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# TEST REPORT

Report: **STSGZ2001133002**  
Date: 18-Feb-2020  
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**Client Name:** NINGBO HIGHLITE ILLUMINATION CO., LTD  
**Client Address:** ROOM 2202,22F, BANK OF CHINA MANSION, FINANCIAL CENTER, NO.318 HEYUAN ROAD, YINZHOU DISTRICT, NINGBO CITY

The following sample(s) and sample information was/were submitted and identified by client as:

**Sample Name:** LED LIGHT  
**Model/Style/Item #:** HL-CL0703-1(5V/1A USB cable included)  
**Series Model #:** HL-CL0703, HL-CL0703-2, HL-CL0706, HL-CL0709, HL-CL0710, HL-CL0710-1, HL-CL0712, HL-CL0713, HL-CL0714, HL-CL0715, HL-FL0013, HL-H0615, HL-H0616, HL-LA3034, HL-LA3037, HL-PF0298, HL-TC6192, HL-TC6194, HL-TC6194-1, HLTC6197, HL-TC6200, HL-WF0476, HL-WF0479, HL-WF0480-3AA, HL-WF0480-6AA, HL-LA3035-1, HL-WL2101-1, HL-WL2138(5V/0.5A USB cable included), HL-WL2138, HL-WL2155, HL-WL2160, HL-WL2161, HL-WL2162, HL-WL2166, HLWL2167, HL-WL2169, HL-RC5065, HL-WL2170, HL-WL2171, USB cable, HL-WL2119, HL-LA3037, HL-PF0298, HL-PF0299, HL-RC5056, HL-WL2180-1, HL-WL2149  
**Brand/Customer:** -  
**Supplier/Manufacturer:** -  
**Receiving Date:** 13-Jan-2020  
**Test Period:** 13-Jan-2020 - 16-Jan-2020  
**Add Information:** -

## Report Summary:

#	Test Item(s)	Reference Standard/Method	Result
1	Lead, Cadmium, Mercury, Hexavalent Chromium, PBBs, PBDEs, DBP, BBP, DEHP and DIBP EU RoHS Directive 2011/65/EU and its amendment directives (EU) 2015/863 (RoHS 2.0)	IEC 62321-3-1:2013 IEC 62321-4:2013+A1:2017 IEC 62321-5:2013 IEC 62321-6:2015 IEC 62321-7-1:2015 IEC 62321-7-2:2017 IEC 62321-8:2017	PASS

\*\*\*\*\*

Signed for and on behalf of STS

Kevin Liu  
(Chemical Test Manager)





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## Result:

### 1. EU RoHS Directive 2011/65/EU and its amendment directives on XRF IEC 62321-3-1:2013, Screening by X-ray Fluorescence Spectroscopy (XRF)

Seq. No.	Tested Part(s)	Results				
		Pb	Cd	Hg	Cr	Br
<b>A</b>	<b>Appearance</b>					
1	White plastic,cover	BL	BL	BL	BL	BL
2	Silver coating,shell	BL	BL	BL	BL	BL
3	White plastic,shell	BL	BL	BL	BL	BL
4	Black plastic,shell	BL	BL	BL	BL	BL
5	Gray soft plastic,shell	BL	BL	BL	BL	BL
6	Yellow soft plastic,cover	BL	BL	BL	BL	BL
7	Silver metal,screw	BL	BL	BL	X	NA
8	Black plastic,support	BL	BL	BL	BL	BL
9	Silver metal,support	BL	BL	BL	BL	NA
10	White coating,on chip	BL	BL	BL	BL	BL
11	Silver metal,chip	BL	BL	BL	BL	NA
12	White/yellow body,LED	BL	BL	BL	BL	X
13	White/silver body,LED	BL	BL	BL	BL	X
14	Silver metal,solder	BL	BL	BL	BL	NA
15	Black soft plastic,wire jacket	BL	BL	BL	BL	BL
16	Red soft plastic,wire jacket	BL	BL	BL	BL	BL
17	White soft plastic,wire jacket	BL	BL	BL	BL	BL
18	Silver metal,wire	BL	BL	BL	BL	NA
19	White metal,connector	BL	BL	BL	BL	NA
20	Silver metal,connector	BL	BL	BL	BL	NA
21	Black soft plastic,gasket ring	BL	BL	BL	BL	BL
22	Silver metal,screw	BL	BL	BL	X	NA



