

## Test Report

No.: SZXEC23001722907

Date: Aug 03, 2023

Page 1 of 8

Client Name: SHENZHEN RUICHIPS SEMICONDUCTOR CO.,LTD

Client Address: 1/FEAST,BLOCK4,WANYAN(FUHAI)INDUSTRIALZONE,QIAOTOUCOMMUNITY,FUYONGSTREET,BAO'AN DISTRICT,SHENZHEN,CHINA

Sample Name: Semiconductor Device

Model No.: SOP16

Client Ref. Information: SOP8,ESOP8,TSSOP8,SSOP16,ESOP16,SSOP24,SOP24

The above sample(s) and information were provided by the client.

SGS Job No.: SZP23-011974

Sample Receiving Date: Jul 28, 2023

Testing Period: Jul 28, 2023 ~ Aug 03, 2023

Test Requested: Select test(s) as requested by the client.

Test Method(s): Please refer to next page(s).

Test Result(s): Please refer to next page(s).

| Test Requirement   | Conclusion |
|--|------------|
| EU RoHS Directive (EU) 2015/863 amending Annex II to Directive 2011/65/EU- Lead, Mercury, Cadmium, Hexavalent chromium, Polybrominated biphenyls (PBBs), Polybrominated diphenyl ethers (PBDEs), Bis(2-ethylhexyl) phthalate (DEHP), Butyl benzyl phthalate (BBP), Dibutyl phthalate (DBP) and Diisobutyl phthalate (DIBP) | Pass       |
| EU RoHS Directive (EU) 2015/863 amending Annex II to Directive 2011/65/EU- Lead, Mercury, Cadmium and Hexavalent chromium  | Pass       |

Signed for and on behalf of  
SGS-CSTC Standards Technical Services Co., Ltd. Shenzhen Branch

*Ford*

Ford Shi

Approved Signatory

scan to see the report



BB82C54A



SGS-CSTC Standards Technical Services Co., Ltd.  
Shenzhen Branch Testing Center Chemical Laboratory

Unless otherwise agreed in writing, this document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <http://www.sgs.com/en/Terms-and-Conditions.aspx> and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <http://www.sgs.com/en/Terms-and-Conditions/Terms-e-Documents.aspx>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested.

Attention: To check the authenticity of testing /inspection report & certificate, please contact us at telephone: (86-755) 8307 1443, or email: [CN.Doccheck@sgs.com](mailto:CN.Doccheck@sgs.com)

Room 101-901, Plant 4 & Room 101, Plant 2 & Room 101, Plant 3 & Room 301-501, Plant 3, Jianghao (Bantian) Industrial Plant Area, No. 430, Jihua Road, Bantian Community, Bantian Street, Longgang District, Shenzhen, Guangdong, China 518129 [www.sgs.com](http://www.sgs.com)  
中国·广东·深圳市龙岗区坂田街道坂田社区吉华路430号江豪(坂田)工业厂区厂房4号101-901、2号101、3号101、3号301-501 邮编:518129 t(86-755)25328888 sgs.china@sgs.com

## Test Report

No.: SZXEC23001722907

Date: Aug 03, 2023

Page 2 of 8

### Test Result(s):

#### Test Part Description:

| SN ID | Sample No. | SGS Sample ID           | Description           |
|-------|------------|-------------------------|-----------------------|
| SN1   | A2         | SZX23-0017229-0001.C002 | Black plastic         |
| SN2   | A3         | SZX23-0017229-0001.C003 | Silver-gray metal pin |

#### Remarks:

- (1) 1 mg/kg = 1 ppm = 0.0001%
- (2) MDL = Method Detection Limit
- (3) ND = Not Detected (< MDL)
- (4) “-” = Not Regulated

**EU RoHS Directive (EU) 2015/863 amending Annex II to Directive 2011/65/EU- Lead, Mercury, Cadmium, Hexavalent chromium, Polybrominated biphenyls (PBBs), Polybrominated diphenyl ethers (PBDEs), Bis(2-ethylhexyl) phthalate (DEHP), Butyl benzyl phthalate (BBP), Dibutyl phthalate (DBP) and Diisobutyl phthalate (DIBP)**

