

Test Report No.: **1160051659d 001**

Page 1 of 48

**Client:** Hangzhou Hikvision Digital Technology Co., Ltd.  
No.555 Qianmo Road, Binjiang District Hangzhou310052, China

**Test item(s):** Handheld thermography camera

**Test Model No(s):** DS-2TP23-10VM/W

**Reference Style No(s).** Refer to page 2

**Sample Receiving date:** 2018-09-17

**Delivery condition:** Apparent good, Samples tested as received

**Test specification:**

**Test result:**

Overall results according to tests performed

1. Cadmium, Lead, Chromium (VI), Mercury, Polybrominated biphenyls (PBB) and Polybrominated diphenyl ethers (PBDE) Benzylbutyl phthalate (BBP), Dibutyl phthalate (DBP), Bis(2-ethylhexyl) phthalate (DEHP), Diisobutyl phthalate (DIBP) According to RoHS (recast): Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment, 2011/65/EU last amended by (EU) 2015/863

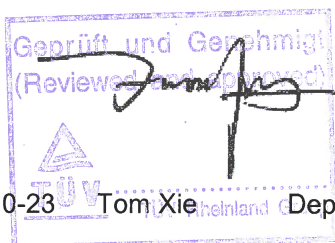
**PASS**

**Other Information:**

Test period: 2018-09-17 ~ 2018-10-23

**Remark:** The testing items in the report were subcontracted to the lab which complied with ISO17025

For and on behalf of  
TÜV Rheinland / CCIC (Ningbo) Co., Ltd.



2018-10-23 Tom Xie, Department Manager

Date Name/Position

Test result is drawn according to the kind and extent of tests performed.  
This test report relates to the a. m. test sample. Without permission of the test center this test report is not permitted to be duplicated in extracts. This test report does not entitle to carry any safety mark on this or similar products.

**Remark:**

Hangzhou Hikvision Digital Technology Co., Ltd. declared that:  
The following models and test model DS-2TP23-10VM/W are the same serials, all components were made by the same raw material but different in shapes and sizes. Hangzhou Hikvision Digital Technology Co., Ltd. will be responsible for this statement.

DS-2TPH36-10VMW, DS-2TPH32-10VMW, DS-2TPH38-10VMW,  
DS-2TP23-10VF/W, DS-2TPH36-10VFW, DS-2TPH32-10VFW, DS-2TPH38-10VFW,  
DS-2TPH32-15VMW, DS-2TPH38-15VMW, DS-2TP23-15VF/W, DS-2TPH36-15VFW,  
DS-2TPH32-15VFW, DS-2TPH38-15VFW, DS-2TPH36-07VMW, DS-2TPH32-07VMW,  
DS-2TPH38-07VMW, DS-2TP23-07VF/W, DS-2TPH36-07VFW, DS-2TPH32-07VFW,  
DS-2TPH38-07VFW, DS-2TPH36-13VMW, DS-2TPH32-13VMW, DS-2TPH38-13VMW,  
DS-2TP23-13VF/W, DS-2TPH36-13VFW, DS-2TPH32-13VFW, DS-2TPH38-13VFW,  
DS-2TPH36-19VMW, DS-2TPH32-19VMW, DS-2TPH38-19VMW, DS-2TP23-19VF/W,  
DS-2TPH36-19VFW, DS-2TPH32-19VFW, DS-2TPH38-19VFW

**1. Screening Test by XRF Spectroscopy**

 Test Method: Cadmium, Lead, Mercury, Chromium, Bromine  
 -With reference to IEC 62321-3-1: 2013

Testing Period: 2018-09-17 ~ 2018-10-23

Material No.	Description	Result (mg/kg)				
		Cd	Pb	Cr <sup>^</sup>	Hg	Br <sup>^</sup>
1	Black plastic shell	n.d.	n.d.	n.d.	n.d.	n.d.
2	Black metal screw	n.d.	n.d.	n.d.	n.d.	N.A.
3	Golden metal threaded stud	n.d.	d( <sup>^</sup> 1)	n.d.	n.d.	N.A.
4	Black rubber gasket	n.d.	n.d.	n.d.	n.d.	n.d.
5	Coppery foil (PCB board)	n.d.	n.d.	n.d.	n.d.	N.A.
6	Yellow PCB board	n.d.	n.d.	n.d.	n.d.	n.d.
7	White plastic slice	n.d.	n.d.	n.d.	n.d.	n.d.
8	Silvery metal wafer	n.d.	n.d.	n.d.	n.d.	N.A.
9	Black plastic wafer	n.d.	n.d.	n.d.	n.d.	n.d.
10	Transprent film	n.d.	n.d.	n.d.	n.d.	n.d.
11	Black plastic sticker	n.d.	n.d.	n.d.	n.d.	n.d.
12	Black rubber button	n.d.	n.d.	n.d.	n.d.	n.d.
13	Yellow PCB board	n.d.	n.d.	n.d.	n.d.	d( <sup>^</sup> 1)
14	SMD audion	n.d.	n.d.	n.d.	n.d.	n.d.
15	Golden metal pin (FFC)	n.d.	n.d.	n.d.	n.d.	N.A.
16	Brown plastic slice (FFC)	n.d.	n.d.	n.d.	n.d.	n.d.
17	Yellow FFC	n.d.	n.d.	n.d.	n.d.	n.d.
18	Black blown sponge	n.d.	n.d.	n.d.	n.d.	n.d.
19	Silvery metal threaded stud	n.d.	n.d.	d( <sup>^</sup> 2)	n.d.	N.A.
20	Silvery metal frame	n.d.	n.d.	d( <sup>^</sup> 2)	n.d.	N.A.
21	Black rubber gasket	n.d.	n.d.	n.d.	n.d.	n.d.
22	Display	n.d.	n.d.	n.d.	n.d.	N.A.
23	White plastic frame	n.d.	n.d.	n.d.	n.d.	n.d.
24	Transparent plastic board	n.d.	n.d.	n.d.	n.d.	n.d.
25	Semi-transparent plastic slice	n.d.	n.d.	n.d.	n.d.	n.d.
26	Dull polish plastic slice	n.d.	n.d.	n.d.	n.d.	n.d.
27	Transparent plastic slice	n.d.	n.d.	n.d.	n.d.	n.d.
28	Silvery plastic slice	n.d.	n.d.	n.d.	n.d.	n.d.
29	Silvery metal frame	n.d.	n.d.	d( <sup>^</sup> 2)	n.d.	N.A.

Material No.	Description	Result (mg/kg)				
		Cd	Pb	Cr <sup>^</sup>	Hg	Br <sup>^</sup>
30	SMD IC (MS62233)	n.d.	n.d.	n.d.	n.d.	n.d.
31	Black plastic interface	n.d.	n.d.	n.d.	n.d.	d(^1)
32	Soldering tin	n.d.	d(^1)	n.d.	n.d.	N.A.
33	White sticker	n.d.	n.d.	n.d.	n.d.	n.d.
34	White LED	n.d.	n.d.	n.d.	n.d.	n.d.
35	Silvery metal screw	n.d.	n.d.	d(^2)	n.d.	N.A.
36	SMD IC (OUX)	n.d.	n.d.	n.d.	n.d.	n.d.
37	SMD IC (8302)	n.d.	n.d.	n.d.	n.d.	n.d.
38	Beige plastic terminal	n.d.	n.d.	n.d.	n.d.	d(^1)
39	Silvery foil (PCB board)	n.d.	n.d.	n.d.	n.d.	N.A.
40	Brown plastic shell (FFC)	n.d.	n.d.	n.d.	n.d.	n.d.
41	Beige plastic shell (FFC)	n.d.	n.d.	n.d.	n.d.	d(^1)
42	SMD IC (P0534)	n.d.	n.d.	n.d.	n.d.	n.d.
43	SMD IC (A42V)	n.d.	n.d.	n.d.	n.d.	n.d.
44	Black plastic shell (FFC)	n.d.	n.d.	n.d.	n.d.	n.d.
45	Green PCB board	n.d.	n.d.	n.d.	n.d.	d(^1)
46	Black rubber sleeve (speaker)	n.d.	n.d.	n.d.	n.d.	n.d.
47	Silvery metal shell (speaker)	n.d.	n.d.	n.d.	n.d.	N.A.
48	Green PCB board (speaker)	n.d.	n.d.	n.d.	n.d.	n.d.
49	Silvery metal slice (speaker)	n.d.	n.d.	n.d.	n.d.	N.A.
50	Silvery metal ring (speaker)	n.d.	n.d.	n.d.	n.d.	N.A.
51	Silvery metal screw (speaker)	n.d.	n.d.	n.d.	n.d.	N.A.
52	Black plastic shell (speaker)	n.d.	n.d.	n.d.	n.d.	n.d.
53	Black blown sponge (speaker)	n.d.	n.d.	n.d.	n.d.	n.d.
54	Transparent plastic frame (speaker)	n.d.	n.d.	n.d.	n.d.	n.d.
55	Transparent film (speaker)	n.d.	n.d.	n.d.	n.d.	n.d.
56	Coppery winding (speaker)	n.d.	n.d.	n.d.	n.d.	N.A.
57	Silvery metal slice (speaker)	n.d.	n.d.	n.d.	n.d.	N.A.
58	Magnet (speaker)	n.d.	n.d.	n.d.	n.d.	N.A.
59	Black plastic shell (speaker)	n.d.	n.d.	n.d.	n.d.	n.d.
60	Black plastic wire sheath (speaker)	n.d.	n.d.	n.d.	n.d.	n.d.
61	Red plastic wire sheath (speaker)	n.d.	n.d.	n.d.	n.d.	n.d.
62	White plastic terminal	n.d.	n.d.	n.d.	n.d.	n.d.
63	Black plastic wire sheath	n.d.	n.d.	n.d.	n.d.	n.d.
64	Silvery metal wire core	n.d.	n.d.	n.d.	n.d.	N.A.

Material No.	Description	Result (mg/kg)				
		Cd	Pb	Cr^	Hg	Br^
65	Black plastic button	n.d.	n.d.	n.d.	n.d.	n.d.
66	Golden metal pin	n.d.	n.d.	n.d.	n.d.	N.A.
67	Black plastic interface	n.d.	n.d.	n.d.	n.d.	d(^1)
68	Red plastic wire sheath	n.d.	n.d.	n.d.	n.d.	n.d.
69	Black metal screw	n.d.	n.d.	n.d.	n.d.	N.A.
70	Black metal screw	n.d.	n.d.	n.d.	n.d.	N.A.
71	Soldering tin (PCB board)	n.d.	d(^1)	n.d.	n.d.	N.A.
72	Green PCB board	n.d.	n.d.	n.d.	n.d.	d(^1)
73	Black metal frame	n.d.	n.d.	n.d.	n.d.	N.A.
74	Gray blown sponge	n.d.	n.d.	n.d.	n.d.	n.d.
75	Silvery metal screw	n.d.	n.d.	n.d.	n.d.	N.A.
76	Black tape	n.d.	n.d.	n.d.	n.d.	n.d.
77	Black plastic interface core	n.d.	n.d.	n.d.	n.d.	n.d.
78	Golden metal interface	n.d.	n.d.	n.d.	n.d.	N.A.
79	Black plastic wire sheath	n.d.	n.d.	n.d.	n.d.	n.d.
80	Soldering tin	n.d.	d(^1)	n.d.	n.d.	N.A.
81	SMD resistor (23C)	n.d.	n.d.	n.d.	n.d.	n.d.
82	SMD capacitor	n.d.	n.d.	n.d.	n.d.	n.d.
83	SMD IC (AD9649)	n.d.	n.d.	n.d.	n.d.	d(^1)
84	SMD IC (25Q256A)	n.d.	n.d.	n.d.	n.d.	d(^1)
85	Green PCB board	n.d.	n.d.	n.d.	n.d.	d(^1)
86	SMD IC (LGSJ)	n.d.	n.d.	n.d.	n.d.	d(^1)
87	Black plastic interface	n.d.	n.d.	n.d.	n.d.	d(^1)
88	Green PCB board	n.d.	n.d.	n.d.	n.d.	d(^1)
89	Soldering tin (PCB board)	n.d.	d(^1)	n.d.	n.d.	N.A.
90	SMD resistor (JK260)	n.d.	n.d.	n.d.	n.d.	n.d.
91	Green PCB board	n.d.	n.d.	n.d.	n.d.	d(^1)
92	SMD diode (G107)	n.d.	n.d.	n.d.	n.d.	n.d.
93	Inductor (202)	n.d.	n.d.	n.d.	n.d.	N.A.
94	Black plastic button (switch)	n.d.	n.d.	n.d.	n.d.	n.d.
95	Silvery metal shell (switch)	n.d.	n.d.	n.d.	n.d.	N.A.
96	SMD IC (SEC 749)	n.d.	n.d.	n.d.	n.d.	n.d.
97	Inductor (1R0)	n.d.	n.d.	n.d.	n.d.	N.A.
98	SMD IC (ADV7393)	n.d.	n.d.	n.d.	n.d.	d(^1)
99	SMD IC (M2S060)	n.d.	n.d.	n.d.	n.d.	d(^1)

Material No.	Description	Result (mg/kg)				
		Cd	Pb	Cr <sup>^</sup>	Hg	Br <sup>^</sup>
100	XTL(HLX8C)	n.d.	n.d.	n.d.	n.d.	N.A.
101	Silvery metal interface	n.d.	n.d.	d(^2)	n.d.	N.A.
102	Black XTL (CF571)	n.d.	n.d.	n.d.	n.d.	N.A.
103	SMD diode (HK-5)	n.d.	n.d.	n.d.	n.d.	n.d.
104	Black blown sponge	n.d.	n.d.	n.d.	n.d.	n.d.
105	Silvery metal interface shell	n.d.	n.d.	d(^2)	n.d.	N.A.
106	Black plastic chip	n.d.	n.d.	n.d.	n.d.	n.d.
107	Green PCB board	n.d.	n.d.	n.d.	n.d.	d(^1)
108	Silvery metal wafer	n.d.	n.d.	d(^2)	n.d.	N.A.
109	Black rubber button	n.d.	n.d.	n.d.	n.d.	n.d.
110	Red plastic button	n.d.	n.d.	n.d.	n.d.	n.d.
111	Silvery metal spring	n.d.	n.d.	n.d.	n.d.	N.A.
112	Black plastic shell	n.d.	n.d.	n.d.	n.d.	n.d.
113	Black plastic battery shell	n.d.	n.d.	n.d.	n.d.	n.d.
114	Silvery metal wafer	n.d.	n.d.	n.d.	n.d.	N.A.
115	Black metal gasket	n.d.	n.d.	d(^2)	n.d.	N.A.
116	Black metal screw	n.d.	n.d.	n.d.	n.d.	N.A.
117	Black metal cover	n.d.	n.d.	n.d.	n.d.	N.A.
118	Soldering tin (PCB board)	n.d.	d(^1)	n.d.	n.d.	N.A.
119	Green PCB board	n.d.	n.d.	n.d.	n.d.	d(^1)
120	Black plastic shell	n.d.	n.d.	n.d.	n.d.	n.d.
121	White plastic button	n.d.	n.d.	n.d.	n.d.	n.d.
122	Black metal shell	n.d.	n.d.	d(^2)	n.d.	N.A.
123	Golden metal screw	n.d.	d(^1)	n.d.	n.d.	N.A.
124	Golden metal interface	n.d.	d(^1)	n.d.	n.d.	N.A.
125	White bar cord label paper	n.d.	n.d.	n.d.	n.d.	n.d.
126	Black plastic shell	n.d.	n.d.	n.d.	n.d.	n.d.
127	Black plastic button	n.d.	n.d.	n.d.	n.d.	n.d.
128	Black rope	n.d.	n.d.	n.d.	n.d.	n.d.
129	Black metal screw	n.d.	n.d.	n.d.	n.d.	N.A.
130	Red metal ring	n.d.	n.d.	n.d.	n.d.	N.A.
131	Black rubber ring	n.d.	n.d.	n.d.	n.d.	n.d.
132	Silvery metal ring	n.d.	n.d.	n.d.	n.d.	N.A.
133	Lens	n.d.	n.d.	n.d.	n.d.	N.A.
134	Silvery metal screw	n.d.	n.d.	n.d.	n.d.	N.A.

Material No.	Description	Result (mg/kg)				
		Cd	Pb	Cr <sup>^</sup>	Hg	Br <sup>^</sup>
135	Black metal lens shell	n.d.	n.d.	d(^2)	n.d.	N.A.
136	Silvery metal frame	n.d.	n.d.	d(^2)	n.d.	N.A.
137	Golden metal pin	n.d.	n.d.	n.d.	n.d.	N.A.
138	Sensor	n.d.	n.d.	n.d.	n.d.	n.d.
139	Black plastic shell	n.d.	n.d.	n.d.	n.d.	n.d.
140	Black metal screw	n.d.	n.d.	n.d.	n.d.	N.A.
141	Silvery metal bobbin	n.d.	n.d.	n.d.	n.d.	N.A.
142	Coppery winding	n.d.	n.d.	n.d.	n.d.	N.A.
143	Silvery metal shaft	n.d.	d(^1)	n.d.	n.d.	N.A.
144	Yellow LED	n.d.	n.d.	n.d.	n.d.	n.d.
145	White lamp holder	n.d.	n.d.	n.d.	n.d.	n.d.
146	White metal board	n.d.	n.d.	n.d.	n.d.	N.A.
147	Transparent plastic cover	n.d.	n.d.	n.d.	n.d.	n.d.
148	Magnet	n.d.	n.d.	n.d.	n.d.	N.A.
149	Black metal slice	n.d.	n.d.	n.d.	n.d.	N.A.
150	Black plastic shell	n.d.	n.d.	n.d.	n.d.	n.d.
151	Silvery metal slice	n.d.	n.d.	n.d.	n.d.	N.A.
152	Coppery winding	n.d.	n.d.	n.d.	n.d.	N.A.
153	Black metal shell	n.d.	n.d.	d(^2)	n.d.	N.A.
154	Silvery metal frame	n.d.	n.d.	n.d.	n.d.	N.A.
155	Gray tape	n.d.	n.d.	n.d.	n.d.	n.d.
156	Black plastic plug shell	n.d.	n.d.	n.d.	n.d.	d(^1)
157	Silvery metal pin	n.d.	d(^1)	n.d.	n.d.	N.A.
158	Silvery metal plug shell	n.d.	n.d.	d(^2)	n.d.	N.A.
159	Silvery metal pin	n.d.	n.d.	n.d.	n.d.	n.d.
160	Black plastic plug core	n.d.	n.d.	n.d.	n.d.	n.d.
161	Soldering tin	n.d.	d(^1)	n.d.	n.d.	N.A.
162	White filler	n.d.	n.d.	n.d.	n.d.	n.d.
163	Black plastic plug shell	n.d.	n.d.	n.d.	n.d.	n.d.
164	Red plastic wire sheath	n.d.	n.d.	n.d.	n.d.	n.d.
165	Black plastic wire sheath	n.d.	n.d.	n.d.	n.d.	n.d.
166	Green plastic wire sheath	n.d.	n.d.	n.d.	n.d.	n.d.
167	White plastic wire sheath	n.d.	n.d.	n.d.	n.d.	n.d.
168	Silvery foil	n.d.	n.d.	n.d.	n.d.	N.A.
169	Silvery metal core ribbon	n.d.	n.d.	n.d.	n.d.	N.A.

