



ICP Test Report Certification Packet

Company name: Littelfuse, Inc.

Product Series: GDT

Product #: SL1003 Series

Issue Date: December 26, 2012

It is hereby certified by Littelfuse, Inc. that there is neither RoHS (EU Directive 2002/95/EC, 2011/65/EU)-restricted substance nor such use, for materials to be used for unit parts, for packing/packaging materials, and for additives and the like in the manufacturing processes.

In addition, it is hereby reported to you that the parts and sub-materials, the materials to be used for unit parts, the packing/packaging materials, and the additives and the like in the manufacturing processes, are all composed of the following components.

Issued by: 
KRISTEEN BACILA

<Global EHS Engineer>

(1) Parts, sub-materials and unit parts

This document covers the GDT RoHS-Compliant series products manufactured by Littelfuse, Inc.

< Raw Materials Used

Please see Table 1

(2) The ICP data on all measurable substances

Please see appropriate pages as identified in Table 1

Remarks :

Table 1: List of Raw Materials covered by this report

Total Parts	Raw Material Part Number	Raw Material Description	Page(s)
1	N/A	Ceramic	3-7
2	N/A	Copper Electrode	8-12
3	N/A	Silver Brazing Ring	13-17
4	N/A	Blue Ink	18-25
5	N/A	Tin Plated Wire	26-30



Test Report

No. CTSSA/08789-1(AD-B)/12
CTS Ref. CTSSA/12/1396/Littel

Date : 18/05/2012

Page: 1 of 5

LITTELFUSE INC.
800E. NORTHWEST HIGHWAY
DES PLAINES, IL 60016, USA

The following merchandise was (were) submitted and identified by the client as:

Sample Description	:	Ceramic
Sample Receiving Date	:	23/04/2012
Testing Period	:	23/04/2012 to 10/05/2012
Date Completed	:	10/05/2012
Reporting Date	:	18/05/2012

Test Requested	:	Selected test(s) as requested by client
Test Method	:	Please refer to next page(s).
Test Results	:	Please refer to next page(s).
Analysts	:	Teh Pui Sean & Tay Siam Pine

SGS LABORATORY SERVICES (M) SDN. BHD.

CHONG KIEN LEN
B.Sc.(HONS) AMIC
SENIOR LAB MANAGER

This document is issued by the Company subject to its General Conditions of Service (www.sgs.com/terms_and_conditions.htm) and Terms and Conditions for Electronic Documents (www.sgs.com/terms_e-document.htm). Attention is drawn to the limitations of liability, indemnification and jurisdictional issues established therein. Even if printed this electronic document is to be treated as an original within the meaning of UCP 600 article 20b. The authenticity of this document may be verified at www.sgs.com/verification. 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. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for three months only.



Test Report

No. CTSSA/08789-1(AD-B)/12
CTS Ref. CTSSA/12/1396/Littel

Date : 18/05/2012

Page: 2 of 5

Test results:

Test Part Description :

Sample Description : Ceramic

RoHS Directive 2011/65/EU Annex II

Test Item(s):	Unit	Test Method	Results	MDL
Cadmium (Cd)	mg/kg	With reference to IEC 62321:2008, and performed by ICP-OES	N.D.	2
Lead (Pb)	mg/kg	With reference to IEC 62321:2008, and performed by ICP-OES	N.D.	2
Mercury (Hg)	mg/kg	With reference to IEC 62321:2008, and performed by ICP-OES	N.D.	2
Hexavalent Chromium (CrVI)	mg/kg	With reference to IEC 62321:2008, and performed by UV-Vis	N.D.	2
Sum of PBBs	mg/kg	With reference to IEC 62321:2008, and performed by GC-MS	N.D.	-
Monobromobiphenyl	mg/kg	With reference to IEC 62321:2008, and performed by GC-MS	N.D.	5
Dibromobiphenyl	mg/kg	With reference to IEC 62321:2008, and performed by GC-MS	N.D.	5
Tribromobiphenyl	mg/kg	With reference to IEC 62321:2008, and performed by GC-MS	N.D.	5
Tetrabromobiphenyl	mg/kg	With reference to IEC 62321:2008, and performed by GC-MS	N.D.	5
Hexabromobiphenyl	mg/kg	With reference to IEC 62321:2008, and performed by GC-MS	N.D.	5
Pentabromobiphenyl	mg/kg	With reference to IEC 62321:2008, and performed by GC-MS	N.D.	5
Heptabromobiphenyl	mg/kg	With reference to IEC 62321:2008, and performed by GC-MS	N.D.	5
Octabromobiphenyl	mg/kg	With reference to IEC 62321:2008, and performed by GC-MS	N.D.	5
Nonabromobiphenyl	mg/kg	With reference to IEC 62321:2008, and performed by GC-MS	N.D.	5
Decabromobiphenyl	mg/kg	With reference to IEC 62321:2008, and performed by GC-MS	N.D.	5

SGS LABORATORY SERVICES (M) SDN. BHD.

CHONG KIEN LEN
B.Sc.(HONS) AMIC
SENIOR LAB MANAGER

This document is issued by the Company subject to its General Conditions of Service (www.sgs.com/terms_and_conditions.htm) and Terms and Conditions for Electronic Documents (www.sgs.com/terms_e-document.htm). Attention is drawn to the limitations of liability, indemnification and jurisdictional issues established therein. Even if printed this electronic document is to be treated as an original within the meaning of UCP 600 article 20b. The authenticity of this document may be verified at www.sgs.com/verification. 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. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for three months only.



Test Report

No. CTSSA/08789-1(AD-B)/12
CTS Ref. CTSSA/12/1396/Littel

Date : 18/05/2012

Page: 3 of 5

Sum of PBDEs	mg/kg	With reference to IEC 62321:2008, and performed by GC-MS	N.D.	-
Monobromodiphenyl ether	mg/kg	With reference to IEC 62321:2008, and performed by GC-MS	N.D.	5
Dibromodiphenyl ether	mg/kg	With reference to IEC 62321:2008, and performed by GC-MS	N.D.	5
Tribromodiphenyl ether	mg/kg	With reference to IEC 62321:2008, and performed by GC-MS	N.D.	5
Tetrabromodiphenyl ether	mg/kg	With reference to IEC 62321:2008, and performed by GC-MS	N.D.	5
Pentabromodiphenyl ether	mg/kg	With reference to IEC 62321:2008, and performed by GC-MS	N.D.	5
Hexabromodiphenyl ether	mg/kg	With reference to IEC 62321:2008, and performed by GC-MS	N.D.	5
Heptabromodiphenyl ether	mg/kg	With reference to IEC 62321:2008, and performed by GC-MS	N.D.	5
Octabromodiphenyl ether	mg/kg	With reference to IEC 62321:2008, and performed by GC-MS	N.D.	5
Nonabromodiphenyl ether	mg/kg	With reference to IEC 62321:2008, and performed by GC-MS	N.D.	5
Decabromodiphenyl ether	mg/kg	With reference to IEC 62321:2008, and performed by GC-MS	N.D.	5

Note : (a) mg/kg = ppm ; (0.1wt% = 1000ppm)
(b) N.D. = Not Detected
(c) MDL = Method Detection Limit
(d) - = Not regulated
(e) This report supersedes report no. CTSSA/08789-1/12

SGS LABORATORY SERVICES (M) SDN. BHD.