Test Method: With reference to IEC 62321-4:2013+AMD1:2017, IEC 62321-5:2013, IEC 62321-7-2:2017, IEC 62321-6:2015 and IEC 62321-8:2017, analysis was performed by ICP-OES, UV-Vis and GC-MS.

| Test Item(s)                       | Limit | Unit(s) | MDL | A2 |
|------------------------------------|-------|---------|-----|----|
| Cadmium (Cd)                       | 100   | mg/kg   | 2   | ND |
| Lead (Pb)                          | 1000  | mg/kg   | 2   | ND |
| Mercury (Hg)                       | 1000  | mg/kg   | 2   | ND |
| Hexavalent Chromium (Cr(VI))       | 1000  | mg/kg   | 8   | ND |
| Polybromobiphenyl (PBBs)           | 1000  | mg/kg   | -   | ND |
| Monobromobiphenyl (MonoBB)         | -     | mg/kg   | 5   | ND |
| Dibromobiphenyl (DiBB)             | -     | mg/kg   | 5   | ND |
| Tribromobiphenyl (TriBB)           | -     | mg/kg   | 5   | ND |
| Tetrabromobiphenyl (TetraBB)       | -     | mg/kg   | 5   | ND |
| Pentabromobiphenyl (PentaBB)       | -     | mg/kg   | 5   | ND |
| Hexabromobiphenyl (HexaBB)         | -     | mg/kg   | 5   | ND |
| Heptabromobiphenyl (HeptaBB)       | -     | mg/kg   | 5   | ND |
| Octabromobiphenyl (OctaBB)         | -     | mg/kg   | 5   | ND |
| Nonabromobiphenyl (NonaBB)         | -     | mg/kg   | 5   | ND |
| Decabromobiphenyl (DecaBB)         | -     | mg/kg   | 5   | ND |
| Polybromodiphenyl ether (PBDEs)    | 1000  | mg/kg   | -   | ND |
| Monobromodiphenylether (MonoBDE)   | -     | mg/kg   | 5   | ND |
| Dibromodiphenylether (DiBDE)       | -     | mg/kg   | 5   | ND |
| Tribromodiphenylether (TriBDE)     | -     | mg/kg   | 5   | ND |
| Tetrabromodiphenylether (TetraBDE) | -     | mg/kg   | 5   | ND |
| Pentabromodiphenylether (PentaBDE) | -     | mg/kg   | 5   | ND |
| Hexabromodiphenylether (HexaBDE)   | -     | mg/kg   | 5   | ND |
| Heptabromodiphenylether (HeptaBDE) | -     | mg/kg   | 5   | ND |
| Octabromodiphenylether (OctaBDE)   | -     | mg/kg   | 5   | ND |
| Nonabromodiphenylether (NonaBDE)   | -     | mg/kg   | 5   | ND |
| Decabromodiphenylether (DecaBDE)   | -     | mg/kg   | 5   | ND |
| Dibutyl Phthalate (DBP)            | 1000  | mg/kg   | 50  | ND |



SGS-CSTC Standards Technical Services Co., Ltd.  
Shenzhen Branch Testing Center Chemical Laboratory

Unless otherwise agreed in writing, this document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <http://www.sgs.com/en/Terms-and-Conditions.aspx> and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <http://www.sgs.com/en/Terms-and-Conditions/Terms-e-Documents.aspx>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested.

Attention: To check the authenticity of testing / inspection report & certificate, please contact us at telephone: (86-755) 8307 1443, or email: [CN.Doccheck@sgs.com](mailto:CN.Doccheck@sgs.com)

Room 101-901, Plant 4 & Room 101, Plant 2 & Room 101, Plant 3 & Room 301-501, Plant 3, Jianghao (Bantian) Industrial Plant Area, No. 430, Jihua Road, Bantian Community, Bantian Street, Longgang District, Shenzhen, Guangdong, China 518129 [www.sgs.com](http://www.sgs.com)  
中国·广东·深圳市龙岗区坂田街道坂田社区吉华路430号江豪(坂田)工业厂区厂房4号101-901、2号101、3号101、3号301-501 邮编:518129 t:(86-755) 25328888 [sgs.china@sgs.com](mailto:sgs.china@sgs.com)