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23	Silver metal,speaker shell	BL	BL	BL	BL	NA
24	White plastic,speaker	BL	BL	BL	BL	BL
25	Black soft plastic,speaker	BL	BL	BL	BL	BL
26	Black plastic,speaker	BL	BL	BL	BL	BL
27	Black paper,speaker	BL	BL	BL	BL	BL
28	Beige paper,speaker	BL	BL	BL	BL	BL
29	Red metal,speaker wire	BL	BL	BL	BL	NA
30	Black fabric,speaker inner	BL	BL	BL	BL	BL
31	Silver metal,speaker inner	BL	BL	BL	BL	NA
32	Transparent plastic,holder	BL	BL	BL	BL	BL
33	Black soft plastic,speaker gasket	BL	BL	BL	BL	BL
34	Silver metal,solder	BL	BL	BL	BL	NA
35	Black plated silver metal,screw	BL	BL	BL	X	NA
36	Green PCB	BL	BL	BL	BL	X
37	Silver metal,USB	BL	BL	BL	BL	NA
38	White plastic,in USB	BL	BL	BL	BL	BL
39	Golden metal pin,in USB	BL	BL	BL	BL	NA
40	Silver metal,mini USB	BL	BL	BL	BL	NA
41	Black plastic,in mini USB	BL	BL	BL	BL	BL
42	Golden metal pin,in mini USB	BL	BL	BL	BL	NA
43	Black plastic,button	BL	BL	BL	BL	BL
44	Silver metal,button	BL	BL	BL	BL	NA
45	Black plastic,button base	BL	BL	BL	BL	BL
46	Silver/copper metal,in button	BL	BL	BL	BL	NA
47	Silver metal pin,button	BL	BL	BL	BL	NA
48	Black magnet,winding inductance	BL	BL	BL	BL	NA
49	Golden enamelled wire	BL	BL	BL	BL	BL
50	Black body,IC	BL	BL	BL	BL	BL



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51	Black body,IC	BL	BL	BL	BL	BL
52	Yellow body,capacitance	BL	BL	BL	BL	BL
53	Black body,resistance	BL	BL	BL	BL	BL
54	Silver body,crystal oscillator	BL	BL	BL	BL	NA
55	Silver metal,solder	BL	BL	BL	BL	NA

## Remark:

- (1) 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	$BL \leq 300 - 3\sigma < X$	--	$BL \leq 250 - 3\sigma < X$

## Note:

BL = Below Limit

OL = Over Limit

X = Inconclusive

NA = Not Applicable

- (2) The XRF screening test for RoHS elements – The reading may be different to the actual content in the sample be of non-uniformity composition.
- (3) The maximum permissible limit is quoted from the document 2011/65/EU and its amendment directives (EU) 2015/863 :

RoHS Restricted Substances	Maximum Concentration Value (mg/kg) (by weight in homogenous materials)
Cadmium (Cd)	100



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Lead (Pb)	1000
Mercury (Hg)	1000
Hexavalent Chromium (Cr(VI))	1000
Polybrominated biphenyls (PBBs)	1000
Polybrominated diphenyl ethers (PBDEs)	1000

## (4) 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.

- (5) The selection of test portions was recommended by the client and the conclusion of chemical test is only for the selected portions.

## 2. Hexavalent Chromium (Cr(VI))

Metal: IEC 62321-7-1:2015, extracted by boiling water and analyzed by UV-Vis

Compound		Material			Limit	RL
		7	22	35		
1	Hexavalent Chromium (Cr(VI))	Negative	Negative	Negative	#	-
	Conclusion	PASS	PASS	PASS	-	-

Remark(s): (a) Negative = Sample Cr(VI) concentration is less than 0.10 ug/cm<sup>2</sup>

Positive = Sample Cr(VI) concentration is greater than 0.13 ug/cm<sup>2</sup>

(b) # = 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.

