



XRF Screening and Chemical Confirmation Test Report

Number: GZHH00149788

Applicant: MEKBAO PLASTIC ELECTRONIC INDUSTRIAL CO.,LTD
JIAOXI INDUSTRY AREAS LIANXIA
CHENGHAI SHANTOU CITY,GD CHINA

Date: Apr 16, 2014

Sample Description:

Six (6) styles of submitted sample said to be :

Item Name : **Music Car Series**
Applicant Specified Age : 3+
Grading for Testing :
Country of Origin : China



Tests conducted:

As requested by the applicant, refer to attached page(s) for details.

Conclusion:

<u>Tested Samples</u>	<u>Standard</u>	<u>Result</u>
Screened components of submitted samples	Screening by XRF spectroscopy and chemical confirmation test for RoHS Directive (2011/65/EU)	Pass

Authorized by:
For Intertek Testing Services Shenzhen Ltd.
Guangzhou Branch, Toys & Hardlines

Ben N.L. Lin
General Manager





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Screening Test by XRF Spectroscopy

Cadmium (Cd), Lead (Pb), Mercury (Hg), Chromium (Cr) and Bromine (Br) content were measured by XRF spectroscopy and chemical confirmation test for RoHS restricted substances.

(A) Results:

Screened Components	XRF Results		Chemical Confirmation Result
	Element	Result	
(1)	Cd	ND	NT
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	Detected	
(2)	Cd	ND	PBBs : ND(<5mg/kg) PBDEs : See appendix
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	Inconclusive	
(3)	Cd	ND	NT
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	ND	
(4)	Cd	ND	PBBs : ND(<5mg/kg) PBDEs : ND(<5mg/kg)
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	Inconclusive	
(5)	Cd	ND	NT
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	ND	
(6)	Cd	ND	NT
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	ND	



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Screened Components	XRF Results		Chemical Confirmation Result
(7)	Cd	ND	NT
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	ND	
(8)	Cd	ND	NT
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	ND	
(9)	Cd	ND	NT
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	ND	
(10)	Cd	ND	NT
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	ND	
(11)	Cd	ND	NT
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	ND	
(12)	Cd	ND	NT
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	ND	
(13)	Cd	ND	NT
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	ND	





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Screened Components	XRF Results		Chemical Confirmation Result
(14)	Cd	ND	PBBs : ND(<5mg/kg) PBDEs : See appendix
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	Inconclusive	
(15)	Cd	ND	NT
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	ND	
(16)	Cd	ND	NT
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	ND	
(17a)	Cd	ND	NT
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	ND	
(17b)	Cd	ND	Cr ⁶⁺ : Negative (<0.02 mg/kg with 50 cm ²)
	Pb	ND	
	Hg	ND	
	Cr	Inconclusive	
	Br	NT	
(17c)	Cd	ND	NT
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	ND	
(17d)	Cd	ND	PBBs : ND(<5mg/kg) PBDEs : ND(<5mg/kg)
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	Inconclusive	



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Screened Components	XRF Results		Chemical Confirmation Result
(17e)	Cd	ND	NT
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	NT	
(17f)	Cd	ND	NT
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	ND	
(17g)	Cd	ND	NT
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	NT	
(17h)	Cd	ND	Cr ⁶⁺ : Negative (<0.02 mg/kg with 50 cm ²)
	Pb	ND	
	Hg	ND	
	Cr	Inconclusive	
	Br	NT	
(18a)	Cd	ND	NT
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	NT	
(18b)	Cd	ND	NT
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	NT	
(18c)	Cd	ND	NT
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	ND	





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Screened Components	XRF Results		Chemical Confirmation Result
(18d)	Cd	ND	NT
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	NT	
(18e)	Cd	ND	NT
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	ND	
(18f)	Cd	ND	NT
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	NT	
(18g)	Cd	ND	NT
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	ND	
(18h)	Cd	ND	NT
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	ND	
(18i)	Cd	ND	NT
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	ND	
(18j)	Cd	ND	NT
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	ND	