# Test Report

No.: SZXEC23001722907

Date: Aug 03, 2023

Page 3 of 8

| Test Item(s)                       | Limit | Unit(s) | MDL | A2 |
|------------------------------------|-------|---------|-----|----|
| Benzyl Butyl Phthalate(BBP)        | 1000  | mg/kg   | 50  | ND |
| Bis-(2-ethylhexyl) Phthalate(DEHP) | 1000  | mg/kg   | 50  | ND |
| Diisobutyl Phthalate(DIBP)         | 1000  | mg/kg   | 50  | ND |

## Notes:

- (1) The maximum permissible limit is quoted from RoHS Directive (EU) 2015/863.
- (2) IEC 62321 series is equivalent to EN 62321 series.
- (3) The restriction of DEHP, BBP, DBP and DIBP shall apply to medical devices, including in vitro medical devices, and monitoring and control instruments, including industrial monitoring and control instruments, from 22 July 2021.

## EU RoHS Directive (EU) 2015/863 amending Annex II to Directive 2011/65/EU- Lead, Mercury, Cadmium and Hexavalent chromium

Test Method: With reference to IEC 62321-4:2013+AMD1:2017, IEC 62321-5:2013 and IEC 62321-7-1:2015, analysis was performed by ICP-OES and UV-Vis .

| Test Item(s)                   | Limit | Unit(s)            | MDL  | A3 |
|--------------------------------|-------|--------------------|------|----|
| Cadmium(Cd)                    | 100   | mg/kg              | 2    | ND |
| Lead(Pb)                       | 1000  | mg/kg              | 2    | 19 |
| Mercury(Hg)                    | 1000  | mg/kg              | 2    | ND |
| Hexavalent Chromium (Cr(VI)) ▼ | -     | µg/cm <sup>2</sup> | 0.10 | ND |

## Notes:

- (1) The maximum permissible limit is quoted from RoHS Directive (EU) 2015/863.
- (2) IEC 62321 series is equivalent to EN 62321 series.
- (3) ▼ =
  - a. The sample is positive for Cr(VI) if the Cr(VI) concentration is greater than 0.13 µg/cm<sup>2</sup>. The sample coating is considered to contain Cr(VI)
  - b. The sample is negative for Cr(VI) if Cr(VI) is ND (concentration less than 0.10 µg/cm<sup>2</sup>). The coating is considered a non-Cr(VI) based coating
  - c. The result between 0.10 µg/cm<sup>2</sup> and 0.13 µg/cm<sup>2</sup> is considered to be inconclusive-unavoidable coating variations may influence the determination.

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

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.



Unless otherwise agreed in writing, this document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <http://www.sgs.com/en/Terms-and-Conditions.aspx> and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <http://www.sgs.com/en/Terms-and-Conditions/Terms-e-Documents.aspx>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested.

Attention: To check the authenticity of testing /inspection report & certificate, please contact us at telephone: (86-755) 8307 1443, or email: [CN.Doccheck@sgs.com](mailto:CN.Doccheck@sgs.com)

Room 101-901, Plant 4 & Room 101, Plant 2 & Room 101, Plant 3 & Room 301-501, Plant 3, Jianghao (Bantian) Industrial Plant Area, No. 430, Jihua Road, Bantian Community, Bantian Street, Longgang District, Shenzhen, Guangdong, China 518129 [www.sgs.com.cn](http://www.sgs.com.cn)  
 中国·广东·深圳市龙岗区坂田街道坂田社区吉华路430号江豪(坂田)工业厂区厂房4号101-901、2号101、3号301-501 邮编:518129 t:(86-755) 25328888 [sgs.china@sgs.com](mailto:sgs.china@sgs.com)

