

1423373

Date: 23-Jan-2008

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Client: Electronics Industry Public Company Limited

103, 117 Moo 4, EPZ 1, Lat Krabang Industrial Estate,

Lat Krabang, Bangkok 10520 Thailand

The following sample(s) was/were submitted and identified by/on behalf of the client as:

Sample Description

: Melf , Mini - Melf

Sample No.

1448207

Sample Condition

As per attached photograph

Part No.

M8010821

Batch/Lot No.

M8010821

Sample Receiving Date: 18-Jan-2008

**Testing Period** 

18-Jan-2008 to 23-Jan-2008

Test Requested

: In accordance with the RoHS Directive 2002/95/EC and its amendment directives

Test Method

: (1) With reference to EPA Method 3050B for Lead Content. Analysis was performed

by ICP-OES.

(2) With reference to EPA Method 3050B for Cadmium Content Analysis was

performed by ICP-OES.

(3) With reference to wet decomposition method for Mercury Content Analysis was

performed by ICP-OES.

With reference to EPA Method 3060A & 7196A for Hexavalent Chromium.

Analysis was performed by UV/Vis Spectrometry.

With reference to USEPA 3540C for PBB/PBDE content. Analysis was

performed by GC/MS.

**Test Results** 

: Please refer to next page.

Signed for and on behalf of SGS (Thailand) Limited

Pornpana Lirathpong **Hardlines Testing Manager** 



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### **TEST RESULTS**

Test results by chemical method (Unit: mg/kg)

Test Item (s):	Method (Refer to)	Result (1)	MDL	RoHS Limit
Lead (Pb)	(1)	n.d.	2	1000
Cadmium (Cd)	(2)	n.d.	2	100
Mercury (Hg)	(3)	n.d.	2	1000
Hexavalent Chromium (CrVI)	(4)*	n.d.	2	1000
sum of PBBs	(5)	n.d.	= -	1000
Monobromobiphenyl		n.d.	5	120
Dibromobiphenyl		n.d.	5	2 86
Tribromobiphenyl		n.d.	5	1-
Tetrabromobiphenyl		n.d.	5	1.92
Pentabromobiphenyl		n.d.	5	
Hexabromobiphenyl		n.d.	5	
Heptabromobiphenyl		n.d.	5	
Octabromobiphenyl		n.d.	5	141
Nonabromobiphenyl		n.d.	5	340
Decabromobiphenyl		n.d.	5	(*)



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### **TEST RESULTS**

Test results by chemical method (Unit: mg/kg)

Test Item (s):	Method (Refer to)	Result (1)	MDL	RoHS Limit
Sum of PBDEs (Mono to Nona) (Note 4)	(5)	n.d.	-	1000
Monobromodiphenyl ether		n.d.	5	849
Dibromodiphenyl ether		n.d.	5	141
Tribromodiphenyl ether		n.d.	5	197
Tetrabromodiphenyl ether		n.d.	5	-
Pentabromodiphenyl ether		n.d.	5	
Hexabromodiphenyl ether		n.d.	5	1.5
Heptabromodiphenyl ether		n.d.	5	
Octabromodiphenyl ether		n.d.	5	-
Nonabromodiphenyl ether		n.d.	5	528
Decabromodiphenyl ether		n.d.	5	京華5
Sum of PBDEs (Mono to Deca)		n.d.	-	200

**Test Part Description** Result (1) metal

# Note:

- (1) mg/kg = ppm
- (2) n.d. = Not Detected
- (3) MDL = Method Detection Limit
- (4) Sum of Mono to NonaBDE & according to 2005/717/EC DecaBDE in polymeric is exempt.
- (5) "-" = Not regulated
- (6) " \* " Test method for hexavalent chromium is requested by the client and would not comply with certain OEMs or automotive assemblers requirements.

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Flow chart of digestion (EPA 3050B for Pb)

```
+----+
     | Cutting/Preparation |
      -----+
      Sample measurement |
       -----+
      | digestion with HNO3 |
       -----+
      | add H2O2 + Hcl |
         | digestion |
         | Filtration |
No residue
           1
                             Residue
                     | Ashing with H2SO4 |
                        +----+
                        | Add HNO3 |
                            1
                         No residue
         | ICP-OES | ---- | DATA |
```

The samples were dissolved totally by pre-conditioning method according to above flow chart.

Operator : Siam Polarwut

Section Chief : Laddawan Uranpitr

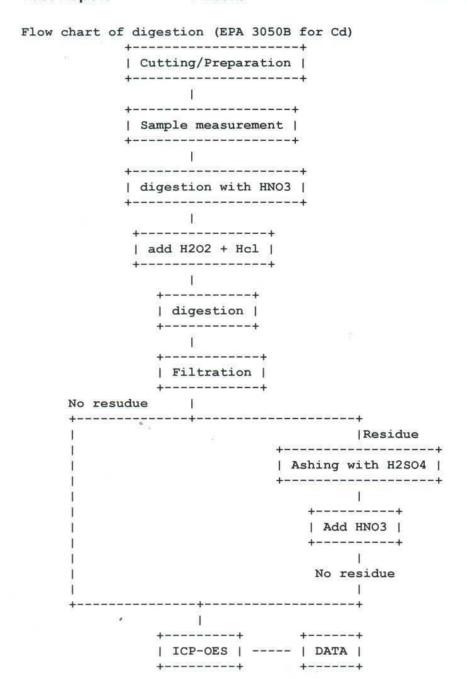
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The samples were dissolved totally by pre-conditioning method according to above flow chart.

Operator : Siam Polarwut

Section Chief : Laddawan Uranpitr

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Flow chart of digestion (Wet decomposition for Hg)

```
+----+
| Cutting/Preparation |
+----+
+----+
| Sample measurement |
+----+
| Hot plate digestion with HNO3 |
+----+
| add H202 |
----+
| add HCl |
  1
| Total digestion |
1 .
ICP-AES
 ----+
  1
+----+
| DATA |
```

The samples were dissolved totally by pre-conditioning method according to above flow chart.

Operator : Siam Polarwut

Section Chief : Laddawan Uranpitr

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Flow chart of digestion (EPA 3060A,7196A for Cr(VI))

```
+----+
| Cutting/Preparation |
| Sample measurement |
 -----+
| Add digestion solution (NaOH+Na2CO3) |
| Add MgCl2 and phosphate buffer |
----+
| add HNO3 |
Colorimetrically |
| UV-Spectrophotometer |
 -----+
| DATA |
+----+
```

Operator : Varaporn Chaihanit Section Chief : Laddawan Uranpitr



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Flow chart of PBBs/PBDEs

Operator : Prapapan Puengpatiparn Section Chief : Sulkifli Mama



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#### SAMPLE/ATTACHMENT PICTURE