Material No.	Description	Result (mg/kg)				
		Cd	Pb	Cr <sup>^</sup>	Hg	Br <sup>^</sup>
170	Black plastic sleeve ribbon	n.d.	n.d.	n.d.	n.d.	n.d.
171	Black plastic wire sleeve	n.d.	n.d.	n.d.	n.d.	n.d.
172	Black plastic cable clip	n.d.	n.d.	n.d.	n.d.	n.d.
173	Silvery metal plug shell	n.d.	n.d.	n.d.	n.d.	N.A.
174	Golden metal pin	n.d.	n.d.	n.d.	n.d.	N.A.
175	White plastic plug core	n.d.	n.d.	n.d.	n.d.	d(^1)
176	Soldering tin	n.d.	d(^1)	n.d.	n.d.	N.A.
177	White filler	n.d.	n.d.	n.d.	n.d.	n.d.
178	Black plastic plug shell	n.d.	n.d.	n.d.	n.d.	n.d.
179	Silvery metal screw	n.d.	n.d.	n.d.	n.d.	N.A.
180	Black plastic shell	n.d.	n.d.	n.d.	n.d.	n.d.
181	Black label paper	n.d.	n.d.	n.d.	n.d.	n.d.
182	Black rubber gasket	n.d.	n.d.	n.d.	n.d.	n.d.
183	Silvery metal slice	n.d.	n.d.	d(^2)	n.d.	N.A.
184	White plastic button	n.d.	n.d.	n.d.	n.d.	d(^1)
185	LED	n.d.	n.d.	n.d.	n.d.	n.d.
186	Green PCB board	n.d.	n.d.	n.d.	n.d.	d(^1)
187	Black plastic interface shell	n.d.	n.d.	n.d.	n.d.	d(^1)
188	Fuse (X1)	n.d.	n.d.	n.d.	n.d.	n.d.
189	Green PCB board	n.d.	n.d.	n.d.	n.d.	d(^1)
190	Soldering tin (PCB board)	n.d.	d(^1)	n.d.	n.d.	N.A.
191	SMD resistor (R010)	n.d.	n.d.	d(^2)	n.d.	n.d.
192	Black plastic shell	n.d.	n.d.	n.d.	n.d.	d(^1)
193	Silvery metal pin	n.d.	n.d.	n.d.	n.d.	N.A.
194	Dark blown sponge	n.d.	n.d.	n.d.	n.d.	n.d.
195	Black plastic slice	n.d.	n.d.	n.d.	n.d.	n.d.
196	Black plastic sleeve	n.d.	n.d.	n.d.	n.d.	n.d.
197	Pink plastic wire sheath	n.d.	n.d.	n.d.	n.d.	n.d.
198	Blue plastic wire sheath	n.d.	n.d.	n.d.	n.d.	n.d.
199	White glue	n.d.	n.d.	n.d.	n.d.	n.d.
200	Varistor	n.d.	n.d.	n.d.	n.d.	n.d.
201	Yellow capacitor	n.d.	n.d.	n.d.	n.d.	n.d.
202	SMD IC (CT817C)	n.d.	n.d.	n.d.	n.d.	n.d.
203	Green magnetic ring (inductor)	n.d.	n.d.	n.d.	n.d.	N.A.
204	Red winding (inductor)	n.d.	n.d.	n.d.	n.d.	N.A.



Material No.	Description	Result (mg/kg)				
		Cd	Pb	Cr <sup>^</sup>	Hg	Br <sup>^</sup>
205	Blue capacitor	n.d.	n.d.	n.d.	n.d.	d(^1)
206	Y capacitor	n.d.	n.d.	n.d.	n.d.	n.d.
207	SMD diode	n.d.	n.d.	n.d.	n.d.	n.d.
208	Silvery metal nut	n.d.	n.d.	n.d.	n.d.	N.A.
209	SMD audion	n.d.	n.d.	n.d.	n.d.	n.d.
210	Fuse	n.d.	n.d.	n.d.	n.d.	n.d.
211	Chromatic ring resistor	n.d.	n.d.	n.d.	n.d.	n.d.
212	Orange capacitor	n.d.	n.d.	n.d.	n.d.	n.d.
213	Yellow tape (transformer)	n.d.	n.d.	n.d.	n.d.	n.d.
214	Black plastic bobbin (transformer)	n.d.	n.d.	n.d.	n.d.	n.d.
215	Mangetic frame (transformer)	n.d.	n.d.	n.d.	n.d.	N.A.
216	Soldering tin (PCB board)	n.d.	d(^1)	n.d.	n.d.	N.A.
217	Green PCB board	n.d.	n.d.	n.d.	n.d.	d(^1)
218	Silvery metal frame	n.d.	n.d.	n.d.	n.d.	N.A.
219	SMD IC (ABS21)	n.d.	n.d.	n.d.	n.d.	n.d.
220	Black plastic sleeve ribbon	n.d.	n.d.	n.d.	n.d.	n.d.
221	Black plastic wire sheath	n.d.	n.d.	n.d.	n.d.	n.d.
222	Black plastic cable clip	n.d.	n.d.	n.d.	n.d.	n.d.
223	Coppery metal wire core	n.d.	n.d.	n.d.	n.d.	N.A.
224	Black plastic plug core	n.d.	n.d.	n.d.	n.d.	d(^1)
225	Silvery metal plug shell	n.d.	n.d.	n.d.	n.d.	N.A.
226	Soldering tin	n.d.	d(^1)	n.d.	n.d.	N.A.
227	Silvery metal pin	n.d.	n.d.	n.d.	n.d.	N.A.
228	Black plastic plug shell	n.d.	n.d.	n.d.	n.d.	n.d.

**Abbreviation:**

Pb	denotes Lead
Cd	denotes Cadmium
Hg	denotes Mercury
Cr	denotes Chromium
Cr(VI)	denotes Chromium(VI)
Br	denotes Bromine
PBBs	denotes Total Polybrominated Biphenyls
PBDEs	denotes Total Polybrominated Diphenyl Ethers
<	denotes less than
N.A.	denotes Not Applicable
n.d.	denotes Not Detected
d	denotes Detected

**Remark:**

(^1) The screening result was found in the inconclusive region (X), thus the further wet chemistry tests are suggested.

(^2) The Chromium (VI) content in surface layer has been confirmed with reference to IEC 62321-7-1: 2015.

**XRF Screening limits for different materials:**

Materials	Concentration (mg/kg)				
	Cd	Cr	Pb	Hg	Br
<b>Metallic material</b>	P≤ 60 < X ≤140 < F	P≤ 640 < X	P≤ 670 < X≤1360 < F	P≤ 660 < X≤1340 < F	NA
<b>Polymeric material</b>	P≤ 60 < X ≤140 < F	P≤ 640 < X	P≤ 670 < X≤1360 < F	P≤ 660 < X≤1340 < F	P≤ 290 < X
<b>Electronic material</b>	P≤ 40 < X ≤160 < F	P≤ 440 < X	P≤ 470 < X≤1640 < F	P≤460 < X≤1540 < F	P≤ 240 < X

## 2. Confirmation Test by Wet Chemistry

Test Method: Total Cadmium, Lead, Mercury, Chromium  
 -Ref. to IEC 62321-4: 2013+AMD1:2017 & IEC 62321-5: 2013  
 Chromium (VI)  
 - For Metal material - Ref. to IEC 62321-7-1: 2015  
 - For Plastic or Electronic material – Ref. to IEC 62321-7-2:2017  
 - For Leather material - Ref. to ISO 17075: 2007  
 PBBs, PBDEs – Ref. to IEC 62321-6: 2015  
 Testing Period: 2018-09-17 ~ 2018-10-23

Material list:

Material No.	Material	Color	Test Plan
			A=Test HM only B=Test FR only C=Test HM+FR
3	metal	golden	A
13	PCB	yellow	B
19	metal	silvery	A
20	metal	silvery	A
29	metal	silvery	A
31	plastic	black	B
32	solder	silvery	A
35	metal	silvery	A
38	plastic	beige	B
41	plastic	beige	B
45	PCB	green	B
67	plastic	black	B
71	solder	silvery	A
72	PCB	green	B
80	solder	silvery	A
83	electronic component	black	B
84	electronic component	black	B
85	PCB	green	B
86	electronic component	black	B

Material No.	Material	Color	Test Plan
			A=Test HM only B=Test FR only C=Test HM+FR
87	plastic	black	B
88	PCB	green	B
89	solder	silvery	A
91	PCB	green	B
98	electronic component	black	B
99	electronic component	black	B
101	metal	silvery	A
105	metal	silvery	A
107	PCB	green	B
108	metal	silvery	A
115	metal	black	A
118	solder	silvery	A
119	PCB	green	B
122	metal	black	A
123	metal	golden	A
124	metal	golden	A
135	metal	black	A
136	metal	silvery	A
143	metal	silvery	A
153	metal	black	A
156	plastic	black	B
157	metal	silvery	A
158	metal	silvery	A
161	solder	silvery	A
175	plastic	white	B
176	solder	silvery	A
183	metal	silvery	A
184	plastic	white	B
186	PCB	green	B

Material No.	Material	Color	Test Plan
			A=Test HM only B=Test FR only C=Test HM+FR
187	plastic	black	<b>B</b>
189	PCB	green	<b>B</b>
190	solder	silvery	<b>A</b>
191	electronic component	black	<b>A</b>
192	plastic	black	<b>B</b>
205	electronic component	blue	<b>B</b>
216	solder	silvery	<b>A</b>
217	PCB	green	<b>B</b>
224	plastic	black	<b>B</b>
226	solder	silvery	<b>A</b>

Abbreviation: HM (Heavy metal) = Cd, Pb, Hg, Cr (VI)  
 FR (Flame Retardant) = PBBs, PBDEs

**Test result:**

	Cd	Pb	Cr (VI)	Hg	PBBs	PBDEs
Maximum Permissible Limit (%)	0.01	0.1	0.1	0.1	0.1	0.1

Material No.	Results (%)					
	Cd	Pb	Cr <sup>VI</sup>	Hg	PBBs <sup>(*)</sup>	PBDEs <sup>(*)</sup>
	RL (%)					
	0.001	0.001	0.001	0.001	0.0005	0.0005
3	N.A.	1.9824 <sup>[6(c)]</sup>	N.A.	N.A.	N.A.	N.A.
13	N.A.	N.A.	N.A.	N.A.	N.D.	N.D.
31	N.A.	N.A.	N.A.	N.A.	N.D.	N.D.
32	N.A.	0.0192	N.A.	N.A.	N.A.	N.A.
38	N.A.	N.A.	N.A.	N.A.	N.D.	N.D.
41	N.A.	N.A.	N.A.	N.A.	N.D.	N.D.
45	N.A.	N.A.	N.A.	N.A.	N.D.	N.D.
67	N.A.	N.A.	N.A.	N.A.	N.D.	N.D.
71	N.A.	0.0032	N.A.	N.A.	N.A.	N.A.
72	N.A.	N.A.	N.A.	N.A.	N.D.	N.D.
80	N.A.	0.0077	N.A.	N.A.	N.A.	N.A.
83	N.A.	N.A.	N.A.	N.A.	N.D.	N.D.
84	N.A.	N.A.	N.A.	N.A.	N.D.	N.D.
85	N.A.	N.A.	N.A.	N.A.	N.D.	N.D.
86	N.A.	N.A.	N.A.	N.A.	N.D.	N.D.
87	N.A.	N.A.	N.A.	N.A.	N.D.	N.D.
88	N.A.	N.A.	N.A.	N.A.	N.D.	N.D.
89	N.A.	0.0317	N.A.	N.A.	N.A.	N.A.
91	N.A.	N.A.	N.A.	N.A.	N.D.	N.D.
98	N.A.	N.A.	N.A.	N.A.	N.D.	N.D.
99	N.A.	N.A.	N.A.	N.A.	N.D.	N.D.
107	N.A.	N.A.	N.A.	N.A.	N.D.	N.D.
118	N.A.	0.0030	N.A.	N.A.	N.A.	N.A.
119	N.A.	N.A.	N.A.	N.A.	N.D.	N.D.

Material No.	Results (%)					
	Cd	Pb	Cr <sup>^</sup>	Hg	PBBs <sup>(*)</sup>	PBDEs <sup>(*)</sup>
	RL (%)					
	0.001	0.001	0.001	0.001	0.0005	0.0005
123	N.A.	2.3763 <sup>[6(c)]</sup>	N.A.	N.A.	N.A.	N.A.
124	N.A.	3.2630 <sup>[6(c)]</sup>	N.A.	N.A.	N.A.	N.A.
143	N.A.	3.0715 <sup>[6(c)]</sup>	N.A.	N.A.	N.A.	N.A.
156	N.A.	N.A.	N.A.	N.A.	N.D.	N.D.
157	N.A.	2.3382 <sup>[6(c)]</sup>	N.A.	N.A.	N.A.	N.A.
161	N.A.	0.0026	N.A.	N.A.	N.A.	N.A.
175	N.A.	N.A.	N.A.	N.A.	N.D.	N.D.
176	N.A.	0.0037	N.A.	N.A.	N.A.	N.A.
184	N.A.	N.A.	N.A.	N.A.	N.D.	N.D.
186	N.A.	N.A.	N.A.	N.A.	N.D.	N.D.
187	N.A.	N.A.	N.A.	N.A.	N.D.	N.D.
189	N.A.	N.A.	N.A.	N.A.	N.D.	N.D.
190	N.A.	0.0081	N.A.	N.A.	N.A.	N.A.
192	N.A.	N.A.	N.A.	N.A.	N.D.	N.D.
205	N.A.	N.A.	N.A.	N.A.	N.D.	N.D.
216	N.A.	0.0056	N.A.	N.A.	N.A.	N.A.
217	N.A.	N.A.	N.A.	N.A.	N.D.	N.D.
224	N.A.	N.A.	N.A.	N.A.	N.D.	N.D.
226	N.A.	0.0037	N.A.	N.A.	N.A.	N.A.

Material no.	Hexavalent Chromium Content ( $\mu\text{g}/\text{cm}^2$ ) <sup>(*)</sup>
	RL: 0.10 $\mu\text{g}/\text{cm}^2$
19	Negative
20	Negative
29	Negative
35	Negative
101	Negative
105	Negative
108	Negative
115	Negative
122	Negative
135	Negative
136	Negative
153	Negative
158	Negative
183	Negative

Material no.	Hexavalent Chromium Content (%) <sup>(*)</sup>
	RL: 0.01%
191	n.d.

**Abbreviation:**

Pb	denotes Lead
Cd	denotes Cadmium
Hg	denotes Mercury
Cr	denotes Chromium
Cr(VI)	denotes Chromium(VI)
PBBs	denotes Total Polybrominated Biphenyls
PBDEs	denotes Total Polybrominated Diphenyl Ethers
N.D.	denotes Not Detected
RL	denotes Reporting Limit
N.A.	denotes Not Applicable
^	The total Chromium have been determined
%	denotes percentage



**Remark:**

1. Component(s)/ materials(s) with an area of less than 2mm x 2mm will not be selected for testing according to RoHS Directive 2011/65/EU due to technical reason.
2. For the test sample does not have detail materials information provided by client, visually identical materials (e.g. wire insulation, solder points, etc.) will be considered as the same material.
3. Solder points on a printing circuit board will be examined several times based on optical anomalies or discoloration of the solder point(s) unless the solder point(s) is obviously generated automatically during production.
4. All other materials will be sampled and tested at one test point representatively.

(\*1) The total chromium content in Metal sample was found to be exceeded the maximum permissible limit (0.1%). Thus, the Chromium (VI) content in surface layer have been confirmed with reference to IEC 62321-7-1: 2015 Annex.

	Chromium (VI) concentration	Qualitative result
Negative	<0.1µg/cm <sup>2</sup>	The sample is negative for Cr(VI). –The Cr(VI) concentration is below the limit of quantification. The coating is considered a non Cr(VI) based coating.
Inconclusive	≥0.1µg/cm <sup>2</sup> and ≤0.13 µg/cm <sup>2</sup>	The result is considered to be inconclusive. –Unavoidable coating variations may influence the determination. Recommendation: if additional samples are available, perform a total of 3 trials to increase sampling surface area. Use the averaged result of the 3 trails for the final determination.
Positive	>0.13 µg/cm <sup>2</sup>	The sample is positive for Cr(VI). –The Cr(VI) concentration is above the limit of quantification and the statistical margin of error. The sample coating is considered to contain Cr(VI).

(\*2) The total chromium content in plastic sample or electronic sample was found to be exceeded the maximum permissible limit (0.1%). Thus, the Chromium (VI) content have been confirmed with reference to IEC 62321-7-2:2017.

(\*3) The total chromium content in leather sample was found to be exceeded the maximum permissible limit (0.1%). Thus, the Chromium (VI) content have been confirmed with reference to ISO 17075: 2007.

(\*4) The result was found to be more than the maximum permissible limit.

(\*5) The plating / coating of all the metal sample(s) is not confirmed, it cannot be further mechanically disjoined into different materials.

(\*6) For this mixed sample, the result was found to be more than the maximum permissible limit. It's recommended that individual sample should be tested separately.

(\*7) Due to the lack of samples the client submitted, the reporting limit is scaled up to 0.005/0.01/0.05/0.1%.

(\*) The reporting limit for each individual PBBs and individual PBDEs are:

Reporting Limit (%)		
PBBs	Monbromobiphenyl	0.0001
	Dibromobiphenyl	0.0001
	Tribromobiphenyl	0.0001
	Tetrabromobiphenyl	0.0001
	Pentabromobiphenyl	0.0002
	Hexabromobiphenyl	0.0002
	Heptabromobiphenyl	0.0002
	Octabromobiphenyl	0.0005
	Nonabromobiphenyl	0.0005
	Decabromobiphenyl	0.0005
PBDEs	Monbromodiphenyl ether	0.0001
	Dibromodiphenyl ether	0.0001
	Tribromodiphenyl ether	0.0001
	Tetrabromodiphenyl ether	0.0001
	Pentabromodiphenyl ether	0.0002
	Hexabromodiphenyl ether	0.0002
	Heptabromodiphenyl ether	0.0002
	Octabromodiphenyl ether	0.0005
	Nonabromodiphenyl ether	0.0005
	Decabromodiphenyl ether	0.0005

6(c) Copper alloy containing up to 4 % lead by weight.

**3. BBP, DBP, DEHP, DIBP content**

Test method: Organic solvent extraction, analyzed by GCMS (Ref. to DIN EN 62321-8: 2014 (IEC 111/321/CD: 2013))

Testing Period: 2018-09-17 ~ 2018-10-23

**Test result:**

	<b>BBP</b>	<b>DBP</b>	<b>DEHP</b>	<b>DIBP</b>
<b>Maximum permissible Limit (%)</b>	0.1	0.1	0.1	0.1

<b>Test No.</b>	<b>Material No.</b>	<b>Results (%)</b>			
		<b>BBP</b>	<b>DBP</b>	<b>DEHP</b>	<b>DIBP</b>
		<b>RL (%)</b>			
		<b>0.005</b>	<b>0.005</b>	<b>0.005</b>	<b>0.005</b>
T001	4+12+21	n.d.	n.d.	n.d.	n.d.
T002	109+131+182	n.d.	n.d.	n.d.	n.d.
T003	18+74	n.d.	n.d.	n.d.	n.d.
T004	104+194	n.d.	n.d.	n.d.	n.d.
T005	1+9+65	n.d.	n.d.	n.d.	n.d.
T006	110+112+113	n.d.	n.d.	n.d.	n.d.
T007	126+180+192	n.d.	n.d.	n.d.	n.d.
T008	23+24+25	n.d.	n.d.	n.d.	n.d.
T009	26+27	n.d.	n.d.	n.d.	n.d.
T010	28+31	n.d.	n.d.	n.d.	n.d.
T011	6+7+13	n.d.	n.d.	n.d.	n.d.
T012	16+17+45	n.d.	n.d.	n.d.	n.d.
T013	119+186	n.d.	n.d.	n.d.	n.d.
T014	46+48+52	n.d.	n.d.	0.0227	n.d.
T015	53+54+55	n.d.	n.d.	n.d.	n.d.
T016	59+60+61	n.d.	n.d.	n.d.	n.d.
T017	38+40+41	n.d.	n.d.	n.d.	n.d.
T018	44+62+63	n.d.	n.d.	n.d.	n.d.
T019	67+68	n.d.	n.d.	n.d.	n.d.
T020	69+72	n.d.	n.d.	n.d.	n.d.
T021	10+11+125	n.d.	n.d.	0.0273	n.d.
T022	181+76+77	n.d.	n.d.	n.d.	n.d.
T023	79+156+184	n.d.	n.d.	n.d.	n.d.
T024	85+87+88	n.d.	n.d.	n.d.	n.d.
T025	91+94	n.d.	n.d.	n.d.	n.d.
T026	106+107	n.d.	n.d.	n.d.	n.d.