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Screened Components	XRF Results		Chemical Confirmation Result
(18k)	Cd	ND	NT
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	NT	
(18l)	Cd	ND	NT
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	ND	
(18m)	Cd	ND	NT
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	NT	
(18n)	Cd	ND	NT
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	NT	
(18o)	Cd	ND	NT
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	ND	
(18p)	Cd	ND	Cr ⁶⁺ : Negative (<0.02 mg/kg with 50 cm ²)
	Pb	ND	
	Hg	ND	
	Cr	Inconclusive	
	Br	NT	
(18q)	Cd	ND	NT
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	NT	



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Screened Components	XRF Results		Chemical Confirmation Result
(19a)	Cd	ND	NT
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	ND	
(19b)	Cd	ND	NT
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	NT	
(20)	Cd	ND	NT
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	ND	
(21a)	Cd	ND	NT
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	ND	
(21b)	Cd	ND	NT
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	NT	
(22a)	Cd	ND	NT
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	NT	
(22b)	Cd	ND	NT
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	NT	



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Screened Components	XRF Results		Chemical Confirmation Result
(22c)	Cd	ND	NT
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	ND	
(22d)	Cd	ND	NT
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	NT	
(22e)	Cd	ND	NT
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	ND	
(22f)	Cd	ND	NT
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	NT	
(22g)	Cd	ND	NT
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	ND	
(22h)	Cd	ND	NT
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	ND	
(22i)	Cd	ND	NT
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	ND	



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Screened Components	XRF Results		Chemical Confirmation Result
(22j)	Cd	ND	NT
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	ND	
(22k)	Cd	ND	NT
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	NT	
(22l)	Cd	ND	NT
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	ND	
(22m)	Cd	ND	NT
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	NT	
(22n)	Cd	ND	NT
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	NT	
(22o)	Cd	ND	NT
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	ND	
(22p)	Cd	ND	Cr ⁶⁺ : Negative (<0.02 mg/kg with 50 cm ²)
	Pb	ND	
	Hg	ND	
	Cr	Inconclusive	
	Br	NT	



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Screened Components	XRF Results		Chemical Confirmation Result
(22q)	Cd	ND	NT
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	NT	
(23)	Cd	ND	NT
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	NT	
(24)	Cd	ND	NT
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	NT	
(25)	Cd	ND	NT
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	NT	
(26)	Cd	ND	NT
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	NT	
(27)	Cd	ND	NT
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	NT	
(28)	Cd	ND	NT
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	NT	



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Screened Components	XRF Results		Chemical Confirmation Result
(29)	Cd	ND	NT
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	NT	
(30a)	Cd	ND	PBBs : ND(<5mg/kg) PBDEs : ND(<5mg/kg)
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	Inconclusive	
(30b)	Cd	ND	NT
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	NT	
(31)	Cd	ND	NT
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	ND	
(32)	Cd	ND	NT
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	ND	
(33)	Cd	ND	NT
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	ND	
(34)	Cd	ND	NT
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	NT	



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Screened Components	XRF Results		Chemical Confirmation Result
(35)	Cd	ND	NT
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	NT	
(36)	Cd	ND	NT
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	NT	
(37)	Cd	ND	NT
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	NT	
(38)	Cd	ND	NT
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	NT	
(39)	Cd	ND	NT
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	NT	
(40)	Cd	ND	NT
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	NT	





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Screened Components	XRF Results		Chemical Confirmation Result
(41)	Cd	ND	NT
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	NT	
(42)	Cd	ND	NT
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	NT	
(43)	Cd	ND	NT
	Pb	ND	
	Hg	ND	
	Cr	ND	
	Br	Detected	





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Appendix:

Testing Item	Result	
	(2)	(14)
Polybrominated Biphenyls (PBBs)(mg/kg)		
Monobromobiphenyl (MonoBB)	ND	ND
Dibromobiphenyl (DiBB)	ND	ND
Tribromobiphenyl (TriBB)	ND	ND
Tetrabromobiphenyl (TetraBB)	ND	ND
Pentabromobiphenyl (PentaBB)	ND	ND
Hexabromobiphenyl (HexaBB)	ND	ND
Heptabromobiphenyl (HeptaBB)	ND	ND
Octabromobiphenyl (OctaBB)	ND	ND
Nonabromobiphenyl (NonaBB)	ND	ND
Decabromobiphenyl (DecaBB)	ND	ND
Polybrominated Diphenyl Ethers (PBDEs)(mg/kg)		
Monobromodiphenyl Ether (MonoBDE)	ND	ND
Dibromodiphenyl Ether (DiBDE)	ND	ND
Tribromodiphenyl Ether (TriBDE)	ND	ND
Tetrabromodiphenyl Ether (TetraBDE)	ND	ND
Pentabromodiphenyl Ether (PentaBDE)	ND	ND
Hexabromodiphenyl Ether (HexaBDE)	ND	ND
Heptabromodiphenyl Ether (HeptaBDE)	ND	27
Octabromodiphenyl Ether (OctaBDE)	ND	36
Nonabromodiphenyl Ether (NonaBDE)	ND	32
Decabromodiphenyl Ether (DecaBDE)	379	252

