



Test Report

No.: ETR23503014

Date: 24-May-2023

Page: 1 of 12

JIANN WA ELECTRONICS CO., LTD.

NO.844, SEC. 1, GANGBU RD., WUGI DIST., TAICHUNG CITY, TAIWAN, R. O. C.

The following sample(s) was/were submitted and identified by the applicant as:

Sample Submitted By : JIANN WA ELECTRONICS CO., LTD.

Sample Name : LED

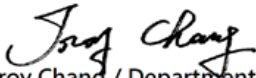
Sample Receiving Date : 17-May-2023

Testing Period : 17-May-2023 to 24-May-2023

Test Requested : (1) As specified by client, with reference to RoHS 2011/65/EU Annex II and amending Directive (EU) 2015/863 to determine Cadmium, Lead, Mercury, Cr(VI), PBBs, PBDEs, DBP, BBP, DEHP, DIBP contents in the submitted sample(s).
(2) Please refer to next pages for the other item(s).

Test Results : Please refer to following pages.

Conclusion : (1) Based on the performed tests on submitted sample(s), the test results of Cadmium, Lead, Mercury, Cr(VI), PBBs, PBDEs, DBP, BBP, DEHP, DIBP comply with the limits as set by RoHS Directive (EU) 2015/863 amending Annex II to Directive 2011/65/EU.


Troy Chang / Department Manager
Signed for and on behalf of
SGS TAIWAN LTD.
Chemical Laboratory - Taipei



PIN CODE: 160966EF

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Test Report

No.: ETR23503014

Date: 24-May-2023

Page: 2 of 12

JIANN WA ELECTRONICS CO., LTD.

NO.844, SEC. 1, GANGBU RD., WUGI DIST., TAICHUNG CITY, TAIWAN, R. O. C.

Test Part Description

- No.1 : TRANSPARENT PLASTIC
No.2 : PLATING LAYER OF SILVER COLORED METAL
No.3 : BASE MATERIAL OF SILVER COLORED METAL

Test Result(s)

Test Item(s)	Method	Unit	MDL	Result			Limit
				No.1	No.2	No.3	
Cadmium (Cd)	With reference to IEC 62321-5: 2013, analysis was performed by ICP-OES.	mg/kg	2	n.d.	---	---	100
Lead (Pb)	With reference to IEC 62321-5: 2013, analysis was performed by ICP-OES.	mg/kg	2	n.d.	---	---	1000
Mercury (Hg)	With reference to IEC 62321-4: 2013+ AMD1: 2017, analysis was performed by ICP-OES.	mg/kg	2	n.d.	---	---	1000
Hexavalent Chromium Cr(VI)	With reference to IEC 62321-7-2: 2017, analysis was performed by UV-VIS.	mg/kg	8	n.d.	---	---	1000
Cadmium (Cd)	IEC 62321-5: 2013 application of modified digestion by surface etching, analysis was performed by ICP-OES.	mg/kg	2	---	n.d.	---	100
Lead (Pb)	IEC 62321-5: 2013 application of modified digestion by surface etching, analysis was performed by ICP-OES.	mg/kg	2	---	n.d.	---	1000
Mercury (Hg)	IEC 62321-4: 2013+AMD1: 2017 application of modified digestion by surface etching, analysis was performed by ICP-OES.	mg/kg	2	---	n.d.	---	1000
Hexavalent Chromium Cr(VI) (#2)	With reference to IEC 62321-7-1: 2015, analysis was performed by UV-VIS.	µg/cm ²	0.1	---	n.d.	n.d.	-

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Test Report

No.: ETR23503014

Date: 24-May-2023

Page: 3 of 12

JIANN WA ELECTRONICS CO., LTD.

NO.844, SEC. 1, GANGBU RD., WUGI DIST., TAICHUNG CITY, TAIWAN, R. O. C.

