



Test Report

No. : CE/2013/45500 Date : 2013/05/07 Page : 1 of 11

NORDIC SEMICONDUCTOR ASA
KARENSLYST ALLE 5, 0213 OSLO, NORWAY



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

Sample Submitted By : NORDIC SEMICONDUCTOR ASA
 Sample Description : IC TRANSCEIVER
 Style/Item No. : nRF2460
 Buyer/Order No. : PO-0003853
 Other Info. : MANUFACTURED AT ASECL (W/CU WIRE)
 Sample Receiving Date : 2013/04/29
 Testing Period : 2013/04/29 TO 2013/05/07

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



Troy Chan, Manager Tech
Signed for and on behalf of
SGS TAIWAN LTD
Chemical Laboratory – Taipei

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Test Result(s)

PART NAME No.1 : IC TRANSCEIVER

Test Item(s)	Unit	Method	MDL	Result
				No.1
Cadmium (Cd)	mg/kg	With reference to IEC 62321: 2008 and performed by ICP-AES.	2	n.d.
Lead (Pb)	mg/kg	With reference to IEC 62321: 2008 and performed by ICP-AES.	2	n.d.
Mercury (Hg)	mg/kg	With reference to IEC 62321: 2008 and performed by ICP-AES.	2	n.d.
Hexavalent Chromium Cr(VI)	mg/kg	With reference to IEC 62321: 2008 and performed by UV-VIS.	2	n.d.
Antimony (Sb)	mg/kg	With reference to US EPA Method 3050B. Analysis was performed by ICP-AES.	2	n.d.
Perfluorooctane sulfonates (PFOS-Acid, Metal Salt, Amide)	mg/kg	With reference to US EPA 3550C: 2007. Analysis was performed by LC/MS.	10	n.d.
PFOA (CAS No.: 335-67-1)	mg/kg	With reference to US EPA 3550C: 2007. Analysis was performed by LC/MS.	10	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.
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.
DIDP (Di-isodecyl phthalate) (CAS No.: 26761-40-0)	%	With reference to EN 14372. Analysis was performed by GC/MS.	0.01	n.d.
DINP (Di-isononyl phthalate) (CAS No.: 28553-12-0)	%	With reference to EN 14372. Analysis was performed by GC/MS.	0.01	n.d.
DNOP (Di-n-octyl phthalate) (CAS No.: 117-84-0)	%	With reference to EN 14372. Analysis was performed by GC/MS.	0.003	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.

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Test Item(s)	Unit	Method	MDL	Result	
				No.1	
Sum of PBBs	mg/kg	With reference to IEC 62321: 2008 and performed by GC/MS.	-	n.d.	
Monobromobiphenyl	mg/kg		5	n.d.	
Dibromobiphenyl	mg/kg		5	n.d.	
Tribromobiphenyl	mg/kg		5	n.d.	
Tetrabromobiphenyl	mg/kg		5	n.d.	
Pentabromobiphenyl	mg/kg		5	n.d.	
Hexabromobiphenyl	mg/kg		5	n.d.	
Heptabromobiphenyl	mg/kg		5	n.d.	
Octabromobiphenyl	mg/kg		5	n.d.	
Nonabromobiphenyl	mg/kg		5	n.d.	
Decabromobiphenyl	mg/kg		5	n.d.	
Sum of PBDEs	mg/kg		-	n.d.	
Monobromodiphenyl ether	mg/kg		5	n.d.	
Dibromodiphenyl ether	mg/kg		5	n.d.	
Tribromodiphenyl ether	mg/kg		5	n.d.	
Tetrabromodiphenyl ether	mg/kg		5	n.d.	
Pentabromodiphenyl ether	mg/kg		5	n.d.	
Hexabromodiphenyl ether	mg/kg		5	n.d.	
Heptabromodiphenyl ether	mg/kg		5	n.d.	
Octabromodiphenyl ether	mg/kg		5	n.d.	
Nonabromodiphenyl ether	mg/kg		5	n.d.	
Decabromodiphenyl ether	mg/kg		5	n.d.	
Halogen			With reference to BS EN 14582:2007. Analysis was performed by IC.		
Halogen-Fluorine (F) (CAS No.: 14762-94-8)	mg/kg			50	n.d.
Halogen-Chlorine (Cl) (CAS No.: 22537-15-1)	mg/kg	50		n.d.	
Halogen-Bromine (Br) (CAS No.: 10097-32-2)	mg/kg	50		n.d.	
Halogen-Iodine (I) (CAS No.: 14362-44-8)	mg/kg	50	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