Test No.	Material No.	Results (%)			
		BBP	DBP	DEHP	DIBP
		RL (%)			
		0.005	0.005	0.005	0.005
T027	160+162+163	n.d.	n.d.	n.d.	n.d.
T028	164+165+166	n.d.	n.d.	n.d.	n.d.
T029	167+170	n.d.	n.d.	n.d.	n.d.
T030	171+172	n.d.	n.d.	n.d.	n.d.
T031	175+177+178	n.d.	n.d.	n.d.	n.d.
T032	120+121+127	n.d.	n.d.	n.d.	n.d.
T033	128+139+147	n.d.	n.d.	n.d.	n.d.
T034	150+155	n.d.	n.d.	n.d.	n.d.
T035	187+189+195	n.d.	n.d.	n.d.	n.d.
T036	196+197+198	n.d.	n.d.	0.0111	n.d.
T037	199+213	n.d.	n.d.	n.d.	n.d.
T038	214+217	n.d.	n.d.	n.d.	n.d.
T039	220+221+222	n.d.	n.d.	n.d.	n.d.
T040	224+228	n.d.	n.d.	n.d.	n.d.

**Abbreviation:** BBP= Benzylbutyl phthalate  
 DBP= Dibutyl phthalate  
 DEHP= Bis(2-ethylhexyl) phthalate  
 DIBP= Diisobutyl phthalate  
 n.d.= Not Detected (< Reporting Limit)  
 RL = Reporting Limit  
 N.A. = Not Applicable  
 % = percentage

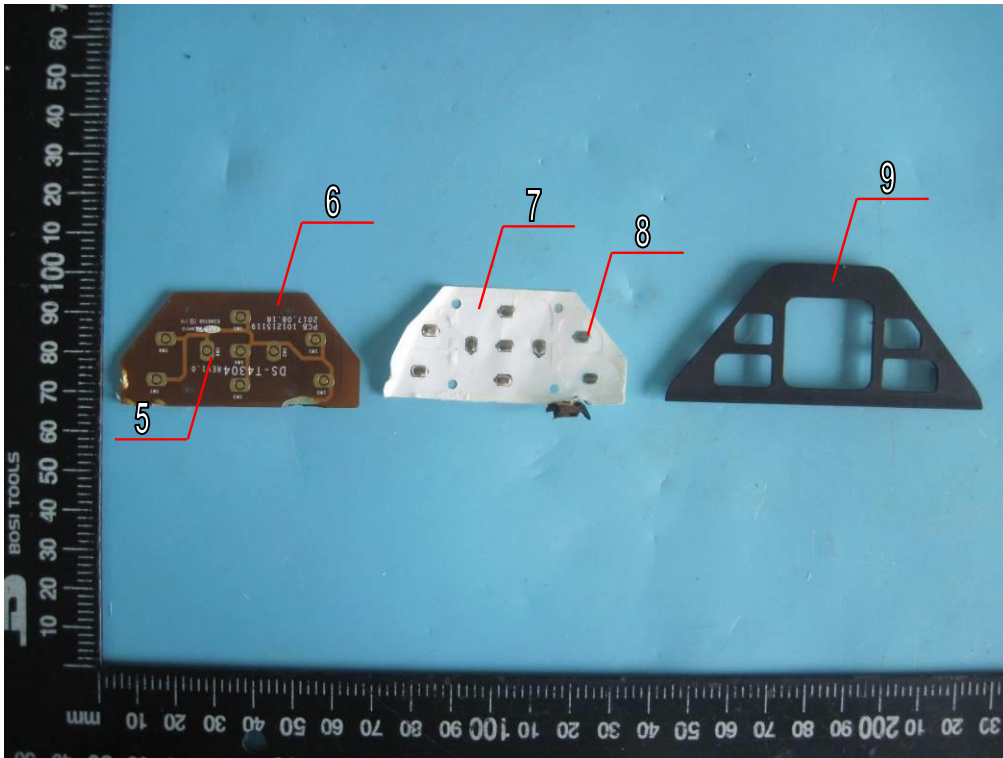
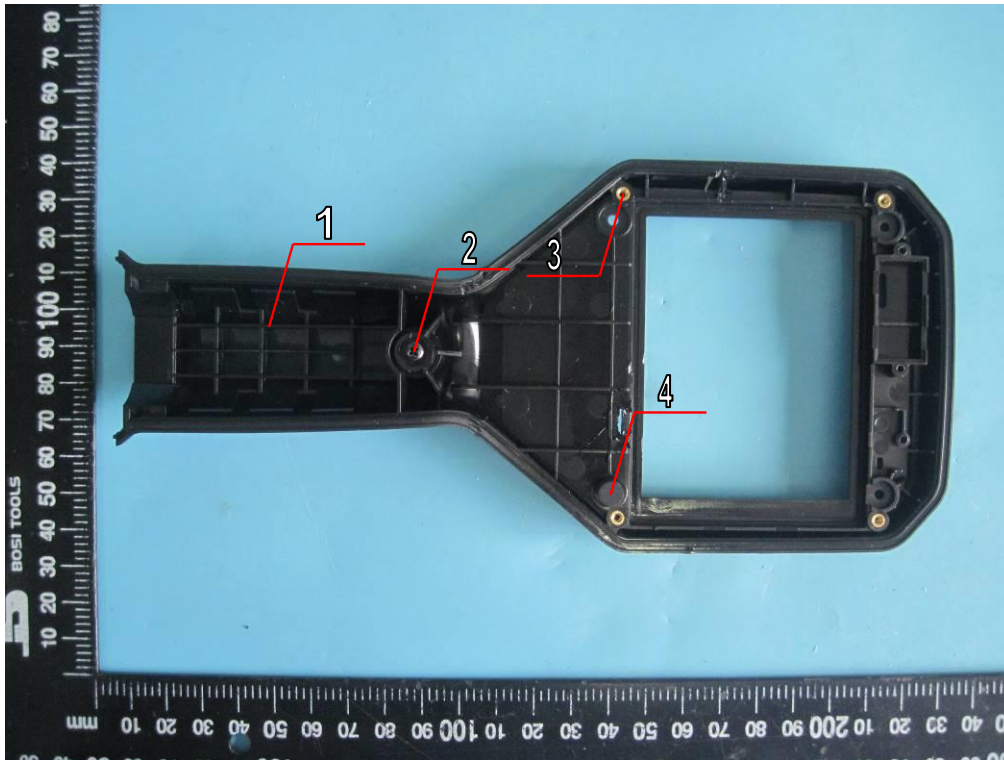
**Remark :**

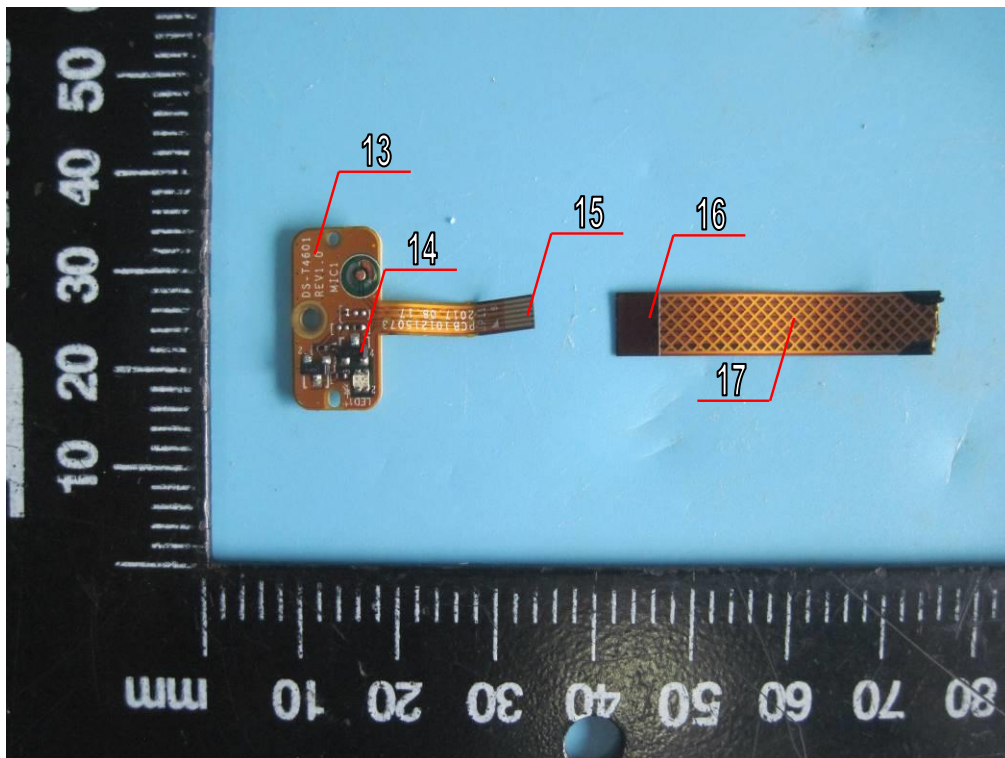
- (\*1) The result was found to be more than the maximum permissible limit.
- (\*2) For this mixed sample, the result was found to be more than the permissible limit. It's recommended that individual sample should be tested separately.

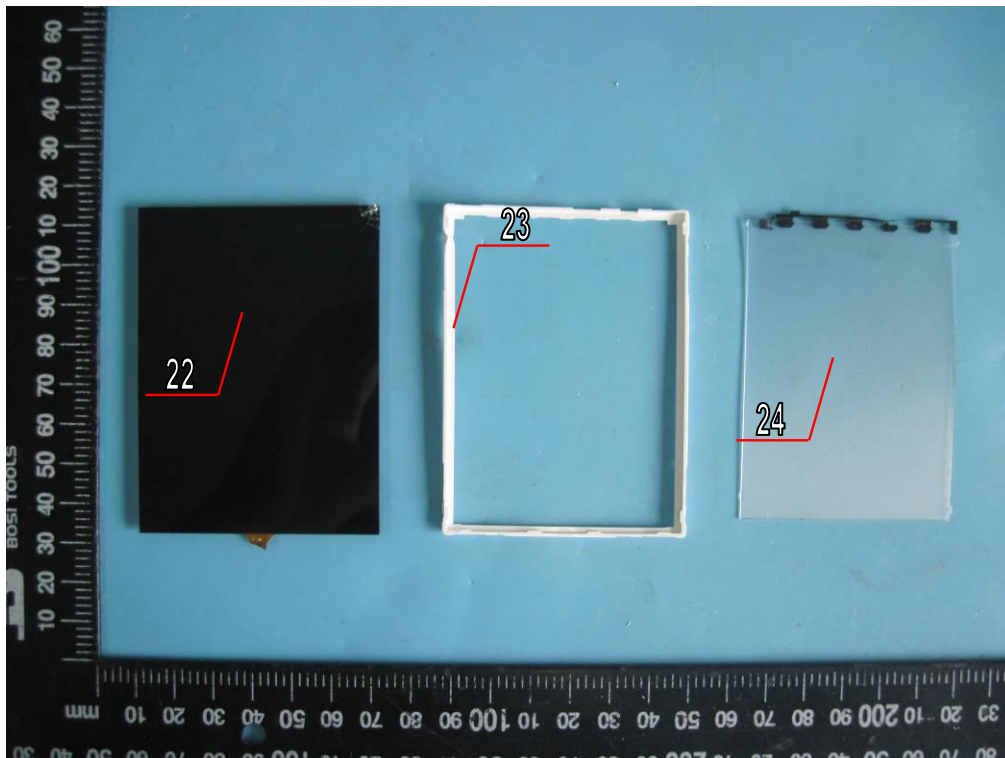
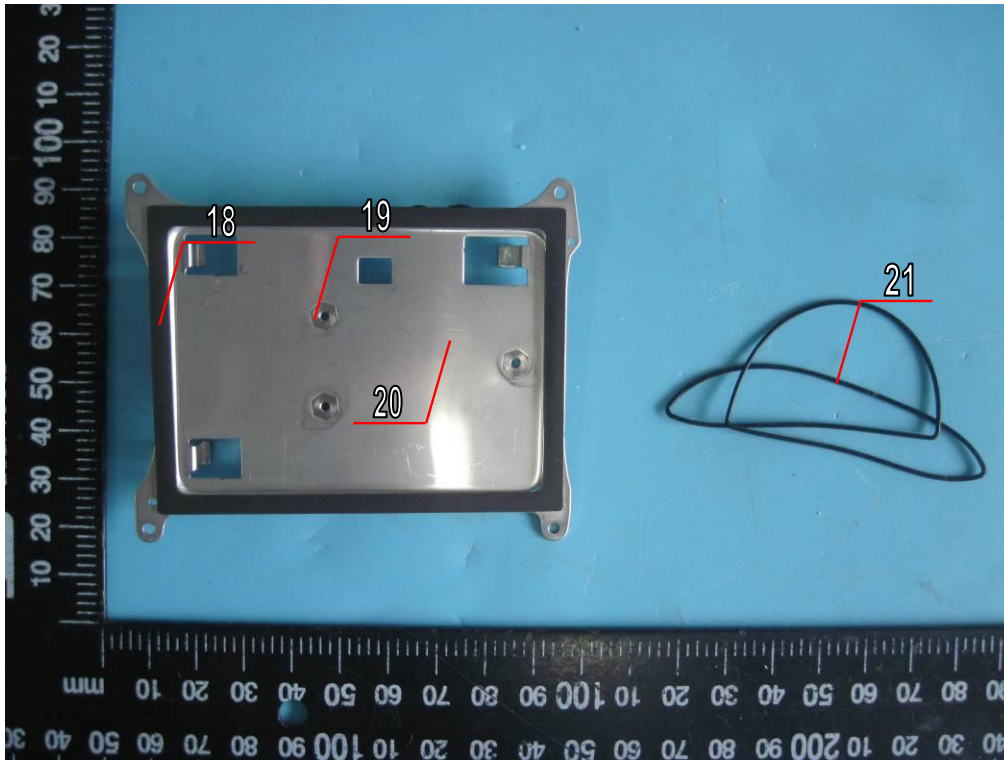
**Sample Photo(s):**



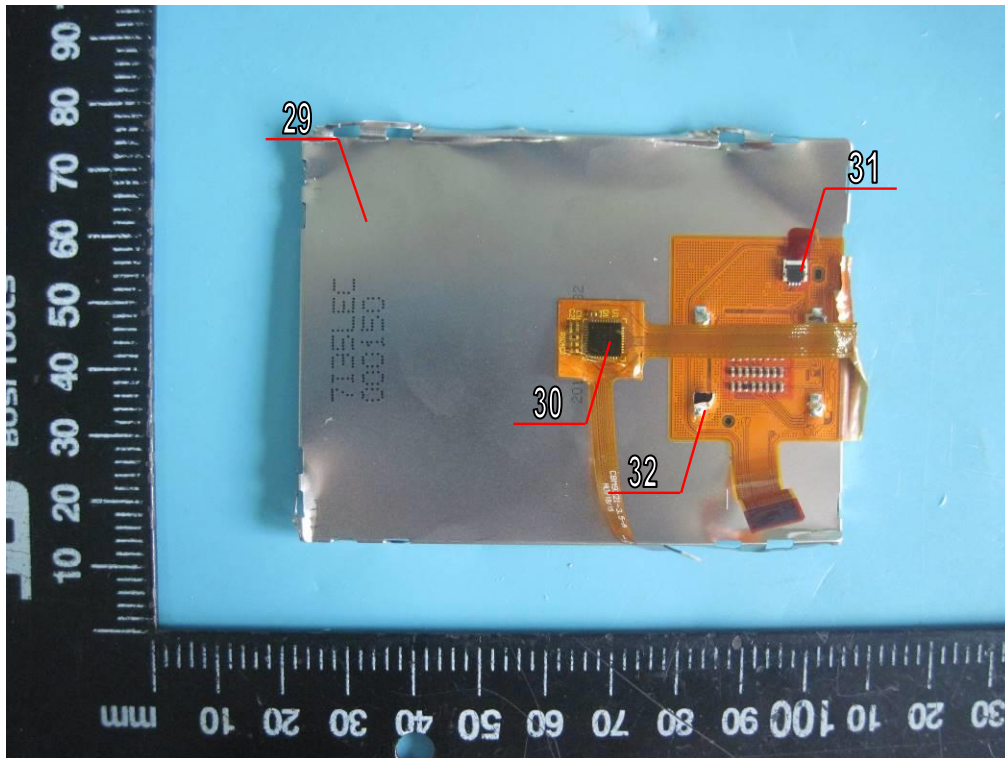
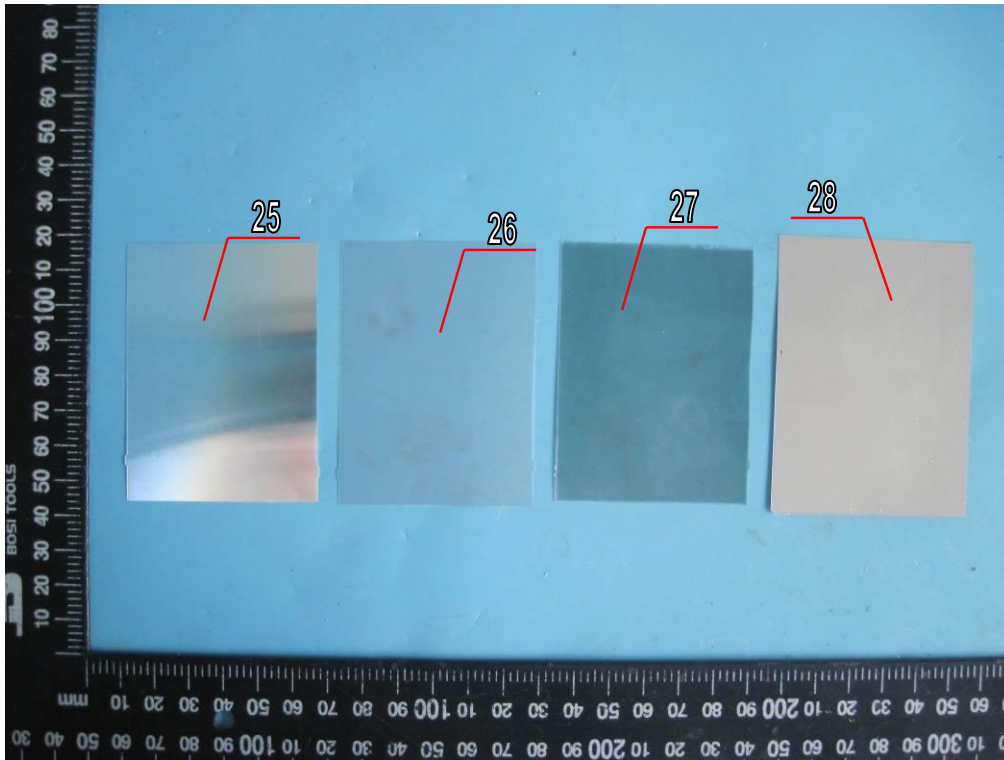
**Test item: Handheld thermography camera**  
**Tested Model: DS-2TP23-10VM/W**

