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Client: NEC Tokin Electronics (Thailand) Co., Ltd.

60/76 Moo 19, Navanakorn Industrial Estate, Phaholyothin Road,

Klong Nueng, Klong Luang, Pathumthani 12120 Thailand

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

Sample Description : TEESVA0J106M8R

Sample No. : 1522720

Sample Condition : As per attached photograph

Lot No. : 8F02T00511

Manufacturer/Vendor : NEC TOKIN ELECTRONICS (THAILAND) CO.,LTD.

Sample Receiving Date : 4-Jul-2008

**Testing Period** 04-Jul-2008 to 08-Jul-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.

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

Analysis was performed by UV/Vis Spectrometry.

(5) 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	-
Dibromobiphenyl		n.d.	5	-
Tribromobiphenyl		n.d.	5	-
Tetrabromobiphenyl		n.d.	5	-
Pentabromobiphenyl		n.d.	5	-
Hexabromobiphenyl		n.d.	5	-
Heptabromobiphenyl		n.d.	5	-
Octabromobiphenyl		n.d.	5	-
Nonabromobiphenyl		n.d.	5	-
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	(5)	n.d.	-	1000
Monobromodiphenyl ether		n.d.	5	-
Dibromodiphenyl ether		n.d.	5	-
Tribromodiphenyl ether		n.d.	5	-
Tetrabromodiphenyl ether		n.d.	5	-
Pentabromodiphenyl ether		n.d.	5	-
Hexabromodiphenyl ether		n.d.	5	-
Heptabromodiphenyl ether		n.d.	5	-
Octabromodiphenyl ether		n.d.	5	-
Nonabromodiphenyl ether		n.d.	5	-
Decabromodiphenyl ether ##		n.d.	5	-

Test Part Description Result (1) mixed all parts

## Note

- (1) mg/kg = ppm; 0.1 wt% = 1000 ppm
- (2) n.d. = Not Detected
- (3) MDL = Method Detection Limit
- (4) ## = The exemption of DecaBDE in polymeric application according 2005/17/EC was overruled by the European Court of Justice by its decision of 01.04.2008. Subsequently DecaBDE will be included in the sum of PBDE after 01.07.2008
- (5) "-" = Not regulated

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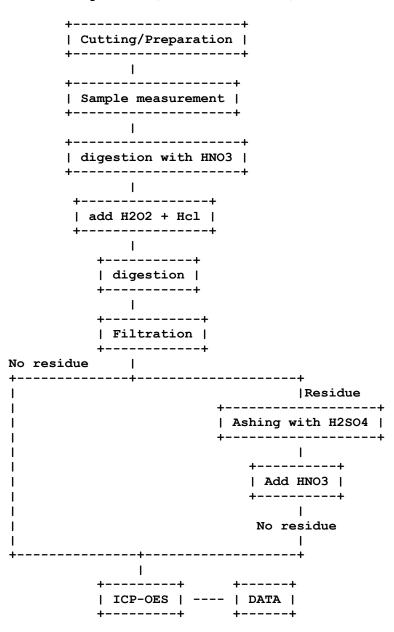
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Flow chart of digestion (EPA 3050B for Pb)



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 3050B for Cd) +----+ | Cutting/Preparation | -+----+ | Sample measurement | 1 | digestion with HNO3 | +----+ - 1 +----+ | add H2O2 + Hcl | \_\_\_\_\_+ +----+ | digestion | +----+ 1 | Filtration | No resudue - 1 +----+ |Residue +----+ | Ashing with H2SO4 | +------ 1 +----+ | Add HNO3 | +----+ -No residue ------- 1 +----+ | 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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Flow chart of digestion (Wet decomposition for Hg)

```
+----+
| Cutting/Preparation |
| Sample measurement |
  | Hot plate digestion with HNO3 |
+----+
  - 1
+----+
| add H2O2 |
+----+
  - 1
+----+
| add HCl |
+----+
  | 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

```
+----+
| Sample |
  - 1
| Sample pretreatment |
| Sample extraction/Soxhlet method |
+----+
| Concentrate/Dilute Extracted solution |
+----+
+----+
| Filter |
| Analysis by GC/MS |
  - 1
+----+
| DATA |
+----+
```

Operator : Prapapan Puengpatiparn Section Chief: Sulkifli Mama

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## SAMPLE/ATTACHMENT PICTURE



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