PFOS Reference Information : POPs - (EU) 757/2010

Outlawing PFOS as substances or preparations in concentrations above 0.001% (10ppm), in semi-finished products or articles or parts at a level above 0.1%(1000ppm), in textiles or other coated materials above 1µg/m².

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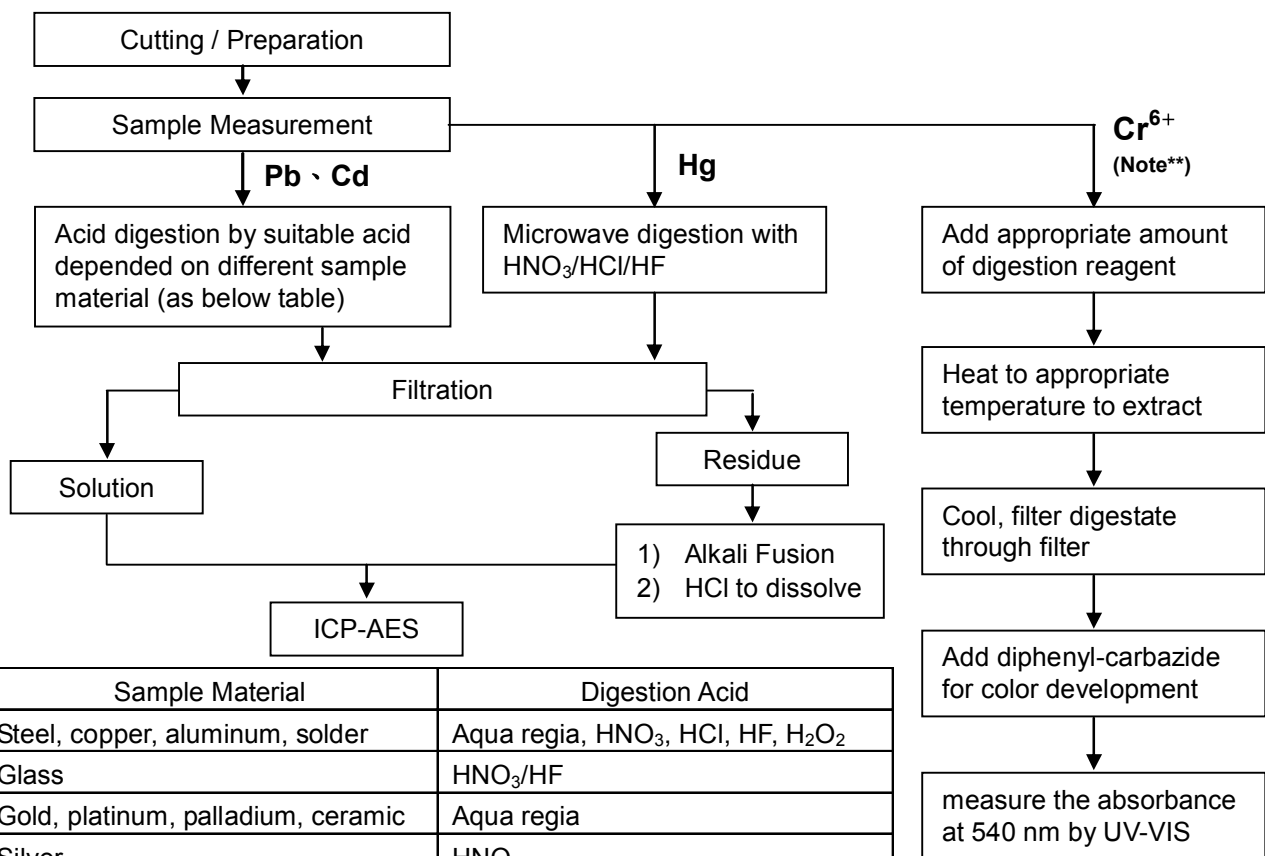
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- 1) These samples were dissolved totally by pre-conditioning method according to below flow chart.
(Cr⁶⁺ test method excluded)
- 2) Name of the person who made measurement: Climbgreat Yang
- 3) Name of the person in charge of measurement: Troy Chang