CHONG KIEN LEN
B.Sc.(HONS) AMIC
SENIOR LAB MANAGER

This document is issued by the Company subject to its General Conditions of Service (www.sgs.com/terms_and_conditions.htm) and Terms and Conditions for Electronic Documents (www.sgs.com/terms_e-document.htm). Attention is drawn to the limitations of liability, indemnification and jurisdictional issues established therein. Even if printed this electronic document is to be treated as an original within the meaning of UCP 600 article 20b. The authenticity of this document may be verified at www.sgs.com/verification. 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. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for three months only.

Test Report

No. CTSSA/08789-1(AD-B)/12
CTS Ref. CTSSA/12/1396/Littel

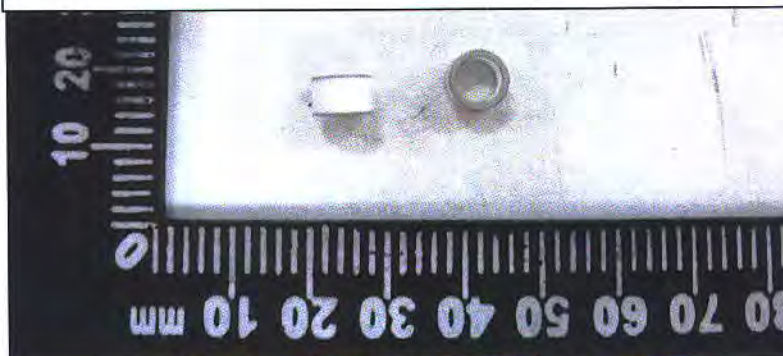
Date : 18/05/2012

Page: 4 of 5

Test Part Description :

Sample Description : Ceramic

LITTELFUSE INC.
CTSSA/08789-1(AD-B)/12



SGS authenticate the photo on original report only

SGS LABORATORY SERVICES (M) SDN. BHD.

CHONG KIEN LEN
B.Sc.(HONS) AMIC
SENIOR LAB MANAGER

This document is issued by the Company subject to its General Conditions of Service (www.sgs.com/terms_and_conditions.htm) and Terms and Conditions for Electronic Documents (www.sgs.com/terms_e-document.htm). Attention is drawn to the limitations of liability, indemnification and jurisdictional issues established therein. Even if printed this electronic document is to be treated as an original within the meaning of UCP 600 article 20b. The authenticity of this document may be verified at www.sgs.com/verification. 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. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for three months only.



Test Report

No. CTSSA/08789-1(AD-B)/12
CTS Ref. CTSSA/12/1396/Littel

Date : 18/05/2012

Page: 5 of 5

1. DETERMINATION OF CADMIUM CONTENT BY IEC 62321 2008

Sample Receiving and Registration
↓
Cut sample in small pieces
↓
Weight sample (0.2-0.5g) into digestion vessel
↓
Acid digestion (Microwave)
↓
"Totally Dissolved"
↓
Filtration
↓
Analyses by ICP

2. DETERMINATION OF LEAD CONTENT BY IEC 62321 2008

Sample Receiving and Registration
↓
Cut sample in small pieces
↓
Weight sample (0.2-0.5g) into digestion vessel
↓
Acid digestion (Microwave)
↓
"Totally Dissolved"
↓
Filtration
↓
Analyses by ICP

3. DETERMINATION OF MERCURY CONTENT BY IEC 62321 2008

Sample Receiving and Registration
↓
Cut sample in small pieces
↓
Weight sample (0.2-0.5g) into digestion vessel
↓
Acid digestion (Microwave)
↓
"Totally Dissolved"
↓
Filtration
↓
Analyses by ICP

4. DETERMINATION OF HEXAVALENT CHROMIUM BY IEC 62321 2008

Sample Preparation
↓
Add colour-developing reagent
↓
Acidify with H_2SO_4
↓
Let stand for 5-10 min
↓
Analyses by UV- Spectrophotometer (540 nm)

5. DETERMINATION OF PBB/PBDE WITH GC-MS BY IEC 62321 2008

Cut sample in small pieces
↓
Weight sample (0.5-4.0g) into extraction thimble
↓
Soxhlet Extraction with Toluene
↓
Filter through 0.45 μm membrane filter
↓
Analyses by GC-MS (with appropriate dilution)

**** End of Report ****

SGS LABORATORY SERVICES (M) SDN. BHD.

CHONG KIEN LEN
B.Sc.(HONS) AMIC
SENIOR LAB MANAGER

This document is issued by the Company subject to its General Conditions of Service (www.sgs.com/terms_and_conditions.htm) and Terms and Conditions for Electronic Documents (www.sgs.com/terms_e-document.htm). Attention is drawn to the limitations of liability, indemnification and jurisdictional issues established therein. Even if printed this electronic document is to be treated as an original within the meaning of UCP 600 article 20b. The authenticity of this document may be verified at www.sgs.com/verify.htm. Any holder of this document is advised that information contained herein 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. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for three months only.



Test Report

No. CTSSA/08790-1(AD-B)/12
CTS Ref. CTSSA/12/1396/Littel

Date : 18/05/2012

Page: 1 of 5

LITTELFUSE INC.
800E. NORTHWEST HIGHWAY
DES PLAINES, IL 60016, USA

The following merchandise was (were) submitted and identified by the client as:

Sample Description	:	Copper Electrode
Sample Receiving Date	:	23/04/2012
Testing Period	:	23/04/2012 to 10/05/2012
Date Completed	:	10/05/2012
Reporting Date	:	18/05/2012

Test Requested	:	Selected test(s) as requested by client
Test Method	:	Please refer to next page(s).
Test Results	:	Please refer to next page(s).
Analysts	:	Teh Pui Sean & Tay Siam Pine

SGS LABORATORY SERVICES (M) SDN. BHD.

CHONG KIEN LEN
B.Sc.(HONS) AMIC
SENIOR LAB MANAGER

This document is issued by the Company subject to its General Conditions of Service (www.sgs.com/terms_and_conditions.htm) and Terms and Conditions for Electronic Documents (www.sgs.com/terms_e-document.htm). Attention is drawn to the limitations of liability, indemnification and jurisdictional issues established therein. Even if printed this electronic document is to be treated as an original within the meaning of UCP 600 article 20b. The authenticity of this document may be verified at www.sgs.com/verification. 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. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for three months only.



Test Report

No. CTSSA/08790-1(AD-B)/12
CTS Ref. CTSSA/12/1396/Littel

Date : 18/05/2012

Page: 2 of 5

Test results:

Test Part Description :

Sample Description : Copper Electrode

RoHS Directive 2011/65/EU Annex II

Test Item(s):	Unit	Test Method	Results	MDL
Cadmium(Cd)	mg/kg	With reference to IEC 62321:2008, and performed by ICP-OES	N.D.	2
Lead (Pb)	mg/kg	With reference to IEC 62321:2008, and performed by ICP-OES	N.D.	2
Mercury (Hg)	mg/kg	With reference to IEC 62321:2008, and performed by ICP-OES	N.D.	2
Hexavalent Chromium (CrVI) by Spot test / boiling water extraction (optional) #	---	With reference to IEC 62321:2008	Negative	-
Sum of PBBs	mg/kg	With reference to IEC 62321:2008, and performed by GC-MS	N.D.	-
Monobromobiphenyl	mg/kg	With reference to IEC 62321:2008, and performed by GC-MS	N.D.	5
Dibromobiphenyl	mg/kg	With reference to IEC 62321:2008, and performed by GC-MS	N.D.	5
Tribromobiphenyl	mg/kg	With reference to IEC 62321:2008, and performed by GC-MS	N.D.	5
Tetrabromobiphenyl	mg/kg	With reference to IEC 62321:2008, and performed by GC-MS	N.D.	5
Hexabromobiphenyl	mg/kg	With reference to IEC 62321:2008, and performed by GC-MS	N.D.	5
Pentabromobiphenyl	mg/kg	With reference to IEC 62321:2008, and performed by GC-MS	N.D.	5
Heptabromobiphenyl	mg/kg	With reference to IEC 62321:2008, and performed by GC-MS	N.D.	5
Octabromobiphenyl	mg/kg	With reference to IEC 62321:2008, and performed by GC-MS	N.D.	5
Nonabromobiphenyl	mg/kg	With reference to IEC 62321:2008, and performed by GC-MS	N.D.	5
Decabromobiphenyl	mg/kg	With reference to IEC 62321:2008, and performed by GC-MS	N.D.	5

SGS LABORATORY SERVICES (M) SDN. BHD.

