

Test Report

Report No.:BCT14LR-1750C

Date: Dec.29, 2014

Page 1 of 12

Applicant : Shenzhen SQT Electronics CO.,Ltd

Address : ZhengChengFeng TechnologyZone Xinsha Road,ShaYi Village, Sha jing Town,
Baoan Area, Shenzhen, China

Sample Name : Wired gaming mouse

Tested Model : MX-008

Receive Date : Dec.05, 2014

Completion Date : Dec.27, 2014

Test Requirement :
1. As requested by client, determination of levels of six regulated substances (lead, mercury, cadmium, hexavalent chromium, polybrominated biphenyls, polybrominated diphenyl ethers) according to EC Directive 2011/65/EU—The Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment— (RoHS).
2. As requested by client, determination of 3 kinds of phthalates (including BDP、BBP and DEHP) content in the selected parts of the submitted sample(s).
3. As requested by client, determination of hexabromocyclododecane (HBCDD) content in the selected parts of the submitted sample(s).

Conclusion : Based on the verification results of the submitted sample(s), the results of Lead, Cadmium, Mercury, Hexavalent chromium, Polybrominated biphenyls (PBBs) and Polybrominated diphenyl ethers (PBDEs) comply with the limits as set by RoHS Directive 2011/65/EU—The Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment.

Authorized signature

Lab Manager:Owen Yang

Dec. 27, 2014

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Result Summary:

1. Six regulated substances (Pb、Cd、Cr(VI)、Hg、PBBs&PBDEs) according to Directive 2011/65/EU.

Part No.	Part Description	Results of EDXRF					Chemical confirmation results (mg/kg)	Conclusion
		Pb	Cd	Hg	Cr	Br		
1	Black shell	BL	BL	BL	BL	BL	---	Pass
2	Silvery shell	BL	BL	BL	BL	BL	---	Pass
3	Black silica gel pad	BL	BL	BL	BL	BL	---	Pass
4	Silvery metal screw	BL	BL	BL	BL	---	---	Pass
5	Red jacket (Wire)	BL	BL	BL	BL	IN	PBBs: N.D. PBDEs: N.D	Pass
6	Black jacket(Wire)	BL	BL	BL	BL	BL	---	Pass
7	White jacket(Wire)	BL	BL	BL	BL	BL	---	Pass
8	Green jacket(Wire)	BL	BL	BL	BL	BL	---	Pass
9	Silvery metal wire(Wire)	BL	BL	BL	BL	---	---	Pass
10	Red and black jacket (Wire)	BL	BL	BL	BL	---	---	Pass
11	Black terminal(Wire)	BL	BL	BL	BL	IN	PBBs: N.D. PBDEs: N.D	Pass
12	Magnet ring(Wire)	BL	BL	BL	BL	---	---	Pass
13	Black plastic of USB (Wire)	BL	BL	BL	BL	BL	---	Pass
14	White plastic of USB (Wire)	BL	BL	BL	BL	BL	---	Pass
15	Silvery metal shell of USB (Wire)	BL	BL	BL	BL	---	---	Pass
16	Metal pin of USB (Wire)	BL	BL	BL	BL	---	---	Pass
17	Silvery metal wire (Wire)	BL	BL	BL	IN	---	Cr(VI): Negative	Pass
18	White plastic(contact1)	BL	BL	BL	BL	BL	---	Pass
19	Slivery metal wire (contact1)	BL	BL	BL	BL	---	---	Pass
20	Red jacket(contact1)	BL	BL	BL	BL	IN	PBBs: N.D. PBDEs: N.D	Pass
21	Black jacket(contact1)	BL	BL	BL	BL	BL	---	Pass
22	White jacket(contact1)	BL	BL	BL	BL	BL	---	Pass
23	Green jacket(contact1)	BL	BL	BL	BL	BL	---	Pass