## 3. Polybrominated Biphenyls and Polybrominated Diphenyl Ethers (PBBs and PBDEs)

IEC 62321-6:2015, solvent extract and determined by GC/MS

Compound		Material			Limit (mg/kg)	RL (mg/kg)
		12	13	36		
1	Monobromo biphenyl	N.D.	N.D.	N.D.	-	50





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2	Dibromo biphenyl	N.D.	N.D.	N.D.	-	50
3	Tribromo biphenyl	N.D.	N.D.	N.D.	-	50
4	Tetrabromo biphenyl	N.D.	N.D.	N.D.	-	50
5	Pentabromo biphenyl	N.D.	N.D.	N.D.	-	50
6	Hexabromo biphenyl	N.D.	N.D.	N.D.	-	50
7	Heptabromo biphenyl	N.D.	N.D.	N.D.	-	50
8	Octabromo biphenyl	N.D.	N.D.	N.D.	-	50
9	Nonabromo biphenyl	N.D.	N.D.	N.D.	-	50
10	Decabromo biphenyl	N.D.	N.D.	N.D.	-	50
11	Monobromo diphenyl ether	N.D.	N.D.	N.D.	-	50
12	Dibromo diphenyl ether	N.D.	N.D.	N.D.	-	50
13	Tribromo diphenyl ether	N.D.	N.D.	N.D.	-	50
14	Tetrabromo diphenyl ether	N.D.	N.D.	N.D.	-	50
15	Pentabromo diphenyl ether	N.D.	N.D.	N.D.	-	50
16	Hexabromo diphenyl ether	N.D.	N.D.	N.D.	-	50
17	Heptabromo diphenyl ether	N.D.	N.D.	N.D.	-	50
18	Octabromo diphenyl ether	N.D.	N.D.	N.D.	-	50
19	Nonabromo diphenyl ether	N.D.	N.D.	N.D.	-	50
20	Decabromo diphenyl ether	N.D.	N.D.	N.D.	-	50
21	Sum of PBBs	N.D.	N.D.	N.D.	1000	-
22	Sum of PBDEs	N.D.	N.D.	N.D.	1000	-
	<b>Conclusion</b>	<b>PASS</b>	<b>PASS</b>	<b>PASS</b>	-	-



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## 4. Phthalates – (DBP, BBP, DEHP, DIBP) IEC 62321-8:2017, Solvent extract and determined by GC/MS

Compound			Material				Limit (%)	RL(%)
			1+3+4	2+10	5+6	8+12+13		
1	DBP	Dibutylphthalate CAS# 84-74-2	N.D.	N.D.	N.D.	N.D.	0.1	0.005
2	BBP	Benzylbutylphthalate CAS# 85-68-7	N.D.	N.D.	N.D.	N.D.	0.1	0.005
3	DEHP	Diethylhexylphthalate CAS# 117-81-7	N.D.	N.D.	N.D.	N.D.	0.1	0.005
4	DIBP	Diisobutyl phthalate CAS# 84-69-5	N.D.	N.D.	N.D.	N.D.	0.1	0.005
Conclusion			PASS	PASS	PASS	PASS	-	-

Compound			Material				Limit (%)	RL(%)
			15+16+17	21+25+33	24+32+38	26		
1	DBP	Dibutylphthalate CAS# 84-74-2	N.D.	N.D.	N.D.	N.D.	0.1	0.005
2	BBP	Benzylbutylphthalate CAS# 85-68-7	N.D.	N.D.	N.D.	N.D.	0.1	0.005
3	DEHP	Diethylhexylphthalate CAS# 117-81-7	N.D.	N.D.	N.D.	N.D.	0.1	0.005
4	DIBP	Diisobutyl phthalate CAS# 84-69-5	N.D.	N.D.	N.D.	N.D.	0.1	0.005
Conclusion			PASS	PASS	PASS	PASS	-	-

