

Test Report

No. : CE/2011/44566D Date : 2011/08/17 Page : 1 of 13

HY ELECTRONIC CORP.

4F, NO. 118, LANE 235, PAO-CHIAO RD., HSIN-TIEN DISTRICT, NEW TAIPEI CITY, 23145 TAIWAN, R. O. C.



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

Sample Description : RECTIFIER
Style/Item No. : DO-41
Sample May Cover : DO-41、DO-15、DO-201、R-1、R-6
Sample Receiving Date : 2011/04/22
Testing Period : 2011/04/22 TO 2011/04/29

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



Chenyu Kung / Operation Manager
Signed for and on behalf of
SGS TAIWAN LTD.
Chemical Laboratory – Taipei

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Test Result(s)

PART NAME No.1 : BLACK BODY
 PART NAME No.2 : PLATING LAYER OF SILVER COLORED METAL
 PART NAME No.3 : BASE MATERIAL OF SILVER COLORED METAL
 PART NAME No.4 : SILVER COLORED METAL (INCLUDING THE PLATING LAYER)

Test Item (s):	Unit	Method	MDL	Result			
				No.1	No.2	No.3	No.4
Cadmium (Cd)	mg/kg	With reference to IEC 62321: 2008 and performed by ICP-AES.	2	n.d.	---	n.d.	---
	mg/kg	IEC 62321: 2008 application of modified digestion by surface etching and performed by ICP-AES.	2	---	n.d.	---	---
Lead (Pb)	mg/kg	With reference to IEC 62321: 2008 and performed by ICP-AES.	2	15600	---	n.d.	---
	mg/kg	IEC 62321: 2008 application of modified digestion by surface etching and performed by ICP-AES.	2	---	18	---	---
Mercury (Hg)	mg/kg	With reference to IEC 62321: 2008 and performed by ICP-AES.	2	n.d.	---	n.d.	---
	mg/kg	IEC 62321: 2008 application of modified digestion by surface etching and performed by ICP-AES.	2	---	n.d.	---	---
Hexavalent Chromium Cr(VI) by alkaline extraction	mg/kg	With reference to IEC 62321: 2008 and performed by UV-VIS.	2	n.d.	---	---	---
Hexavalent Chromium Cr(VI) by Spot test / boiling water extraction	**	With reference to IEC 62321: 2008 and performed by Spot test / boiling water extraction Method. (See Note 7)	0.02mg/kg with 50 cm ² surface area	---	Negative	Negative	---
Perfluorooctane sulfonates (PFOS-Acid, Metal Salt, Amide)	mg/kg	With reference to US EPA 3540C: 1996 method for PFOS Content. Analysis was performed by LC/MS.	10	n.d.	---	n.d.	---

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Test Item (s):	Unit	Method	MDL	Result			
				No.1	No.2	No.3	No.4
Perfluorooctane sulfonates (PFOS-Acid, Metal Salt, Amide)	µg/m ²	With reference to US EPA 3540C: 1996 method for PFOS Content. Analysis was performed by LC/MS.	1	---	n.d.	---	---
PFOA (CAS No.: 335-67-1)	mg/kg	With reference to US EPA 3540C: 1996 method for PFOA Content. Analysis was performed by LC/MS.	10	n.d.	---	n.d.	---
	µg/m ²	With reference to US EPA 3540C: 1996 method for PFOA Content. Analysis was performed by LC/MS.	1	---	n.d.	---	---
Hexabromocyclododecane (HBCDD) (CAS No.: 25637-99-4)	mg/kg	With reference to US EPA 3540C method. Analysis was performed by GC/MS.	5	n.d.	---	---	n.d.
BBP (Benzyl butyl phthalate) (CAS No.: 85-68-7)	%	With reference to EN 14372. Analysis was performed by GC/MS.	0.003	n.d.	---	---	n.d.
DBP (Dibutyl phthalate) (CAS No.: 84-74-2)	%	With reference to EN 14372. Analysis was performed by GC/MS.	0.003	n.d.	---	---	n.d.
DEHP (Di- (2-ethylhexyl) phthalate) (CAS No.: 117-81-7)	%	With reference to EN 14372. Analysis was performed by GC/MS.	0.003	n.d.	---	---	n.d.
Halogen							
Halogen-Fluorine (F) (CAS No.: 14762-94-8)	mg/kg	With reference to BS EN 14582:2007. Analysis was performed by IC.	50	n.d.	---	---	---
Halogen-Chlorine (Cl) (CAS No.: 22537-15-1)	mg/kg	With reference to BS EN 14582:2007. Analysis was performed by IC.	50	86	---	---	---
Halogen-Bromine (Br) (CAS No.: 10097-32-2)	mg/kg	With reference to BS EN 14582:2007. Analysis was performed by IC.	50	4330	---	---	---
Halogen-Iodine (I) (CAS No.: 14362-44-8)	mg/kg	With reference to BS EN 14582:2007. Analysis was performed by IC.	50	n.d.	---	---	---

