



# TEST REPORT

REPORT No.: **DTI201706091285-2-1**

Date:2017-06-14

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**Client Company: SHEN ZHEN STP&GB ELECTRONICS CO., LTD**

**Client Address: 7th Floor, Building B, Jinhuan, Dasan Village, Dashuikeng, Fucheng Street, Longhua New District, Shenzhen, China**

Report on the submitted samples said to be:

Sample Name : DIP INDUCTOR  
 Model No. : ZC2W, ZCTC, ZC3W, ZC4W, ZCWW, ZCT, ZCTW  
 Sample Receiving Date : June 09, 2017  
 Testing Period : From June 09, 2017 to June 14, 2017  
 Results : Please refer to next page(s).

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**Summary of Test Results:**


**TEST REQUEST**

**CONCLUSION**

A EU RoHS Directive 2011/65/EU and its amendment directives

**Pass**

Signed for and on behalf of  
DTI

Approved by:   
lab manager



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**Results:**

**A. EU RoHS Directive 2011/65/EU and its amendment directives on XRF**

Test method: With reference to IEC 62321-3-1:2013, Screening by X-ray Fluorescence Spectroscopy (XRF)

Seq. No.	Tested Part(s)	Results				
		Pb	Cd	Hg	Cr	Br
1	Black Rubber Jacket	BL	BL	BL	BL	BL
2	Yellow Ceramic Body	BL	BL	BL	BL	BL
3	Golden Metal Line	BL	BL	BL	X	BL
4	Green Ceramic Body	BL	BL	BL	BL	BL
5	Golden Metal Line	BL	BL	BL	X	BL
6	Black Ceramic Body	BL	BL	BL	BL	BL
7	Golden Metal Line	BL	BL	BL	X	BL
8	Black Rubber Jacket	BL	BL	BL	BL	BL
9	Black Ceramic Body	BL	BL	BL	BL	BL
10	Golden Metal Line	BL	BL	BL	X	BL
11	Metal Line	BL	BL	BL	X	BL
12	Black Rubber Jacket	BL	BL	BL	BL	BL
13	Black Ceramic Body	BL	BL	BL	BL	BL
14	Golden Metal Line	BL	BL	BL	X	BL
15	Metal Line	BL	BL	BL	X	BL
16	Black Rubber Jacket	BL	BL	BL	BL	BL
17	Black Ceramic Body	BL	BL	BL	BL	BL
18	Golden Metal Line	BL	BL	BL	X	BL
19	Metal Line	BL	BL	BL	X	BL
20	Black Rubber Jacket	BL	BL	BL	BL	BL

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Deesev Testing International Corp. (Shenzhen)  
德泽威技术检测(深圳)有限公司

5/F, 1st Tower of Gaoxinqi High-tech Zone, 67th Zone, Liuxian 1st Road, Bao'an, Shenzhen, Guangdong, China  
中国广东省深圳市宝安区留仙一路67区高新奇战略新兴产业园二期1号楼5楼  
Tel: +86-755-66683088 Fax: +86-755-66683099



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Seq. No.	Tested Part(s)	Results				
		Pb	Cd	Hg	Cr	Br
21	Black Ceramic Body	BL	BL	BL	BL	BL
22	Golden Metal Line	BL	BL	BL	X	BL
23	Metal Line	BL	BL	BL	X	BL
24	Green Plastic Body	BL	BL	BL	BL	BL
25	Inner Parts	BL	BL	BL	BL	BL
26	Metal Line	BL	BL	BL	X	BL
27	Yellow Tape	BL	BL	BL	BL	BL

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德泽威技术检测(深圳)有限公司

5/F, 1st Tower of Gaoxinqi High-tech Zone, 67th Zone, Liuxian 1st Road, Bao'an, Shenzhen, Guangdong, China  
中国广东省深圳市宝安区留仙一路67区高新奇战略新兴产业二期1号楼5楼  
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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

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5/F, 1st Tower of Gaoxinqi High-tech Zone, 67th Zone, Liuxian 1st Road, Bao'an, Shenzhen, Guangdong, China  
中国广东省深圳市宝安区留仙一路67区高新奇战略新兴产业二期1号楼5楼  
Tel: +86-755-66683088 Fax: +86-755-66683099



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(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 2015/863/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
Polybrominate ddiphenylethers (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.

