TEST REPORT

Report No.: SZ4231220-76915E Date: January 04, 2024

Dongguan Jizhi Electronic Technology Co., Ltd.
Room 101, Building 3,No. 1 Room 201, Building 1,No. 1, Baoyuan Road, Lianhu, Tangxia town Dongguan City, Guangdong province, China

Report on the submitted samples said to be:

Sample Description:	Encoder Key Switch
Style/Item No.:	02-0KNOB-E200
Country of Origin:	China
Manufacturer:	Dongguan Jizhi Electronic Technology Co., Ltd.
Supplier:	Dongguan Jizhi Electronic Technology Co., Ltd.
Sample Receiving Date:	December 20,2023
Testing Period:	December 20,2023 - December 31,2023
Result:	**Please refer to next page(s).**

Signed for and on behalf of

BACL

Checked by: Queenie Lee

Approved by: Len Xie

TEST REPORT

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Summary of Test Result:

TEST REQUEST	**CONCLUSION**
A RoHS Directive 2011/65/EU and amendment directives (EU) 2015/863 on Lead,Cadmium, Mercury, Hexavalent Chromium, PBBs & PBDEs, Phthalates(DBP, BBP,DEHP, DIBP) content	
A.1 XRF screening test	Pass
A.2 Wet Chemical Testing	
A.2.1 Chromium VI (Cr(VI)) Content	Pass
A.3 Phthalates(DBP, BBP, DEHP, DIBP)content	Pass

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A RoHS Directive 2011/65/EU and amendment directives (EU) 2015/863 on Lead,Cadmium, Mercury, Hexavalent Chromium, PBBs & PBDEs, Phthalates(DBP, BBP,DEHP, DIBP) content

A.1 XRF screening test

Test method: IEC 62321-3-1:2013

Seq No.	Tested Part(s)	Result				
		Pb	Cd	Hg	Cr	Br
(1)	Dark silvery plated silvery metal (button, encoder key switch)	BL	BL	BL	BL	---
(2)	Blue plated silvery metal (button, encoder key switch)	BL	BL	BL	BL	---
(3)	Transparent plastic (button, encoder key switch)	BL	BL	BL	BL	BL
(4)	Transparent plastic (frame, encoder key switch)	BL	BL	BL	BL	BL
(5)	Transparent soft plastic (washer, encoder key switch)	BL	BL	BL	BL	BL
(6)	Black soft plastic (washer, encoder key switch)	BL	BL	BL	BL	BL
(7)	Yellow soft plastic (washer, encoder key switch)	BL	BL	BL	BL	BL
(8)	Pink soft plastic (washer, encoder key switch)	BL	BL	BL	BL	BL
(9)	Red soft plastic (washer, encoder key switch)	BL	BL	BL	BL	BL
(10)	Prunosus soft plastic (washer, encoder key switch)	BL	BL	BL	BL	BL
(11)*1	Golden metal (pin, connector, PCB, encoder key switch)	OL (7219)	BL	BL	BL	---
(12)*1	Golden metal (holder, connector, PCB, encoder key switch)	OL (10381)	BL	BL	BL	---
(13)*	Golden metal (spring, connector, PCB, encoder key switch)	BL	BL	BL	X	---
(14)	Black plastic (button, switch, PCB, encoder key switch)	BL	BL	BL	BL	BL
(15)	Black plastic (cover, switch, PCB, encoder key switch)	BL	BL	BL	BL	BL
(16)*	Silvery metal (cover, switch, PCB, encoder key switch)	BL	BL	BL	X	---
(17)*	Silvery metal (disc, switch, PCB, encoder key switch)	BL	BL	BL	X	---
(18)	Silvery metal (sheet, switch, PCB, encoder key switch)	BL	BL	BL	BL	---
(19)	Silvery metal (pin, switch, PCB, encoder key switch)	BL	BL	BL	BL	---
(20)*	Black/white body (SMD resistor, PCB, encoder key switch)	BL	BL	BL	X	BL
(21)	Black printed white coated brown plastic with coppery metal (PCB, encoder key switch)	BL	BL	BL	BL	BL
(22)	Silvery solder (PCB, encoder key switch)	BL	BL	BL	BL	---