Detected = Below the lower screening limit of table (B) and pass

ND = Not detected

NT = Not tested

mg/kg with 50cm² = milligram per kilogram with 50 square centimetre

Positive = A positive test result indicated the presence of Cr(VI) at the time of testing, equal to or greater than threshold of 1 mg/kg for spot test procedure or 0.02 mg/kg for boiling-water-extraction procedures with a sample surface area of 50cm² used. However, it shall not be interpreted as the Cr(VI) concentration in the coating layer of the sample and should not be used as a method detection limit for this qualitative test.

Negative = A negative test result indicated above positive observation was not found at the time of testing. When the spot-test showed a negative result, the boiling-water-extraction procedure shall be used to verify the result.



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(B) XRF Screening Limits in mg/kg for Regulated Elements in Various Matrices

Element	Polymer Materials	Metallic Materials	Composite Materials
Cd	$P \leq 70 < X < 130 \leq F$	$P \leq 70 < X < 130 \leq F$	$P \leq 70 < X < 150 \leq F$
Pb	$P \leq 700 < X < 1300 \leq F$	$P \leq 700 < X < 1300 \leq F$	$P \leq 500 < X < 1500 \leq F$
Hg	$P \leq 700 < X < 1300 \leq F$	$P \leq 700 < X < 1300 \leq F$	$P \leq 500 < X < 1500 \leq F$
Cr	$P \leq 700 < X$	$P \leq 700 < X$	$P \leq 500 < X$
Br	$P \leq 300 < X$	Not applicable	$P \leq 250 < X$

P = Pass

X = Inconclusive result

F = Fail

mg/kg = milligram per kilogram = ppm

(C) Estimated Detection Limits in mg/kg for Regulated Elements in Various Matrices

Element	Polymer Materials	Metallic Materials	Composite Materials
Cd	50	70	70
Pb	100	200	200
Hg	100	200	200
Cr	100	200	200
Br	200	Not applicable	200

Disclaimers:

This XRF Screening and Chemical Confirmation Test 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 and Chemical Confirmation Test Report is sufficient for its/his/her purposes.

The results shown in this XRF Screening and Chemical Confirmation Test 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 is required to obtain quantitative data.



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(D) Chemical Confirmation Test Methods:

Testing Item	Testing Method	Reporting Limit
Chromium (VI) (Cr ⁶⁺) Content	With reference to IEC 62321 Edition 1.0:2008, by boiling water extraction and determined by UV-VIS spectrophotometer	Positive/Negative (Threshold of 0.02mg/kg with 50cm ²)
Polybrominated Biphenyls (PBBs) & Polybrominated Diphenyl Ethers (PBDEs)	With reference to IEC 62321 Edition 1.0:2008, by solvent extraction and determined by GC/MS and further HPLC confirmation when necessary	5 mg/kg

(E) RoHS Requirement:

Restricted Substances	Limits
Cadmium (Cd)	0.01% (100 mg/kg)
Lead (Pb)	0.1% (1000 mg/kg)
Mercury (Hg)	0.1% (1000 mg/kg)
Chromium (VI) (Cr ⁶⁺)	0.1% (1000 mg/kg)
Polybrominated Biphenyls (PBBs)	0.1% (1000 mg/kg)
Polybrominated Diphenyl Ethers (PBDEs)	0.1% (1000 mg/kg)

The above limits were quoted from 2011/65/EU for homogeneous material.