Test Item(s)	Method	Unit	MDL	Result			Limit
				No.1	No.2	No.3	
Cadmium (Cd)	With reference to IEC 62321-5: 2013, analysis was performed by ICP-OES.	mg/kg	2	---	---	n.d.	100
Lead (Pb)	With reference to IEC 62321-5: 2013, analysis was performed by ICP-OES.	mg/kg	2	---	---	n.d.	1000
Mercury (Hg)	With reference to IEC 62321-4: 2013+ AMD1: 2017, analysis was performed by ICP-OES.	mg/kg	2	---	---	n.d.	1000
Monobromobiphenyl	With reference to IEC 62321-6: 2015, analysis was performed by GC/MS.	mg/kg	5	n.d.	---	---	-
Dibromobiphenyl		mg/kg	5	n.d.	---	---	-
Tribromobiphenyl		mg/kg	5	n.d.	---	---	-
Tetrabromobiphenyl		mg/kg	5	n.d.	---	---	-
Pentabromobiphenyl		mg/kg	5	n.d.	---	---	-
Hexabromobiphenyl		mg/kg	5	n.d.	---	---	-
Heptabromobiphenyl		mg/kg	5	n.d.	---	---	-
Octabromobiphenyl		mg/kg	5	n.d.	---	---	-
Nonabromobiphenyl		mg/kg	5	n.d.	---	---	-
Decabromobiphenyl		mg/kg	5	n.d.	---	---	-
Sum of PBBs		mg/kg	-	n.d.	---	---	1000
Monobromodiphenyl ether		mg/kg	5	n.d.	---	---	-
Dibromodiphenyl ether		mg/kg	5	n.d.	---	---	-
Tribromodiphenyl ether		mg/kg	5	n.d.	---	---	-
Tetrabromodiphenyl ether		mg/kg	5	n.d.	---	---	-
Pentabromodiphenyl ether		mg/kg	5	n.d.	---	---	-
Hexabromodiphenyl ether		mg/kg	5	n.d.	---	---	-
Heptabromodiphenyl ether		mg/kg	5	n.d.	---	---	-
Octabromodiphenyl ether		mg/kg	5	n.d.	---	---	-
Nonabromodiphenyl ether		mg/kg	5	n.d.	---	---	-
Decabromodiphenyl ether		mg/kg	5	n.d.	---	---	-
Sum of PBDEs		mg/kg	-	n.d.	---	---	1000
Butyl benzyl phthalate (BBP)	With reference to IEC 62321-8: 2017, analysis was performed by GC/MS.	mg/kg	50	n.d.	---	---	1000
Dibutyl phthalate (DBP)		mg/kg	50	n.d.	---	---	1000
Di-(2-ethylhexyl) phthalate (DEHP)		mg/kg	50	n.d.	---	---	1000
Diisobutyl phthalate (DIBP)		mg/kg	50	n.d.	---	---	1000

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Test Report

No.: ETR23503014

Date: 24-May-2023

Page: 4 of 12

JIANN WA ELECTRONICS CO., LTD.

NO.844, SEC. 1, GANGBU RD., WUGI DIST., TAICHUNG CITY, TAIWAN, R. O. C.

Test Item(s)	Method	Unit	MDL	Result			Limit
				No.1	No.2	No.3	
Diisodecyl phthalate (DIDP) (CAS No.: 26761-40-0, 68515-49-1)	With reference to IEC 62321-8: 2017, analysis was performed by GC/MS.	mg/kg	50	n.d.	---	---	-
Diisononyl phthalate (DINP) (CAS No.: 28553-12-0, 68515-48-0)		mg/kg	50	n.d.	---	---	-
Di-n-octyl phthalate (DNOP) (CAS No.: 117-84-0)		mg/kg	50	n.d.	---	---	-
Medium Chain Chlorinated Paraffins(C14-C17) (MCCP) (CAS No.: 85535-85-9)	With reference to ISO 18219-2: 2021, analysis was performed by GC/MS.	mg/kg	50	n.d.	---	---	-
Tetrabromobisphenol A (TBBP-A) (CAS No.: 79-94-7)	With reference to RSTS-E&E-121, analysis was performed by LC/MS.	mg/kg	10	n.d.	---	---	-

