

Test Report No.: 48.400.23.1087.01-00/20

Rev.: 00

Dated: 2023-11-09



Applicant: Jiangsu Acrel Electrical Manufacturing. Co., Ltd.
Address: No. 5, Dongmeng Road, Nanzha Street, Jiangyin, Jiangsu, P. R. China
Attn: Han Zhonghua
Sample Description: Voltage transformer
Model No.: JDG4-0.5
Sample Received Date: 2023-10-12
Test Period: 2023-10-12~2023-10-27
Test Location: TÜV SÜD Certification and Testing (China) Co., Ltd.
Shanghai Branch, SHA Chemical Lab.
Purpose of examination: Verification of RoHS (Restriction of Hazardous Substances) directive 2011/65/EU and its amendment (EU) 2015/863 on submitted samples
Test Results: Refer to following page(s)
Remark:
- The result relates only to the items tested.
- The reference model(s) was declared by client.
- The test sample(s) and item(s) was specified by client.

TÜV SÜD Certification and Testing (China) Co., Ltd.
TÜV SÜD Group
Prepared by:

Reviewed by:



Mr. Yiwei CHEN



Mr. Feng ZHANG

Disclaimer Measurement Uncertainty: Unless otherwise agreed upon, Pass or Fail verdicts are given base on the measured values without any considerations of measurement uncertainties. Please note, every test method has a measurement uncertainty which has been evaluated by the laboratory according to ISO/IEC 17025 requirements. By taking measurement uncertainties into account it might happen that measured values can neither be assessed as Pass nor as Fail. Any use for advertising purposes must be granted in writing. This test report may only be quoted in full. This report is the result of a single examination of the object in question and is not generally applicable evaluation of the quality of other products in regular production. For further details, please see testing and certification regulation, chapter A-3.4.

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SUMMARY OF TEST RESULTS

No.	Test Requested	Conclusion	Remarks
1.	Heavy Metal (Pb, Cd, Hg and Cr VI) Content	PASS	
2.	Polybrominated Biphenyls (PBBs) and Polybrominated Diphenyl Ethers (PBDEs) Content	PASS	
3.	Phthalates (DEHP, BBP, DBP and DIBP) Content	PASS	

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1. TESTED SUBJECT DESCRIPTION

Sample No.	Description (Material, colour)	Photograph/Location
01	Silvery metal plate	
02	Green paper label	
03	Silvery metal bracket	
04	Silver metal silicon steel sheet	
05	Golden metal wire	

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Sample No.	Description (Material, colour)	Photograph/Location
06	Black hard plastic frame	
07	Black hard plastic cover	
08	Orange and white soft plastic tube	
09	Silvery metal packing belt	
10	Silvery metal buckle	



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Sample No.	Description (Material, colour)	Photograph/Location
11	Gray hard plastic skeleton	
12	Brown soft plastic insulation paper	
13	Blue soft plastic insulation paper	
14	Black hard plastic cover	
15	White paper adhesive tape	



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Sample No.	Description (Material, colour)	Photograph/Location
16	Transparent glue	
17	Translucent silica gel	
18	Silvery metal slice	
19	Transparent grease	
20	Silvery soft plastic label	



Sample No.	Description (Material, colour)	Photograph/Location
21	Gray ink	
22	Transparent ink	
23	Silvery metal screw	
24	Silvery metal gasket	
25	Silvery metal shrapnel	