Note:
--- = Not Applicable.
* = Screening by XRF and detected by chemical method. The test result of chemical method please refer to next pages.
*1 = As claimed by the material declaration submitted by the client, the materials of the sample No. 11,12 are copper alloy. And according to RoHS directive 2011/65/EU and its amendments, Lead is exempted as an alloying element in Copper containing up to 4% (40000ppm) by weight.

Remark:

i Result 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 IEC62321-3-1:2013.

Element	Unit	Polymers	Metal	Composite Material
Cd	mg/kg	BL≤70-3σ<X <130+3σ≤OL	BL≤70-3σ<X <130+3σ≤OL	BL≤50-3σ<X <150+3σ≤OL
Pb	mg/kg	BL≤700-3σ<X <1300+3σ≤OL	BL≤700-3σ<X <1300+3σ≤OL	BL≤500-3σ<X <1500+3σ≤OL
Hg	mg/kg	BL≤700-3σ<X <1300+3σ≤OL	BL≤700-3σ<X <1300+3σ≤OL	BL≤500-3σ<X <1500+3σ≤OL
Cr	mg/kg	BL≤700-3σ<X	BL≤700-3σ<X	BL≤500-3σ<X
Br	mg/kg	BL≤300-3σ<X	--	BL≤250-3σ<X

Note:
BL = Below Limit
OL = Over Limit
IN = Inconclusive (questionable, need further chemical analysis)

ii The XRF screening test for RoHS elements – The reading may be different to the actual content in the sample be of non-uniformity composition.

iii The maximum permissible limit is quoted from the RoHS directive 2011/65/EU:

RoHS Restricted Substances	Maximum Concentration Value (mg/kg) (by weight in homogenous materials)
Cadmium (Cd)	100
Lead (Pb)	1000
Mercury (Hg)	1000
Hexavalent Chromium (Cr(VI))	1000
Polybrominated biphenyls (PBBs)	1000
Polybrominated diphenylethers (PBDEs)	1000

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.

A.2 Wet Chemical Testing

A.2.1 Chromium VI (Cr(VI)) Content

Chromium VI (Cr(VI)) Content(In metal)

Test method: IEC 62321-7-1:2015

Item	Unit	MDL	Result			Limit
			(13)	(16)	(17)	
hexavalent chromium(Cr(VI))	μg/cm²	0.10	N.D.	N.D.	N.D.	See Remark
Conclusion	/	/	**Pass**	**Pass**	**Pass**	/

Limit Remark:

a. The sample is positive for CrVI if the CrVI concentration is greater than 0.13μg/cm2. The sample coating is considered to contain CrVI

b. The sample is negative for CrVI if CrVI is ND (concentration less than 0.10μg/cm2). The coating is onsidered a non-CrVI based coating

c. The result between 0.10μg/cm2 and 0.13μg/cm2 is considered to be inconclusive -unavoidable coating variations may influence the determination

For corrosion protection coatings on metals: Information on storage conditions and production date of the tested sample is unavailable and thus results of Cr(VI) represent status of the sample at the time of testing.

Chromium VI (Cr(VI)) Content(In Non-metal)

Test method: IEC 62321-7-2:2017

Item	Unit	MDL	Result	Limit
			(20)	
hexavalent chromium(Cr(VI))	mg/kg	10	N.D.	1000
Conclusion	/	/	**Pass**	/