Note :

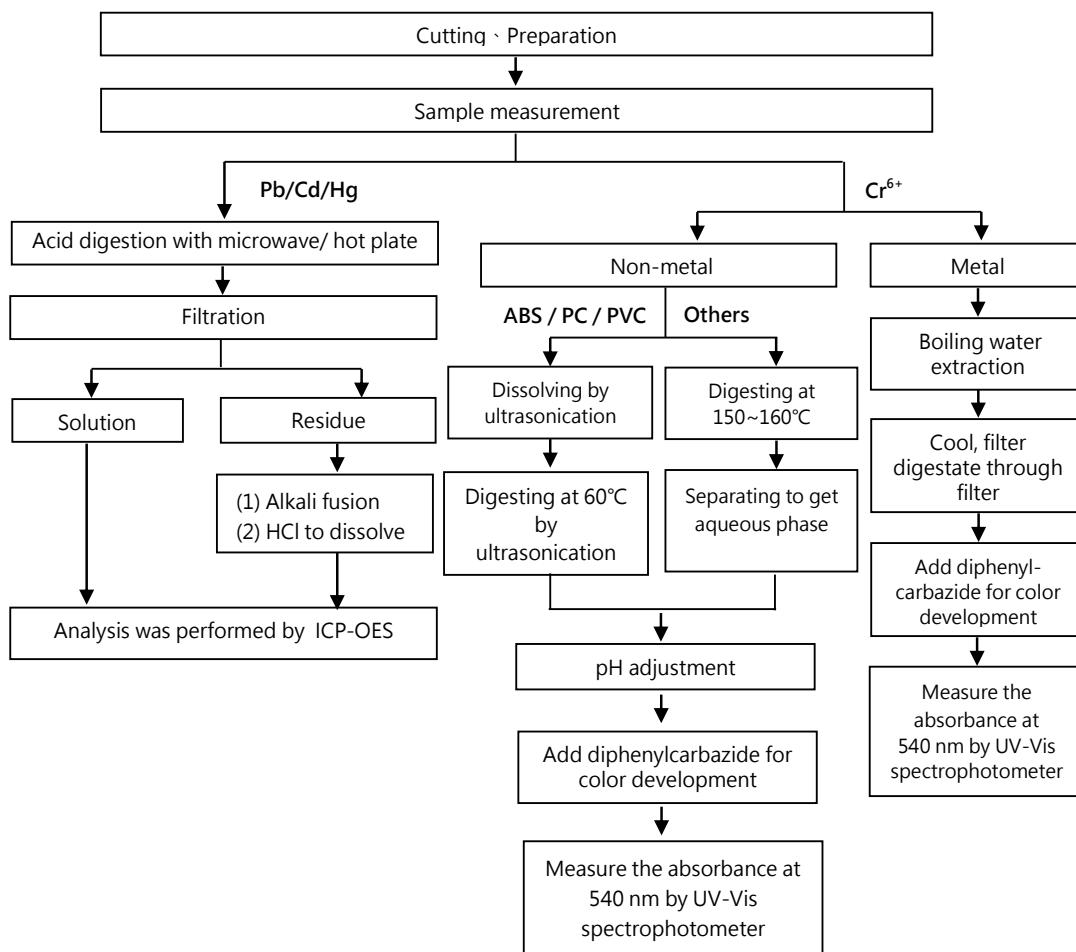
1. mg/kg = ppm ; 0.1wt% = 0.1% = 1000ppm
2. MDL = Method Detection Limit
3. n.d. = Not Detected (Less than MDL)
4. "-" = Not Regulated
5. "---" = Not Conducted
6. (#2) =
 - a. The sample is positive for Cr(VI) if the Cr(VI) concentration is greater than 0.13 $\mu\text{g}/\text{cm}^2$. The sample coating is considered to contain Cr(VI).
 - b. The sample is negative for Cr(VI) if Cr(VI) is n.d. (concentration less than 0.10 $\mu\text{g}/\text{cm}^2$). The coating is considered a non-Cr(VI) based coating
 - c. The result between 0.10 $\mu\text{g}/\text{cm}^2$ and 0.13 $\mu\text{g}/\text{cm}^2$ is considered to be inconclusive - unavoidable coating variations may influence the determination.
7. Unless otherwise stated , the decision rule for conformity reporting is based on Binary Statement for Simple Acceptance Rule (w=0) stated in ILAC-G8:09/2019. According to this rule, the judgement of conformity is based on the comparing test results with limits.