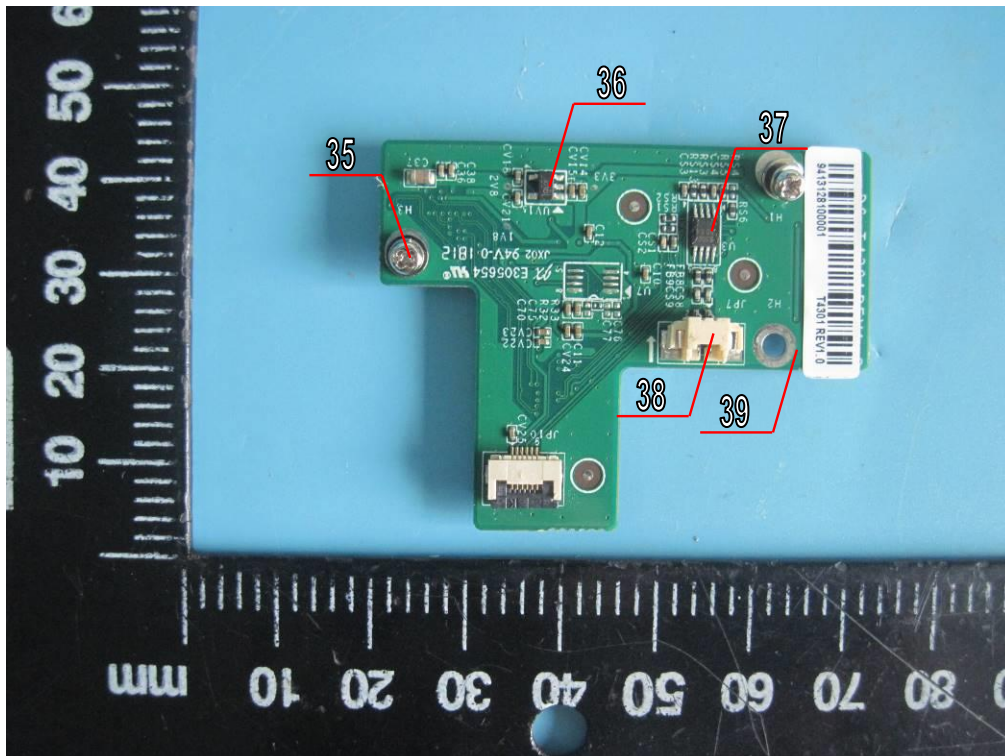


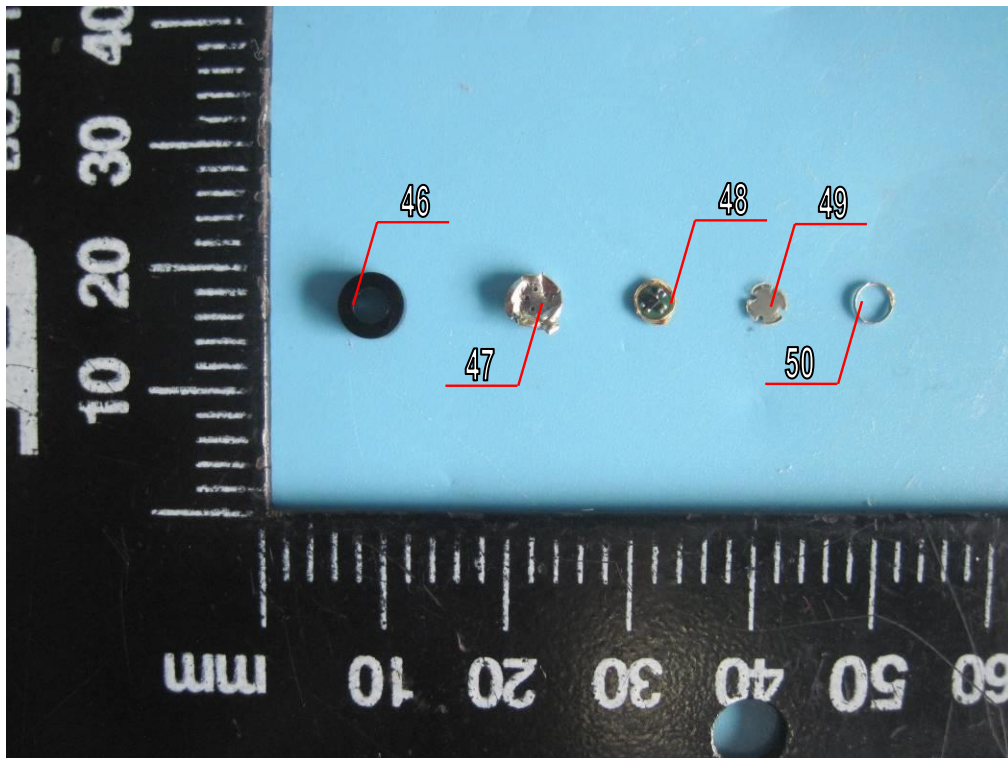
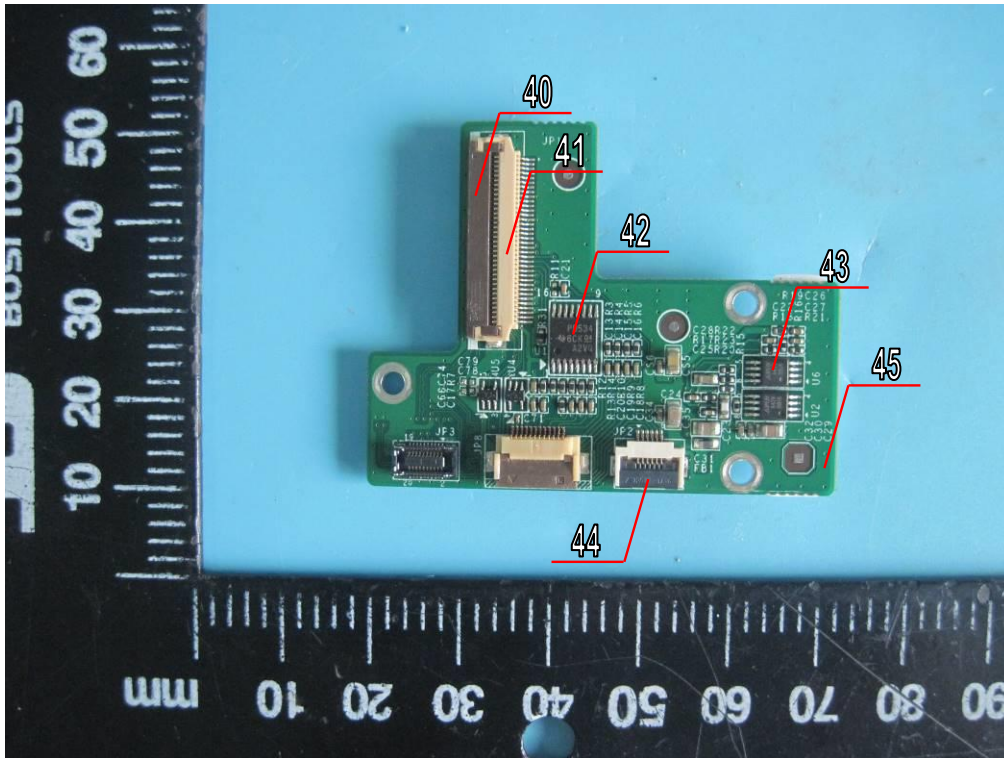


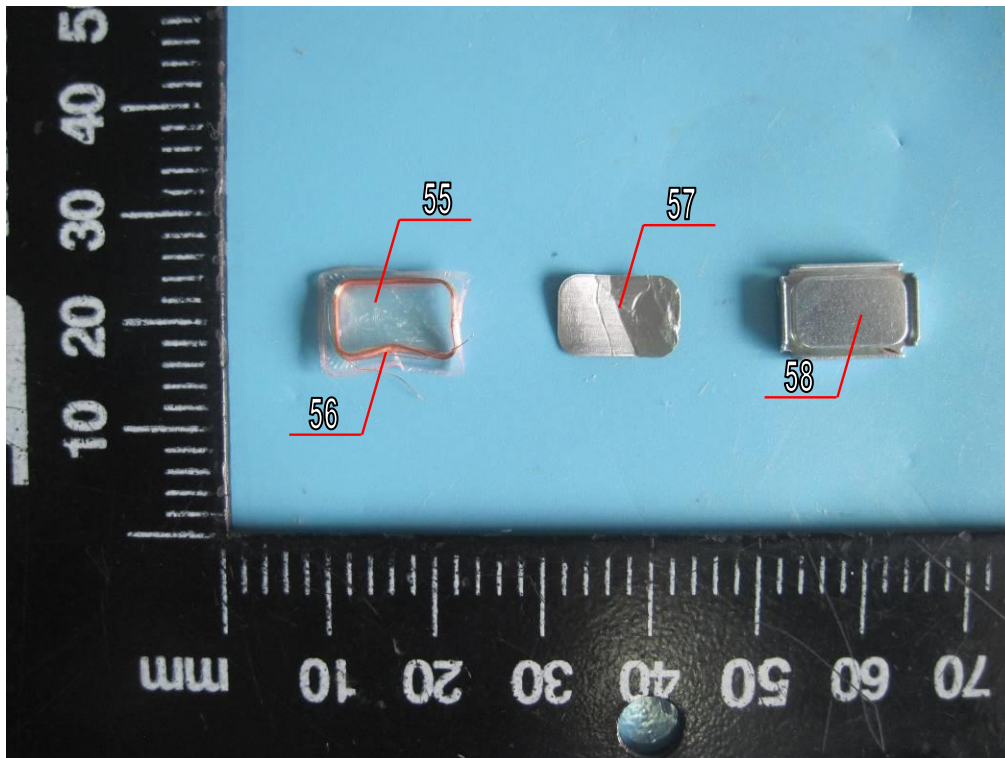
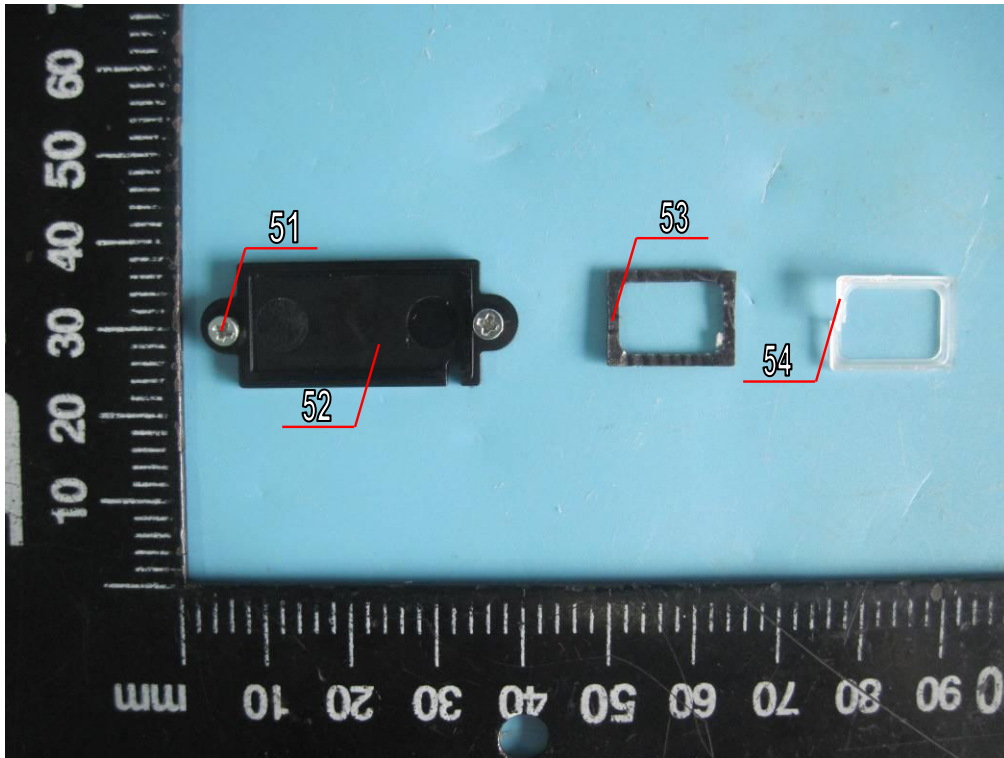


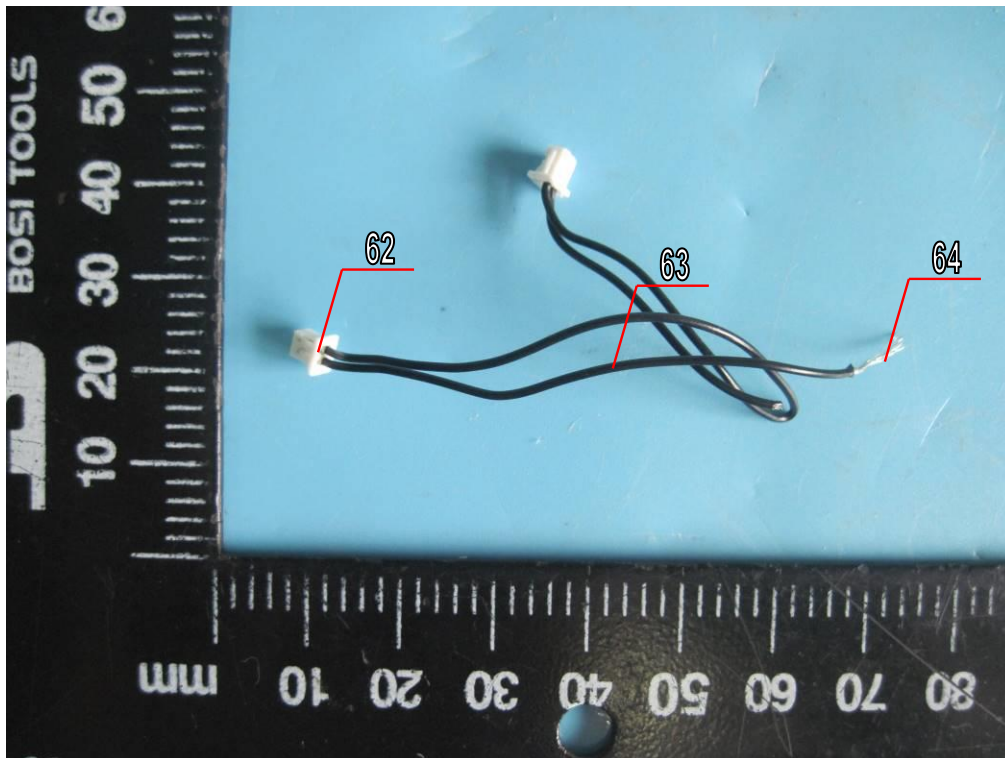
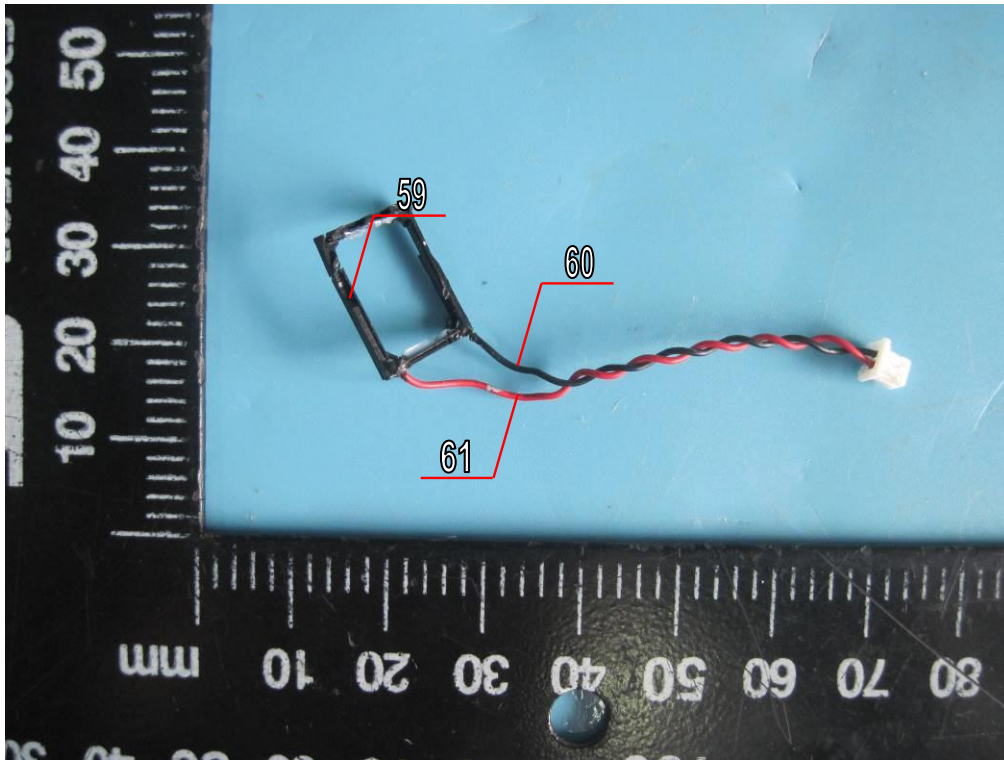


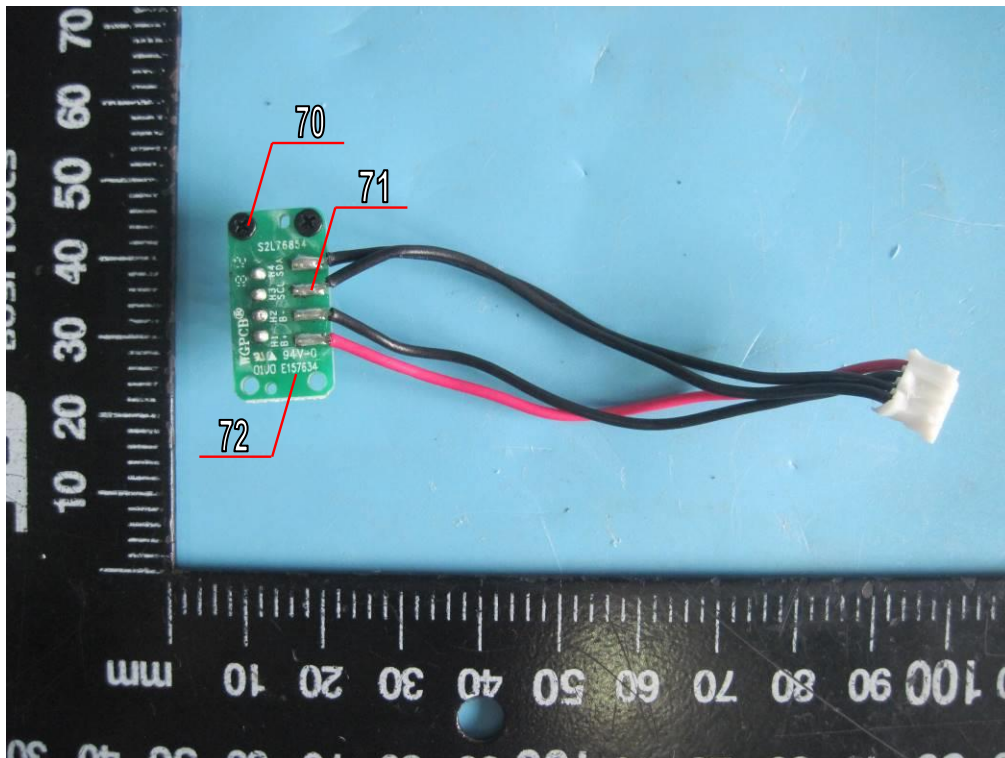
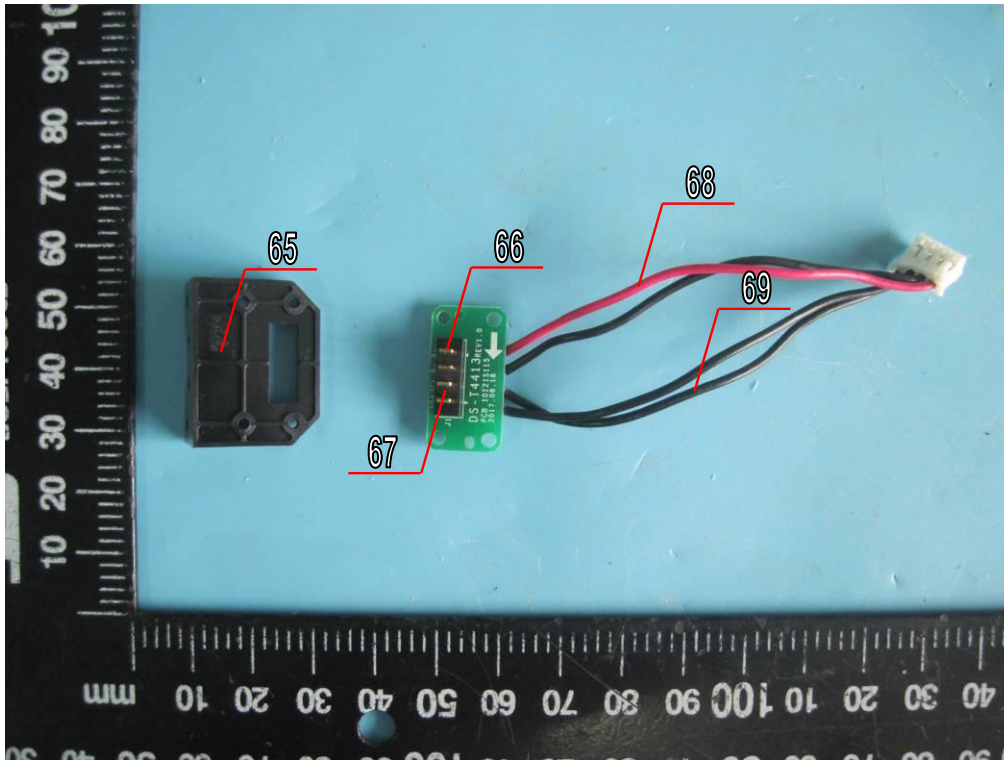