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Test Item (s):	Unit	Method	MDL	Result					
				No.1	No.2	No.3	No.4		
Sum of PBBs	mg/kg	With reference to IEC 62321: 2008 and performed by GC/MS.	-	n.d.	n.d.	n.d.	---		
Monobromobiphenyl			5	n.d.	n.d.	n.d.	---		
Dibromobiphenyl			5	n.d.	n.d.	n.d.	---		
Tribromobiphenyl			5	n.d.	n.d.	n.d.	---		
Tetrabromobiphenyl			5	n.d.	n.d.	n.d.	---		
Pentabromobiphenyl			5	n.d.	n.d.	n.d.	---		
Hexabromobiphenyl			5	n.d.	n.d.	n.d.	---		
Heptabromobiphenyl			5	n.d.	n.d.	n.d.	---		
Octabromobiphenyl			5	n.d.	n.d.	n.d.	---		
Nonabromobiphenyl			5	n.d.	n.d.	n.d.	---		
Decabromobiphenyl			5	n.d.	n.d.	n.d.	---		
Sum of PBDEs					-	n.d.	n.d.	n.d.	---
Monobromodiphenyl ether					5	n.d.	n.d.	n.d.	---
Dibromodiphenyl ether					5	n.d.	n.d.	n.d.	---
Tribromodiphenyl ether					5	n.d.	n.d.	n.d.	---
Tetrabromodiphenyl ether					5	n.d.	n.d.	n.d.	---
Pentabromodiphenyl ether					5	n.d.	n.d.	n.d.	---
Hexabromodiphenyl ether					5	n.d.	n.d.	n.d.	---
Heptabromodiphenyl ether					5	n.d.	n.d.	n.d.	---
Octabromodiphenyl ether					5	n.d.	n.d.	n.d.	---
Nonabromodiphenyl ether					5	n.d.	n.d.	n.d.	---
Decabromodiphenyl ether					5	n.d.	n.d.	n.d.	---

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Note :

1. mg/kg = ppm ; 0.1wt% = 1000ppm
2. n.d. = Not Detected
3. MDL = Method Detection Limit
4. " - " = Not Regulated
5. "----" = Not Conducted
6. ** = Qualitative analysis (No Unit)

7. Spot-test:

Negative = Absence of Cr(VI) coating / surface layer; Positive = Presence of Cr(VI) coating / surface layer;
(The tested sample should be further verified by boiling-water-extraction method if the spot test result cannot be confirmed.)

Boiling-water-extraction:

Negative = Absence of Cr(VI) coating / surface layer; Positive = Presence of Cr(VI) coating / surface layer;
The detected concentration in boiling-water-extraction solution is equal or greater than 0.02 mg/kg with 50 cm² sample surface area.