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Test Report

Report No.:BCT14LR-1750C

Date: Dec.29, 2014

Page 3 of 12

Part No.	Part Description	Results of EDXRF					Chemical confirmation results (mg/kg)	Conclusion
		Pb	Cd	Hg	Cr	Br		
24	White plastic(contact2)	BL	BL	BL	BL	BL	---	Pass
25	Silvery metal wire (contact2)	BL	BL	BL	BL	---	---	Pass
26	Orang jacket(contact2)	BL	BL	BL	BL	BL	---	Pass
27	Blue jacket(contact2)	BL	BL	BL	BL	BL	---	Pass
28	White jacket(contact2)	BL	BL	BL	BL	BL	---	Pass
29	Green jacket(contact2)	BL	BL	BL	BL	BL	---	Pass
30	White plastic(contact3)	BL	BL	BL	BL	BL	---	Pass
31	Silvery metal wire (contact3)	BL	BL	BL	BL	---	---	Pass
32	White jacket(contact3)	BL	BL	BL	BL	BL	---	Pass
33	Black silica gel (Sliding roller)	BL	BL	BL	BL	BL	---	Pass
34	Silvery plastic (Sliding roller)	BL	BL	BL	BL	BL	---	Pass
35	Transparent plastic (Sliding roller)	BL	BL	BL	BL	BL	---	Pass
36	Silvery metal shell (Sliding roller)	BL	BL	BL	BL	---	---	Pass
37	Grey plastic (Sliding roller)	BL	BL	BL	BL	---	---	Pass
38	Black plastic (Sliding roller)	BL	BL	BL	BL	IN	PBBs: N.D. PBDEs: N.D	Pass
39	Switch shell (Sliding roller)	BL	BL	BL	BL	IN	PBBs: N.D. PBDEs: N.D	Pass
40	Spring of the switch (Sliding roller)	BL	BL	BL	BL	IN	PBBs: N.D. PBDEs: N.D	Pass
41	Metal gasket of the Switch(Sliding roller)	BL	BL	BL	BL	---	---	Pass
42	Black plastic(Switch)	BL	BL	BL	BL	BL	---	Pass
43	White plastic(Switch)	BL	BL	BL	BL	IN	PBBs: N.D. PBDEs: N.D	Pass
44	Grey button(Switch)	BL	BL	BL	BL	BL	---	Pass
45	Shrapnel(Switch)	BL	BL	BL	BL	---	---	Pass
46	SMD Capacitor	BL	BL	BL	BL	IN	PBBs: N.D. PBDEs: N.D	Pass
47	SMD Resistor	BL	BL	BL	BL	IN	PBBs: N.D. PBDEs: N.D	Pass

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Test Report

Report No.:BCT14LR-1750C

Date: Dec.29, 2014

Page 4 of 12

Part No.	Part Description	Results of EDXRF					Chemical confirmation results (mg/kg)	Conclusion
		Pb	Cd	Hg	Cr	Br		
48	IC	BL	BL	BL	BL	IN	PBBs: N.D. PBDEs: N.D	Pass
49	SMD diode	BL	BL	BL	BL	IN	PBBs: N.D. PBDEs: N.D	Pass
50	Electrolytic capacitor	BL	BL	BL	BL	BL	---	Pass
51	U3	BL	BL	BL	BL	IN	PBBs: N.D. PBDEs: N.D	Pass
52	White LED light	BL	BL	BL	BL	IN	PBBs: N.D. PBDEs: N.D	Pass
53	White plastic(BAT)	BL	BL	BL	BL	IN	PBBs: N.D. PBDEs: N.D	Pass
54	Silvery metal pin(BAT)	BL	BL	BL	BL	---	---	Pass
55	Blue PCB board	BL	BL	BL	BL	IN	PBBs: N.D. PBDEs: N.D	Pass
56	Solder	BL	BL	BL	BL	---	---	Pass
57	Green PCB board	BL	BL	BL	BL	IN	PBBs: N.D. PBDEs: N.D	Pass
58	Solder	BL	BL	BL	BL	---	---	Pass

Remark:

(1) "----"= Not Applicable;

(2) (a) It is the result on total Br while test item on restricted substances is PBBs/PBDEs. It is the result on total Cr while test item on restricted substances is Cr(VI).

(b) Results are obtained by EDXRF for primary screening, and further chemical testing by ICP-OES (for Pb、Cd、Hg), UV-VIS (for Cr(VI) and GC/MSD (for PBBs, PBDEs) is recommended to be performed, if the concentration exceeds the below warning value according to IEC 62321:2008.