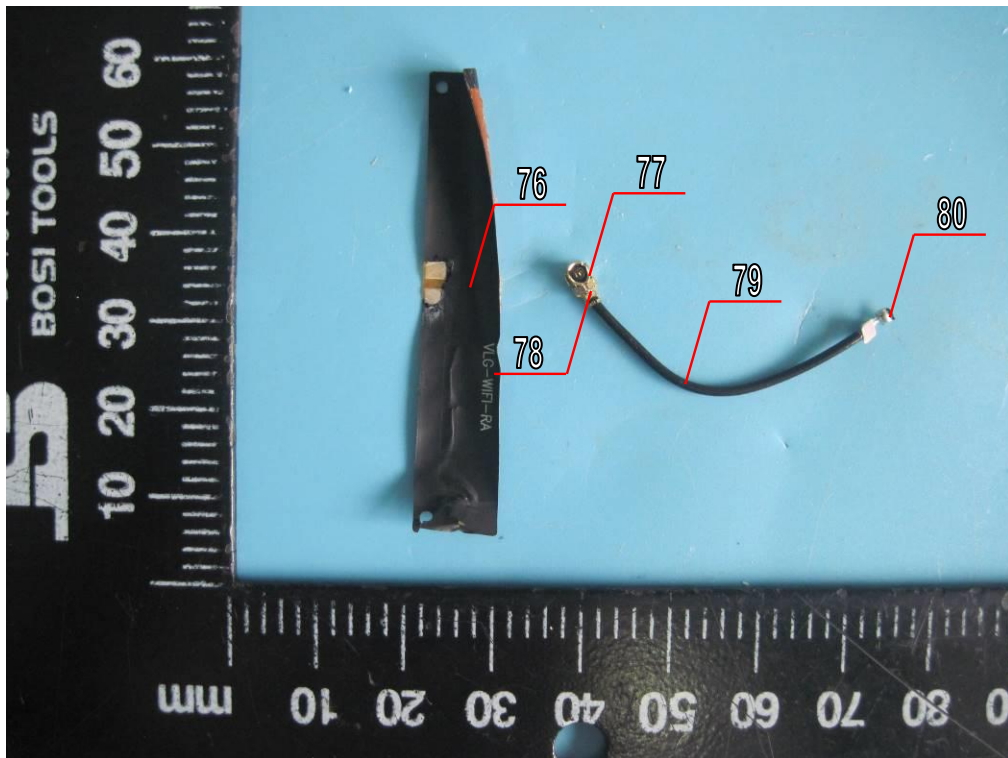
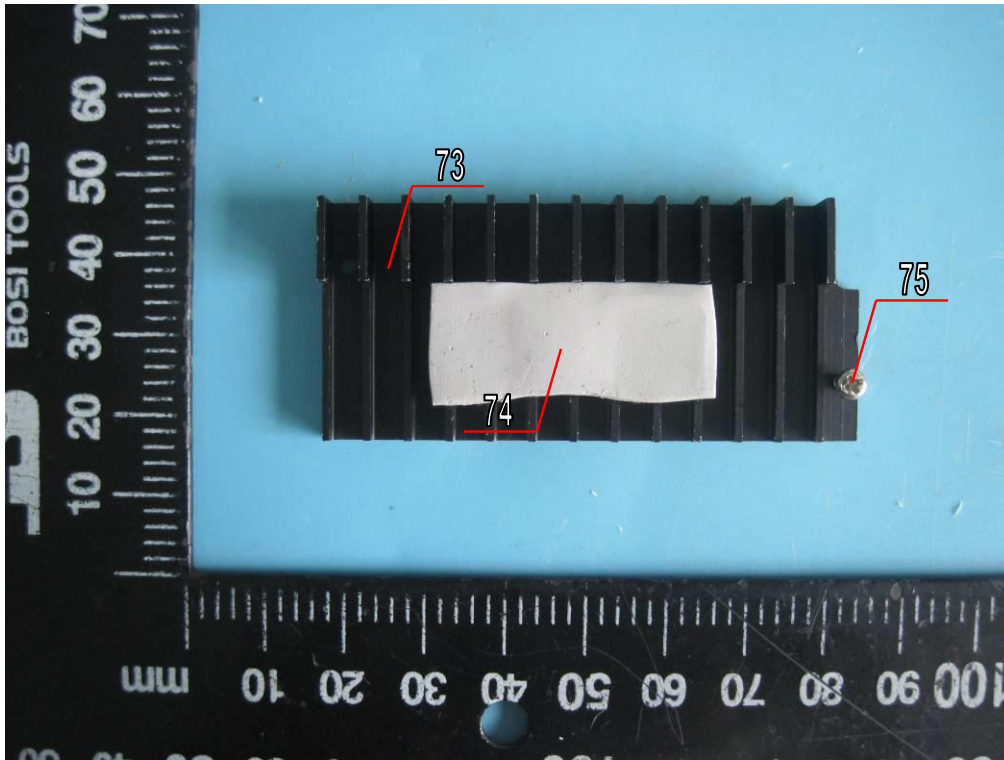


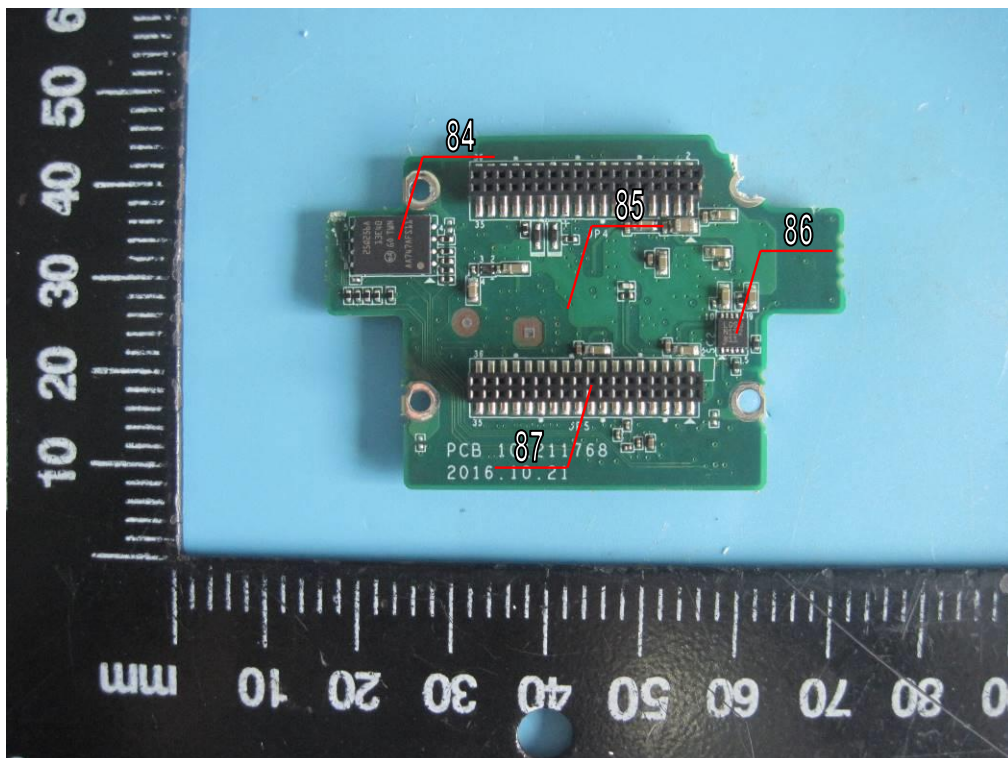
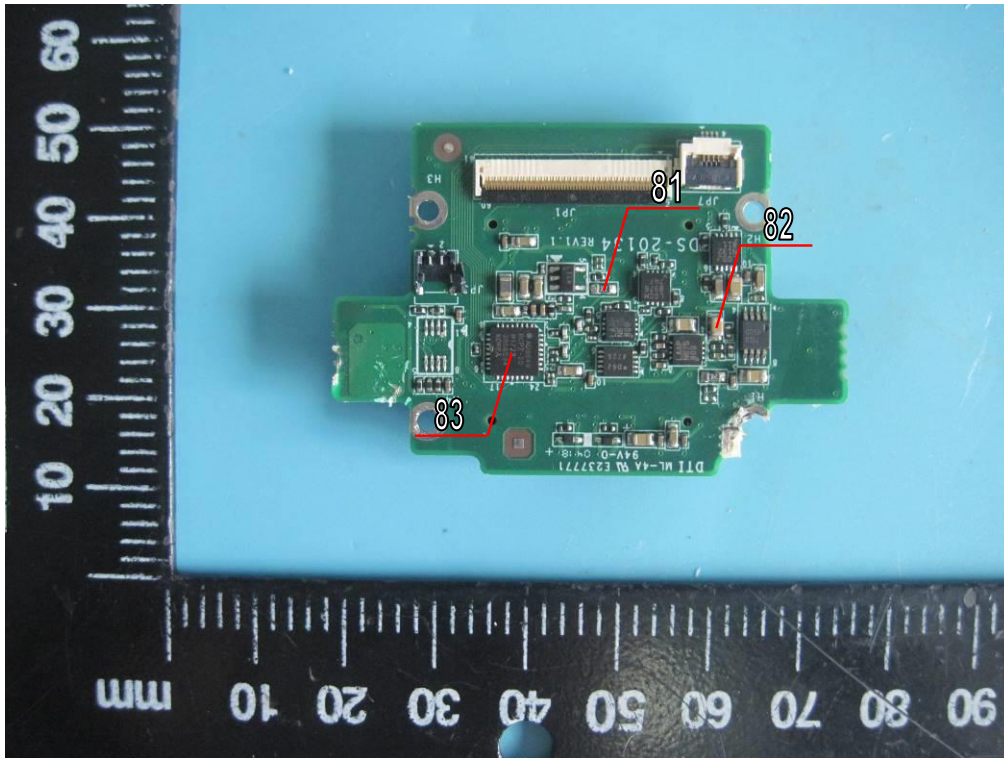




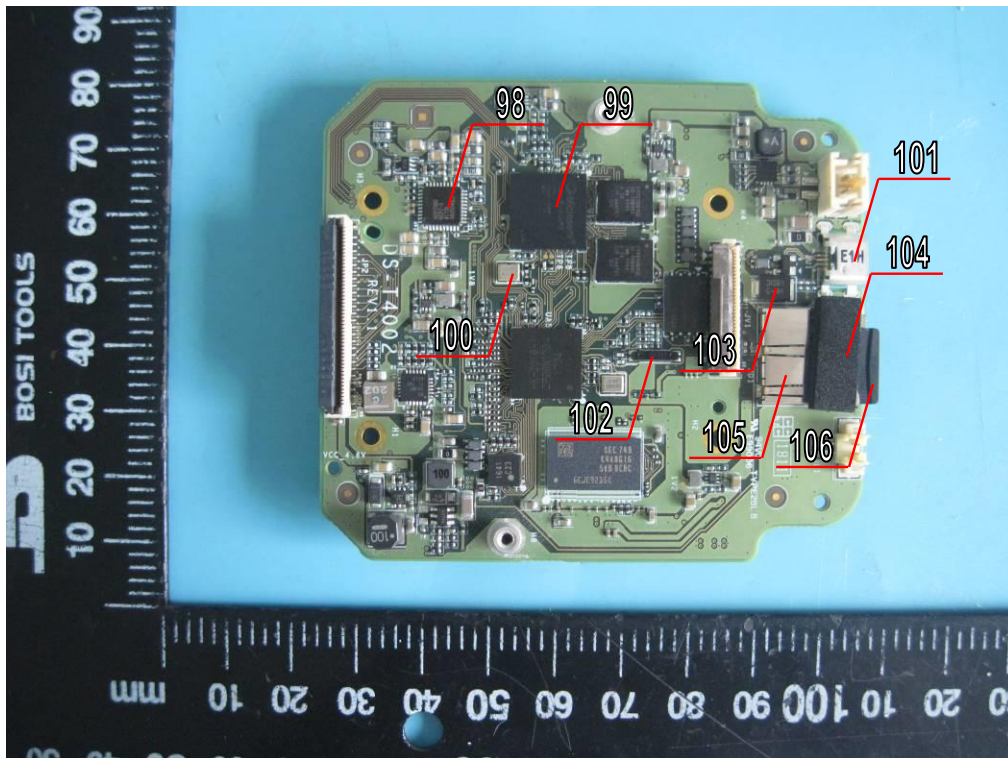
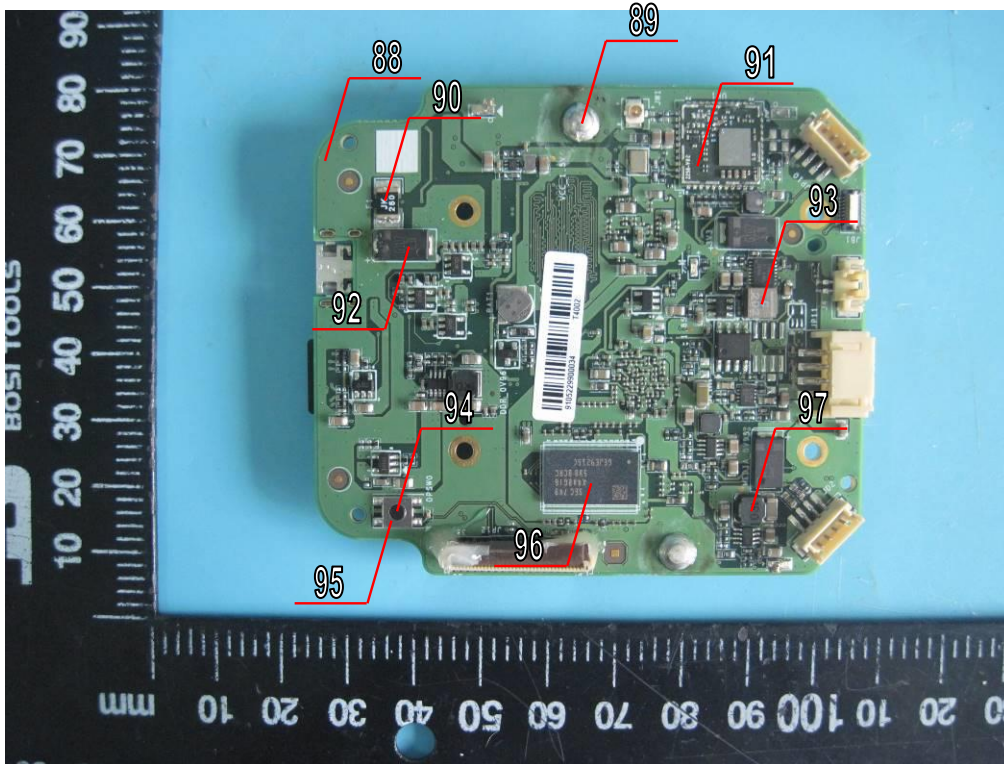