Sample Material	Digestion Acid
Steel, copper, aluminum, solder	Aqua regia, HNO ₃ , HCl, HF, H ₂ O ₂
Glass	HNO ₃ /HF
Gold, platinum, palladium, ceramic	Aqua regia
Silver	HNO ₃
Plastic	H ₂ SO ₄ , H ₂ O ₂ , HNO ₃ , HCl
Others	Added appropriate reagent to total digestion

Note :** (1) For non-metallic material, add alkaline digestion reagent and heat to 90~95°C.
(2) For metallic material, add pure water and heat to boiling.

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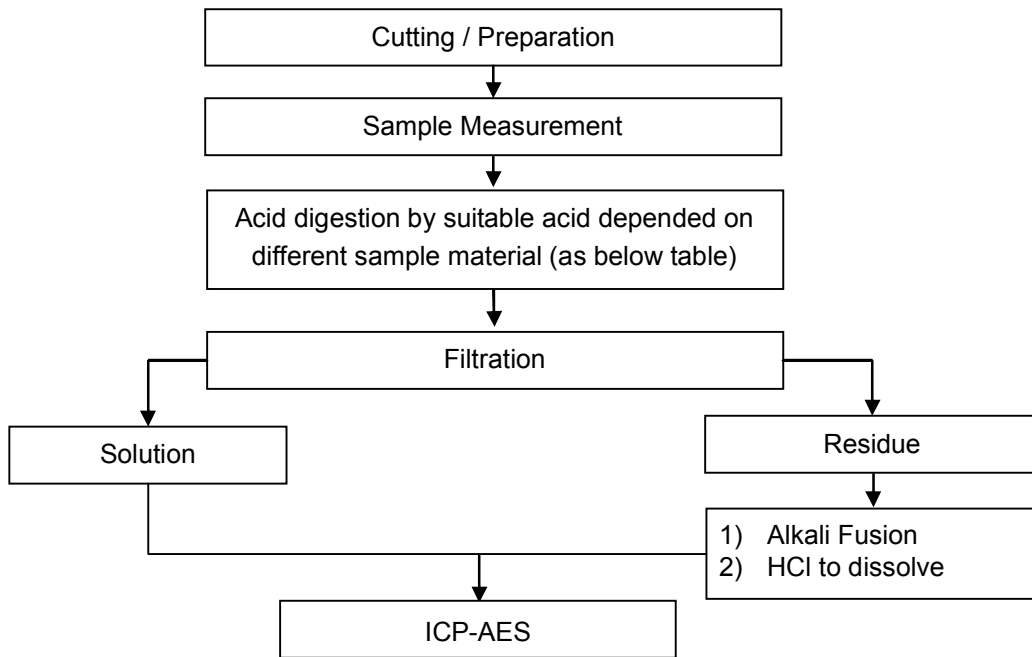
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NORDIC SEMICONDUCTOR ASA
KARENSLYST ALLE 5, 0213 OSLO, NORWAY



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

Flow Chart of digestion for the elements analysis performed by ICP-AES



Steel, copper, aluminum, solder	Aqua regia, HNO ₃ , HCl, HF, H ₂ O ₂
Glass	HNO ₃ /HF
Gold, platinum, palladium, ceramic	Aqua regia
Silver	HNO ₃
Plastic	H ₂ SO ₄ , H ₂ O ₂ , HNO ₃ , HCl
Others	Added appropriate reagent to total digestion