Attached table 1, XRF screening limits in mg/kg for regulated elements in various matrices:

Element	Polymer Materials	Metallic Materials	Electronics
Cd	$BL \leq (70-3\sigma) < X < (130+3\sigma) \leq OL$	$BL \leq (70-3\sigma) < X < (130+3\sigma) \leq OL$	$LOD < X < (250+3\sigma) \leq OL$
Pb	$BL \leq (700-3\sigma) < X < (1300+3\sigma) \leq OL$	$BL \leq (700-3\sigma) < X < (1300+3\sigma) \leq OL$	$BL \leq (500-3\sigma) < X < (1500+3\sigma) \leq OL$
Hg	$BL \leq (700-3\sigma) < X < (1300+3\sigma) \leq OL$	$BL \leq (700-3\sigma) < X < (1300+3\sigma) \leq OL$	$BL \leq (500-3\sigma) < X < (1500+3\sigma) \leq OL$
Br	$BL \leq (300-3\sigma) < X$	--	$BL \leq (250-3\sigma) < X$
Cr	$BL \leq (700-3\sigma) < X$	$BL \leq (700-3\sigma) < X$	$BL \leq (500-3\sigma) < X$

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Note:

- ① BL "below limit" = the result less than the limit.
- ② OL "over limit" = the result greater than the limit.
- ③ IN = inconclusive, the region where need further chemical testing by ICP-OES (for Pb、Cd、Hg), UV-VIS (for Cr(VI)) and GC/MSD (for PBBs, PBDEs).
- ④ 3σ = Repeability of the analyser at the action level.
- ⑤ LOD = Limit of detection.
- ⑥ "--" = Not Regulated.

(c) 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) (a) mg/kg=ppm=0.0001%;

(b) N.D. = Not detected, less than MDL;

(c) Method Detection Limit (MDL) in wet chemical test and Limit of Directive 2011/65/EU.

Parameter	Unit	Limit	Method Detection Limit (MDL)
Lead (Pb)	mg/kg	1000	2
Cadmium (Cd)	mg/kg	100	2
Mercury (Hg)	mg/kg	1000	2
Chromium VI (Cr VI)	mg/kg	1000	2
Group PBBs	mg/kg	1000	5
Group PBDEs	mg/kg	1000	5

Important: The limit values apply to each individual homogenous material.

(d) According to IEC 62321, result on Cr(VI) for metal sample is shown as Negative/Positive:

Negative = Absence of Cr(VI), Positive = Presence of Cr(VI).

(4) Main test instruments used and test method:

Parameter	Method in IEC 62321: 2008	Instrument	Manufactory	Model / Type
Pb, Cd, Hg, Cr & Br	Chapter 6	EDX	Skyray Instrument	EDX 3000B
Pb & Cd	Chapter 8, 9 and 10	ICP-OES	PerkinElmer	Optima 2100 DV
Hg	Chapter 7	ICP-OES	PerkinElmer	Optima 2100 DV
Cr(VI)	Annex B and C	Uv-Vis	LabTech	UV-2100
PBBs &PBDEs	Annex A	GC-MSD	Thermo Fisher	TRACE GC/DSQ

Test Report

Report No.: BCT14LR-1750C

Date: Dec.29, 2014

Page 6 of 12

2. Phthalates (DBP, BBP, DEHP) and Hexabromocyclododecane(HBCDD) content

Test Method : Phthalates (DBP, BBP, DEHP)-Reference to EN 14372:2004

Organic solvent extraction and quantification by gas chromatography-mass selective detector (GC-MSD)

HBCDD-Reference to US EPA 3550C:2007 and US EPA 8270D: 2007

The submitted sample first by organic solvent ultrasonic extraction and quantification by gas Chromatography - mass selective detector (GC-MSD).

Test Result:

Test Item	Unit	MDL	Part No.			
			1	2	3	5
			Result			
Dibutyl phthalate (DBP)	mg/kg	30	N.D.	N.D.	N.D.	N.D.
Butyl benzyl phthalate (BBP)	mg/kg	30	N.D.	N.D.	N.D.	N.D.
Di-2-ethylhexyl phthalate (DEHP)	mg/kg	30	N.D.	N.D.	N.D.	N.D.
Hexabromocyclododecane(HBCDD)	mg/kg	10	N.D.	N.D.	N.D.	N.D.

Test Item	Unit	MDL	Part No.			
			6	7	8	10
			Result			
Dibutyl phthalate (DBP)	mg/kg	30	N.D.	N.D.	N.D.	N.D.
Butyl benzyl phthalate (BBP)	mg/kg	30	N.D.	N.D.	N.D.	N.D.
Di-2-ethylhexyl phthalate (DEHP)	mg/kg	30	N.D.	N.D.	N.D.	N.D.
Hexabromocyclododecane(HBCDD)	mg/kg	10	N.D.	N.D.	N.D.	N.D.