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5/F, 1st Tower of Gaoxinqi High-tech Zone, 67th Zone, Liuxian 1st Road, Bao'an, Shenzhen, Guangdong, China  
中国广东省深圳市宝安区留仙一路67区高新奇战略新兴产业园二期1号楼5楼  
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**B. The Test Results of Chemical Method:**

Test method:

Lead, Cadmium, Mercury Content :

With reference to IEC 62321-4:2013 and IEC62321-5:2013, by acid digestion and analysis was performed by Inductively Coupled Plasma- Atomic Emission Spectrophotometer (ICP-AES)

Hexavalent Chromium Content (For metal material):

With reference to IEC 62321-7-1:2015, by boiling-water-extraction and analysis was performed by UV-visible spectrophotometer (UV-Vis)

Hexavalent Chromium Content (For non-metal material):

With reference to IEC 62321-7-2:2017, by alkaline digestion and analysis was performed by UV-visible spectrophotometer (UV-Vis)

PBBs & PBDEs Content:

With reference to IEC 62321-6:2015, by solvent extraction and analysis was performed by gas chromatographic/ mass spectrometer (GC-MS)

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德泽威技术检测(深圳)有限公司

5/F, 1st Tower of Gaoxinqi High-tech Zone, 67th Zone, Liuxian 1st Road, Bao'an, Shenzhen, Guangdong, China  
中国广东省深圳市宝安区留仙一路67区高新奇战略新兴产业园二期1号楼5楼  
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1) The test results of Cr (VI)

Item	MDL( $\mu\text{g}/\text{cm}^2$ )	Results					Limit
		3	5	7	10	11	
Hexavalent Chromium (Cr (VI))	0.05	Negative	Negative	Negative	Negative	Negative	#
<b>Conclusion</b>	/	Pass	Pass	Pass	Pass	Pass	/

Item	MDL( $\mu\text{g}/\text{cm}^2$ )	Results					Limit
		14	15	18	19	22	
Hexavalent Chromium (Cr (VI))	0.05	Negative	Negative	Negative	Negative	Negative	#
<b>Conclusion</b>	/	Pass	Pass	Pass	Pass	Pass	/

Item	MDL( $\mu\text{g}/\text{cm}^2$ )	Results		Limit
		23	26	
Hexavalent Chromium (Cr (VI))	0.05	Negative	Negative	#
<b>Conclusion</b>	/	Pass	Pass	/

Note:

- Negative = Absence of Cr(VI) on the tested areas.
  - MDL = Method Detection Limit.
  - mg/kg = ppm
  - Negative= Sample Cr(VI) concentration is less than  $0.10 \mu\text{g}/\text{cm}^2$ .
  - Positive = Sample Cr(VI) concentration is greater than  $0.13 \mu\text{g}/\text{cm}^2$ .
  - # =
- 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.



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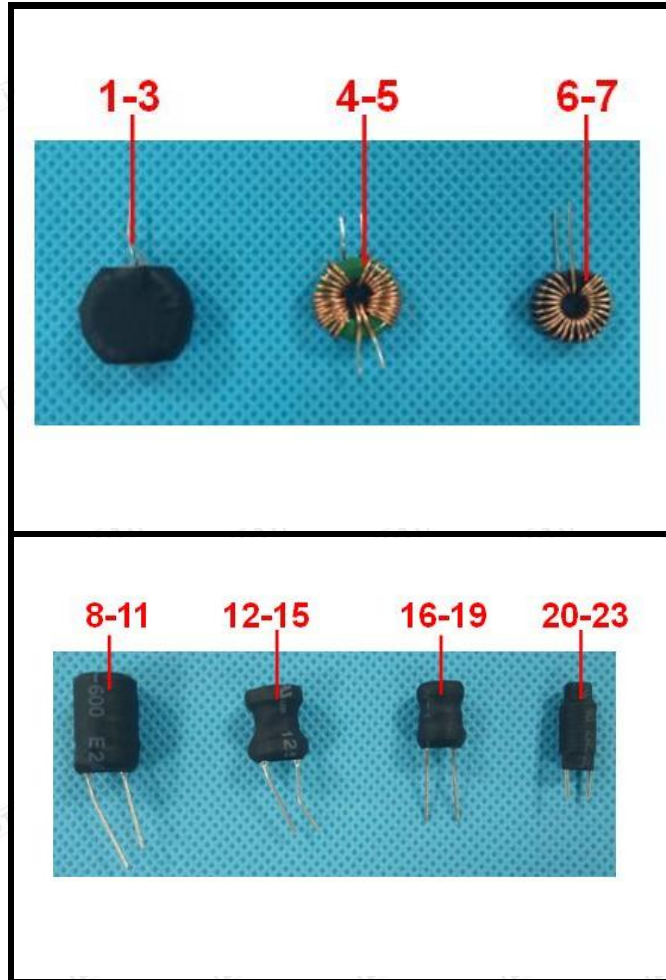
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## Appendix Photograph of Sample