Compound			Material				Limit (%)	RL(%)
			36	41+43+45	49	50+51+52		
1	DBP	Dibutylphthalate CAS# 84-74-2	N.D.	N.D.	N.D.	N.D.	0.1	0.005
2	BBP	Benzylbutylphthalate CAS# 85-68-7	N.D.	N.D.	N.D.	N.D.	0.1	0.005
3	DEHP	Diethylhexylphthalate CAS# 117-81-7	N.D.	N.D.	N.D.	N.D.	0.1	0.005
4	DIBP	Diisobutyl phthalate CAS# 84-69-5	N.D.	N.D.	N.D.	N.D.	0.1	0.005
Conclusion			PASS	PASS	PASS	PASS	-	-



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Compound			Material	Limit (%)	RL(%)
			53		
1	DBP	Dibutylphthalate CAS# 84-74-2	N.D.	0.1	0.005
2	BBP	Benzylbutylphthalate CAS# 85-68-7	N.D.	0.1	0.005
3	DEHP	Diethylhexylphthalate CAS# 117-81-7	N.D.	0.1	0.005
4	DIBP	Diisobutyl phthalate CAS# 84-69-5	N.D.	0.1	0.005
Conclusion			PASS	-	-

Remark(s): (a) mg/kg: milligram per kilogram  
(b) RL: Report limit  
(c) N.D.: Not detected (result is less than RL)  
(d) Composite testing is recommended by the client.