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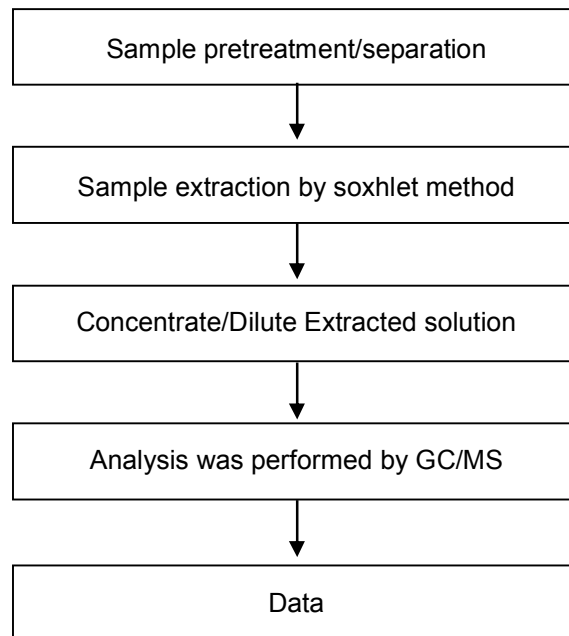
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NORDIC SEMICONDUCTOR ASA
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Analytical flow chart of phthalate content

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



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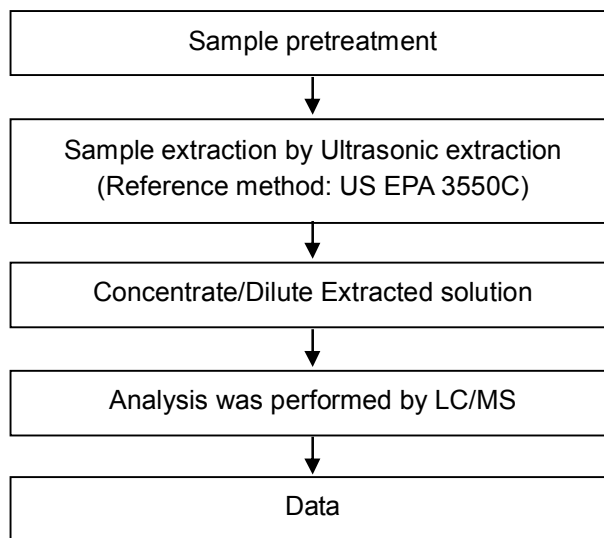
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PFOA/PFOS analytical flow chart of Ultrasonic extraction (LC/MS) procedure

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



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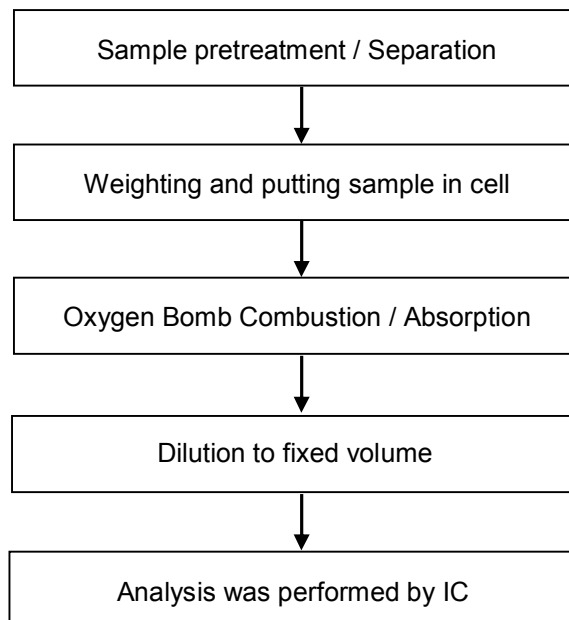
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Analytical flow chart of halogen content

