

Test Report

No. : CE/2016/56434A

Date : 2016/06/20

Page : 1 of 8

NORDIC SEMICONDUCTOR ASA
KARENSLYST ALLÉ 5, 0213 OSLO, NORWAY



The following samples was/were submitted and identified by/on behalf of the applicant as :

Sample Submitted By : NORDIC SEMICONDUCTOR ASA
Sample Description : INTEGRATED CIRCUITS
Style/Item No. : nRF52832-CXAX
Buyer/Order No. : PO-0008530
Other Info. : BUMPED AT DECA
Sample Receiving Date : 2016/05/31
Testing Period : 2016/05/31 TO 2016/06/06

Test Requested :

- (1) As specified by client, with reference to RoHS Directive 2011/65/EU Annex II to determine Cadmium, Lead, Mercury, Cr(VI), PBBs, PBDEs contents in the submitted sample.
- (2) Please refer to next pages for the other item(s).

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


Troy Chang / Manager - Tech
Signed for and on behalf of
SGS TAIWAN LTD.
Chemical Laboratory - Taipei

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Test Report

No. : CE/2016/56434A

Date : 2016/06/20

Page : 2 of 8

NORDIC SEMICONDUCTOR ASA
KARENSLYST ALLÉ 5, 0213 OSLO, NORWAY



Test Result(s)

PART NAME No.1 : INTEGRATED CIRCUITS

Test Item(s)	Unit	Method	MDL	Result No.1
Cadmium (Cd)	mg/kg	With reference to IEC 62321-5 (2013) and performed by ICP-AES.	2	n.d.
Lead (Pb)	mg/kg	With reference to IEC 62321-5 (2013) and performed by ICP-AES.	2	42.6
Mercury (Hg)	mg/kg	With reference to IEC 62321-4 (2013) 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.
Sum of PBBs	mg/kg	With reference to IEC 62321-6 (2015) 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.

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Test Report

No. : CE/2016/56434A

Date : 2016/06/20

Page : 3 of 8

NORDIC SEMICONDUCTOR ASA
KARENSLYST ALLÉ 5, 0213 OSLO, NORWAY



Test Item(s)	Unit	Method	MDL	Result
				No.1
Antimony (Sb)	mg/kg	With reference to US EPA 3052 (1996). Analysis was performed by ICP-AES.	2	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	n.d.
Halogen-Bromine (Br) (CAS No.: 10097-32-2)	mg/kg		50	n.d.

Note :

1. mg/kg = ppm ; 0.1wt% = 1000ppm
2. n.d. = Not Detected
3. MDL = Method Detection Limit
4. " - " = Not Regulated
5. This report supersedes the previous document bearing the test report number CE/2016/56434.

Test Report

No. : CE/2016/56434A

Date : 2016/06/20

Page : 4 of 8

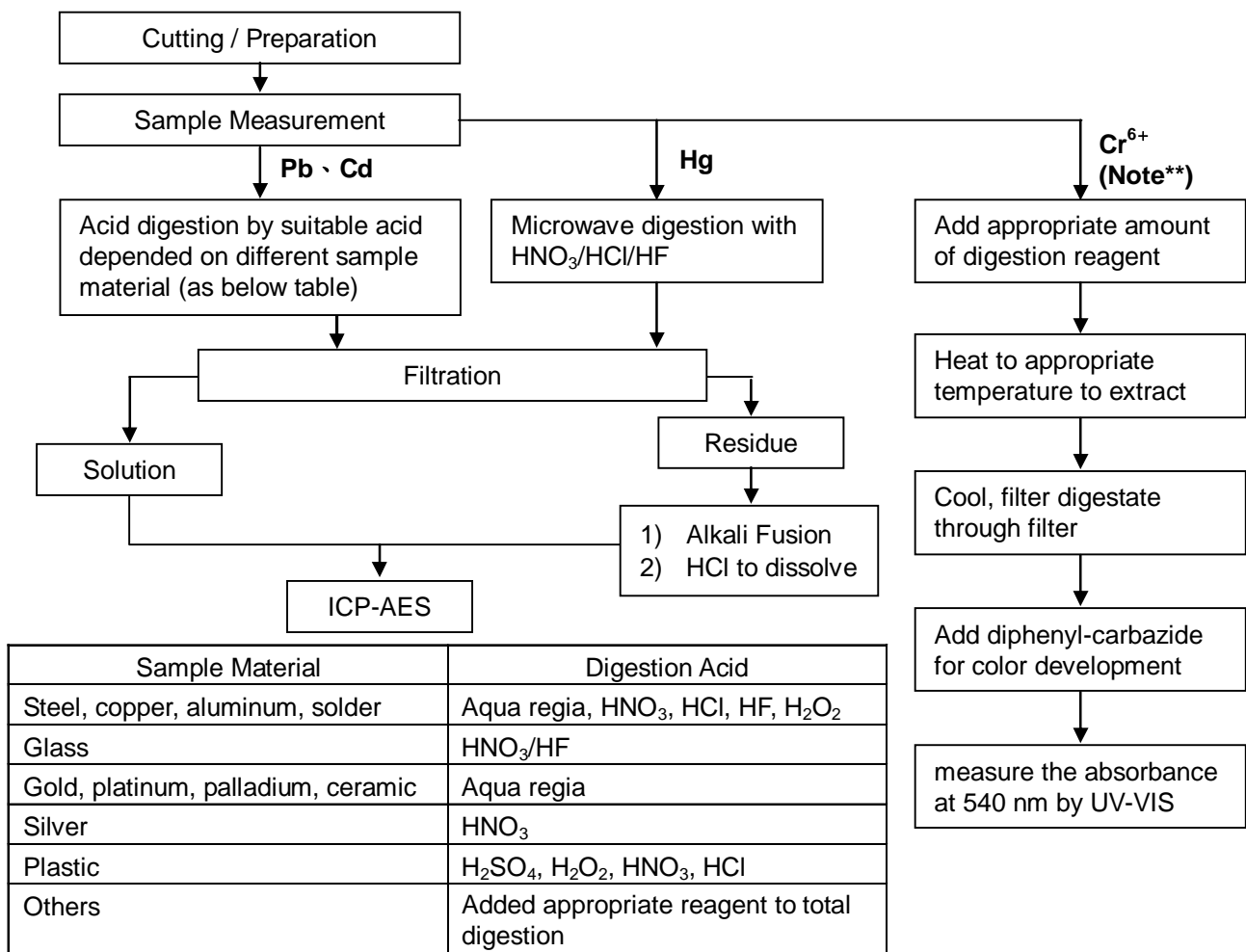
NORDIC SEMICONDUCTOR ASA
KARENSLYST ALLÉ 5, 0213 OSLO, NORWAY