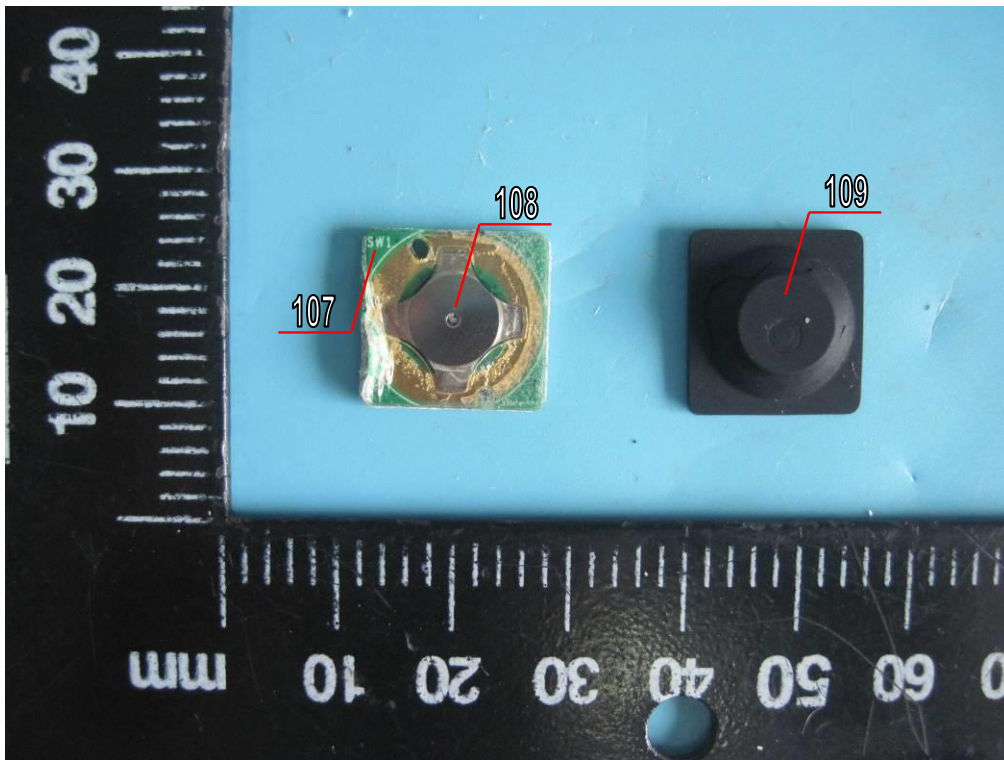


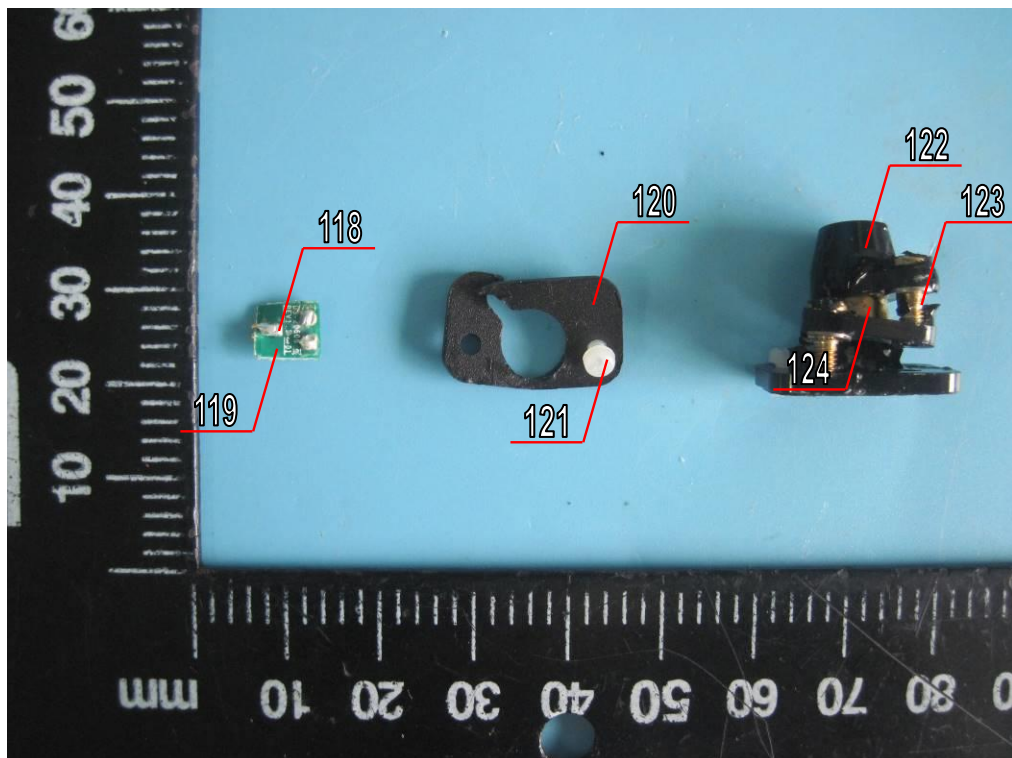


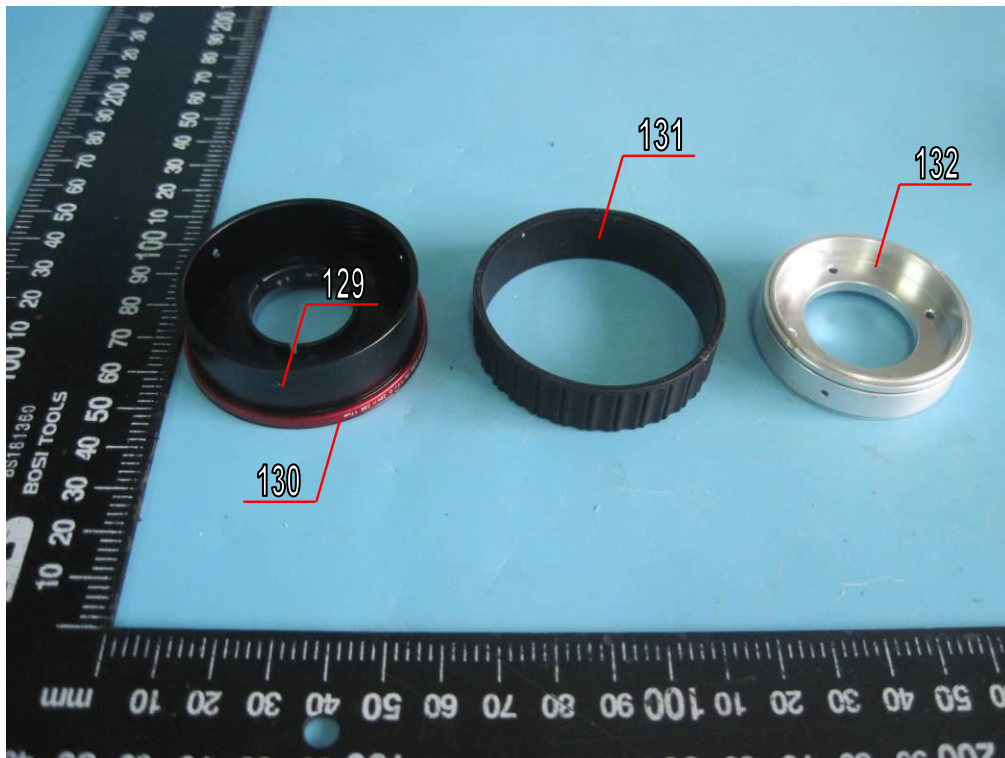


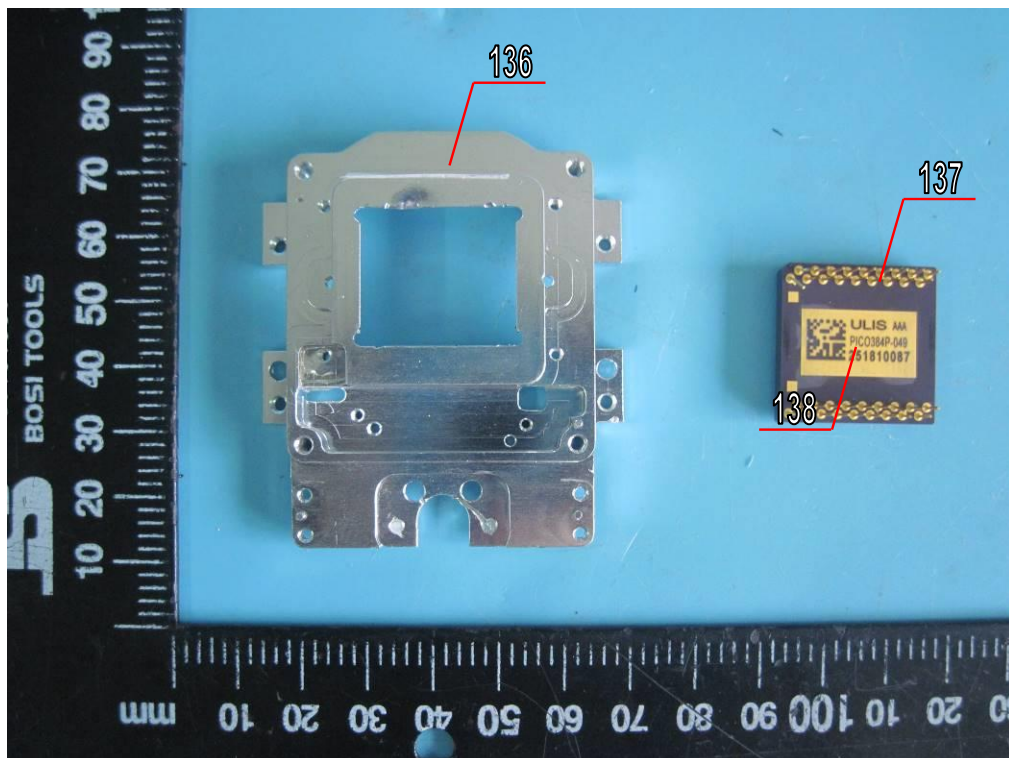
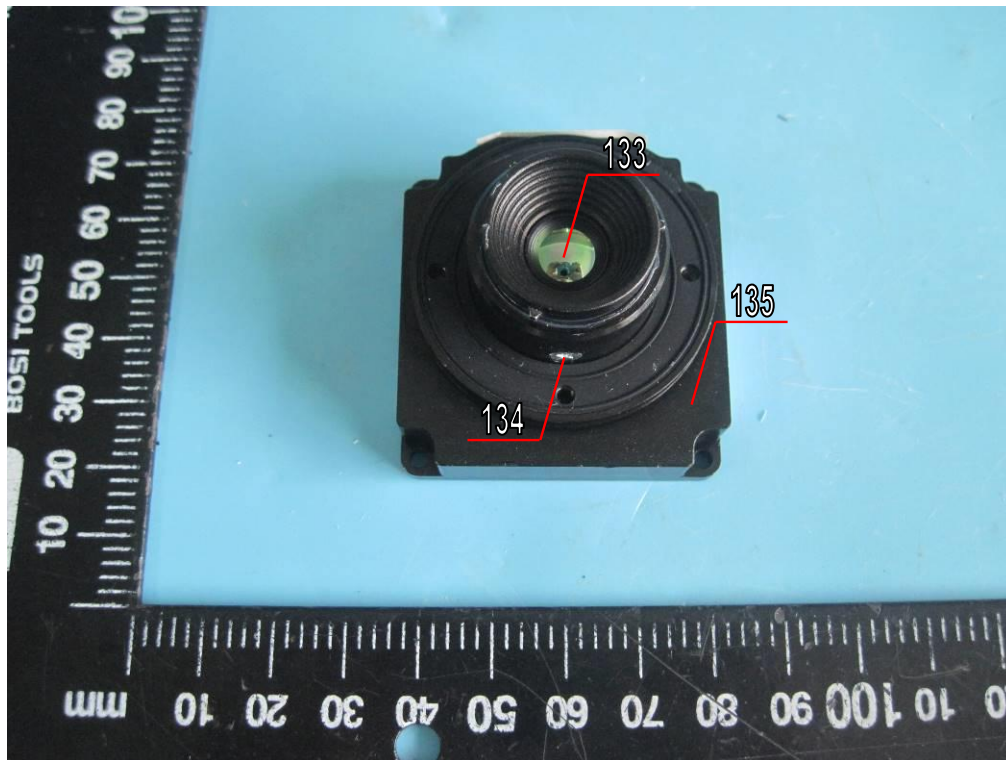


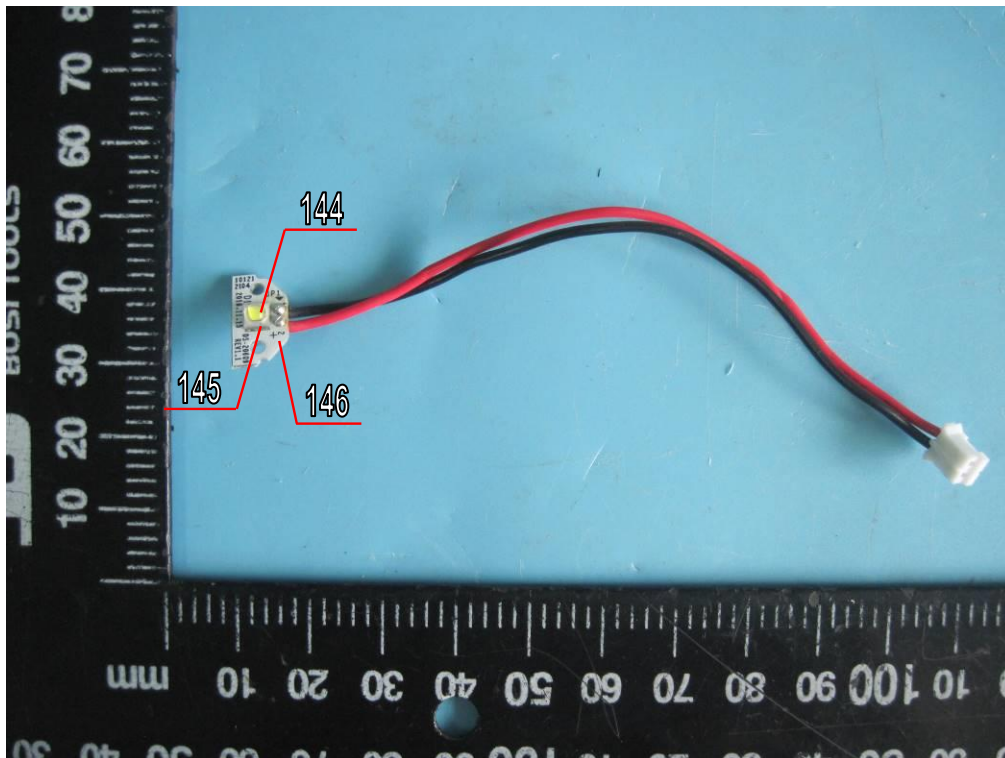
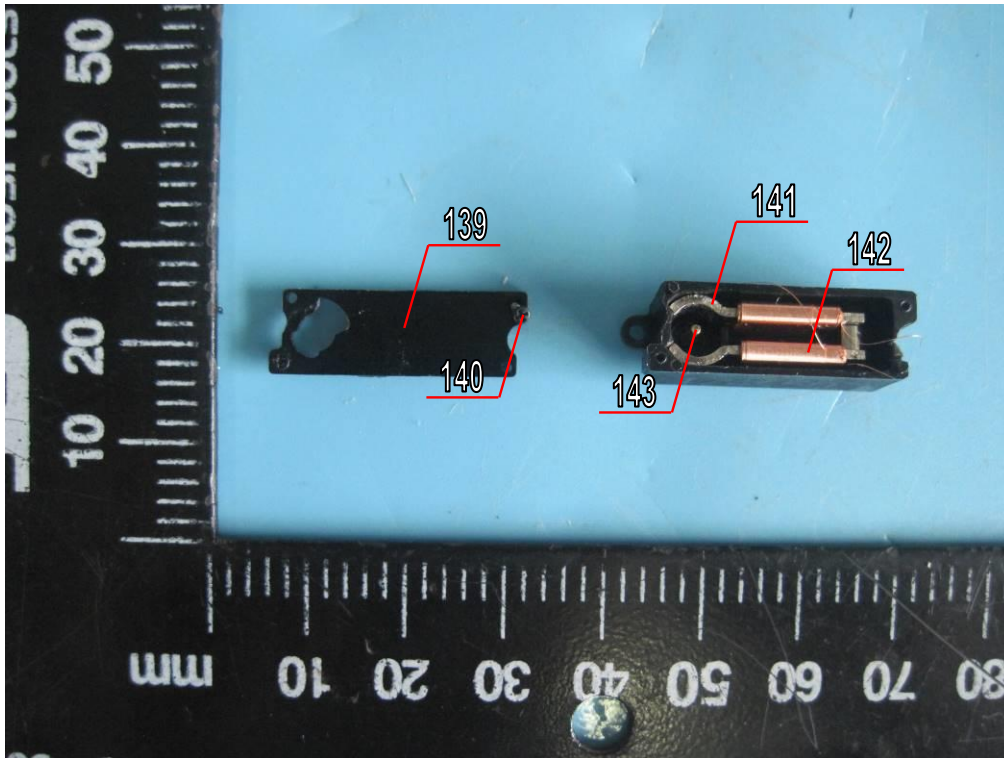


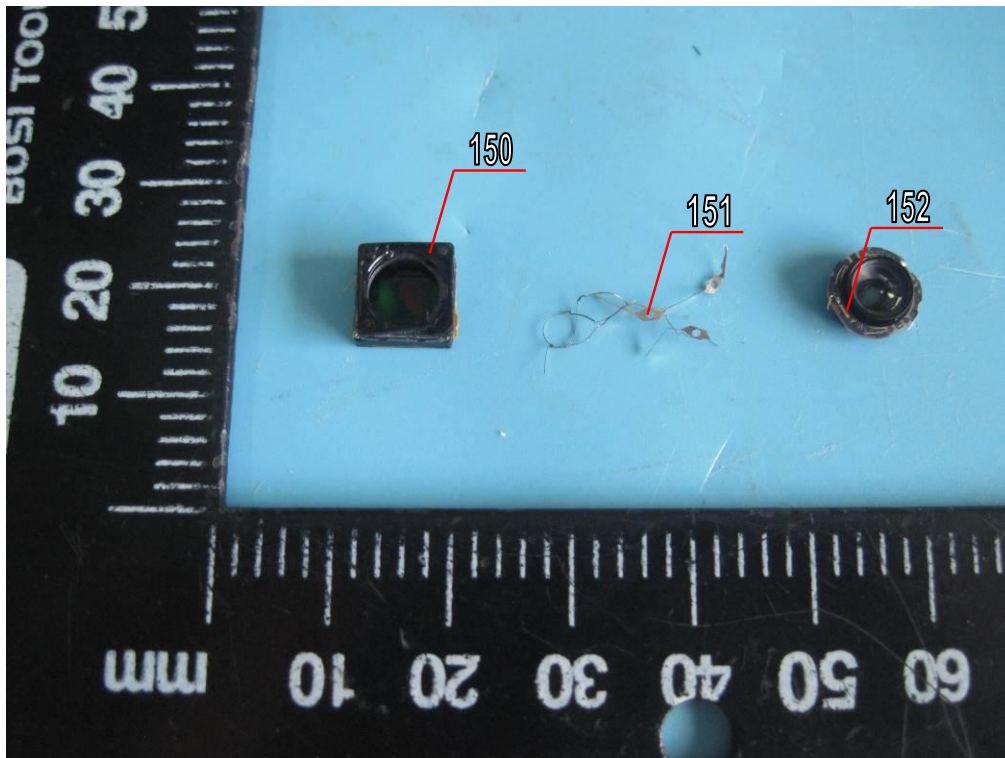
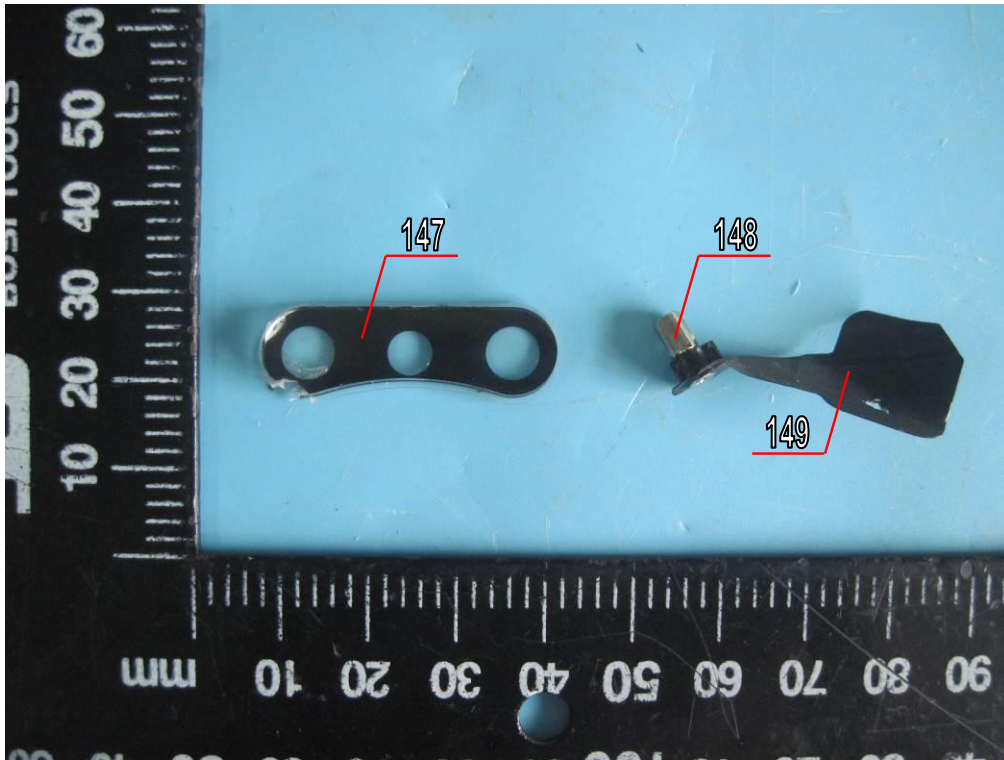