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Analytical flow chart of heavy metal

These samples were dissolved totally by pre-conditioning method according to below flow chart.

(Cr^{6+} test method excluded)



Test Report

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Date: 24-May-2023

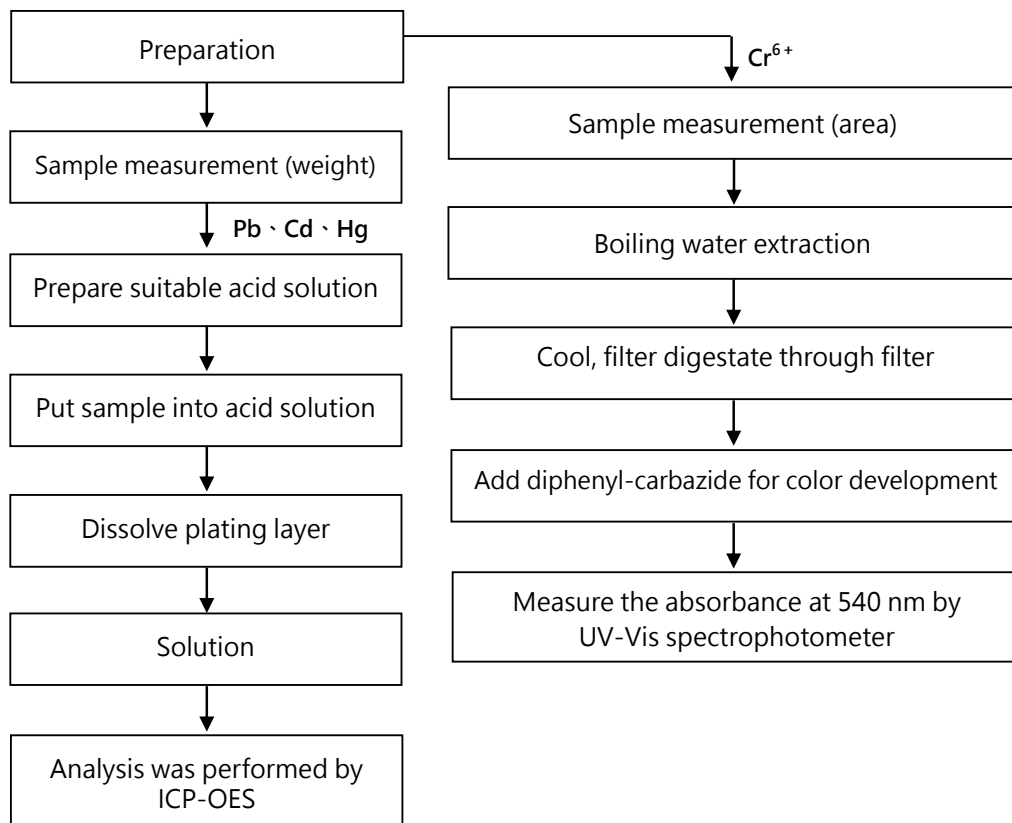
Page: 6 of 12

JIANN WA ELECTRONICS CO., LTD.

NO.844, SEC. 1, GANGBU RD., WUGI DIST., TAICHUNG CITY, TAIWAN, R. O. C.