## Photo(s):







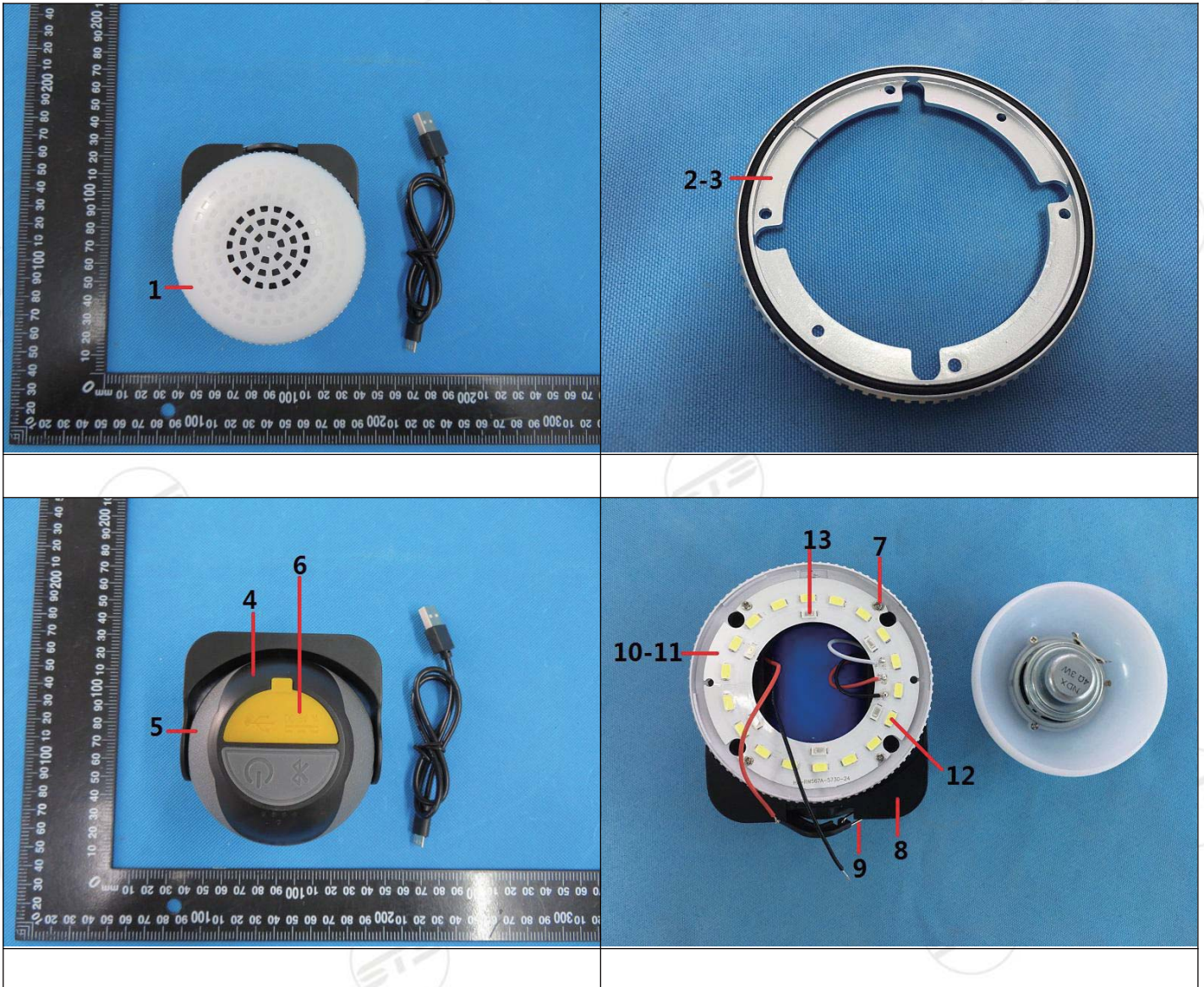
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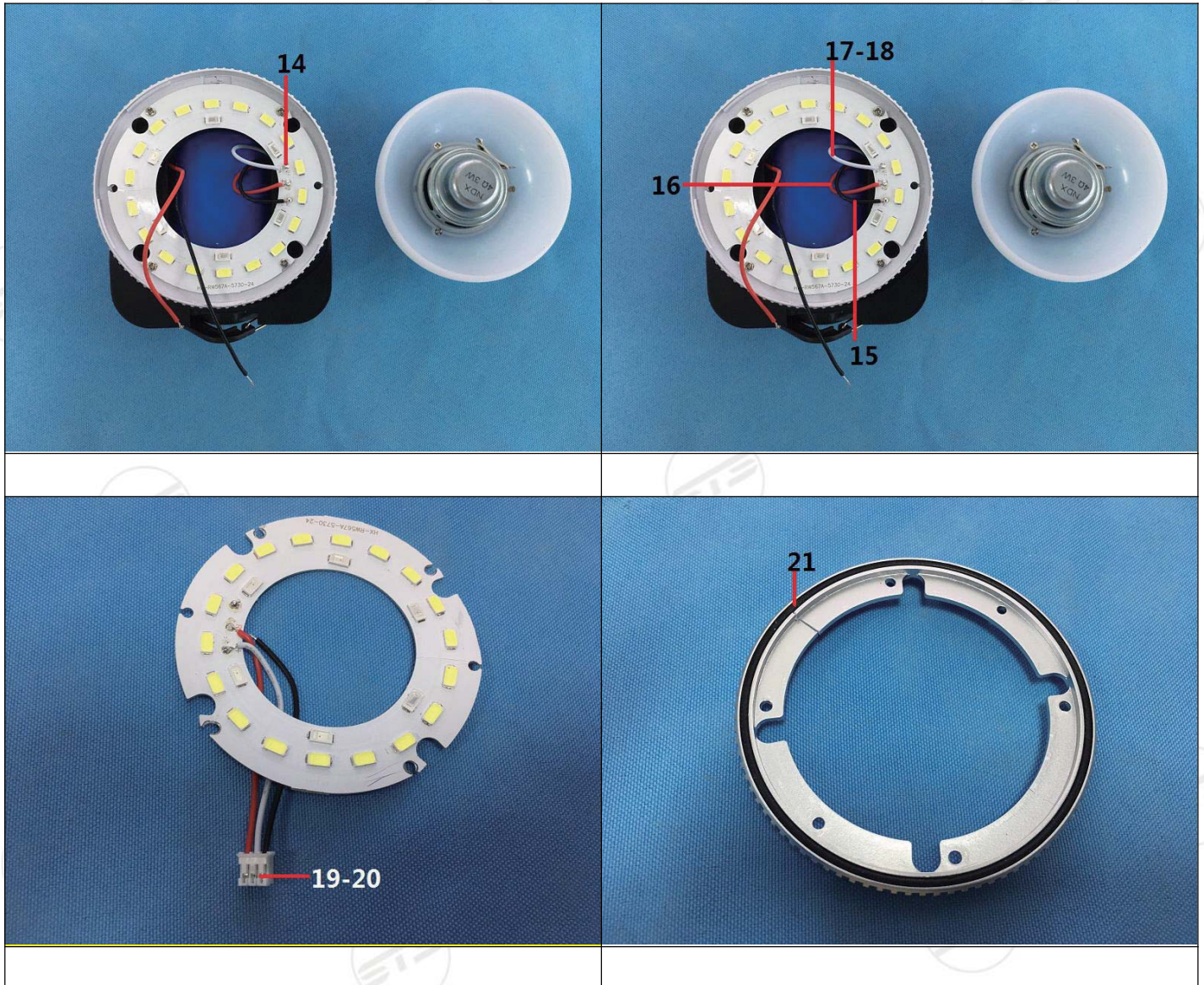
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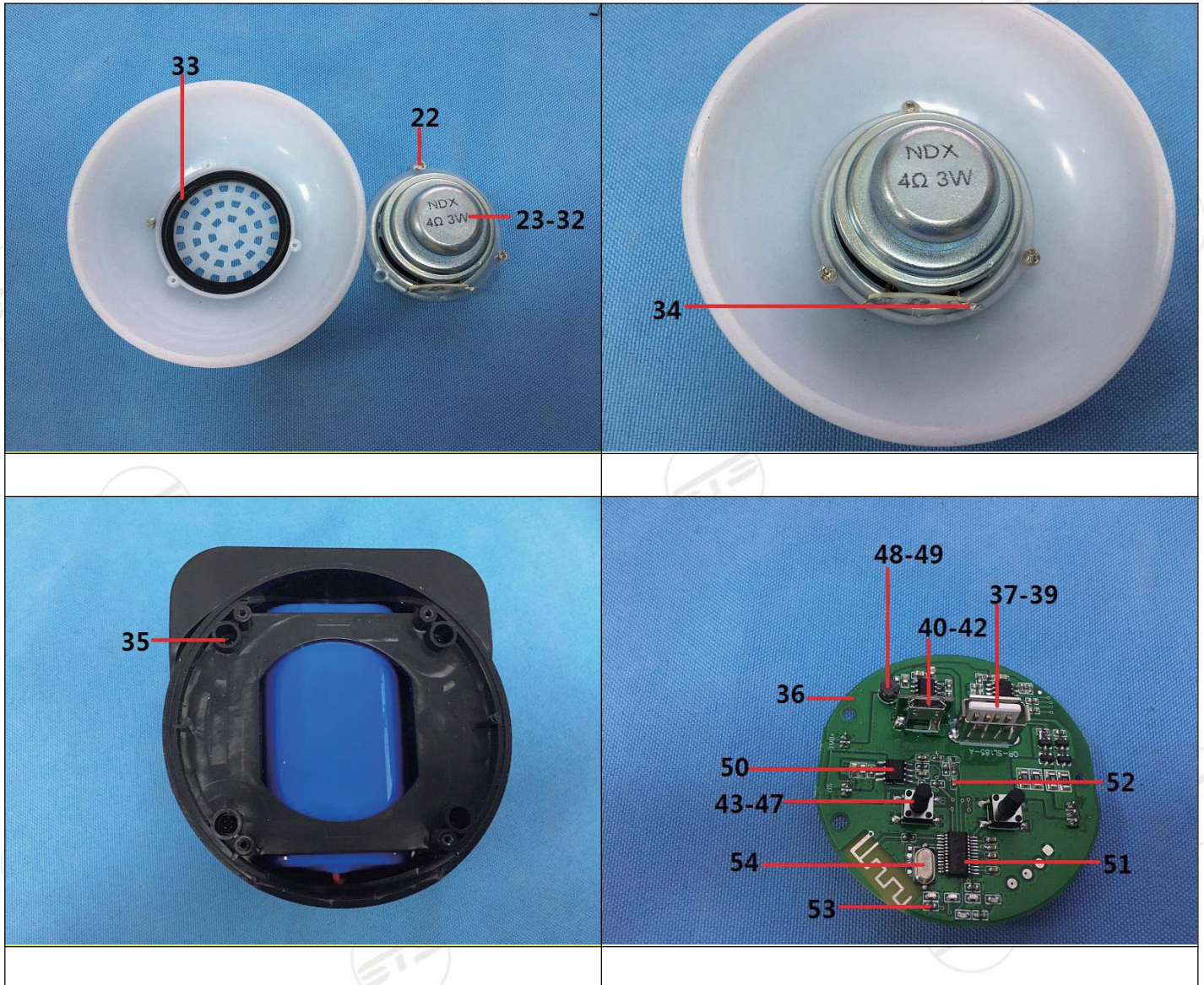