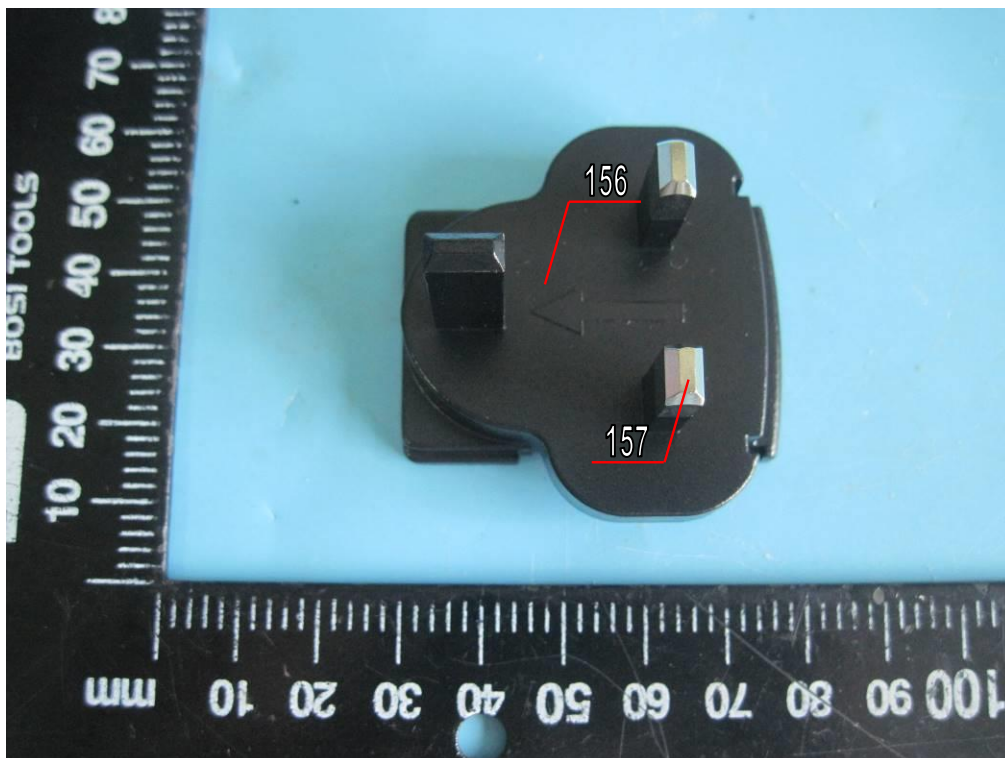
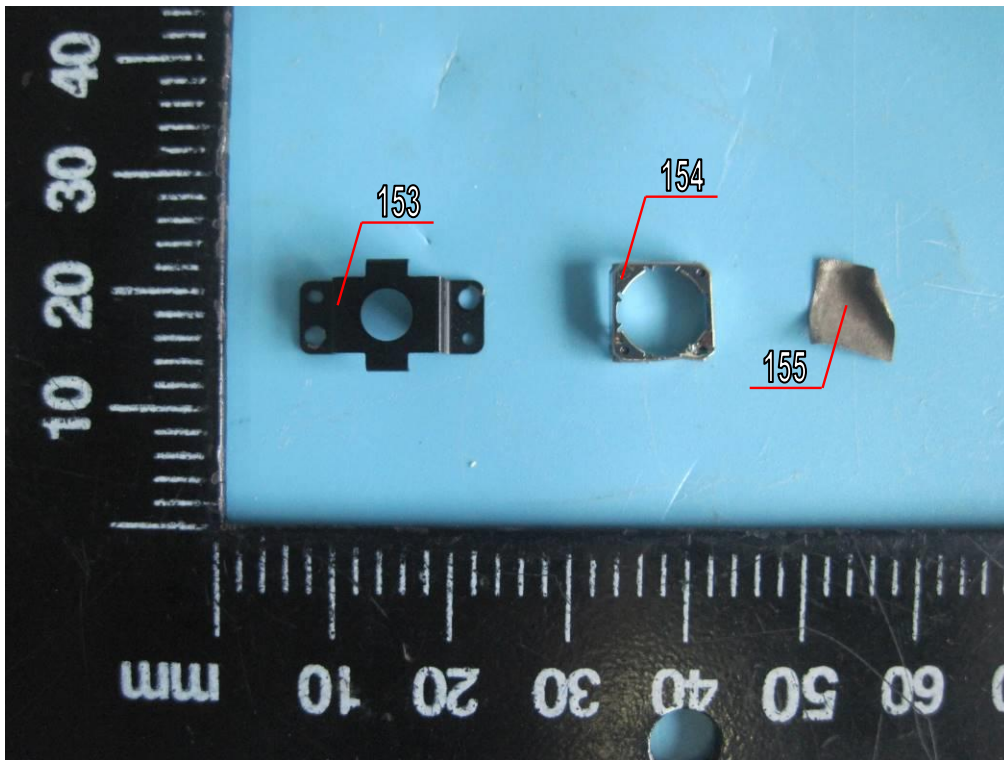




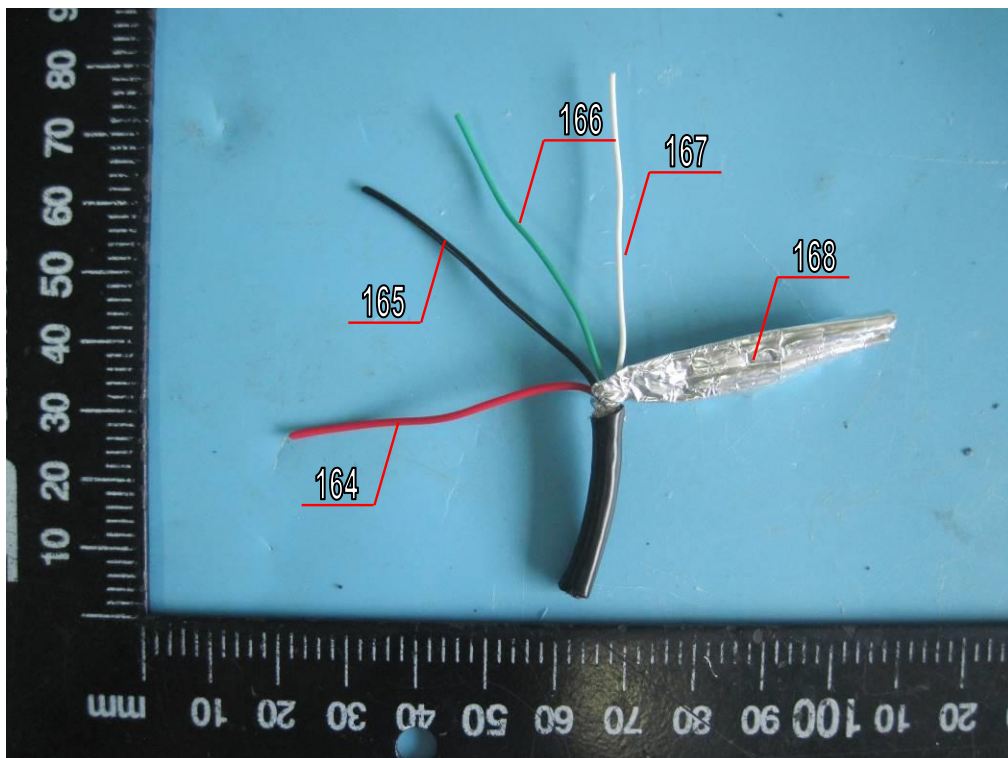
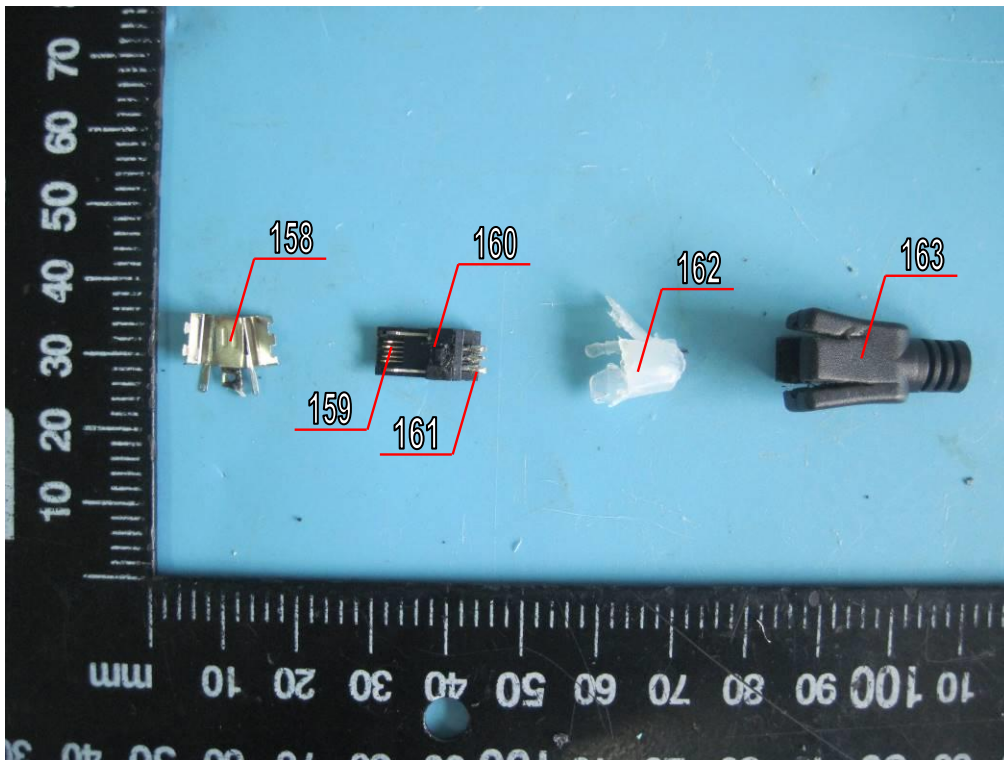


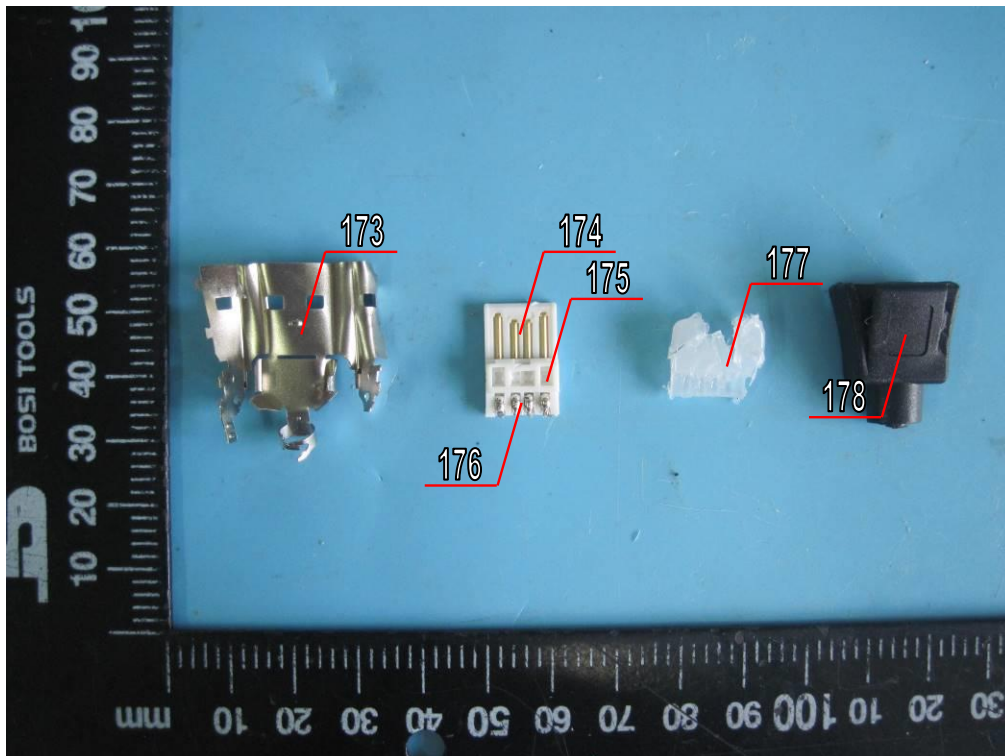
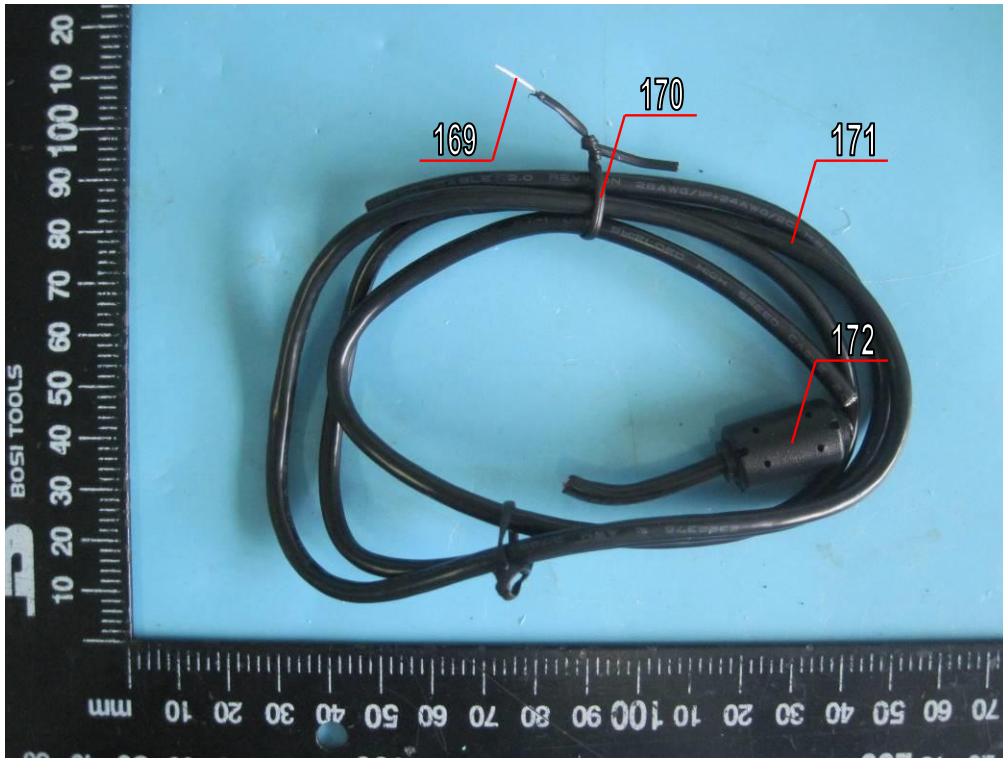


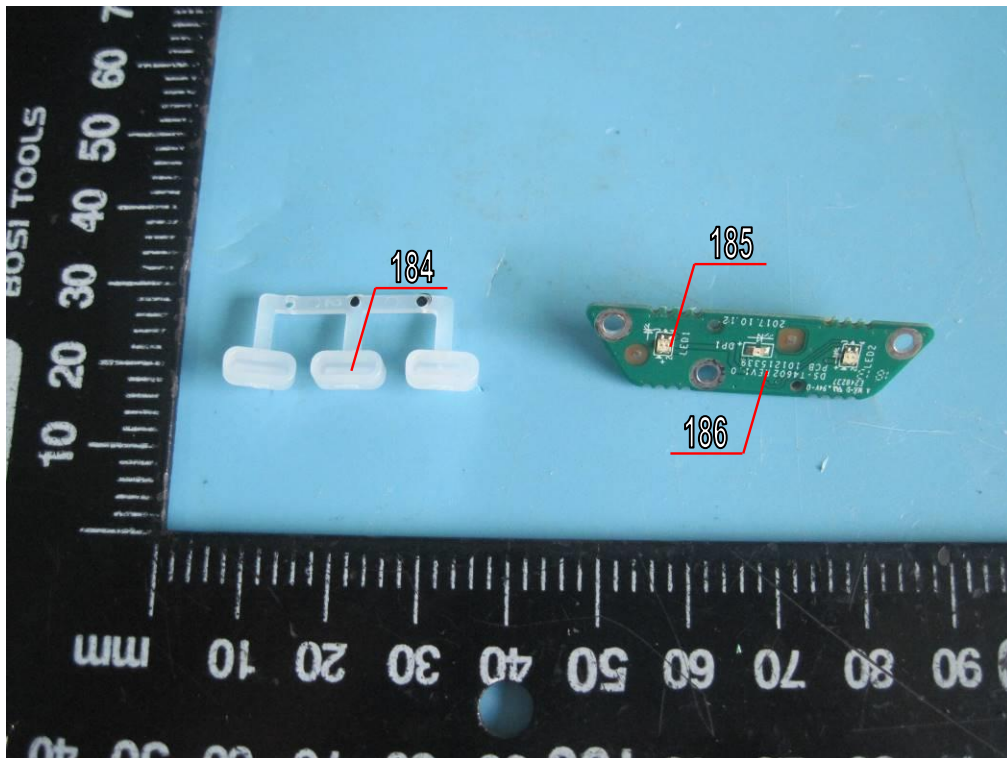
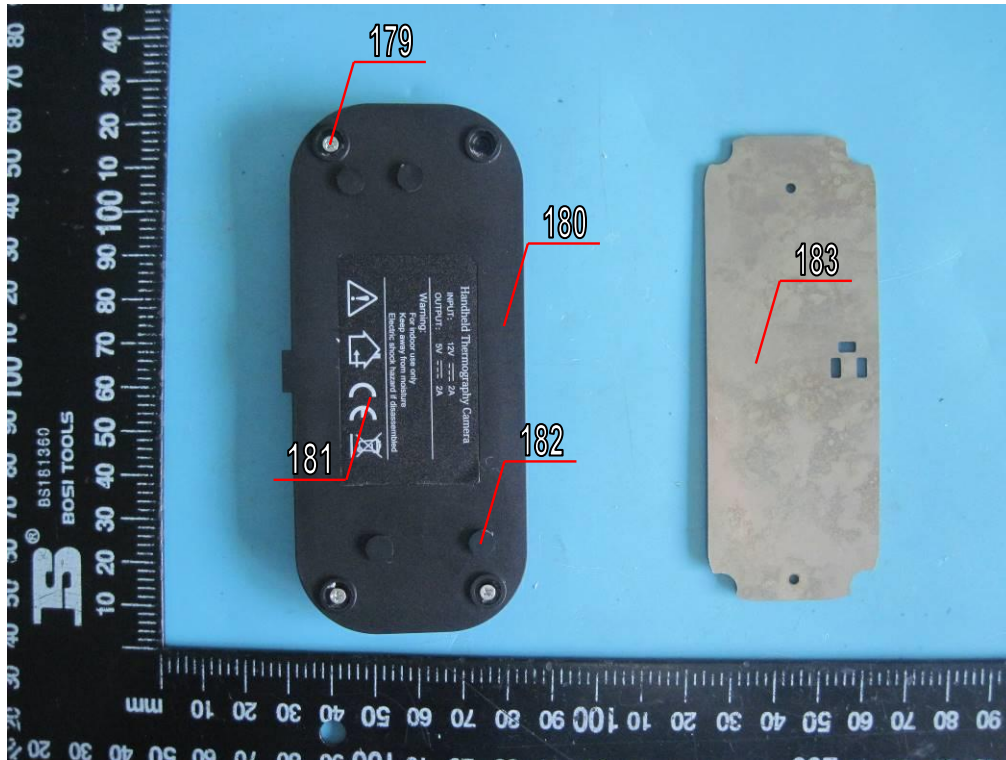