Test Item	Unit	MDL	Part No.			
			11	13	14	18
			Result			
Dibutyl phthalate (DBP)	mg/kg	30	N.D.	N.D.	N.D.	N.D.
Butyl benzyl phthalate (BBP)	mg/kg	30	N.D.	N.D.	N.D.	N.D.
Di-2-ethylhexyl phthalate (DEHP)	mg/kg	30	N.D.	N.D.	N.D.	N.D.
Hexabromocyclododecane(HBCDD)	mg/kg	10	N.D.	N.D.	N.D.	N.D.

Test Item	Unit	MDL	Part No.			
			20	21	22	23
			Result			
Dibutyl phthalate (DBP)	mg/kg	30	N.D.	N.D.	N.D.	N.D.
Butyl benzyl phthalate (BBP)	mg/kg	30	N.D.	N.D.	N.D.	N.D.
Di-2-ethylhexyl phthalate (DEHP)	mg/kg	30	N.D.	N.D.	N.D.	N.D.
Hexabromocyclododecane(HBCDD)	mg/kg	10	N.D.	N.D.	N.D.	N.D.

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Test Report

Report No.:BCT14LR-1750C

Date: Dec.29, 2014

Page 7 of 12

Test Item	Unit	MDL	Part No.			
			24	26	27	28
			Result			
Dibutyl phthalate (DBP)	mg/kg	30	N.D.	N.D.	N.D.	N.D.
Butyl benzyl phthalate (BBP)	mg/kg	30	N.D.	N.D.	N.D.	N.D.
Di-2-ethylhexyl phthalate (DEHP)	mg/kg	30	N.D.	N.D.	N.D.	N.D.
Hexabromocyclododecane(HBCDD)	mg/kg	10	N.D.	N.D.	N.D.	N.D.

Test Item	Unit	MDL	Part No.			
			29	30	32	33
			Result			
Dibutyl phthalate (DBP)	mg/kg	30	N.D.	N.D.	N.D.	N.D.
Butyl benzyl phthalate (BBP)	mg/kg	30	N.D.	N.D.	N.D.	N.D.
Di-2-ethylhexyl phthalate (DEHP)	mg/kg	30	N.D.	N.D.	N.D.	N.D.
Hexabromocyclododecane(HBCDD)	mg/kg	10	N.D.	N.D.	N.D.	N.D.

Test Item	Unit	MDL	Part No.			
			34	35	37	38
			Result			
Dibutyl phthalate (DBP)	mg/kg	30	N.D.	N.D.	N.D.	N.D.
Butyl benzyl phthalate (BBP)	mg/kg	30	N.D.	N.D.	N.D.	N.D.
Di-2-ethylhexyl phthalate (DEHP)	mg/kg	30	N.D.	N.D.	N.D.	N.D.
Hexabromocyclododecane(HBCDD)	mg/kg	10	N.D.	N.D.	N.D.	N.D.

Test Item	Unit	MDL	Part No.			
			39	42	43	44
			Result			
Dibutyl phthalate (DBP)	mg/kg	30	N.D.	N.D.	N.D.	N.D.
Butyl benzyl phthalate (BBP)	mg/kg	30	N.D.	N.D.	N.D.	N.D.
Di-2-ethylhexyl phthalate (DEHP)	mg/kg	30	N.D.	N.D.	N.D.	N.D.
Hexabromocyclododecane(HBCDD)	mg/kg	10	N.D.	N.D.	N.D.	N.D.

Test Item	Unit	MDL	Part No.			
			52	54	55	57
			Result			
Dibutyl phthalate (DBP)	mg/kg	30	N.D.	N.D.	N.D.	N.D.
Butyl benzyl phthalate (BBP)	mg/kg	30	N.D.	N.D.	N.D.	N.D.
Di-2-ethylhexyl phthalate (DEHP)	mg/kg	30	N.D.	N.D.	N.D.	N.D.
Hexabromocyclododecane(HBCDD)	mg/kg	10	N.D.	N.D.	N.D.	N.D.

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Remark: (1) N.D.= Not detected, less than Method Detection Limit (MDL).
(2) The part No. are derived from the Part 1 of the result summary.