## Test Report

No.: SZXEC23001722907

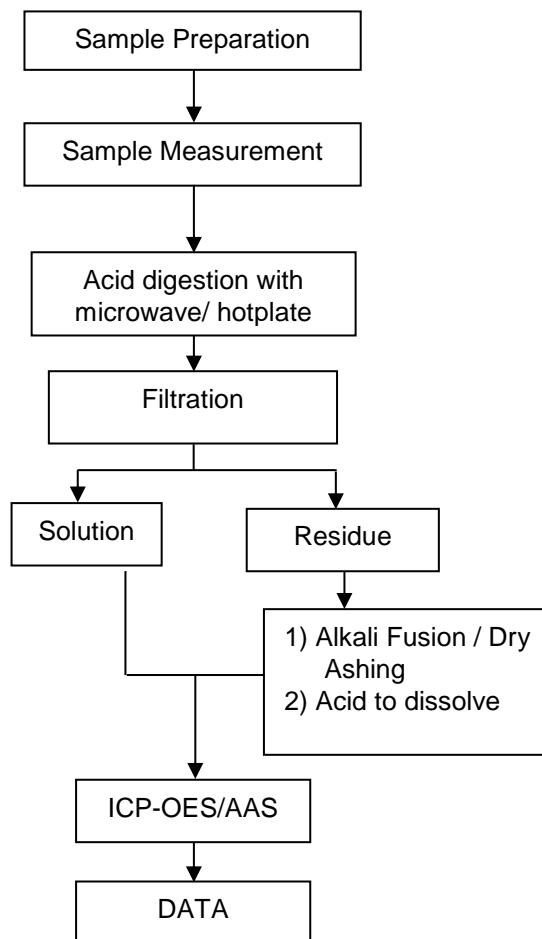
Date: Aug 03, 2023

Page 4 of 8

### ATTACHMENTS

### Elements Testing Flow Chart

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



SGS-CTS Standards Technical Services Co., Ltd.  
Shenzhen Branch Testing Center Chemical Laboratory

Unless otherwise agreed in writing, this document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <http://www.sgs.com/en/Terms-and-Conditions.aspx> and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <http://www.sgs.com/en/Terms-and-Conditions/Terms-e-Documents.aspx>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested.

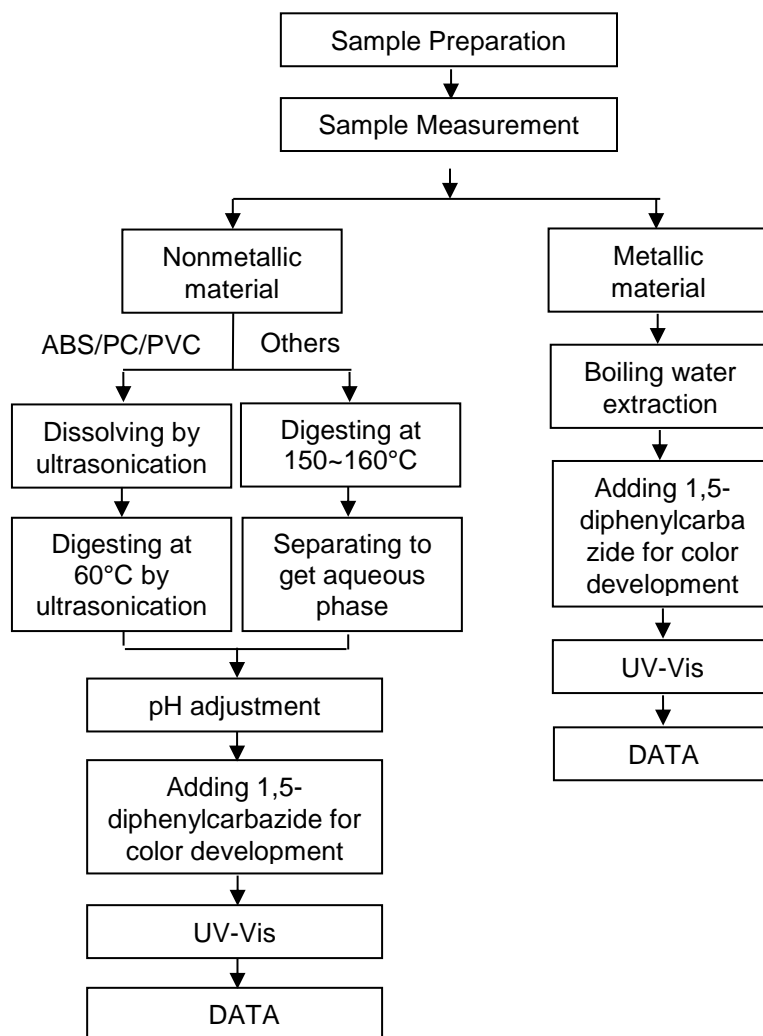
Attention: To check the authenticity of testing / inspection report & certificate, please contact us at telephone: (86-755) 8307 1443, or email: [CN.Doccheck@sgs.com](mailto:CN.Doccheck@sgs.com)