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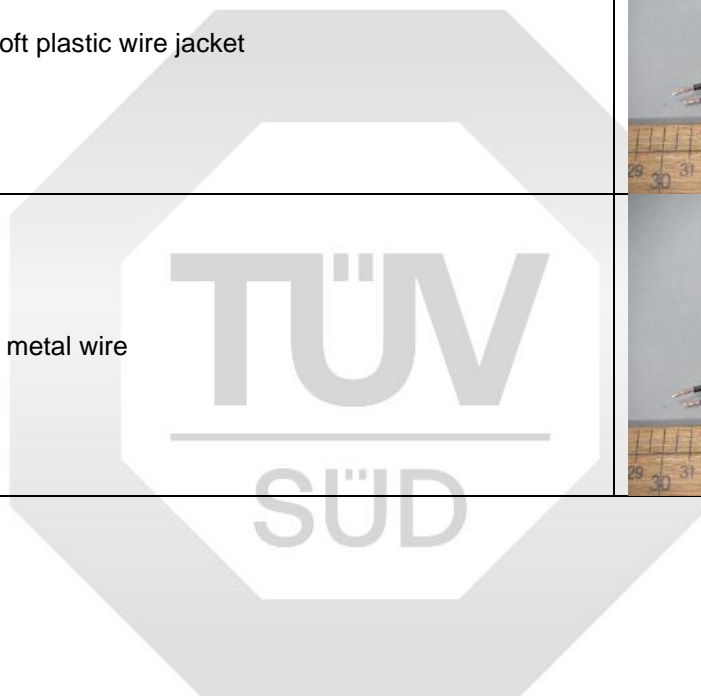
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Sample No.	Description (Material, colour)	Photograph/Location
26	Silvery metal screw	
27	Silvery metal gasket	
28	Silver metal solder	
29	White textile adhesive tape	
30	Yellow hard plastic slice	



Sample No.	Description (Material, colour)	Photograph/Location
31	Transparent soft plastic adhesive tape	
32	Black soft plastic wire jacket	
33	Golden metal wire	

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2. TEST RESULT(S)

2.1 SCREENING TEST

Test method: With reference to EN 62321-1:2013, EN IEC 62321-2:2021, EN 62321-3-1:2014 and EN 62321-8:2017.

For Heavy Metals and Flame Retardants, analyzed by Energy Dispersive X-ray Fluorescence Spectrometer (XRF); for phthalates, analyzed by Gas Chromatography and Mass Spectrometer (GC-MS).

Sample No.	Heavy Metals and Flame Retardants					Phthalates			
	Cd	Pb	Hg	Cr	Br	DEHP	BBP	DBP	DIBP
01	BL	BL	BL	BL	NA	NA	NA	NA	NA
02	BL	BL	BL	BL	BL	BL	BL	BL	BL
03	BL	BL	BL	BL	NA	NA	NA	NA	NA
04	BL	BL	BL	Inc. ^(a)	NA	NA	NA	NA	NA
05	BL	BL	BL	BL	NA	NA	NA	NA	NA
06	BL	BL	BL	BL	Inc. ^(a)	BL	BL	BL	BL
07	BL	BL	BL	BL	BL	BL	BL	BL	BL
08	BL	BL	BL	BL	BL	BL	BL	BL	BL
09	BL	BL	BL	Inc. ^(a)	NA	NA	NA	NA	NA
10	BL	BL	BL	BL	NA	NA	NA	NA	NA
11	BL	BL	BL	BL	BL	BL	BL	BL	BL
12	BL	BL	BL	BL	BL	BL	BL	BL	BL
13	BL	BL	BL	BL	BL	BL	BL	BL	BL
14	BL	BL	BL	BL	Inc. ^(a)	BL	BL	BL	BL
15	BL	BL	BL	BL	BL	BL	BL	BL	BL
16	BL	BL	BL	BL	BL	BL	BL	BL	BL
17	BL	BL	BL	BL	BL	BL	BL	BL	BL
18	BL	BL	BL	BL	NA	NA	NA	NA	NA
19	BL	BL	BL	BL	BL	BL	BL	BL	BL
20	BL	BL	BL	BL	BL	BL	BL	BL	BL

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Sample No.	Heavy Metals and Flame Retardants					Phthalates			
	Cd	Pb	Hg	Cr	Br	DEHP	BBP	DBP	DIBP
21	BL	BL	BL	BL	BL	BL	BL	BL	BL
22	BL	BL	BL	BL	BL	BL	BL	BL	BL
23	BL	BL	BL	BL	NA	NA	NA	NA	NA
24	BL	BL	BL	BL	NA	NA	NA	NA	NA
25	BL	BL	BL	Inc. ^(a)	NA	NA	NA	NA	NA
26	BL	BL	BL	BL	NA	NA	NA	NA	NA
27	BL	BL	BL	BL	NA	NA	NA	NA	NA
28	BL	BL	BL	BL	NA	NA	NA	NA	NA
29	BL	BL	BL	BL	BL	BL	BL	BL	BL
30	BL	BL	BL	BL	BL	BL	BL	BL	BL
31	BL	BL	BL	BL	BL	BL	BL	BL	BL
32	BL	BL	BL	BL	BL	BL	BL	BL	BL
33	BL	BL	BL	BL	NA	NA	NA	NA	NA