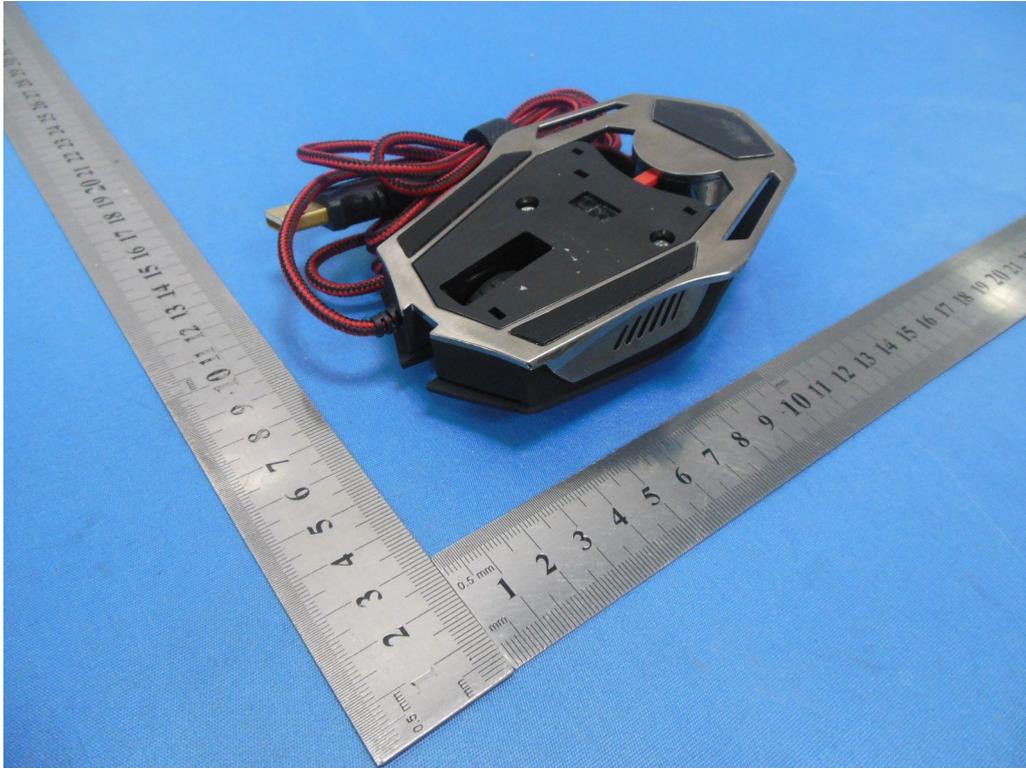
Sample photos:



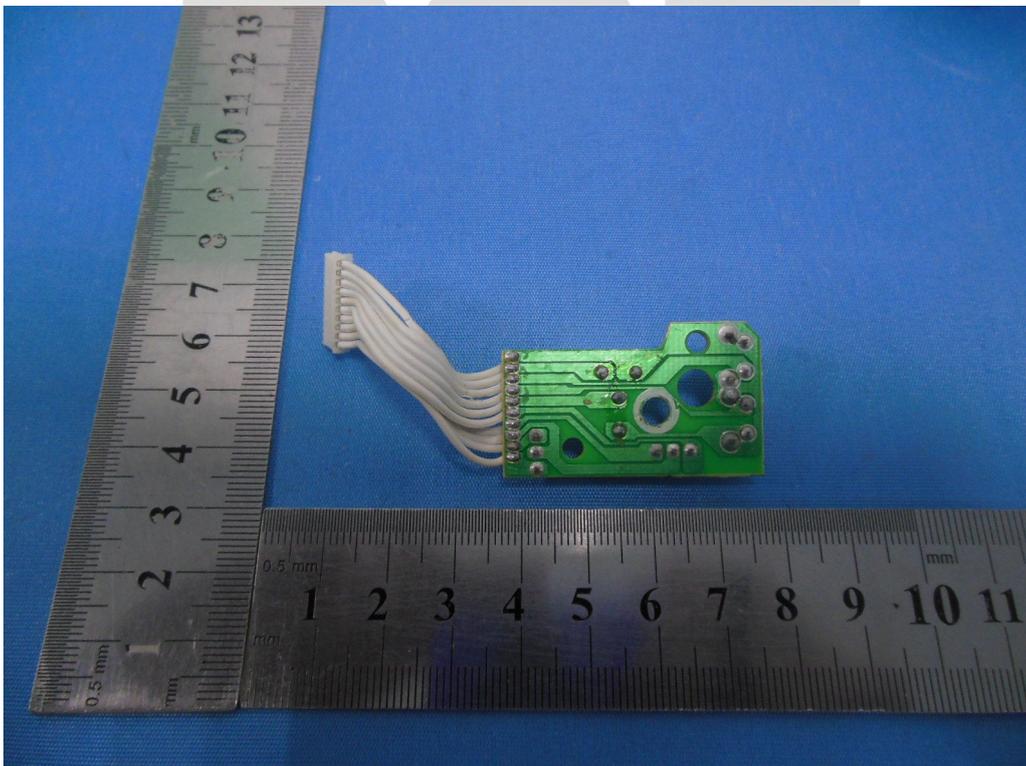
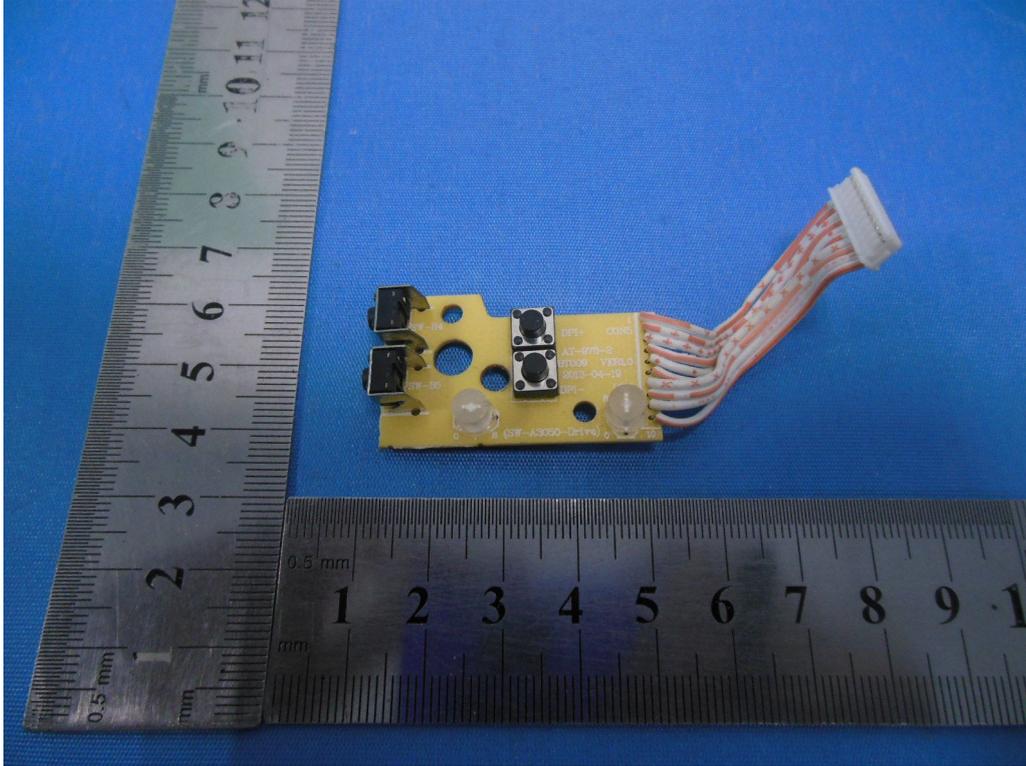
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