Room 101-901, Plant 4 & Room 101, Plant 2 & Room 101, Plant 3 & Room 301-501, Plant 3, Jianghao (Bantian) Industrial Plant Area, No. 430, Jihua Road, Bantian Community, Bantian Street, Longgang District, Shenzhen, Guangdong, China 518129 [www.sgs.com](http://www.sgs.com)  
中国·广东·深圳市龙岗区坂田街道坂田社区吉华路430号江豪(坂田)工业厂区厂房4号101-901、2号101、3号301-501 邮编:518129 t:(86-755) 25328888 [sgs.china@sgs.com](mailto:sgs.china@sgs.com)



### ATTACHMENTS

### Hexavalent Chromium (Cr(VI)) Testing Flow Chart



## Test Report

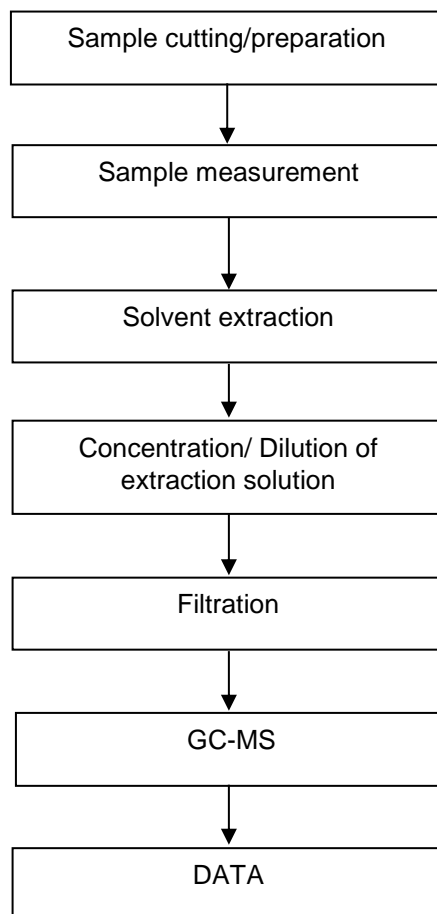
### ATTACHMENTS

No.: SZXEC23001722907

Date: Aug 03, 2023

Page 6 of 8

### PBBs/PBDEs Testing Flow Chart



SGS-CTC Standards Technical Services Co., Ltd.  
Shenzhen Branch Testing Center Chemical Laboratory

Unless otherwise agreed in writing, this document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <http://www.sgs.com/en/Terms-and-Conditions.aspx> and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <http://www.sgs.com/en/Terms-and-Conditions/Terms-e-Documents.aspx>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested.

Attention: To check the authenticity of testing /inspection report & certificate, please contact us at telephone: (86-755) 8307 1443, or email: [CN.Doccheck@sgs.com](mailto:CN.Doccheck@sgs.com)

Room 101-901, Plant 4 & Room 101, Plant 2 & Room 101, Plant 3 & Room 301-501, Plant 3, Jianghao (Bantian) Industrial Plant Area, No. 430, Jihua Road, Bantian Community, Bantian Street, Longgang District, Shenzhen, Guangdong, China 518129 [www.sgs.com.cn](http://www.sgs.com.cn)  
中国·广东·深圳市龙岗区坂田街道坂田社区吉华路430号江灏(坂田)工业厂区厂房4号101-901、2号101、3号301-501 邮编:518129 t:(86-755) 25328888 [sgs.china@sgs.com](mailto:sgs.china@sgs.com)