CHONG KIEN LEN
B.Sc.(HONS) AMIC
SENIOR LAB MANAGER

This document is issued by the Company subject to its General Conditions of Service (www.sgs.com/terms_and_conditions.htm) and Terms and Conditions for Electronic Documents (www.sgs.com/terms_e-document.htm). Attention is drawn to the limitations of liability, indemnification and jurisdictional issues established therein. Even if printed this electronic document is to be treated as an original within the meaning of UCP 600 article 20b. The authenticity of this document may be verified at www.sgs.com/verification. 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. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for three months only.



Test Report

No. CTSSA/08790-1(AD-B)/12
CTS Ref. CTSSA/12/1396/Littel

Date : 18/05/2012

Page: 3 of 5

Sum of PBDEs	mg/kg	With reference to IEC 62321:2008, and performed by GC-MS	N.D.	-
Monobromodiphenyl ether	mg/kg	With reference to IEC 62321:2008, and performed by GC-MS	N.D.	5
Dibromodiphenyl ether	mg/kg	With reference to IEC 62321:2008, and performed by GC-MS	N.D.	5
Tribromodiphenyl ether	mg/kg	With reference to IEC 62321:2008, and performed by GC-MS	N.D.	5
Tetrabromodiphenyl ether	mg/kg	With reference to IEC 62321:2008, and performed by GC-MS	N.D.	5
Pentabromodiphenyl ether	mg/kg	With reference to IEC 62321:2008, and performed by GC-MS	N.D.	5
Hexabromodiphenyl ether	mg/kg	With reference to IEC 62321:2008, and performed by GC-MS	N.D.	5
Heptabromodiphenyl ether	mg/kg	With reference to IEC 62321:2008, and performed by GC-MS	N.D.	5
Octabromodiphenyl ether	mg/kg	With reference to IEC 62321:2008, and performed by GC-MS	N.D.	5
Nonabromodiphenyl ether	mg/kg	With reference to IEC 62321:2008, and performed by GC-MS	N.D.	5
Decabromodiphenyl ether	mg/kg	With reference to IEC 62321:2008, and performed by GC-MS	N.D.	5

Note : (a) mg/kg = ppm ; (0.1wt% = 1000ppm)

(b) N.D. = Not Detected

(c) MDL = Method Detection Limit

(d) # = **Spot-Test:**

a. Negative means the absence of Cr(VI) on the tested areas

b. Positive means the presence of Cr(VI) on the tested areas

(The tested sample should be further verified by boiling-water-extraction method if the spot test result is negative or cannot be confirmed)

Boiling water extraction:

a. Negative means the absence of Cr(VI) on the tested areas

b. Positive means the presence of Cr(VI) on the tested areas;

The detected concentration in 50 mL boiling water extraction solution is equal or greater than 0.02 mg/kg with 50 cm² sample surface area.

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.

(e) - = Not regulated

(f) This report supersedes report no. CTSSA/08790-1/12

SGS LABORATORY SERVICES (M) SDN. BHD.

CHONG KIEN LEN
B.Sc.(HONS) AMIC
SENIOR LAB MANAGER

This document is issued by the Company subject to its General Conditions of Service (www.sgs.com/terms_and_conditions.htm) and Terms and Conditions for Electronic Documents (www.sgs.com/terms_e-document.htm). Attention is drawn to the limitations of liability, indemnification and jurisdictional issues established therein. Even if printed this electronic document is to be treated as an original within the meaning of UCP 600 article 20b. The authenticity of this document may be verified at www.sgs.com/verification. 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. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for three months only.

Test Report

No. CTSSA/08790-1(AD-B)/12
CTS Ref. CTSSA/12/1396/Littel

Date : 18/05/2012

Page: 4 of 5

Test Part Description :

Sample Description : Copper Electrode



SGS authenticate the photo on original report only

SGS LABORATORY SERVICES (M) SDN. BHD.

CHONG KIEN LEN
B.Sc.(HONS) AMIC
SENIOR LAB MANAGER

This document is issued by the Company subject to its General Conditions of Service (www.sgs.com/terms_and_conditions.htm) and Terms and Conditions for Electronic Documents (www.sgs.com/terms_e-document.htm). Attention is drawn to the limitations of liability, indemnification and jurisdictional issues established therein. Even if printed this electronic document is to be treated as an original within the meaning of UCP 600 article 20b. The authenticity of this document may be verified at www.sgsonline.com/authentication. 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. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for three months only.

Test Report

No. CTSSA/08790-1(AD-B)/12
CTS Ref. CTSSA/12/1396/Littel

Date : 18/05/2012

Page: 5 of 5

1. DETERMINATION OF CADMIUM CONTENT BY IEC 62321 2008

Sample Receiving and Registration
↓
Cut sample in small pieces
↓
Weight sample (0.2-0.5g) into digestion vessel
↓
Acid digestion (Microwave)
↓
"Totally Dissolved"
↓
Filtration
↓
Analyses by ICP

2. DETERMINATION OF LEAD CONTENT BY IEC 62321 2008

Sample Receiving and Registration
↓
Cut sample in small pieces
↓
Weight sample (0.2-0.5g) into digestion vessel
↓
Acid digestion (Microwave)
↓
"Totally Dissolved"
↓
Filtration
↓
Analyses by ICP

3. DETERMINATION OF MERCURY CONTENT BY IEC 62321 2008

Sample Receiving and Registration
↓
Cut sample in small pieces
↓
Weight sample (0.2-0.5g) into digestion vessel
↓
Acid digestion (Microwave)
↓
"Totally Dissolved"
↓
Filtration
↓
Analyses by ICP

4. DETERMINATION OF HEXAVALENT CHROMIUM BY IEC 62321 2008

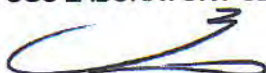
Sample Receiving and Registration
↓
Sample Preparation
↓
Spot-test (Qualitative)
↓
Boiling-water-extraction
↓
Analyses by UV- Spectrophotometer
↓
Test Report

5. DETERMINATION OF PBB/PBDE WITH GC-MS BY IEC 62321 2008

Cut sample in small pieces
↓
Weight sample (0.5-4.0g) into extraction thimble
↓
Soxhlet Extraction with Toluene
↓
Filter through 0.45 um membrane filter
↓
Analyses by GC-MS (with appropriate dilution)

**** End of Report ****

SGS LABORATORY SERVICES (M) SDN. BHD.



CHONG KIEN LEN
B.Sc.(HONS) AMIC
SENIOR LAB MANAGER

This document is issued by the Company subject to its General Conditions of Service (www.sgs.com/terms_and_conditions.htm) and Terms and Conditions for Electronic Documents (www.sgs.com/terms_e-document.htm). Attention is drawn to the limitations of liability, indemnification and jurisdictional issues established therein. Even if printed this electronic document is to be treated as an original within the meaning of UCP 600 article 20b. The authenticity of this document may be verified at www.sgs.com/verification. 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. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for three months only.