Flow chart of stripping method for metal analysis

The plating layer of samples were dissolved totally by pre-conditioning method according to below flow chart. (Cr^{6+} test method excluded)



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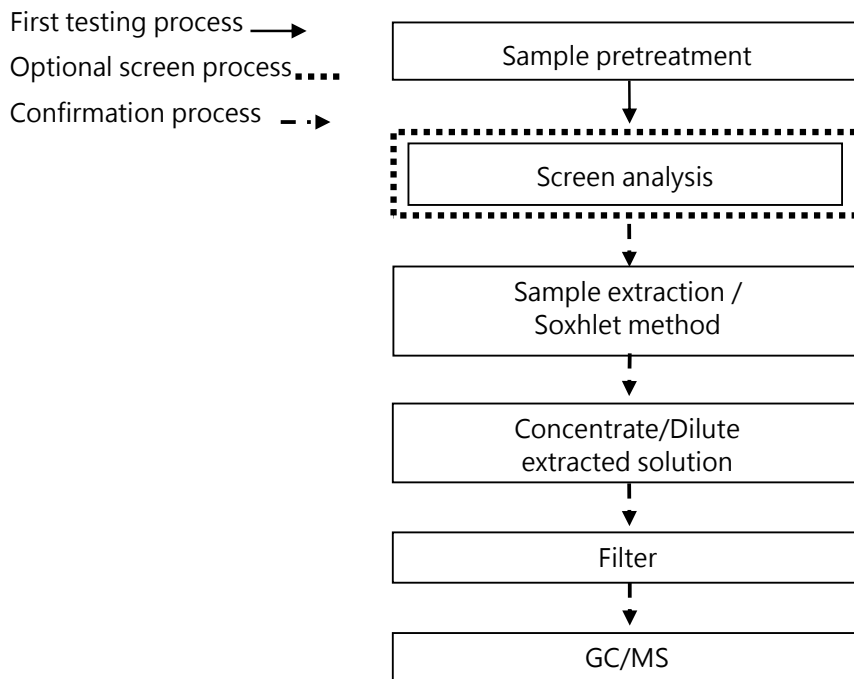
Date: 24-May-2023

Page: 7 of 12

JIANN WA ELECTRONICS CO., LTD.

NO.844, SEC. 1, GANGBU RD., WUGI DIST., TAICHUNG CITY, TAIWAN, R. O. C.

Analytical flow chart – PBBs / PBDEs



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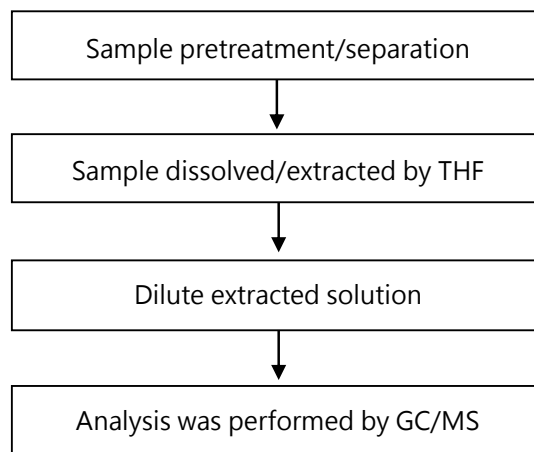
Page: 8 of 12

JIANN WA ELECTRONICS CO., LTD.

NO.844, SEC. 1, GANGBU RD., WUGI DIST., TAICHUNG CITY, TAIWAN, R. O. C.