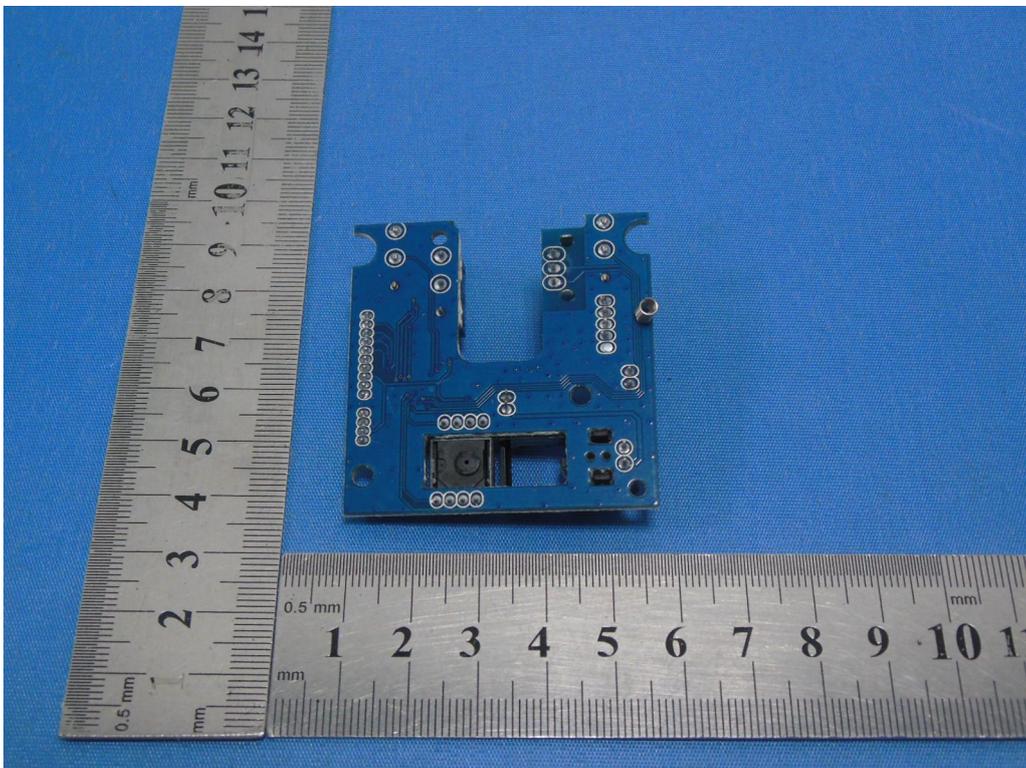
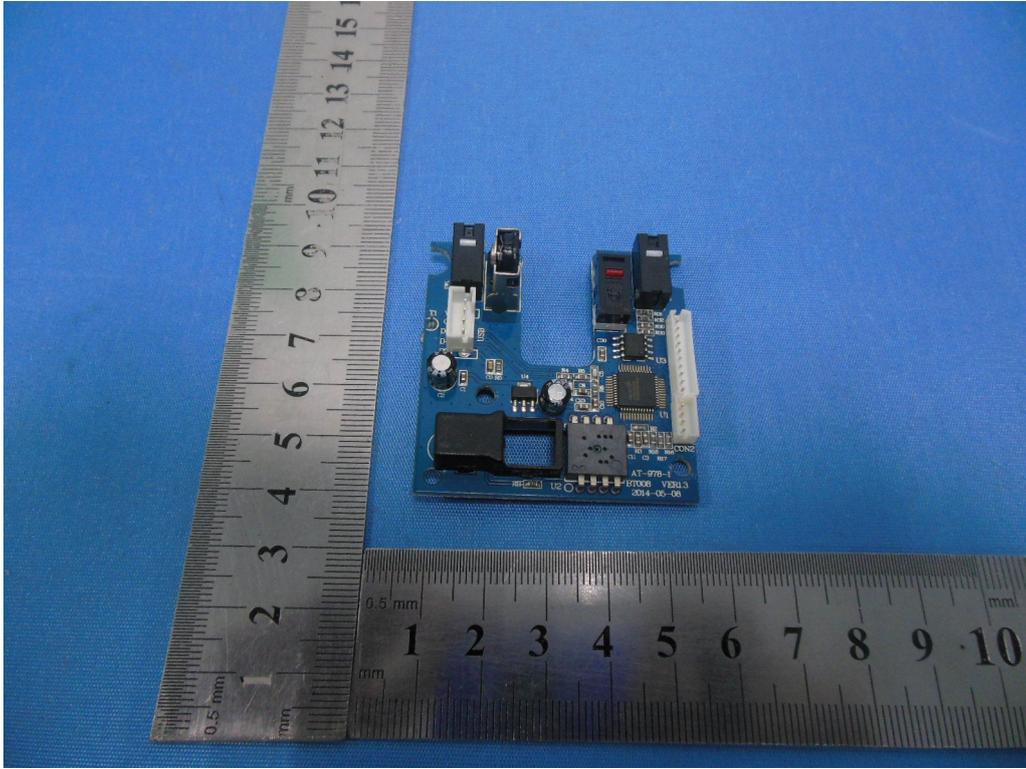
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