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Remark:

- "BL" denotes below limit
- "OL" denotes over limit
- "Inc." denotes inconclusive
- "NA" denotes not applicable
- "(a)" denotes further confirmation test was conducted, results are listed in 2.2 and 2.3.
- XRF screening limits in mg/kg for regulated elements in various matrices

ELEMENT	POLYMER		
	BL	INCONCLUSIVE	OL
Cd	$X \leq (70-3\sigma)$	$(70-3\sigma) < X < (130+3\sigma)$	$X \geq (130+3\sigma)$
Pb	$X \leq (700-3\sigma)$	$(700-3\sigma) < X < (1300+3\sigma)$	$X \geq (1300+3\sigma)$
Hg	$X \leq (700-3\sigma)$	$(700-3\sigma) < X < (1300+3\sigma)$	$X \geq (1300+3\sigma)$
Br	$X \leq (300-3\sigma)$	$X > (300-3\sigma)$	NA
Cr	$X \leq (700-3\sigma)$	$X > (700-3\sigma)$	NA

ELEMENT	METAL		
	BL	INCONCLUSIVE	OL
Cd	$X \leq (70-3\sigma)$	$(70-3\sigma) < X < (130+3\sigma)$	$X \geq (130+3\sigma)$
Pb	$X \leq (700-3\sigma)$	$(700-3\sigma) < X < (1300+3\sigma)$	$X \geq (1300+3\sigma)$
Hg	$X \leq (700-3\sigma)$	$(700-3\sigma) < X < (1300+3\sigma)$	$X \geq (1300+3\sigma)$
Cr	$X \leq (700-3\sigma)$	$X > (700-3\sigma)$	NA

ELEMENT	COMPLEX MATERIAL		
	BL	INCONCLUSIVE	OL
Cd	$X \leq (50-3\sigma)$	$(50-3\sigma) < X < (150+3\sigma)$	$X \geq (150+3\sigma)$
Pb	$X \leq (500-3\sigma)$	$(500-3\sigma) < X < (1500+3\sigma)$	$X \geq (1500+3\sigma)$
Hg	$X \leq (500-3\sigma)$	$(500-3\sigma) < X < (1500+3\sigma)$	$X \geq (1500+3\sigma)$
Br	$X \leq (250-3\sigma)$	$X > (250-3\sigma)$	NA
Cr	$X \leq (500-3\sigma)$	$X > (500-3\sigma)$	NA

- Screening limits in mg/kg for regulated phthalates in various matrices

PHthalATES	BL	INCONCLUSIVE
DEHP	$X < 600$	$X \geq 600$
BBP	$X < 600$	$X \geq 600$
DBP	$X < 600$	$X \geq 600$
DIBP	$X < 600$	$X \geq 600$

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2.2 HEAVY METAL CONTENT

Test method: With reference to EN 62321-4:2014 /A1:2017, EN 62321-5:2014, EN 62321-7-1:2015 and EN 62321-7-2:2017, analyzed by Inductively Coupled Plasma Optical Emission Spectrometer (ICP-OES) and Ultraviolet-visible spectrophotometer (UV-Vis).

[Reporting Limit: 2.0 mg/kg for Cadmium; 5.0 mg/kg or 0.10 µg/cm² for Hexavalent Chromium, 10.0 mg/kg for Lead and Mercury.]

Sample No.	Result(s)				
	Total Cadmium	Hexavalent Chromium	Hexavalent Chromium	Total Mercury	Total Lead
03					
08					
24					
Unit	mg/kg	mg/kg	µg/cm ²	mg/kg	mg/kg
RoHS Requirement	100	1000	Negative [#]	1000	1000

Remark:

- "mg/kg" denotes milligram per kilogram
- "µg/cm²" denotes micrograms per square centimeter
- "<" denotes less than
- "Positive" denotes the absorbance value of sample is > 0.13 µg/cm², the sample is considered to be positive for Hexavalent Chromium.
- "Inconclusive" denotes the absorbance value of sample is ≥ 0.10 µg/cm² and ≤ 0.13 µg/cm², the sample is considered to be Inconclusive for Hexavalent Chromium.
- "Negative" denotes the absorbance value of sample is < 0.10 µg/cm², the sample is considered to be negative for Hexavalent Chromium.
- "#" According to DIRECTIVE 2011/65/EU Article 4(1) and Annex II. While, positive means the presence of CrVI on tested areas and the result(s) was (were) regarded as in conflict with European Parliament and Council Directive 2011/65/EU, Article 4(1) and Annex II.
- "--" denotes tested by XRF, result is listed in 2.1

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2.3 POLYBROMINATED BIPHENYLS (PBBs) AND POLYBROMINATED DIPHENYL ETHERS (PBDEs) CONTENT

Test Method: With reference to EN 62321-6:2015, extracted by toluene and analyzed by Gas Chromatography and Mass Spectrometer (GC-MS). [Reporting Limit : 5 mg/kg]

Test Item		Result(s) [mg/kg]		RoHS Requirement [mg/kg]
		05	13	
PBBs	Monobromobiphenyl	<5	<5	-
	Dibromobiphenyl	<5	<5	-
	Tribromobiphenyl	<5	<5	-
	Tetrabromobiphenyl	<5	<5	-
	Pentabromobiphenyl	<5	<5	-
	Hexabromobiphenyl	<5	<5	-
	Heptabromobiphenyl	<5	<5	-
	Octabromobiphenyl	<5	<5	-
	Nonabromobiphenyl	<5	<5	-
	Decabromobiphenyl	<5	<5	-
	Sum of detected PBBs		<50	<50
PBDEs	Monobromodiphenyl ether	<5	<5	-
	Dibromodiphenyl ether	<5	<5	-
	Tribromodiphenyl ether	<5	<5	-
	Tetrabromodiphenyl ether	<5	<5	-
	Pentabromodiphenyl ether	<5	<5	-
	Hexabromodiphenyl ether	<5	<5	-
	Heptabromodiphenyl ether	<5	<5	-
	Octabromodiphenyl ether	<5	<5	-
	Nonabromodiphenyl ether	<5	<5	-
	Decabromodiphenyl ether	<5	<5	-
	Sum of detected PBDEs		<50	<50

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Remark:

- "mg/kg" denotes milligram per kilogram
- "<" denotes less than

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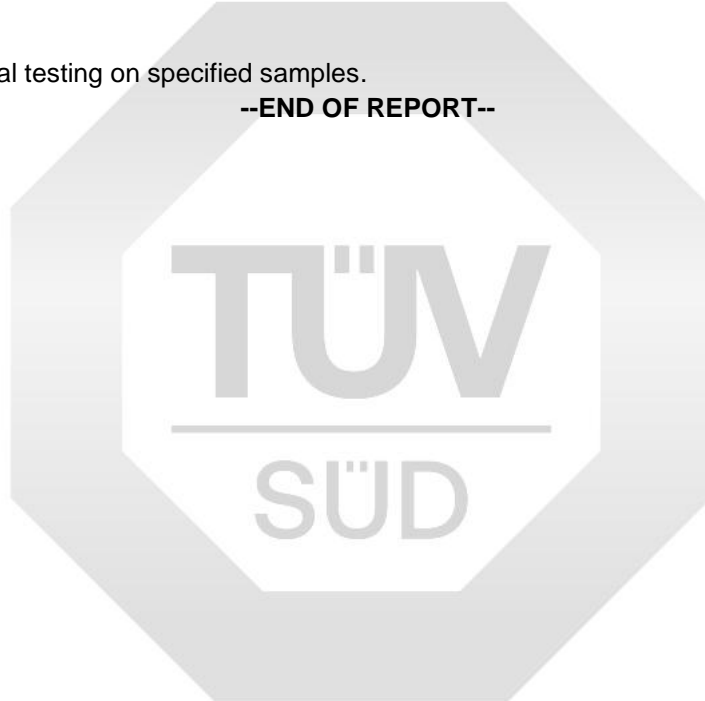
APPENDIX I: Product Model

Product: Voltage transformer	Test model: JDG4-0.5
	

Remark:

- 1. The report covers material testing on specified samples.

--END OF REPORT--



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