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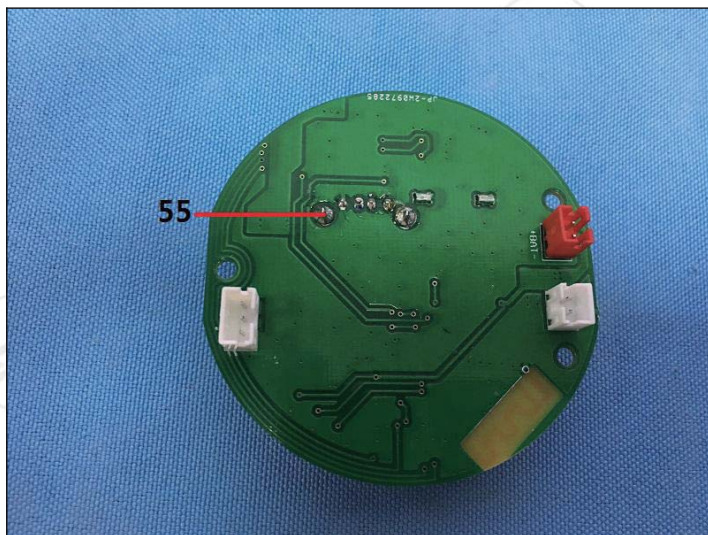