Test Report

No. CTSSA/08802-1(AD-B)/12
CTS Ref. CTSSA/12/1396/Littell

Date : 18/05/2012

Page: 1 of 5

LITTELFUSE INC.
800E. NORTHWEST HIGHWAY
DES PLAINES, IL 60016, USA

The following merchandise was (were) submitted and identified by the client as:

Sample Description	:	Silver Ring
Sample Receiving Date	:	23/04/2012
Testing Period	:	23/04/2012 to 11/05/2012
Date Completed	:	11/05/2012
Reporting Date	:	18/05/2012

Test Requested	:	Selected test(s) as requested by client
Test Method	:	Please refer to next page(s).
Test Results	:	Please refer to next page(s).
Analysts	:	Teh Pui Sean & Tay Siam Pine

SGS LABORATORY SERVICES (M) SDN. BHD.

CHONG KIEN LEN
B.Sc.(HONS) AMIC
SENIOR LAB MANAGER

This document is issued by the Company subject to its General Conditions of Service (www.sgs.com/terms_and_conditions.htm) and Terms and Conditions for Electronic Documents (www.sgs.com/terms_e-document.htm). Attention is drawn to the limitations of liability, indemnification and jurisdictional issues established therein. Even if printed this electronic document is to be treated as an original within the meaning of UCP 600 article 20b. The authenticity of this document may be verified at www.sgs.com/verification. 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. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for three months only.



Test Report

No. CTSSA/08802-1(AD-B)/12
CTS Ref. CTSSA/12/1396/Littel

Date : 18/05/2012

Page: 2 of 5

Test results:

Test Part Description :

Sample Description : Silver Ring

RoHS Directive 2011/65/EU Annex II

Test Item(s):	Unit	Test Method	Results	MDL
Cadmium(Cd)	mg/kg	With reference to IEC 62321:2008, and performed by ICP-OES	N.D.	2
Lead (Pb)	mg/kg	With reference to IEC 62321:2008, and performed by ICP-OES	N.D.	2
Mercury (Hg)	mg/kg	With reference to IEC 62321:2008, and performed by ICP-OES	N.D.	2
Hexavalent Chromium (CrVI) by Spot test / boiling water extraction (optional) #	---	With reference to IEC 62321:2008	Negative	-
Sum of PBBs	mg/kg	With reference to IEC 62321:2008, and performed by GC-MS	N.D.	-
Monobromobiphenyl	mg/kg	With reference to IEC 62321:2008, and performed by GC-MS	N.D.	5
Dibromobiphenyl	mg/kg	With reference to IEC 62321:2008, and performed by GC-MS	N.D.	5
Tribromobiphenyl	mg/kg	With reference to IEC 62321:2008, and performed by GC-MS	N.D.	5
Tetrabromobiphenyl	mg/kg	With reference to IEC 62321:2008, and performed by GC-MS	N.D.	5
Hexabromobiphenyl	mg/kg	With reference to IEC 62321:2008, and performed by GC-MS	N.D.	5
Pentabromobiphenyl	mg/kg	With reference to IEC 62321:2008, and performed by GC-MS	N.D.	5
Heptabromobiphenyl	mg/kg	With reference to IEC 62321:2008, and performed by GC-MS	N.D.	5
Octabromobiphenyl	mg/kg	With reference to IEC 62321:2008, and performed by GC-MS	N.D.	5
Nonabromobiphenyl	mg/kg	With reference to IEC 62321:2008, and performed by GC-MS	N.D.	5
Decabromobiphenyl	mg/kg	With reference to IEC 62321:2008, and performed by GC-MS	N.D.	5

SGS LABORATORY SERVICES (M) SDN. BHD.

CHONG KIEN LEN
B.Sc.(HONS) AMIC
SENIOR LAB MANAGER

This document is issued by the Company subject to its General Conditions of Service (www.sgs.com/terms_and_conditions.htm) and Terms and Conditions for Electronic Documents (www.sgs.com/terms_e-document.htm). Attention is drawn to the limitations of liability, indemnification and jurisdictional issues established therein. Even if printed this electronic document is to be treated as an original within the meaning of UCP 600 article 20b. The authenticity of this document may be verified at www.sgs.com/verification. 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. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for three months only.



Test Report

No. CTSSA/08802-1(AD-B)/12
CTS Ref. CTSSA/12/1396/Littel

Date : 18/05/2012

Page: 3 of 5

Sum of PBDEs	mg/kg	With reference to IEC 62321:2008, and performed by GC-MS	N.D.	-
Monobromodiphenyl ether	mg/kg	With reference to IEC 62321:2008, and performed by GC-MS	N.D.	5
Dibromodiphenyl ether	mg/kg	With reference to IEC 62321:2008, and performed by GC-MS	N.D.	5
Tribromodiphenyl ether	mg/kg	With reference to IEC 62321:2008, and performed by GC-MS	N.D.	5
Tetrabromodiphenyl ether	mg/kg	With reference to IEC 62321:2008, and performed by GC-MS	N.D.	5
Pentabromodiphenyl ether	mg/kg	With reference to IEC 62321:2008, and performed by GC-MS	N.D.	5
Hexabromodiphenyl ether	mg/kg	With reference to IEC 62321:2008, and performed by GC-MS	N.D.	5
Heptabromodiphenyl ether	mg/kg	With reference to IEC 62321:2008, and performed by GC-MS	N.D.	5
Octabromodiphenyl ether	mg/kg	With reference to IEC 62321:2008, and performed by GC-MS	N.D.	5
Nonabromodiphenyl ether	mg/kg	With reference to IEC 62321:2008, and performed by GC-MS	N.D.	5
Decabromodiphenyl ether	mg/kg	With reference to IEC 62321:2008, and performed by GC-MS	N.D.	5

Note : (a) mg/kg = ppm ; (0.1wt% = 1000ppm)

(b) N.D. = Not Detected

(c) MDL = Method Detection Limit

(d) # = **Spot-Test:**

a. Negative means the absence of Cr(VI) on the tested areas

b. Positive means the presence of Cr(VI) on the tested areas

(The tested sample should be further verified by boiling-water-extraction method if the spot test result is negative or cannot be confirmed)

Boiling water extraction:

a. Negative means the absence of Cr(VI) on the tested areas

b. Positive means the presence of Cr(VI) on the tested areas;

The detected concentration in 50 mL boiling water extraction solution is equal or greater than 0.02 mg/kg with 50 cm² sample surface area.

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.

(e) - = Not regulated

(f) This report supersedes report no. CTSSA/08802-1/12

SGS LABORATORY SERVICES (M) SDN. BHD.

CHONG KIEN LEN
B.Sc.(HONS) AMIC
SENIOR LAB MANAGER

This document is issued by the Company subject to its General Conditions of Service (www.sgs.com/terms_and_conditions.htm) and Terms and Conditions for Electronic Documents (www.sgs.com/terms_e-document.htm). Attention is drawn to the limitations of liability, indemnification and jurisdictional issues established therein. Even if printed this electronic document is to be treated as an original within the meaning of UCP 600 article 20b. The authenticity of this document may be verified at www.sgs.com/verify.htm. Any holder of this document is advised that information contained herein 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. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for three months only.



Test Report

No. CTSSA/08802-1(AD-B)/12
CTS Ref. CTSSA/12/1396/Littel

Date : 18/05/2012

Page: 4 of 5

Test Part Description :

Sample Description : Silver Ring



SGS authenticate the photo on original report only

SGS LABORATORY SERVICES (M) SDN. BHD.