## Test Report

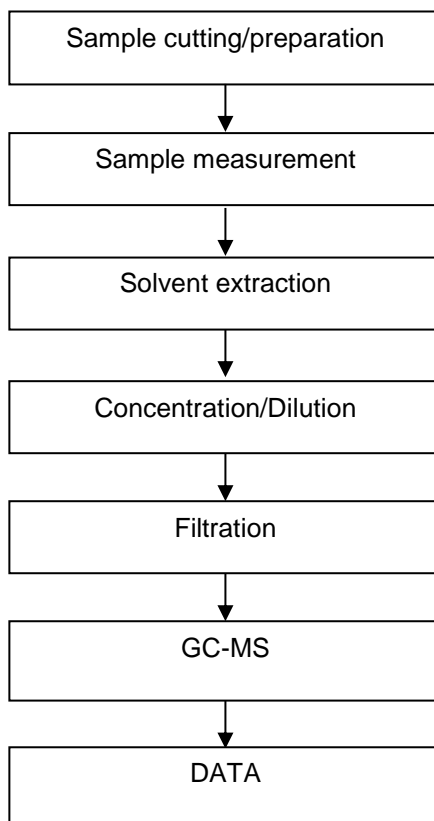
### ATTACHMENTS

No.: SZXEC23001722907

Date: Aug 03, 2023

Page 7 of 8

### Phthalates Testing Flow Chart



SGS-CTC Standards Technical Services Co., Ltd.  
Shenzhen Branch Testing Center Chemical Laboratory

Unless otherwise agreed in writing, this document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <http://www.sgs.com/en/Terms-and-Conditions.aspx> and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <http://www.sgs.com/en/Terms-and-Conditions/Terms-e-Documents.aspx>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested.

Attention: To check the authenticity of testing /inspection report & certificate, please contact us at telephone: (86-755) 8307 1443, or email: [CN.Doccheck@sgs.com](mailto:CN.Doccheck@sgs.com)

Room 101-901, Plant 4 & Room 101, Plant 2 & Room 101, Plant 3 & Room 301-501, Plant 3, Jianghao (Bantian) Industrial Plant Area, No. 430, Jihua Road, Bantian Community, Bantian Street, Longgang District, Shenzhen, Guangdong, China 518129 [www.sgs.com.cn](http://www.sgs.com.cn)  
中国·广东·深圳市龙岗区坂田街道坂田社区吉华路430号江豪(坂田)工业厂区厂房4号101-901、2号101、3号301-501 邮编:518129 t:(86-755) 25328888 [sgs.china@sgs.com](mailto:sgs.china@sgs.com)