Analytical flow chart - Phthalate

【Test method: IEC 62321-8】



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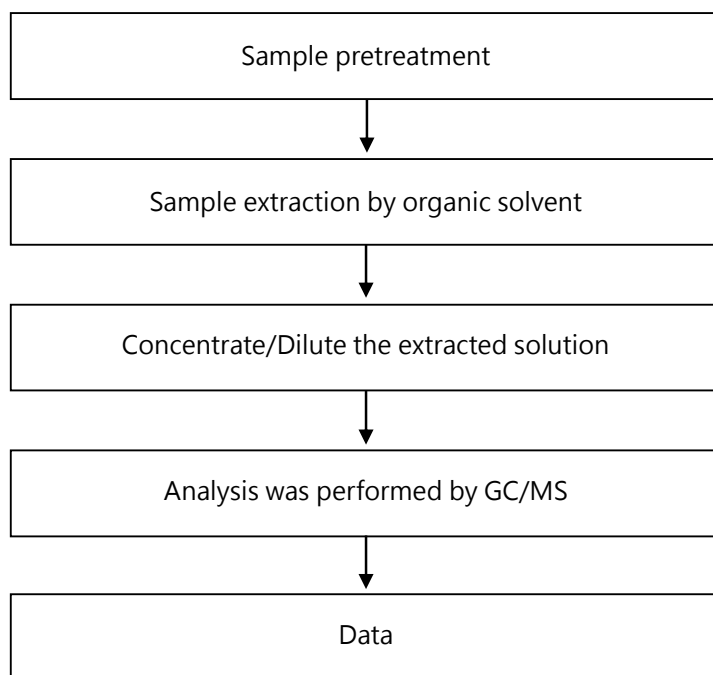
Page: 9 of 12

JIANN WA ELECTRONICS CO., LTD.

NO.844, SEC. 1, GANGBU RD., WUGI DIST., TAICHUNG CITY, TAIWAN, R. O. C.

Analytical flow chart

* Apply to: PCBs, PCNs, PCTs, Mirex, Chlorinated Paraffins, DBBT



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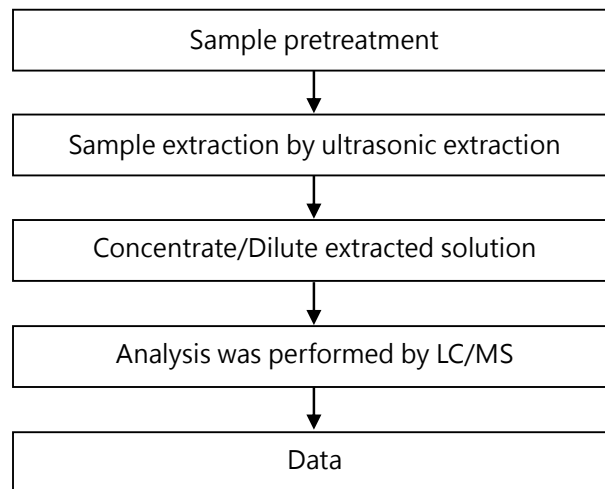
Date: 24-May-2023

Page: 10 of 12

JIANN WA ELECTRONICS CO., LTD.

NO.844, SEC. 1, GANGBU RD., WUGI DIST., TAICHUNG CITY, TAIWAN, R. O. C.

Analytical flow chart - TBBP-A



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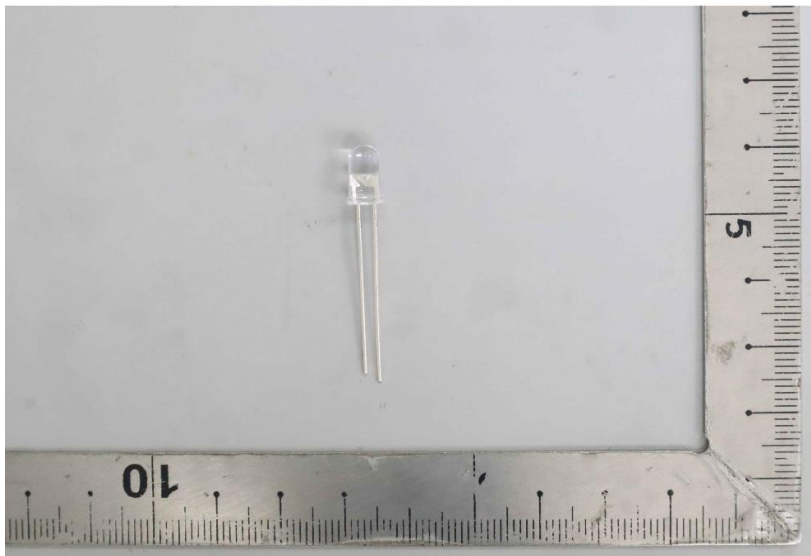
Page: 11 of 12

JIANN WA ELECTRONICS CO., LTD.