PFOS Reference Information : Directive 2006/122/EC

- (1) May not be placed on the market or used as a substance or constituent of preparations in a concentration equal to or higher than 0.005 % by mass.
- (2) May not be placed on the market in semi-finished products or articles, or parts thereof, if the concentration of PFOS is equal to or higher than 0.1 % by mass calculated with reference to the mass of structurally or microstructurally distinct parts that contain PFOS or, for textiles or other coated materials, if the amount of PFOS is equal to or higher than 1µg/m² of the coated material.

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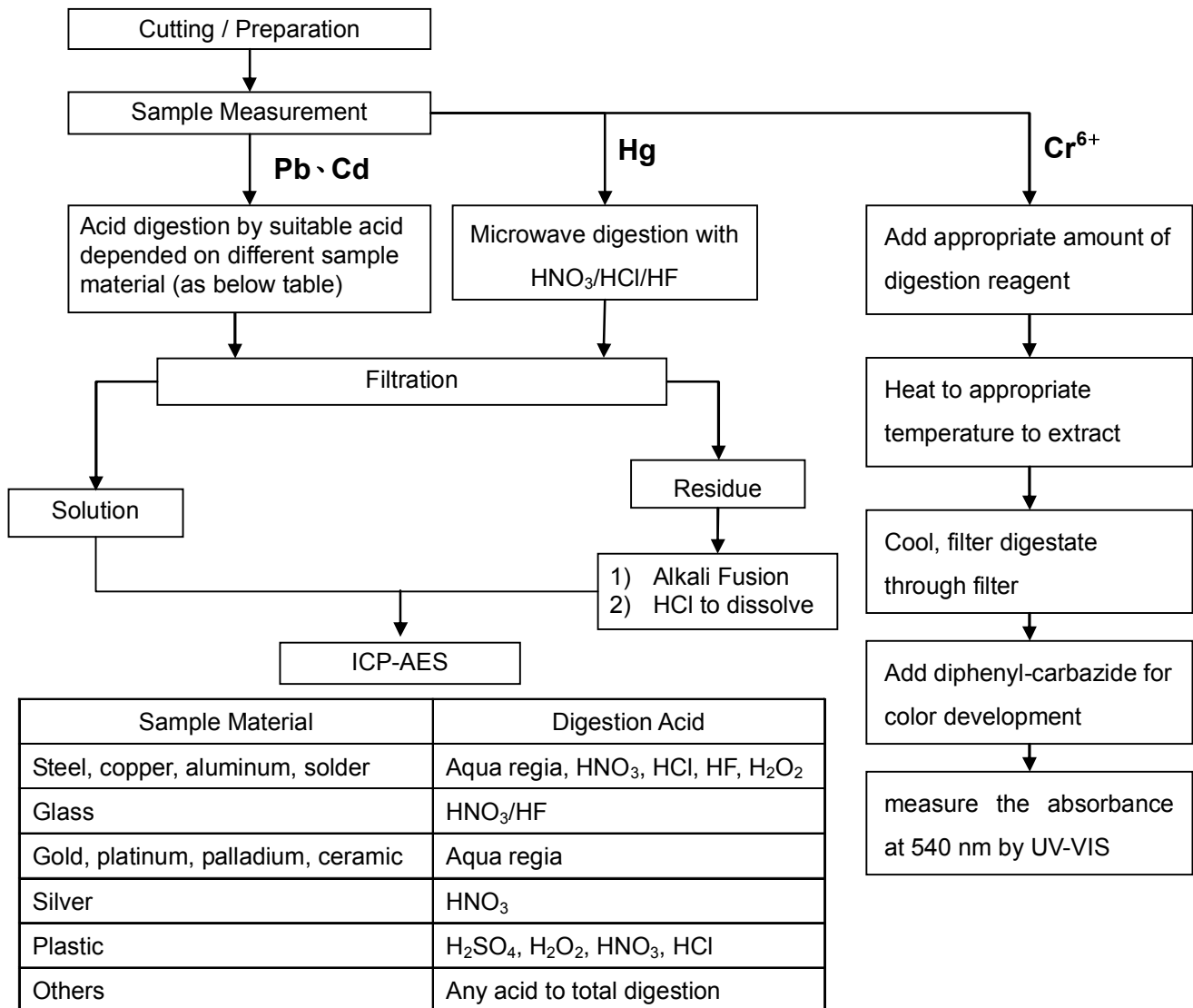
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PART NAME No.1,3