These samples were dissolved totally by pre-conditioning method according to below flow chart.

(Cr⁶⁺ test method excluded)

- Technician: JR Wang
- Supervisor: Troy Chang



Note** (For IEC 62321)

- (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.

Test Report

No. : CE/2016/56434A

Date : 2016/06/20

Page : 5 of 8

NORDIC SEMICONDUCTOR ASA
KARENSLYST ALLÉ 5, 0213 OSLO, NORWAY



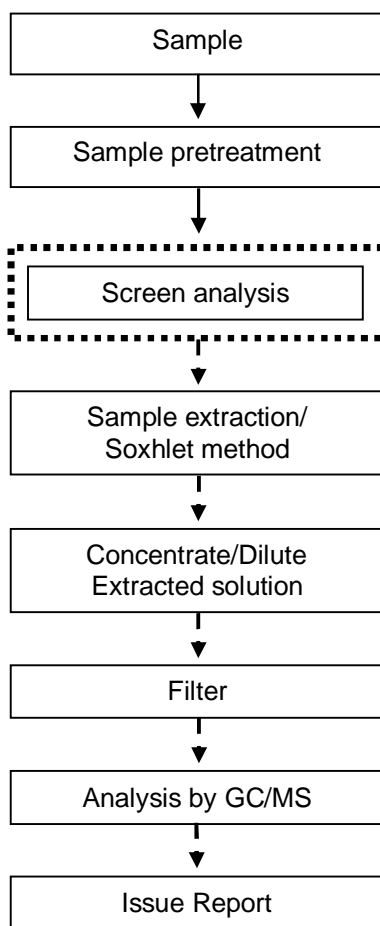
Analytical flow chart - PBB/PBDE

- Technician : Yaling Tu
- Supervisor: Troy Chang

First testing process →

Optional screen process

Confirmation process - .▶



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Test Report

No. : CE/2016/56434A

Date : 2016/06/20

Page : 6 of 8

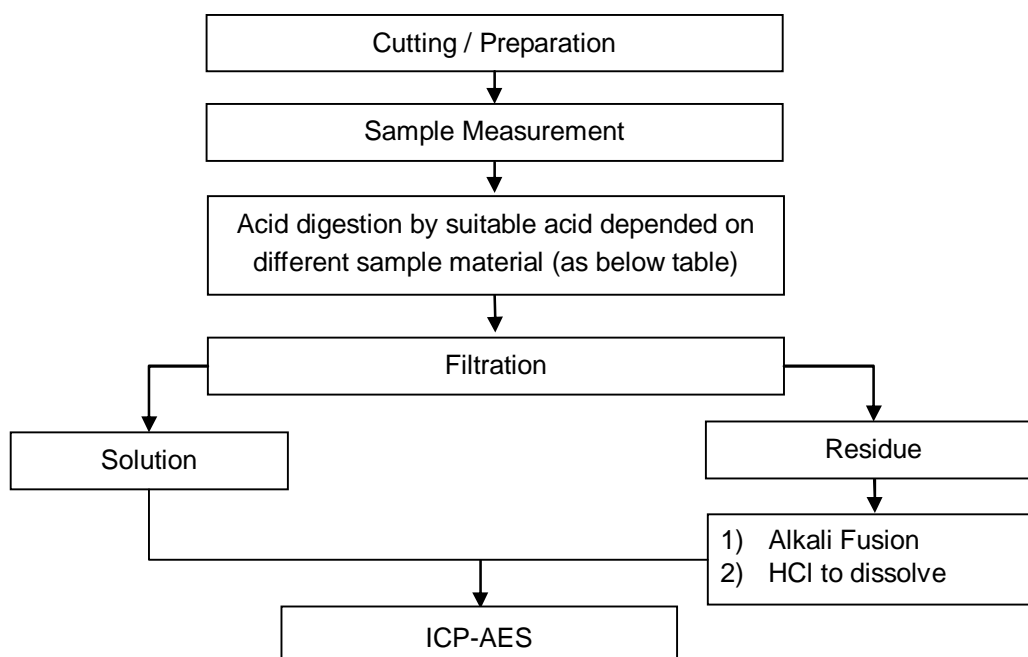
NORDIC SEMICONDUCTOR ASA
KARENSLYST ALLÉ 5, 0213 OSLO, NORWAY