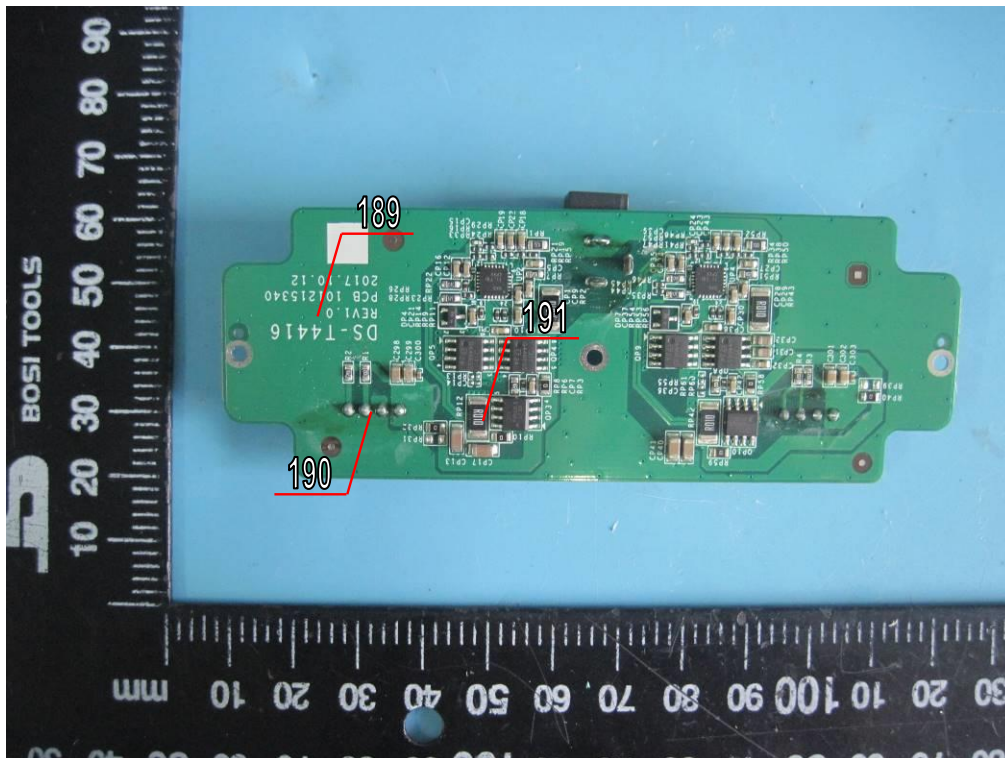
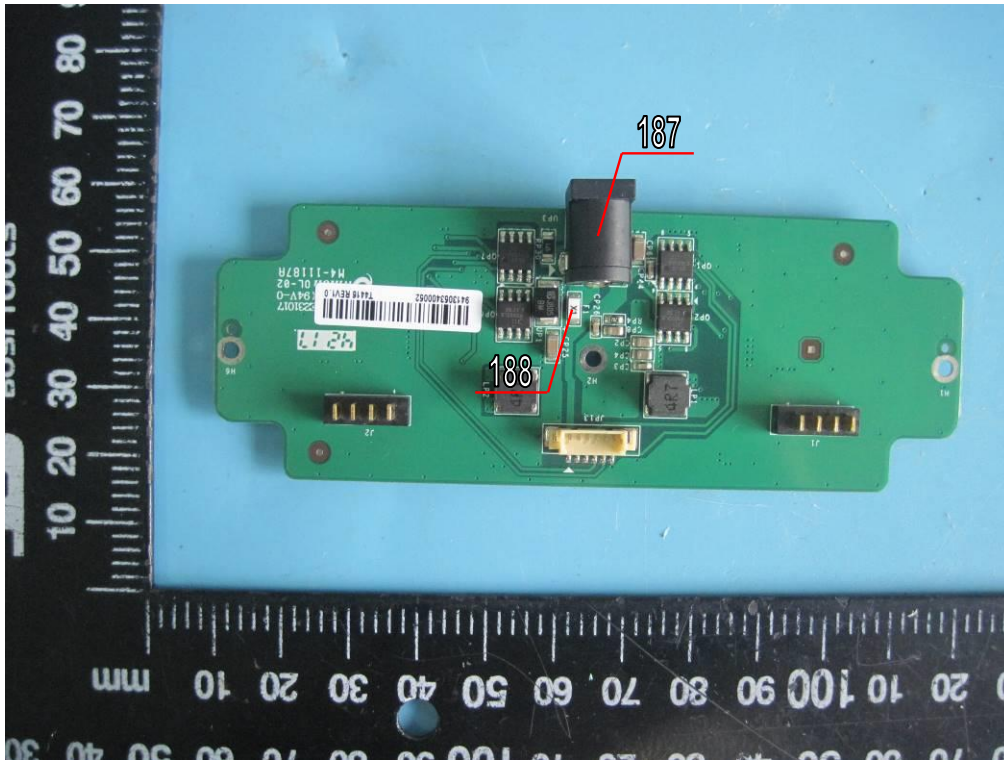


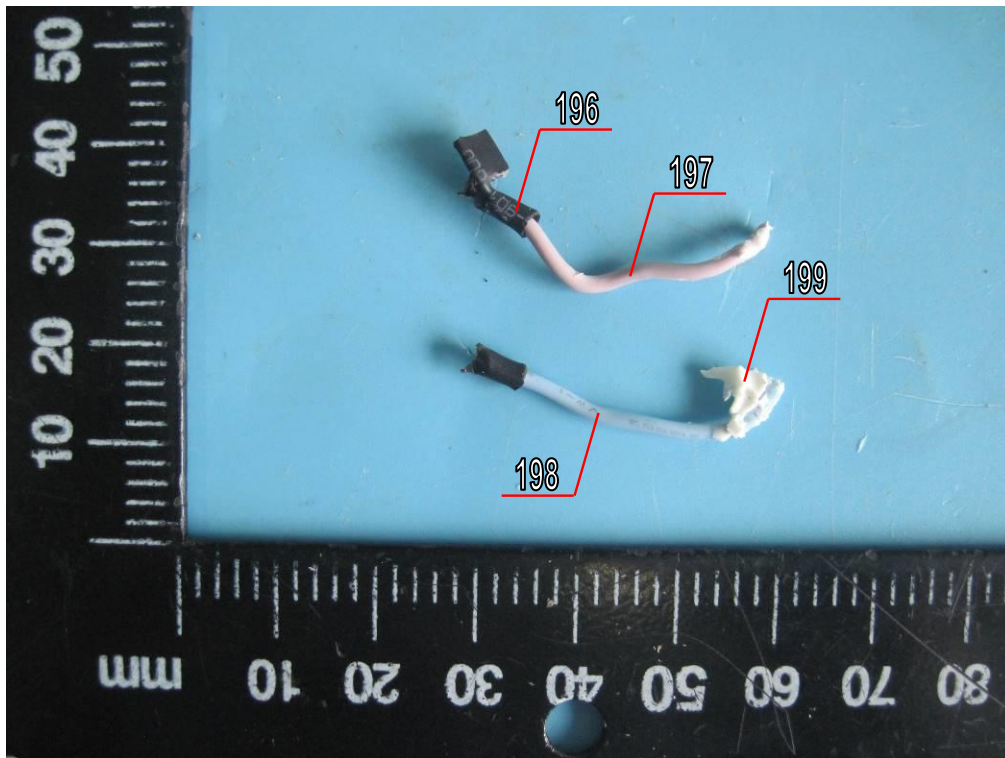
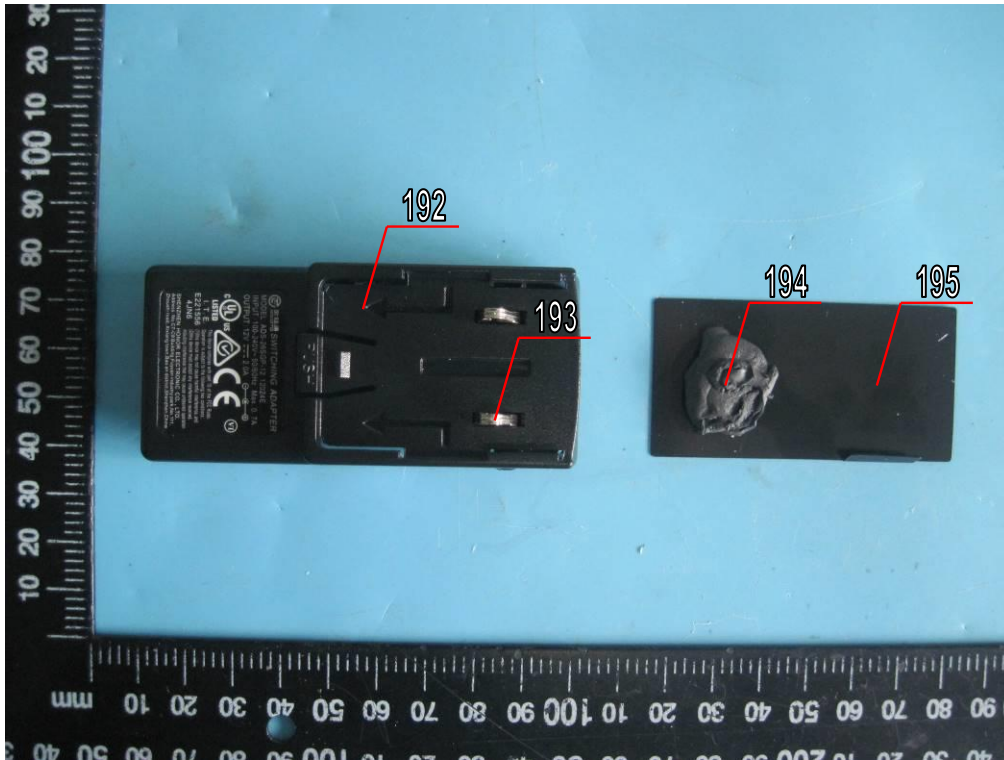


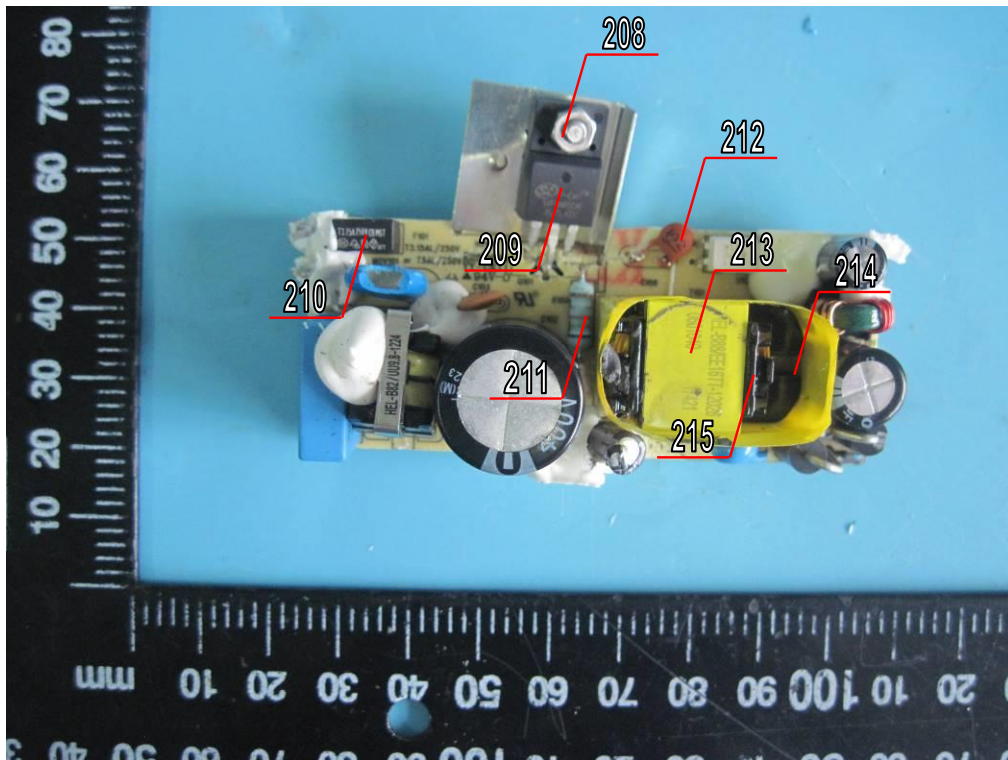
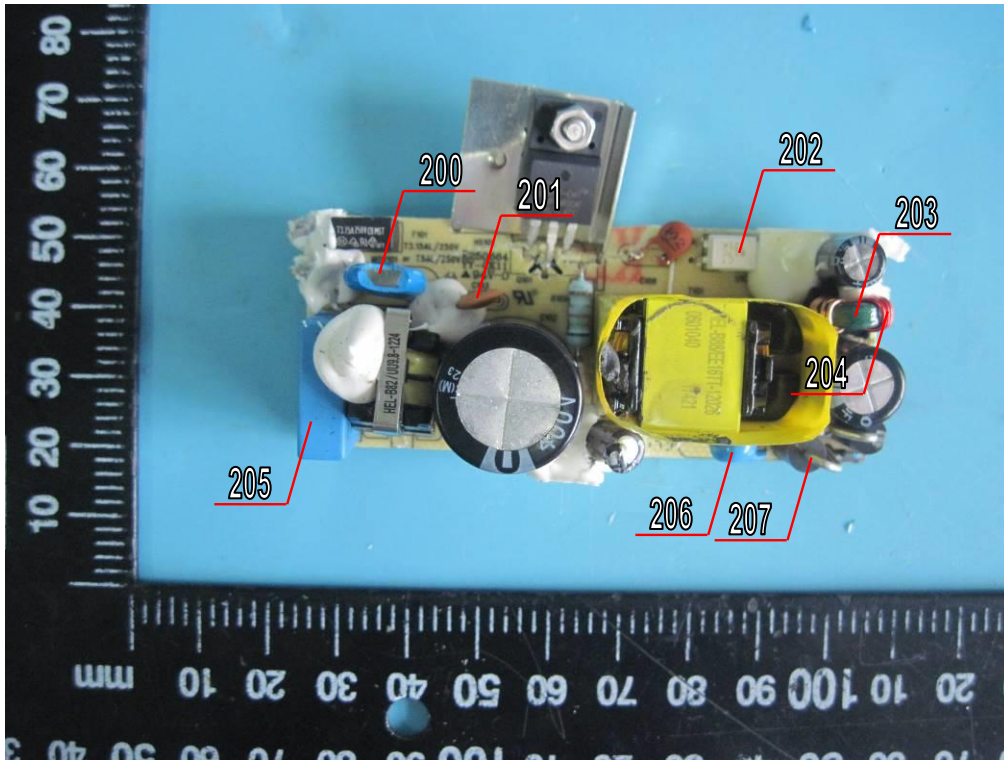


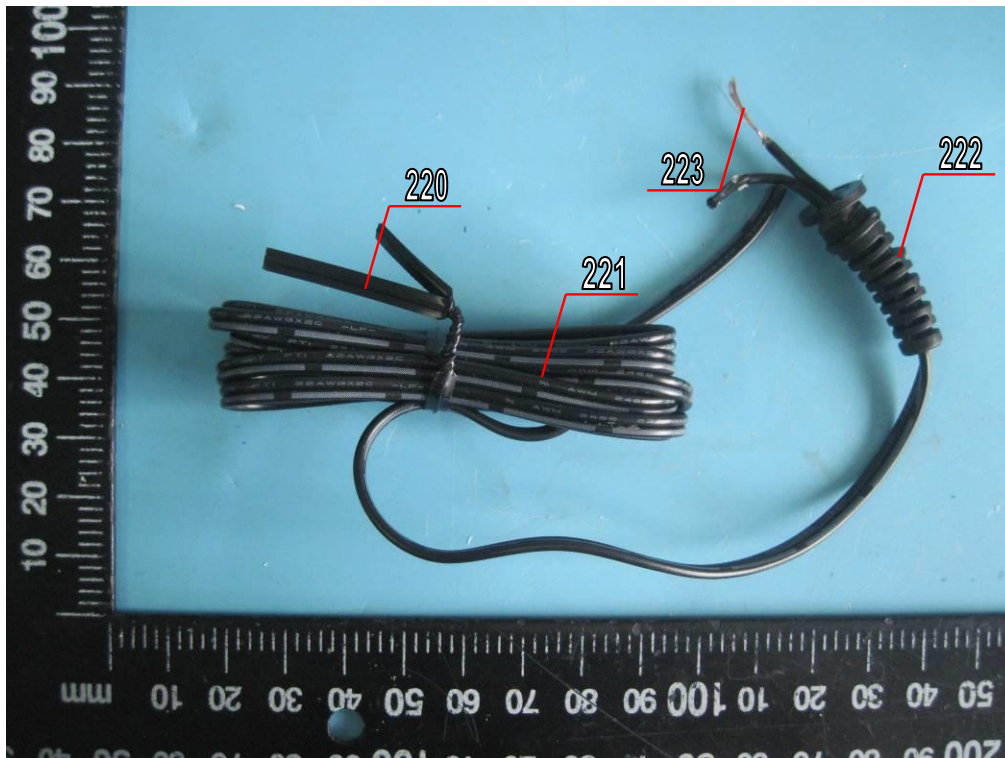
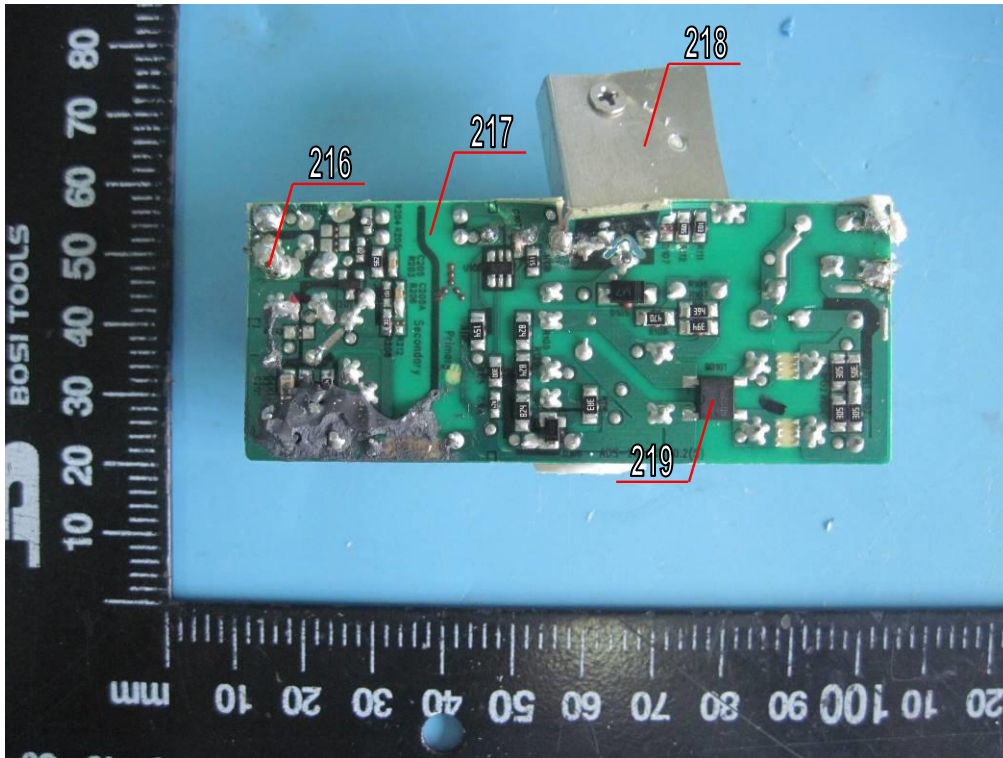


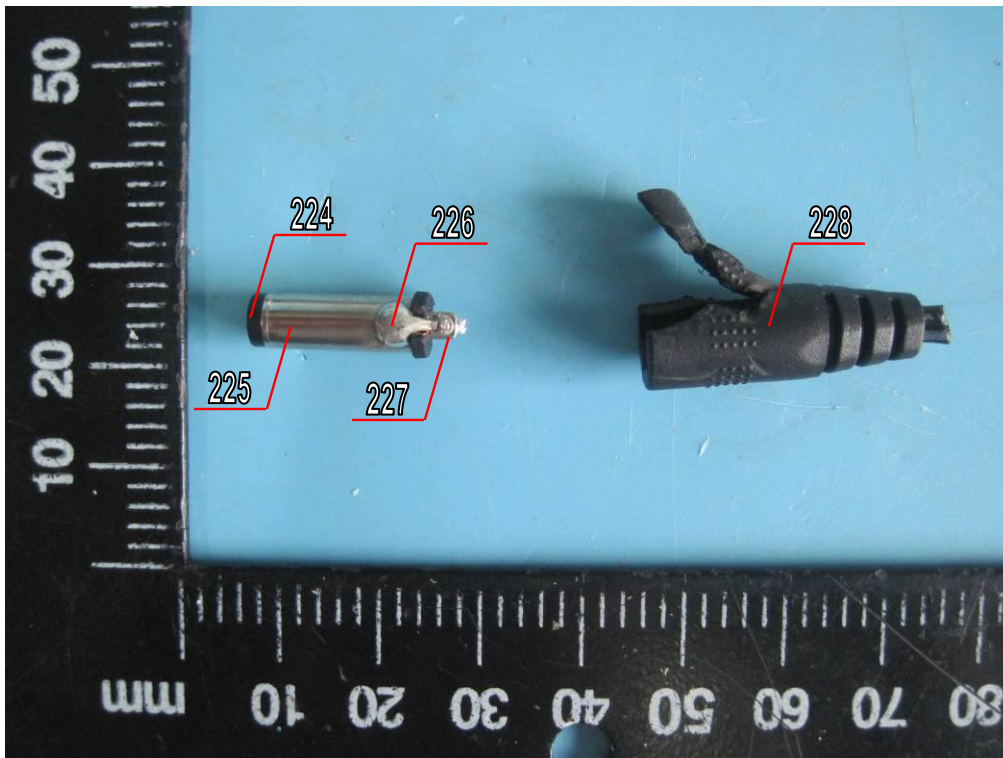












\*\*\*\*End of Report\*\*\*\*