- 1) These samples were dissolved totally by pre-conditioning method according to below flow chart. (Cr⁶⁺ test method excluded)
- 2) Name of the person who made measurement: Climbgreat Yang
- 3) Name of the person in charge of measurement: Troy Chang



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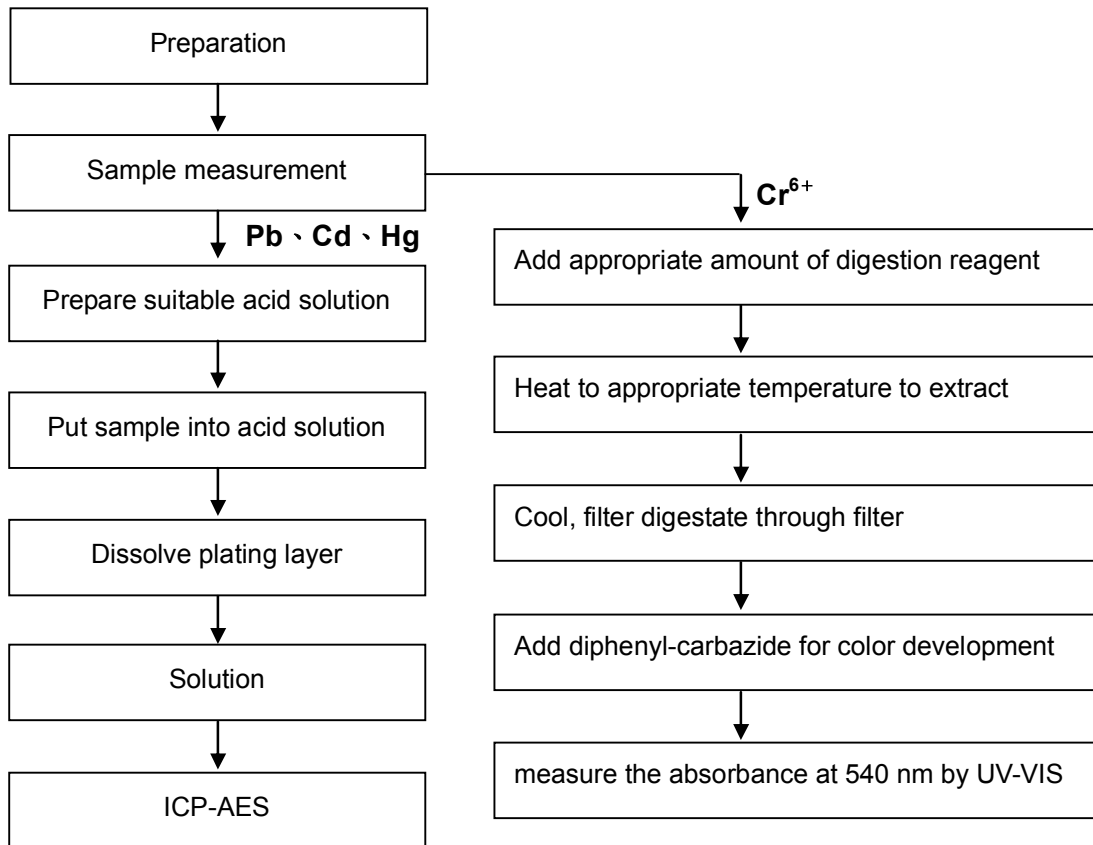
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- PART NAME No.2
- 1) These samples were dissolved totally by pre-conditioning method according to below flow chart. (Cr⁶⁺ test method excluded)
 - 2) Name of the person who made measurement: Climbgreat Yang
 - 3) Name of the person in charge of measurement: Troy Chang

