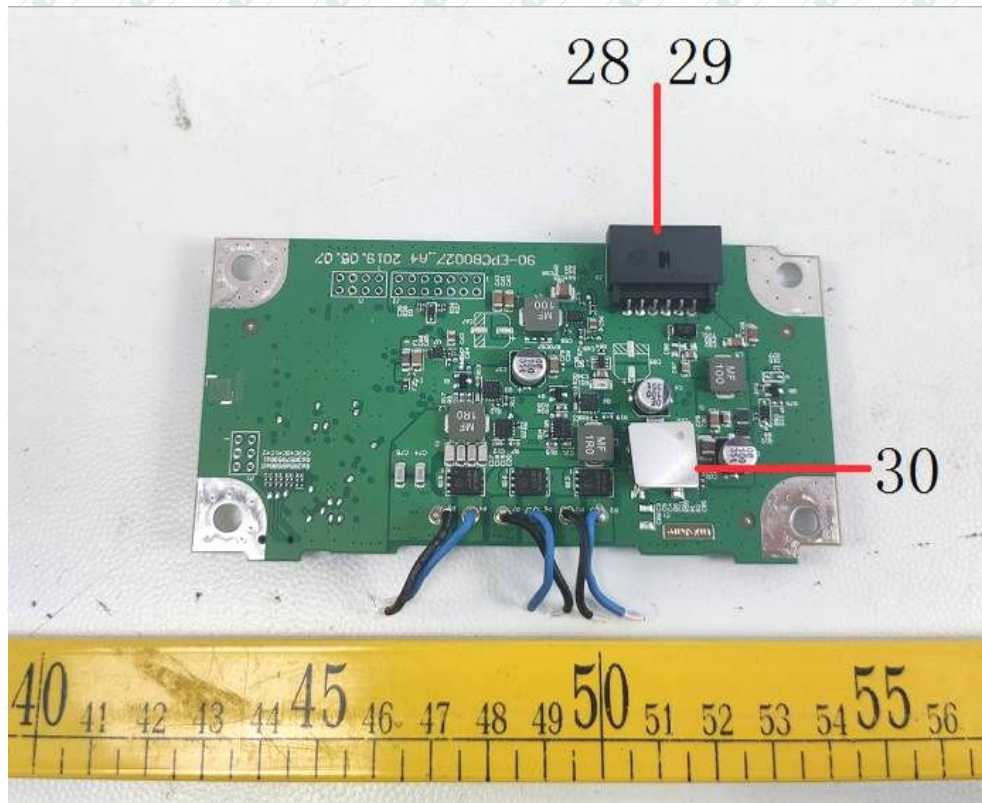
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