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

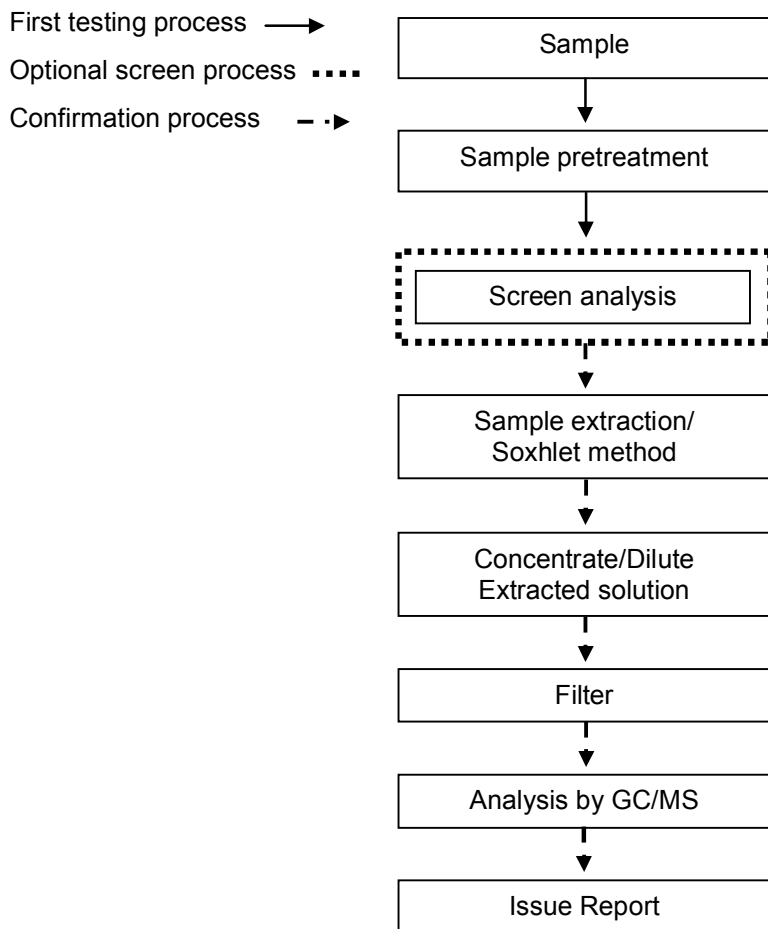


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PBB/PBDE analytical FLOW CHART

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



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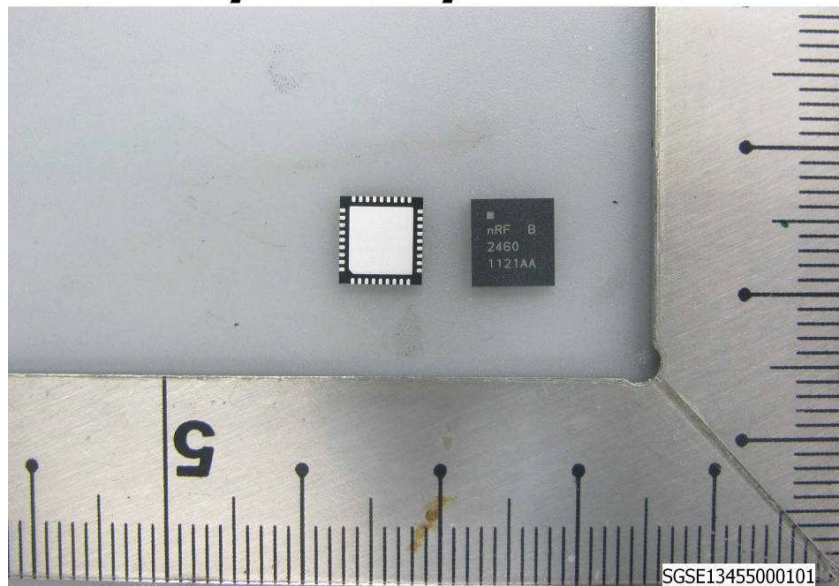
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* The tested sample / part is marked by an arrow if it's shown on the photo. *

CE/2013/45500



** End of Report **

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