Flow Chart of Stripping method for metal analysis



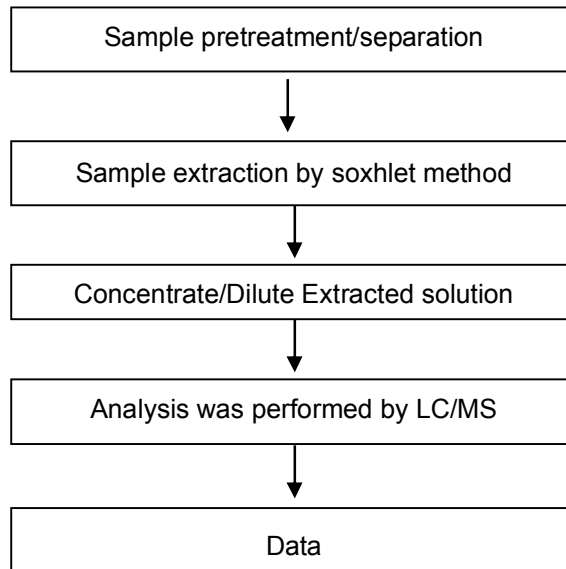
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Analytical flow chart of Soxhlet extraction (LC/MS) procedure

- 1) Name of the person who made measurement: Roman Wong
- 2) Name of the person in charge of measurement: Shinjyh Chen

■ Test Items: PFOS/PFOA 、Benzotriazole



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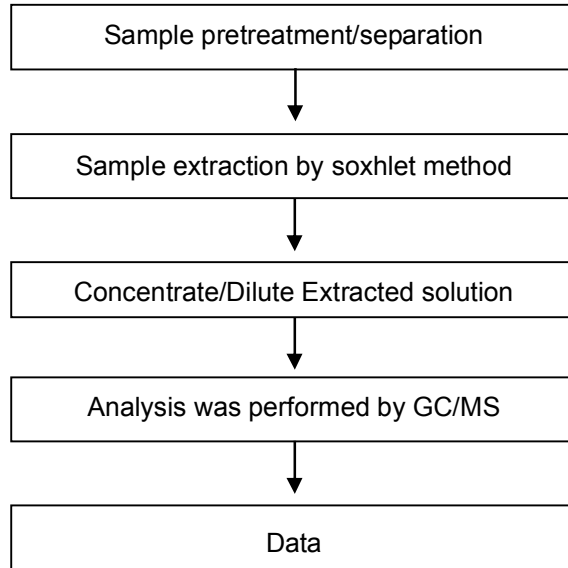
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Analytical flow chart of Soxhlet extraction (GC/MS) procedure

1) Name of the person who made measurement: Roman Wong

2) Name of the person in charge of measurement: Shinjyh Chen

■ Test Items: Phthalate 、 Benzotriazole 、 HBCDD 、 NP 、 DBBT 、
Organic phosphorus compounds

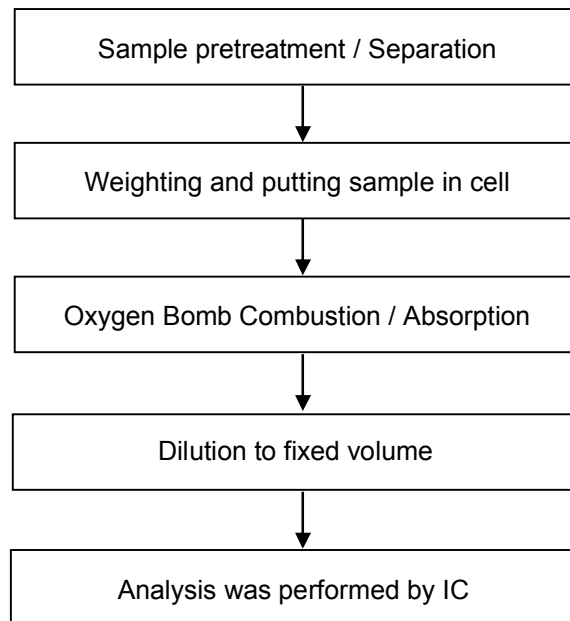


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Analytical flow chart of halogen content