Screened Components:

- (1) Coatings(black, orange, silver color) on plastic
- (2) Beige plastic excluding coatings
- (3) Coatings(yellow, black, orange) on plastic
- (4) White plastic excluding coatings
- (5) Coatings(orange,white,black,silver color,red) on plastic
- (6) Coatings(blue, white,orange, silver color) on plastic
- (7) Coatings(dark blue, white, orange) on plastic
- (8) Silver color vacuum plated coating on plastic
- (9) Light grey plastic excluding coating
- (10) Grey plastic excluding coating
- (11) Black plastic excluding coating
- (12) Bright black plastic
- (13) Black/semi-transparent soft plastic
- (14) Black plastic
- (15) Dull white plastic with grease
- (16) Dull black soft plastic



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Screened Components:

- (17) Speaker
 - a) Dull white plastic
 - b) Silver color metal
 - c) Black magnet
 - d) Conformal coating with green solder mask & copper color metal pad & fiberboard with black glue
 - e) Solder
 - f) Transparent plastic
 - g) Copper enamelled wire
 - h) Silver color metal
- (18) Motor
 - a) Silver color metal
 - b) Silver-grey color metal
 - c) Black magnet with white coating
 - d) Black treated metal
 - e) Beige plastic
 - f) Copper color metal sheet
 - g) Dark yellow plastic
 - h) White plastic
 - i) Red plastic
 - j) Beige plastic
 - k) Silver color metal
 - l) Black magnet
 - m) Copper color enamelled wire
 - n) Silver color metal
 - o) White plastic
 - p) Silver color sheet
 - q) Gold color metal
- (19) Capacitor
 - a) Brown ceramic with black printing
 - b) Silver color metal (lead)
- (20) White plastic
- (21) Capacitor
 - a) Brown ceramic with black printing
 - b) Silver color metal (lead)



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Screened Components:

- (22) Motor
 - a) Silver color metal
 - b) Silver-grey color metal
 - c) Black magnet with white coating
 - d) Black treated metal
 - e) Beige plastic
 - f) Copper color metal sheet
 - g) Yellow plastic
 - h) White plastic
 - i) Red plastic
 - j) Beige plastic
 - k) Silver color metal
 - l) Black magnet
 - m) Copper color enamelled wire
 - n) Silver color metal
 - o) White plastic
 - p) Silver color sheet
 - q) Gold color metal
- (23) Silver color metal (spring)
- (24) Silver color metal
- (25) Silver color metal
- (26) Silver color metal
- (27) Silver color metal
- (28) Silver color metal
- (29) Silver color metal
- (30) Led
 - a) Transparent plastic
 - b) Silver color metal (lead)
- (31) Yellow plastic (wire covering)
- (32) White plastic (wire covering)
- (33) Red plastic (wire covering)
- (34) Copper color metal wire
- (35) Silver color metal
- (36) Silver color metal
- (37) Silver color metal
- (38) Black plated metal
- (39) Silver color metal
- (40) Silver color metal
- (41) Silver color metal
- (42) Silver color metal
- (43) Coatings(white, red, black, orange) on plastic