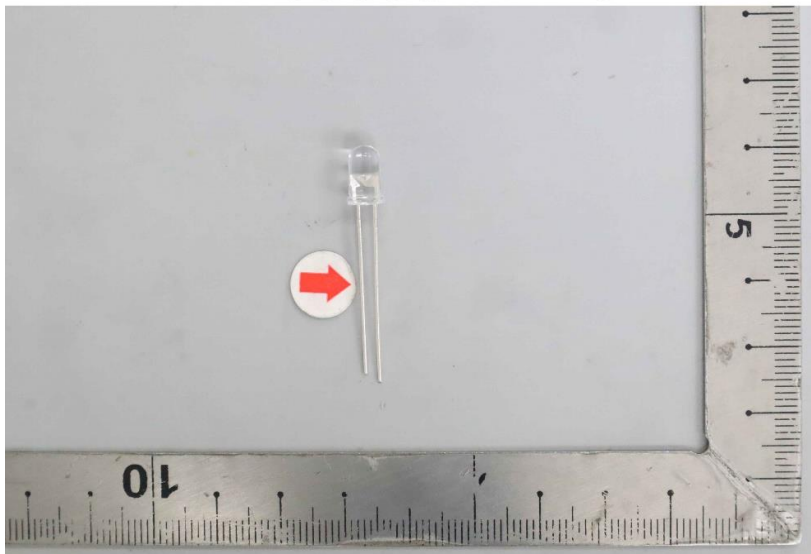
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* The tested sample / part is marked by an arrow if it's shown on the photo. *

ETR23503014 NO.1



ETR23503014 NO.2



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Test Report

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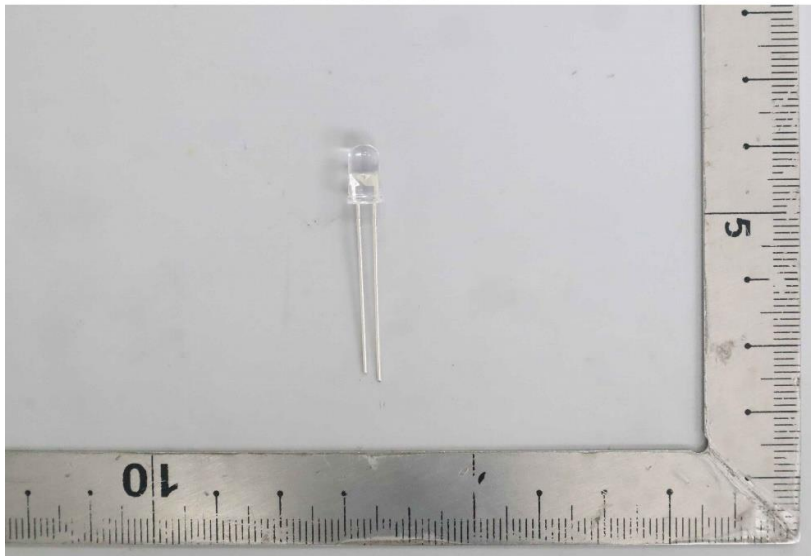
Date: 24-May-2023

Page: 12 of 12

JIANN WA ELECTRONICS CO., LTD.

NO.844, SEC. 1, GANGBU RD., WUGI DIST., TAICHUNG CITY, TAIWAN, R. O. C.

ETR23503014 NO.3



** End of Report **

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