- 1) Name of the person who made measurement: Rita Chen
- 2) Name of the person in charge of measurement: Troy Chang



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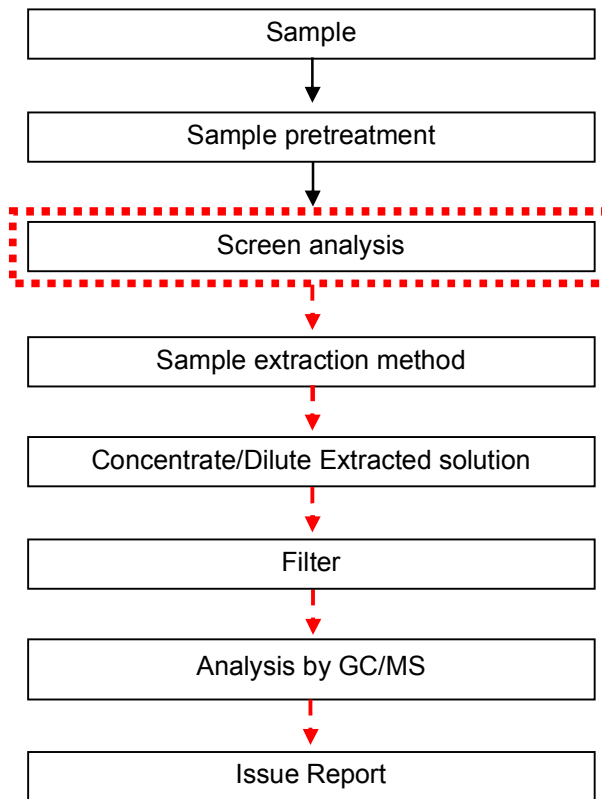
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Analytical flow chart

- 1) Name of the person who made measurement: Roman Wong
- 2) Name of the person in charge of measurement: Troy Chang

■ Test Items: PBB/PBDE, TBBP-A-bis

First testing process —> Optional screen process Confirmation process - ->



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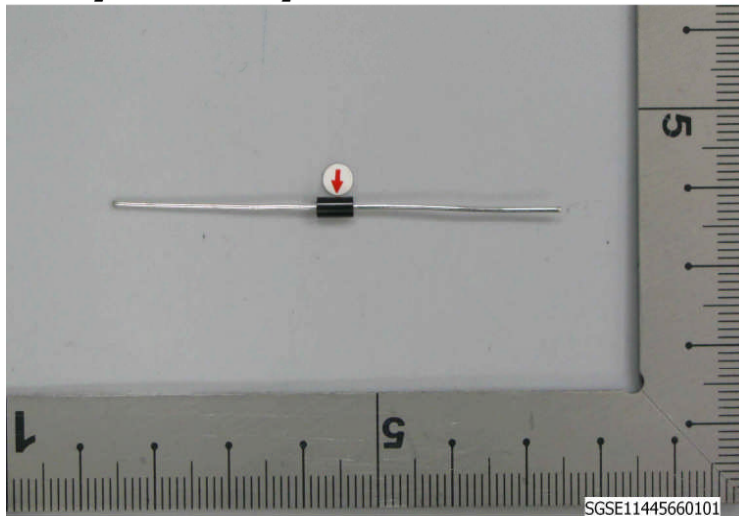
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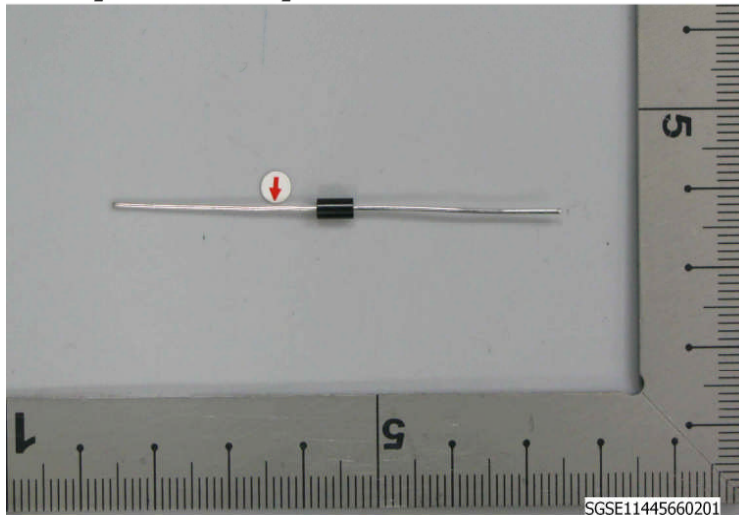
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CE/2011/44566 NO.1