Date sample received: Mar 31, 2014 & Apr 11, 2014

Testing period: Mar 31, 2014 to Apr 15, 2014





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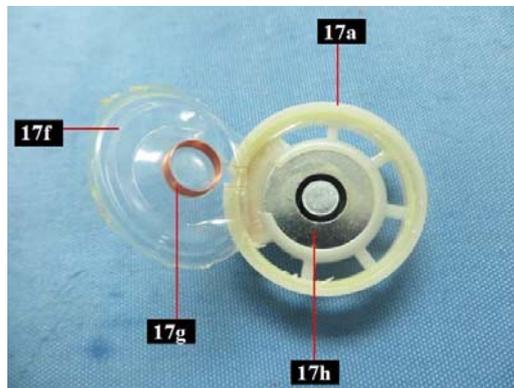
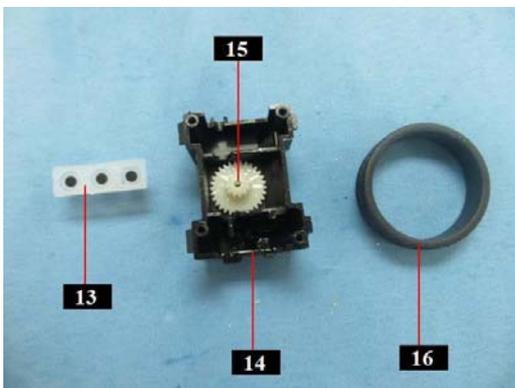
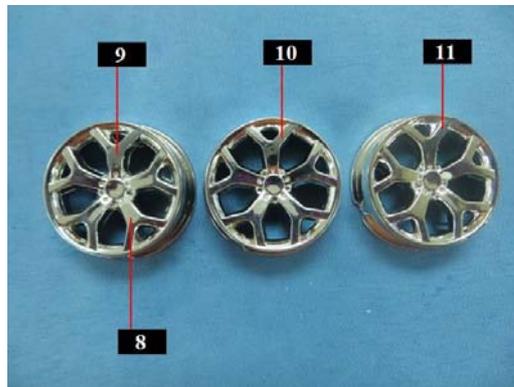
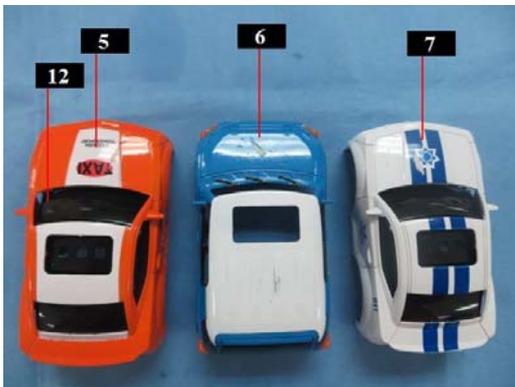
Appendix