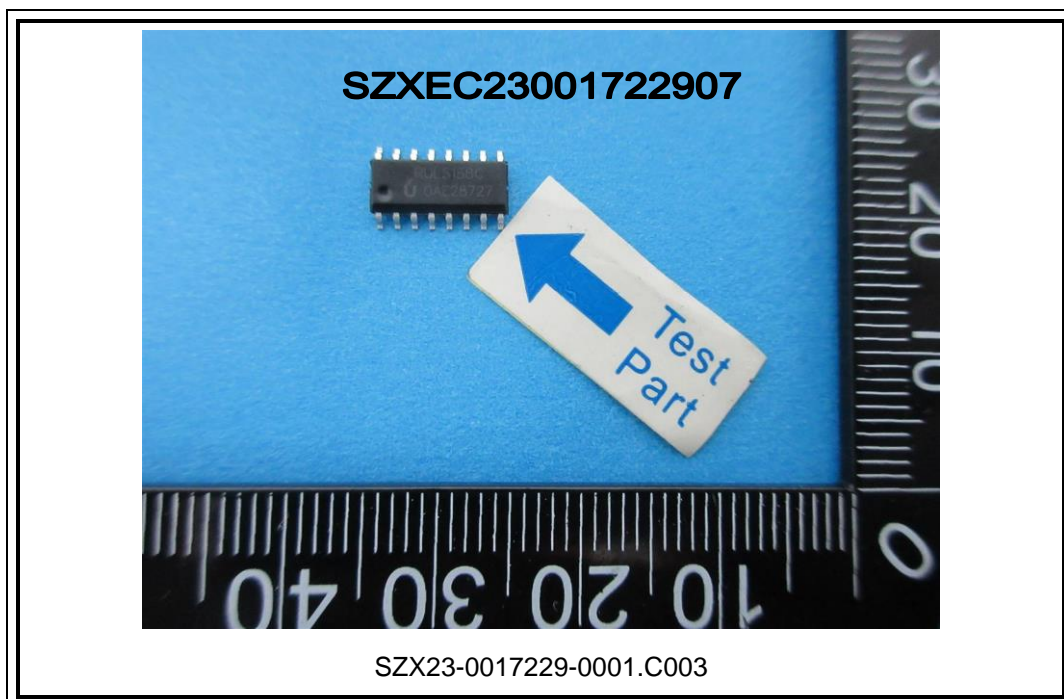
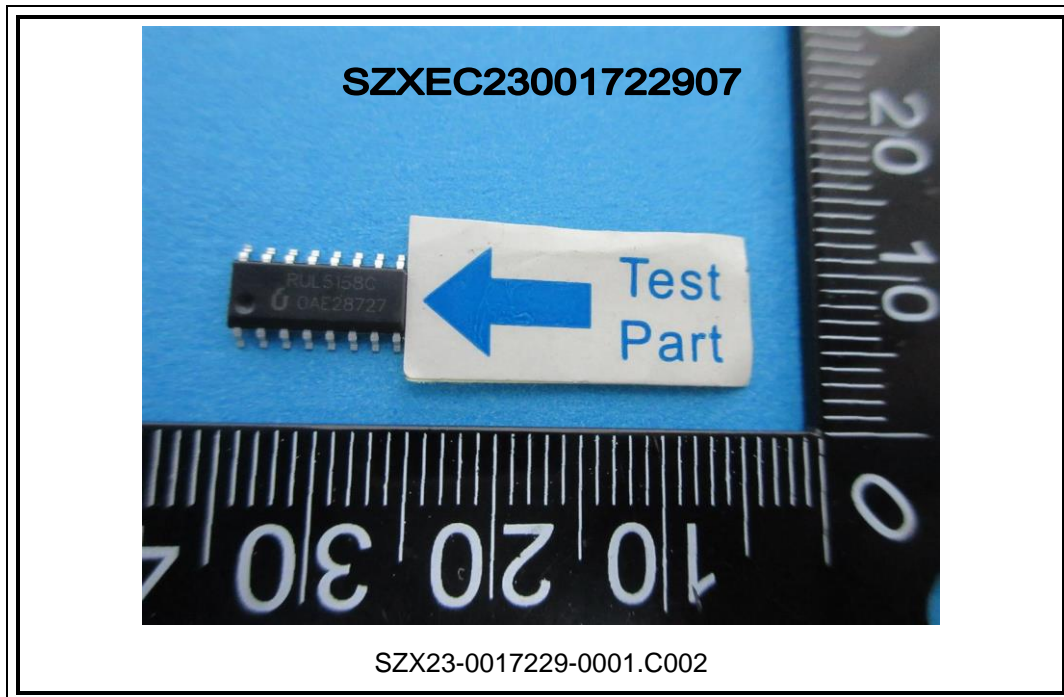
## Test Report

No.: SZXEC23001722907

Date: Aug 03, 2023

Page 8 of 8

Sample Photo:



SGS authenticate the photo on original report only

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



Unless otherwise agreed in writing, this document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <http://www.sgs.com/en/Terms-and-Conditions.aspx> and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <http://www.sgs.com/en/Terms-and-Conditions/Terms-e-Documents.aspx>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested.

Attention: To check the authenticity of testing /inspection report & certificate, please contact us at telephone: (86-755) 8307 1443, or email: [CN.Doccheck@sgs.com](mailto:CN.Doccheck@sgs.com)

SGS-CTC (Shenzhen) Technical Services Co., Ltd.  
Shenzhen Branch Testing Center Chemical Laboratory

Room 101-901, Plant 4 & Room 101, Plant 3 & Room 301-501, Plant 3, Jianghao (Bantian) Industrial Plant Area, No. 430, Jihua Road, Bantian Community, Bantian Street, Longgang District, Shenzhen, Guangdong, China 518129 [www.sgs.com](http://www.sgs.com)  
中国·广东·深圳市龙岗区坂田街道坂田社区吉华路430号江豪(坂田)工业厂区厂房4号101-901、2号101、3号301-501 邮编:518129 t:(86-755) 25328888 [sgs.china@sgs.com](mailto:sgs.china@sgs.com)