A.3 Phthalates(DBP, BBP, DEHP, DIBP)content

Test method: IEC 62321-8:2017

Item	Unit	MDL	Result					Limit
			(3)+(4)	(5)+(6)+(7)	(8)+(9)+(10)	(14)+(15)	(21)	
Dibutyl Phthalate(DBP)	mg/kg	30	N.D.	N.D.	N.D.	N.D.	N.D.	1000
Benzyl Butyl Phthalate(BBP)	mg/kg	30	N.D.	N.D.	N.D.	N.D.	N.D.	1000
Bis-(2-ethylhexyl) Phthalate (DEHP)	mg/kg	30	N.D.	N.D.	N.D.	N.D.	N.D.	1000
Diisobutyl phthalate(DIBP)	mg/kg	30	N.D.	N.D.	N.D.	N.D.	N.D.	1000
Conclusion	/	/	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	/

Note:
- N.D.= Not Detected or less than MDL
- MDL = Method Detection Limit
- "+" = Composite testing.

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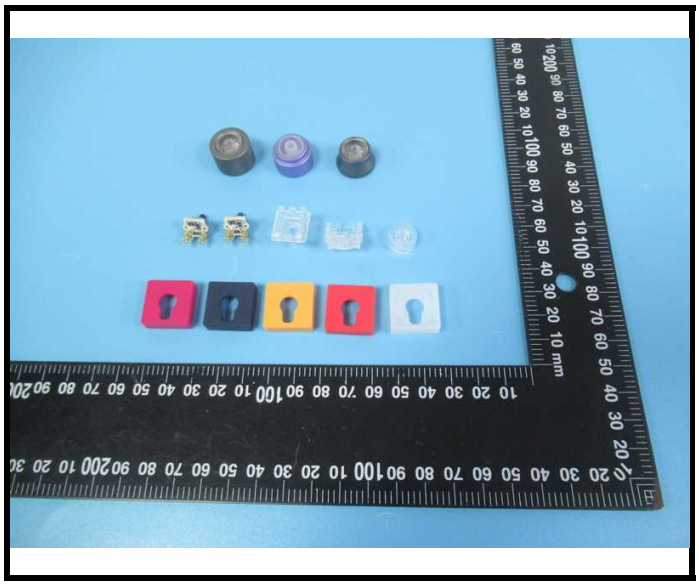
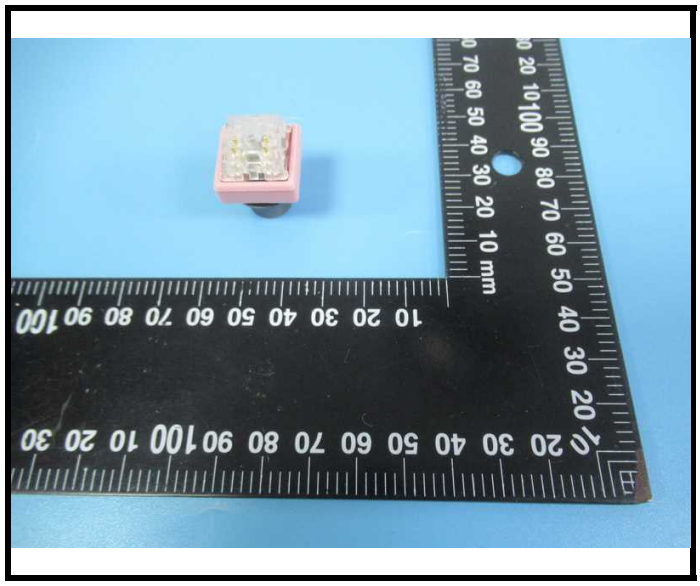
Photograph of Sample





BACL authenticate the photo on original report only

Statement:

1.This report cannot be reproduced except in full, without prior written approval of the Company.
2.Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 30 days only.
3.This report is valid only with a valid digital signature. The digital signature may be available only under the Adobe software above version 7.0.
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5.The information which provided by the applicant, such as sample description, sample name, material component, style/item No. , P.O. No. , manufacturer, age phase, the laboratory is not responsible for its authenticity and this information can affect the validity of the result in the test report.
6.The test samples were in good condition before testing.

*** End of Report ***