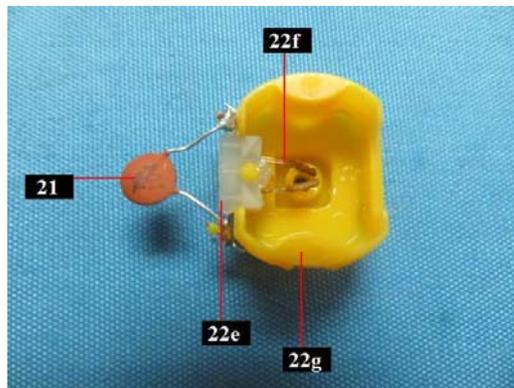
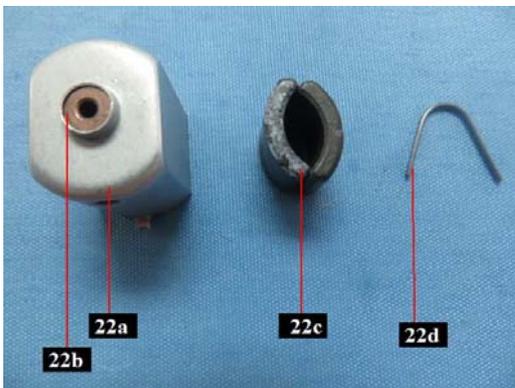
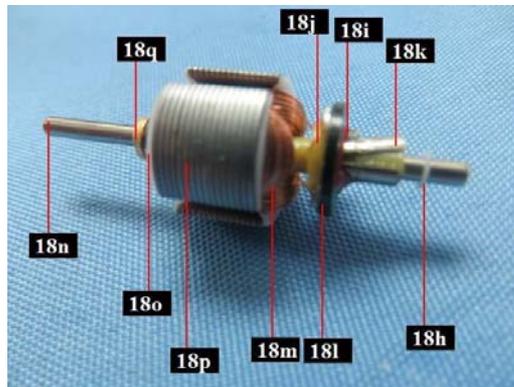
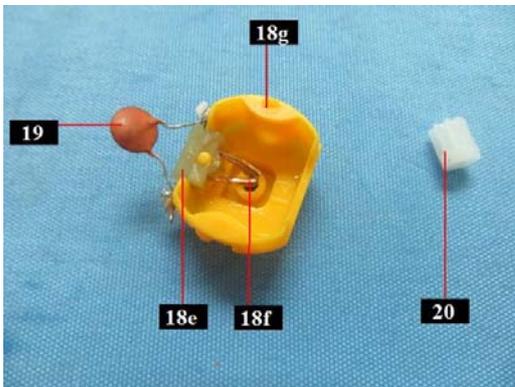
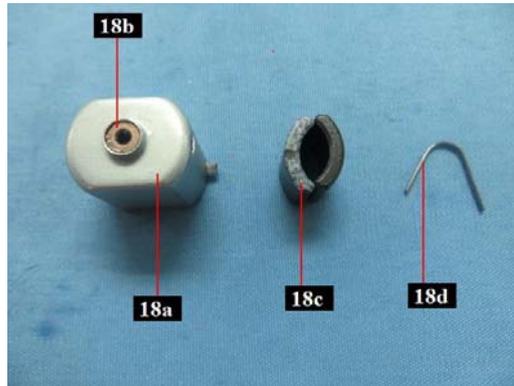
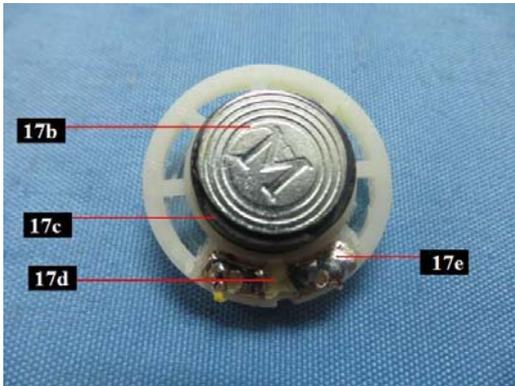
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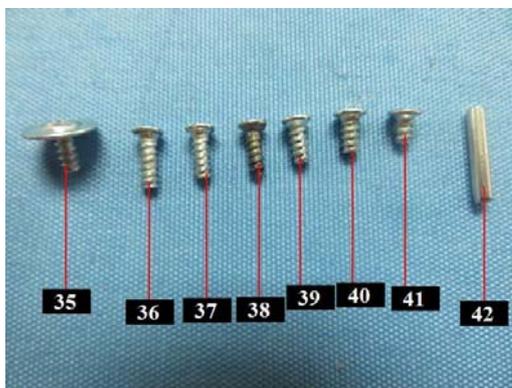
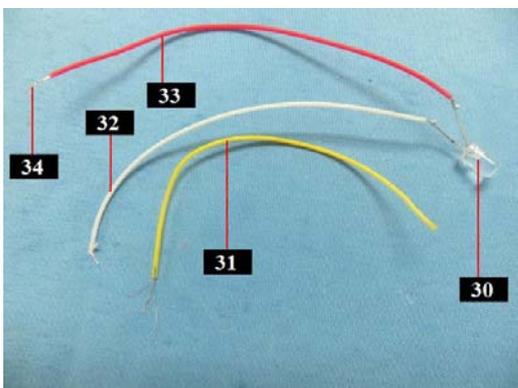
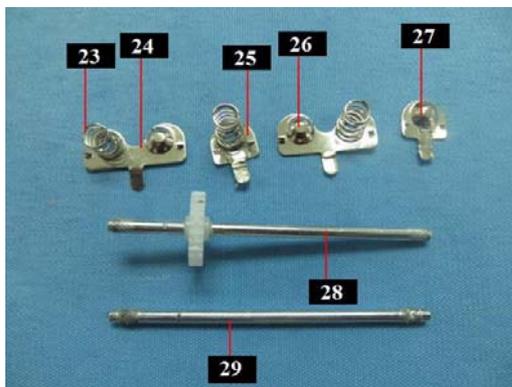
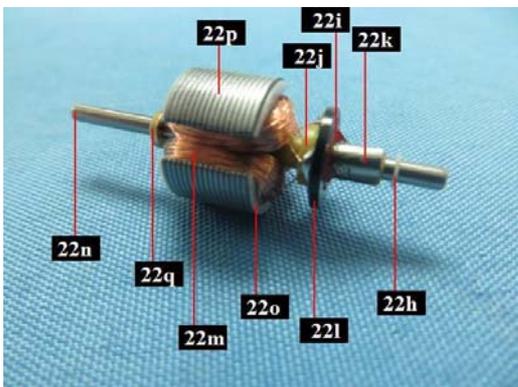


XRF Screening and Chemical Confirmation Test Report

Number: GZHH00149788







End of report

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