CHONG KIEN LEN
B.Sc.(HONS) AMIC
SENIOR LAB MANAGER

This document is issued by the Company subject to its General Conditions of Service (www.sgs.com/terms_and_conditions.htm) and Terms and Conditions for Electronic Documents (www.sgs.com/terms_e-document.htm). Attention is drawn to the limitations of liability, indemnification and jurisdictional issues established therein. Even if printed this electronic document is to be treated as an original within the meaning of UCP 600 article 20b. The authenticity of this document may be verified at www.sgssite.com/authentication. 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. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for three months only.

Test Report

No. CTSSA/08802-1(AD-B)/12
CTS Ref. CTSSA/12/1396/Littel

Date : 18/05/2012

Page: 5 of 5

1. DETERMINATION OF CADMIUM CONTENT BY IEC 62321 2008

Sample Receiving and Registration
↓
Cut sample in small pieces
↓
Weight sample (0.2-0.5g) into digestion vessel
↓
Acid digestion (Microwave)
↓
"Totally Dissolved"
↓
Filtration
↓
Analyses by ICP

2. DETERMINATION OF LEAD CONTENT BY IEC 62321 2008

Sample Receiving and Registration
↓
Cut sample in small pieces
↓
Weight sample (0.2-0.5g) into digestion vessel
↓
Acid digestion (Microwave)
↓
"Totally Dissolved"
↓
Filtration
↓
Analyses by ICP

3. DETERMINATION OF MERCURY CONTENT BY IEC 62321 2008

Sample Receiving and Registration
↓
Cut sample in small pieces
↓
Weight sample (0.2-0.5g) into digestion vessel
↓
Acid digestion (Microwave)
↓
"Totally Dissolved"
↓
Filtration
↓
Analyses by ICP

4. DETERMINATION OF HEXAVALENT CHROMIUM BY IEC 62321 2008

Sample Receiving and Registration
↓
Sample Preparation
↓
Spot-test (Qualitative)
↓
Boiling-water-extraction
↓
Analyses by UV- Spectrophotometer
↓
Test Report

5. DETERMINATION OF PBB/PBDE WITH GC-MS BY IEC 62321 2008

Cut sample in small pieces
↓
Weight sample (0.5-4.0g) into extraction thimble
↓
Soxhlet Extraction with Toluene
↓
Filter through 0.45 µm membrane filter
↓
Analyses by GC-MS (with appropriate dilution)

**** End of Report ****

SGS LABORATORY SERVICES (M) SDN. BHD.



CHONG KIEN LEN
B.Sc.(HONS) AMIC
SENIOR LAB MANAGER

This document is issued by the Company subject to its General Conditions of Service (www.sgs.com/terms_and_conditions.htm) and Terms and Conditions for Electronic Documents (www.sgs.com/terms_e-document.htm). Attention is drawn to the limitations of liability, indemnification and jurisdictional issues established therein. Even if printed this electronic document is to be treated as an original within the meaning of UCP 600 article 20b. The authenticity of this document may be verified at www.sgsonline.com/verification. Any holder of this document is advised that information contained herein 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. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for three months only.



Test Report

No. CTSSA/08786-1(AD-B)/12
CTS Ref. CTSSA/12/1396/Littel

Date : 18/05/2012

Page: 1 of 5

LITTELFUSE INC.
800E. NORTHWEST HIGHWAY
DES PLAINES, IL 60016, USA

The following merchandise was (were) submitted and identified by the client as:

Sample Description	:	Blue Ink
Sample Receiving Date	:	23/04/2012
Testing Period	:	23/04/2012 to 10/05/2012
Date Completed	:	10/05/2012
Reporting Date	:	18/05/2012

Test Requested	:	Selected test(s) as requested by client
Test Method	:	Please refer to next page(s).
Test Results	:	Please refer to next page(s).
Analysts	:	Teh Pui Sean & Tay Siam Pine

SGS LABORATORY SERVICES (M) SDN. BHD.

CHONG KIEN LEN
B.Sc.(HONS) AMIC
SENIOR LAB MANAGER

This document is issued by the Company subject to its General Conditions of Service (www.sgs.com/terms_and_conditions.htm) and Terms and Conditions for Electronic Documents (www.sgs.com/terms_e-document.htm). Attention is drawn to the limitations of liability, indemnification and jurisdictional issues established therein. Even if printed this electronic document is to be treated as an original within the meaning of UCP 600 article 20b. The authenticity of this document may be verified at www.sgsonline.com/verification. 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. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for three months only.



Test Report

No. CTSSA/08786-1(AD-B)/12
CTS Ref. CTSSA/12/1396/Littel

Date : 18/05/2012

Page: 2 of 5

Test results:

Test Part Description :

Sample Description : Blue Ink

RoHS Directive 2011/65/EU Annex II

Test Item(s):	Unit	Test Method	Results	MDL
Cadmium (Cd)	mg/kg	With reference to IEC 62321:2008, and performed by ICP-OES	N.D.	2
Lead (Pb)	mg/kg	With reference to IEC 62321:2008, and performed by ICP-OES	N.D.	2
Mercury (Hg)	mg/kg	With reference to IEC 62321:2008, and performed by ICP-OES	N.D.	2
Hexavalent Chromium (CrVI)	mg/kg	With reference to IEC 62321:2008, and performed by UV-Vis	N.D.	2
Sum of PBBs	mg/kg	With reference to IEC 62321:2008, and performed by GC-MS	N.D.	-
Monobromobiphenyl	mg/kg	With reference to IEC 62321:2008, and performed by GC-MS	N.D.	5
Dibromobiphenyl	mg/kg	With reference to IEC 62321:2008, and performed by GC-MS	N.D.	5
Tribromobiphenyl	mg/kg	With reference to IEC 62321:2008, and performed by GC-MS	N.D.	5
Tetrabromobiphenyl	mg/kg	With reference to IEC 62321:2008, and performed by GC-MS	N.D.	5
Hexabromobiphenyl	mg/kg	With reference to IEC 62321:2008, and performed by GC-MS	N.D.	5
Pentabromobiphenyl	mg/kg	With reference to IEC 62321:2008, and performed by GC-MS	N.D.	5
Heptabromobiphenyl	mg/kg	With reference to IEC 62321:2008, and performed by GC-MS	N.D.	5
Octabromobiphenyl	mg/kg	With reference to IEC 62321:2008, and performed by GC-MS	N.D.	5
Nonabromobiphenyl	mg/kg	With reference to IEC 62321:2008, and performed by GC-MS	N.D.	5
Decabromobiphenyl	mg/kg	With reference to IEC 62321:2008, and performed by GC-MS	N.D.	5

SGS LABORATORY SERVICES (M) SDN. BHD.

CHONG KIEN LEN
B.Sc.(HONS) AMIC
SENIOR LAB MANAGER

This document is issued by the Company subject to its General Conditions of Service (www.sgs.com/terms_and_conditions.htm) and Terms and Conditions for Electronic Documents (www.sgs.com/terms_e-document.htm). Attention is drawn to the limitations of liability, indemnification and jurisdictional issues established therein. Even if printed this electronic document is to be treated as an original within the meaning of UCP 600 article 20b. The authenticity of this document may be verified at www.sgs.com/au/verification. 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. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for three months only.