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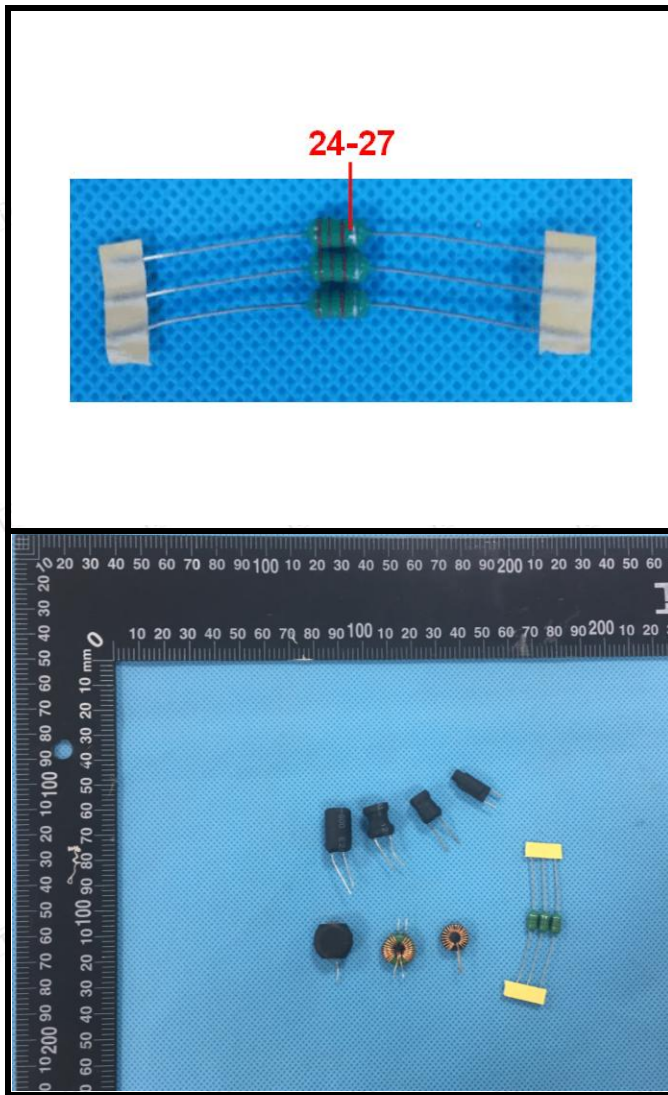


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 德泽威技术检测(深圳)有限公司

5/F, 1st Tower of Gaoxinqi High-tech Zone, 67th Zone, Liuxian 1st Road, Bao'an, Shenzhen, Guangdong, China  
 中国广东省深圳市宝安区留仙一路67区高新奇战略新兴产业园二期1号楼5楼  
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DTI authenticate the photo on original report only

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



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5/F, 1st Tower of Gaoxinqi High-tech Zone, 67th Zone, Liuxian 1st Road, Bao'an, Shenzhen, Guangdong, China  
中国广东省深圳市宝安区留仙一路67区高新奇战略新兴产业园二期1号楼5楼  
Tel: +86-755-66683088 Fax: +86-755-66683099