CE/2011/44566 NO.2



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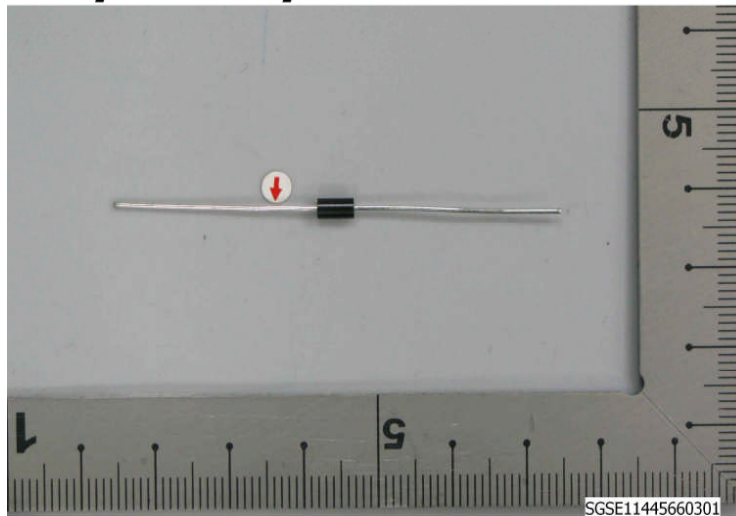
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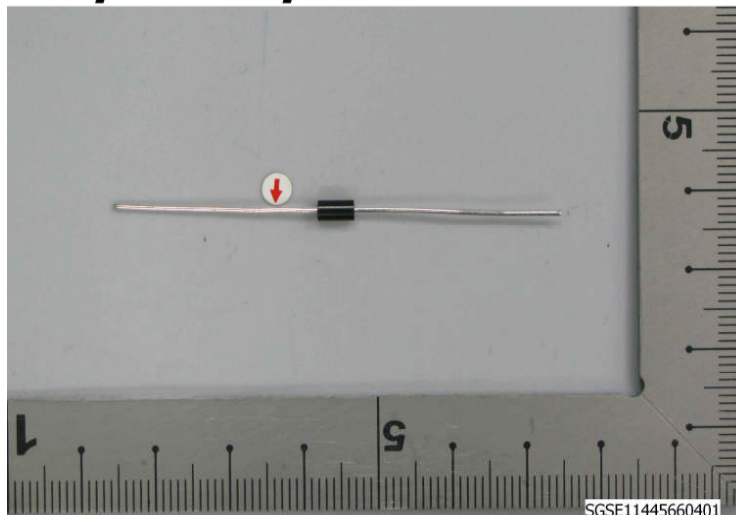
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CE/2011/44566 NO.3



CE/2011/44566 NO.4



** End of Report **

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