Test Report

No. CTSSA/08786-1(AD-B)/12
CTS Ref. CTSSA/12/1396/Littel

Date : 18/05/2012

Page: 3 of 5

Sum of PBDEs	mg/kg	With reference to IEC 62321:2008, and performed by GC-MS	N.D.	-
Monobromodiphenyl ether	mg/kg	With reference to IEC 62321:2008, and performed by GC-MS	N.D.	5
Dibromodiphenyl ether	mg/kg	With reference to IEC 62321:2008, and performed by GC-MS	N.D.	5
Tribromodiphenyl ether	mg/kg	With reference to IEC 62321:2008, and performed by GC-MS	N.D.	5
Tetrabromodiphenyl ether	mg/kg	With reference to IEC 62321:2008, and performed by GC-MS	N.D.	5
Pentabromodiphenyl ether	mg/kg	With reference to IEC 62321:2008, and performed by GC-MS	N.D.	5
Hexabromodiphenyl ether	mg/kg	With reference to IEC 62321:2008, and performed by GC-MS	N.D.	5
Heptabromodiphenyl ether	mg/kg	With reference to IEC 62321:2008, and performed by GC-MS	N.D.	5
Octabromodiphenyl ether	mg/kg	With reference to IEC 62321:2008, and performed by GC-MS	N.D.	5
Nonabromodiphenyl ether	mg/kg	With reference to IEC 62321:2008, and performed by GC-MS	N.D.	5
Decabromodiphenyl ether	mg/kg	With reference to IEC 62321:2008, and performed by GC-MS	N.D.	5

Note : (a) mg/kg = ppm ; (0.1wt% = 1000ppm)
(b) N.D. = Not Detected
(c) MDL = Method Detection Limit
(d) - = Not regulated
(e) Testing based on original basis
(f) This report supersedes report no. CTSSA/08786-1/12

SGS LABORATORY SERVICES (M) SDN. BHD.

CHONG KIEN LEN
B.Sc.(HONS) AMIC
SENIOR LAB MANAGER

This document is issued by the Company subject to its General Conditions of Service (www.sgs.com/terms_and_conditions.htm) and Terms and Conditions for Electronic Documents (www.sgs.com/terms_e-document.htm). Attention is drawn to the limitations of liability, indemnification and jurisdictional issues established therein. Even if printed this electronic document is to be treated as an original within the meaning of UCP 600 article 20b. The authenticity of this document may be verified at www.sgsonline.com/verification. 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. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for three months only.

Test Report

No. CTSSA/08786-1(AD-B)/12
CTS Ref. CTSSA/12/1396/Littel

Date : 18/05/2012


Page: 4 of 5

Test Part Description :

Sample Description : Blue Ink



SGS LABORATORY SERVICES (M) SDN. BHD.



CHONG KIEN LEN
B.Sc.(HONS) AMIC
SENIOR LAB MANAGER

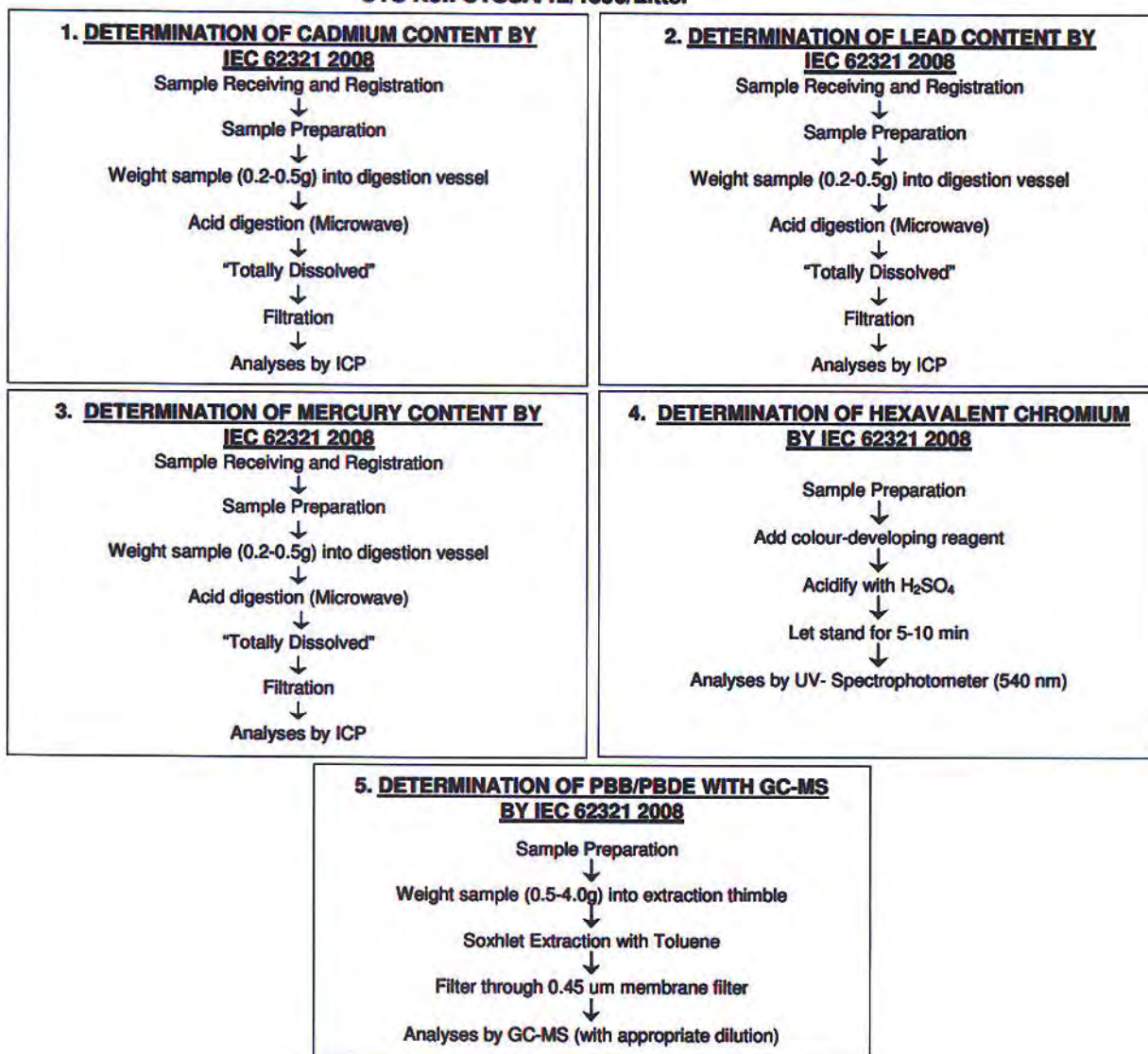
This document is issued by the Company subject to its General Conditions of Service (www.sgs.com/terms_and_conditions.htm) and Terms and Conditions for Electronic Documents (www.sgs.com/terms_e-document.htm). Attention is drawn to the limitations of liability, indemnification and jurisdictional issues established therein. Even if printed this electronic document is to be treated as an original within the meaning of UCP 600 article 20b. The authenticity of this document may be verified at www.sgs.com/audittrail.htm. 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. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for three months only.

Test Report

No. CTSSA/08786-1(AD-B)/12
CTS Ref. CTSSA/12/1396/Littel

Date : 18/05/2012

Page: 5 of 5



**** End of Report ****

SGS LABORATORY SERVICES (M) SDN. BHD.



CHONG KIEN LEN
B.Sc.(HONS) AMIC
SENIOR LAB MANAGER

This document is issued by the Company subject to its General Conditions of Service (www.sgs.com/terms_and_conditions.htm) and Terms and Conditions for Electronic Documents (www.sgs.com/terms_e-document.htm). Attention is drawn to the limitations of liability, indemnification and jurisdictional issues established therein. Even if printed this electronic document is to be treated as an original within the meaning of UCP 600 article 20b. The authenticity of this document may be verified at www.sgs.com/verify.htm. 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. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for three months only.