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HL-CL0703-1



HL-CL0703



HL-CL0703-2





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HL-CL0706



HL-CL0709



HL-CL0710



HL-CL0710-1





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HL-CL0712



HL-CL0713



HL-CL0714



HL-CL0715



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HL-FL0013



HL-H0615



HL-H0616



HL-LA3034



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HL-TC6197



HL-TC6200



HL-WF0476



HL-WF0479



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HL-WF0480-3AA



HL-WF0480-6AA



HL-WL2101-1



HL-WL2138



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HL-WL2155



HL-WL2160



HL-WL2161



HL-WL2162





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HL-WL2166



HL-WL2167



HL-WL2169



HL-WL2170



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HL-WL2171



USB cable

Product Photo



HL-WL2119



HL-LA3037

Product Photo



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HL-PF0299



HL-PF0298

Product Photo



HL-LA3035-1



HL-RC5065

Product Photo



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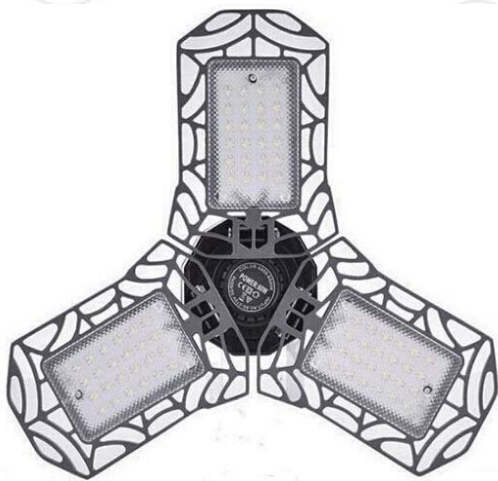


HL-RC5056



HL-WL2149

Product Photo



HL-WL2180-1

Product Photo

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