These samples were dissolved totally by pre-conditioning method according to below flow chart.

- Technician: JR Wang
- Supervisor: 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

Test Report

No. : CE/2016/56434A

Date : 2016/06/20

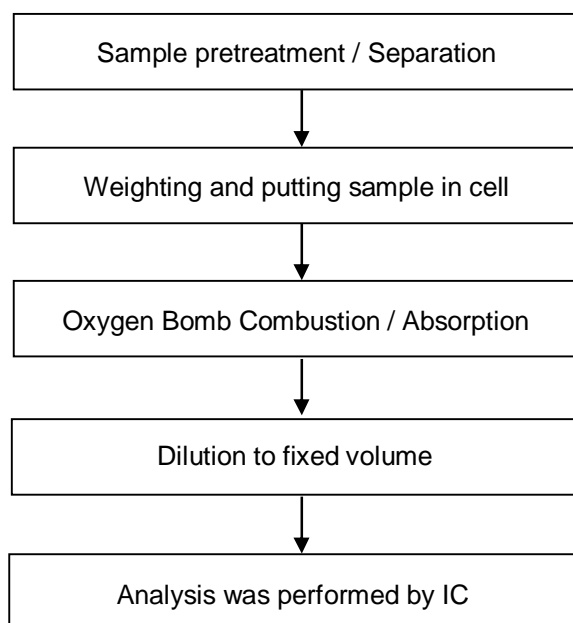
Page : 7 of 8

NORDIC SEMICONDUCTOR ASA
KARENSLYST ALLÉ 5, 0213 OSLO, NORWAY



Analytical flow chart - Halogen

- Technician: Rita Chen
- Supervisor: Troy Chang



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Date : 2016/06/20

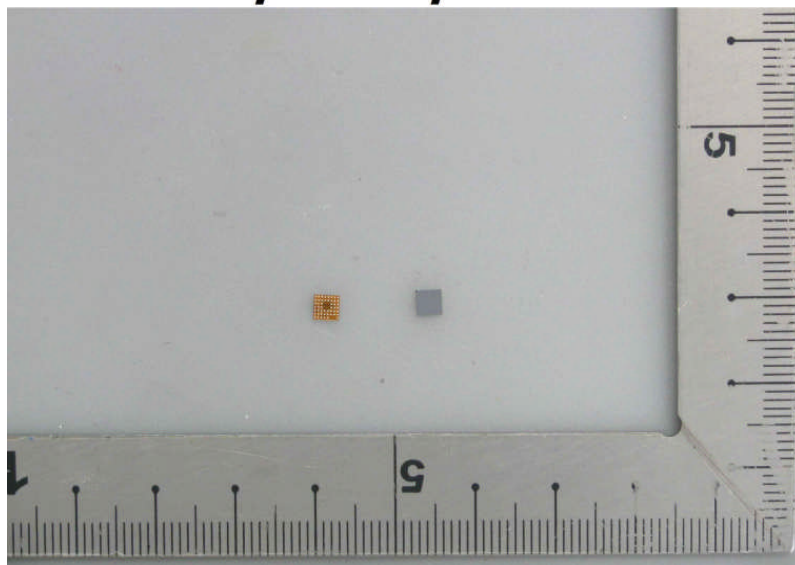
Page : 8 of 8

NORDIC SEMICONDUCTOR ASA
KARENSLYST ALLÉ 5, 0213 OSLO, NORWAY



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

CE/2016/56434



** End of Report **

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