Test Report

No. CTSSA/08786-2(AD-B)/12
CTS Ref. CTSSA/12/1396/Littel

Date : 18/05/2012

Page: 1 of 3

LITTELFUSE INC.
800E. NORTHWEST HIGHWAY
DES PLAINES, IL 60016, USA

The following merchandise was (were) submitted and identified by the client as:

Sample Description	:	Blue Ink
Sample Receiving Date	:	23/04/2012
Testing Period	:	23/04/2012 to 10/05/2012
Date Completed	:	10/05/2012
Reporting Date	:	18/05/2012

Test Requested	:	Selected test(s) as requested by client
Test Method	:	Please refer to next page(s).
Test Results	:	Please refer to next page(s).
Analysts	:	Yee Sook Wai

SGS LABORATORY SERVICES (M) SDN. BHD.

CHONG KIEN LEN
B.Sc.(HONS) AMIC
SENIOR LAB MANAGER

This document is issued by the Company subject to its General Conditions of Service (www.sgs.com/terms_and_conditions.htm) and Terms and Conditions for Electronic Documents (www.sgs.com/terms_e-document.htm). Attention is drawn to the limitations of liability, indemnification and jurisdictional issues established therein. Even if printed this electronic document is to be treated as an original within the meaning of UCP 600 article 20b. The authenticity of this document may be verified at www.sgs.com/verification. 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. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for three months only.



Test Report

No. CTSSA/08786-2(AD-B)/12
CTS Ref. CTSSA/12/1396/Littel

Date : 18/05/2012

Page: 2 of 3

Test result:

Test Part Description :

Sample Description : Blue Ink

Optional: RoHS Directive 2011/65/EU, priority substances

Test Item(s):	Unit	Test Method	Results	MDL
Hexabromocyclododecane (HBCDD)	mg/kg	Based on IEC 62321:2008, and performed by GC-MS	N.D.	10
Bis (2-ethylhexyl) phthalate (DEHP)	mg/kg	Based on EN 14372: 2004, and performed by GC-MS	N.D.	30
Butyl benzyl phthalate (BBP)	mg/kg	Based on EN 14372: 2004, and performed by GC-MS	N.D.	30
Dibutyl phthalate (DBP)	mg/kg	Based on EN 14372: 2004, and performed by GC-MS	N.D.	30

Note:

- (a) Reference Information: Directive 2011/65/EU recasting RoHS directive 2002/95/EC: Hexabromocyclododecane (HBCDD), Bis (2-ethylhexyl) phthalate (DEHP), Butyl benzyl phthalate (BBP) and Dibutyl phthalate (DBP) are considered as a priority for risk evaluation and substance restriction.
- (b) mg/kg = ppm; 0.1wt% = 1000ppm
- (c) N.D. = Not detected
- (d) MDL = Method Detection Limit
- (e) - = not regulated
- (f) Testing based on original basis
- (g) This report supersedes report no. CTSSA/08786-2/12

SGS LABORATORY SERVICES (M) SDN. BHD.

CHONG KIEN LEN
B.Sc.(HONS) AMIC
SENIOR LAB MANAGER

This document is issued by the Company subject to its General Conditions of Service (www.sgs.com/terms_and_conditions.htm) and Terms and Conditions for Electronic Documents (www.sgs.com/terms_e-document.htm). Attention is drawn to the limitations of liability, indemnification and jurisdictional issues established therein. Even if printed this electronic document is to be treated as an original within the meaning of UCP 600 article 20b. The authenticity of this document may be verified at www.ssgsonline.com/authentication. 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. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for three months only.

Test Report

No. CTSSA/08786-2(AD-B)/12
CTS Ref. CTSSA/12/1396/Littel

Date : 18/05/2012

Page: 3 of 3

Test Part Description :

Sample Description : Blue Ink

LITTELFUSE INC.
CTSSA/08786-2(AD-B)/12



SGS authenticate the photo on original report only

**** End of Report ****

SGS LABORATORY SERVICES (M) SDN. BHD.

CHONG KIEN LEN
B.Sc.(HONS) AMIC
SENIOR LAB MANAGER

This document is issued by the Company subject to its General Conditions of Service (www.sgs.com/terms_and_conditions.htm) and Terms and Conditions for Electronic Documents (www.sgs.com/terms_e-document.htm). Attention is drawn to the limitations of liability, indemnification and jurisdictional issues established therein. Even if printed this electronic document is to be treated as an original within the meaning of UCP 600 article 20b. The authenticity of this document may be verified at www.sgs.com/authenticity. 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. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for three months only.



Test Report

No. CTSSA/08805-1(AD-B)/12
CTS Ref. CTSSA/12/1396/Littel

Date : 18/05/2012

Page: 1 of 5

LITTELFUSE INC.
800E, NORTHWEST HIGHWAY
DES PLAINES, IL 60016, USA

The following merchandise was (were) submitted and identified by the client as:

Sample Description	:	Tin Plated Wire
Sample Receiving Date	:	23/04/2012
Testing Period	:	23/04/2012 to 11/05/2012
Date Completed	:	11/05/2012
Reporting Date	:	18/05/2012

Test Requested	:	Selected test(s) as requested by client
Test Method	:	Please refer to next page(s).
Test Results	:	Please refer to next page(s).
Analysts	:	Teh Pui Sean & Tay Siam Pine

SGS LABORATORY SERVICES (M) SDN. BHD.

CHONG KIEN LEN
B.Sc.(HONS) AMIC
SENIOR LAB MANAGER

This document is issued by the Company subject to its General Conditions of Service (www.sgs.com/terms_and_conditions.htm) and Terms and Conditions for Electronic Documents (www.sgs.com/terms_e-document.htm). Attention is drawn to the limitations of liability, indemnification and jurisdictional issues established therein. Even if printed this electronic document is to be treated as an original within the meaning of UCP 600 article 20b. The authenticity of this document may be verified at www.sgs.com/verification. 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. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for three months only.



Test Report

No. CTSSA/08805-1(AD-B)/12
CTS Ref. CTSSA/12/1396/Littel

Date : 18/05/2012

Page: 2 of 5

Test results:

Test Part Description :

Sample Description : Tin Plated Wire

RoHS Directive 2011/65/EU Annex II

Test Item(s):	Unit	Test Method	Results	MDL
Cadmium(Cd)	mg/kg	With reference to IEC 62321:2008, and performed by ICP-OES	N.D.	2
Lead (Pb)	mg/kg	With reference to IEC 62321:2008, and performed by ICP-OES	N.D.	2
Mercury (Hg)	mg/kg	With reference to IEC 62321:2008, and performed by ICP-OES	N.D.	2
Hexavalent Chromium (CrVI) by Spot test / boiling water extraction (optional) #	---	With reference to IEC 62321:2008	Negative	-
Sum of PBBs	mg/kg	With reference to IEC 62321:2008, and performed by GC-MS	N.D.	-
Monobromobiphenyl	mg/kg	With reference to IEC 62321:2008, and performed by GC-MS	N.D.	5
Dibromobiphenyl	mg/kg	With reference to IEC 62321:2008, and performed by GC-MS	N.D.	5
Tribromobiphenyl	mg/kg	With reference to IEC 62321:2008, and performed by GC-MS	N.D.	5
Tetrabromobiphenyl	mg/kg	With reference to IEC 62321:2008, and performed by GC-MS	N.D.	5
Hexabromobiphenyl	mg/kg	With reference to IEC 62321:2008, and performed by GC-MS	N.D.	5
Pentabromobiphenyl	mg/kg	With reference to IEC 62321:2008, and performed by GC-MS	N.D.	5
Heptabromobiphenyl	mg/kg	With reference to IEC 62321:2008, and performed by GC-MS	N.D.	5
Octabromobiphenyl	mg/kg	With reference to IEC 62321:2008, and performed by GC-MS	N.D.	5
Nonabromobiphenyl	mg/kg	With reference to IEC 62321:2008, and performed by GC-MS	N.D.	5
Decabromobiphenyl	mg/kg	With reference to IEC 62321:2008, and performed by GC-MS	N.D.	5

SGS LABORATORY SERVICES (M) SDN. BHD.

CHONG KIEN LEN
B.Sc.(HONS) AMIC
SENIOR LAB MANAGER

This document is issued by the Company subject to its General Conditions of Service (www.sgs.com/terms_and_conditions.htm) and Terms and Conditions for Electronic Documents (www.sgs.com/terms_e-document.htm). Attention is drawn to the limitations of liability, indemnification and jurisdictional issues established therein. Even if printed this electronic document is to be treated as an original within the meaning of UCP 600 article 20b. The authenticity of this document may be verified at www.sgs.com/audit/audit.htm. 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. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for three months only.



Test Report

No. CTSSA/08805-1(AD-B)/12
CTS Ref. CTSSA/12/1396/Littel

Date : 18/05/2012

Page: 3 of 5

Sum of PBDEs	mg/kg	With reference to IEC 62321:2008, and performed by GC-MS	N.D.	-
Monobromodiphenyl ether	mg/kg	With reference to IEC 62321:2008, and performed by GC-MS	N.D.	5
Dibromodiphenyl ether	mg/kg	With reference to IEC 62321:2008, and performed by GC-MS	N.D.	5
Tribromodiphenyl ether	mg/kg	With reference to IEC 62321:2008, and performed by GC-MS	N.D.	5
Tetrabromodiphenyl ether	mg/kg	With reference to IEC 62321:2008, and performed by GC-MS	N.D.	5
Pentabromodiphenyl ether	mg/kg	With reference to IEC 62321:2008, and performed by GC-MS	N.D.	5
Hexabromodiphenyl ether	mg/kg	With reference to IEC 62321:2008, and performed by GC-MS	N.D.	5
Heptabromodiphenyl ether	mg/kg	With reference to IEC 62321:2008, and performed by GC-MS	N.D.	5
Octabromodiphenyl ether	mg/kg	With reference to IEC 62321:2008, and performed by GC-MS	N.D.	5
Nonabromodiphenyl ether	mg/kg	With reference to IEC 62321:2008, and performed by GC-MS	N.D.	5
Decabromodiphenyl ether	mg/kg	With reference to IEC 62321:2008, and performed by GC-MS	N.D.	5

Note : (a) mg/kg = ppm ; (0.1wt% = 1000ppm)

(b) N.D. = Not Detected

(c) MDL = Method Detection Limit

(d) # = **Spot-Test:**

a. Negative means the absence of Cr(VI) on the tested areas

b. Positive means the presence of Cr(VI) on the tested areas

(The tested sample should be further verified by boiling-water-extraction method if the spot test result is negative or cannot be confirmed)

Boiling water extraction:

a. Negative means the absence of Cr(VI) on the tested areas

b. Positive means the presence of Cr(VI) on the tested areas;

The detected concentration in 50 mL boiling water extraction solution is equal or greater than 0.02 mg/kg with 50 cm² sample surface area.

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.

(e) - = Not regulated

(f) This report supersedes report no. CTSSA/08805-1/12

SGS LABORATORY SERVICES (M) SDN. BHD.

CHONG KIEN LEN
B.Sc.(HONS) AMIC
SENIOR LAB MANAGER

This document is issued by the Company subject to its General Conditions of Service (www.sgs.com/terms_and_conditions.htm) and Terms and Conditions for Electronic Documents (www.sgs.com/terms_e-document.htm). Attention is drawn to the limitations of liability, indemnification and jurisdictional issues established therein. Even if printed this electronic document is to be treated as an original within the meaning of UCP 600 article 20b. The authenticity of this document may be verified at www.sgs.com/authenticity. 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. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for three months only.

Test Report

No. CTSSA/08805-1(AD-B)/12
CTS Ref. CTSSA/12/1396/Littel

Date : 18/05/2012

Page: 4 of 5

Test Part Description :

Sample Description : Tin Plated Wire



SGS authenticate the photo on original report only

SGS LABORATORY SERVICES (M) SDN. BHD.

CHONG KIEN LEN
B.Sc.(HONS) AMIC
SENIOR LAB MANAGER

This document is issued by the Company subject to its General Conditions of Service (www.sgs.com/terms_and_conditions.htm) and Terms and Conditions for Electronic Documents (www.sgs.com/terms_e-document.htm). Attention is drawn to the limitations of liability, indemnification and jurisdictional issues established therein. Even if printed this electronic document is to be treated as an original within the meaning of UCP 600 article 20b. The authenticity of this document may be verified at www.sgs.com/verification. 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. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for three months only.

Test Report

No. CTSSA/08805-1(AD-B)/12
CTS Ref. CTSSA/12/1396/Littel

Date : 18/05/2012

Page: 5 of 5

1. DETERMINATION OF CADMIUM CONTENT BY IEC 62321 2008

Sample Receiving and Registration
↓
Cut sample in small pieces
↓
Weight sample (0.2-0.5g) into digestion vessel
↓
Acid digestion (Microwave)
↓
"Totally Dissolved"
↓
Filtration
↓
Analyses by ICP

2. DETERMINATION OF LEAD CONTENT BY IEC 62321 2008

Sample Receiving and Registration
↓
Cut sample in small pieces
↓
Weight sample (0.2-0.5g) into digestion vessel
↓
Acid digestion (Microwave)
↓
"Totally Dissolved"
↓
Filtration
↓
Analyses by ICP

3. DETERMINATION OF MERCURY CONTENT BY IEC 62321 2008

Sample Receiving and Registration
↓
Cut sample in small pieces
↓
Weight sample (0.2-0.5g) into digestion vessel
↓
Acid digestion (Microwave)
↓
"Totally Dissolved"
↓
Filtration
↓
Analyses by ICP

4. DETERMINATION OF HEXAVALENT CHROMIUM BY IEC 62321 2008

Sample Receiving and Registration
↓
Sample Preparation
↓
Spot-test (Qualitative)
↓
Boiling-water-extraction
↓
Analyses by UV- Spectrophotometer
↓
Test Report

5. DETERMINATION OF PBB/PBDE WITH GC-MS BY IEC 62321 2008

Cut sample in small pieces
↓
Weight sample (0.5-4.0g) into extraction thimble
↓
Soxhlet Extraction with Toluene
↓
Filter through 0.45 µm membrane filter
↓
Analyses by GC-MS (with appropriate dilution)

**** End of Report ****

SGS LABORATORY SERVICES (M) SDN. BHD.



CHONG KIEN LEN
B.Sc.(HONS) AMIC
SENIOR LAB MANAGER

This document is issued by the Company subject to its General Conditions of Service (www.sgs.com/terms_and_conditions.htm) and Terms and Conditions for Electronic Documents (www.sgs.com/terms_e-document.htm). Attention is drawn to the limitations of liability, indemnification and jurisdictional issues established therein. Even if printed this electronic document is to be treated as an original within the meaning of UCP 600 article 20c. The authenticity of this document may be verified at www.sgs.com/authenticity.htm. 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. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for three months only.