



Informe de ensayo nº:

Test report No:

NIE: 55958REM.001

## Partial Test Report

**Draft ETSI EN 301 489-1 V2.2.0 (2017-03): ElectroMagnetic Compatibility (EMC) standard for radio equipment and services; Part 1: Common technical requirements; Harmonised Standard covering the essential requirements of article 3.1(b) of Directive 2014/53/EU and the essential requirements of article 6 of Directive 2014/30/EU**

&

**Draft ETSI EN 301 489-17 V3.2.0 (2017-03): ElectroMagnetic Compatibility (EMC) standard for radio equipment and services; Part 17: Specific conditions for Broadband Data Transmission Systems; Harmonised Standard covering the essential requirements of article 3.1(b) of Directive 2014/53/EU**

<b>Identificación del objeto ensayado.....:</b> Identification of item tested	SoC
<b>Marca .....</b> Trademark	Nordic
<b>Modelo y/o referencia tipo .....</b> Model and /or type reference	N52840
<b>Otra identificación del producto.....:</b> Other identification of the product	S/N: Not provided data.
<b>Versión final del HW .....</b> Final HW version	QIAA CA0
<b>Versión final del SW .....</b> Final SW version	NA
<b>Características .....</b> Features	Not provided data.
<b>Fabricante .....</b> Manufacturer	NORDIC SEMICONDUCTOR ASA Otto Nielsen veg 12, 7052 Trondheim, Norway.
<b>Método de ensayo solicitado, norma.....:</b> Test method requested, standard	Draft ETSI EN 301 489-1 V2.2.0 (2017-03) & Draft ETSI EN 301 489-17 V3.2.0 (2017-03)
<b>Aprobado por (nombre / cargo y firma) .....</b> Approved by (name / position & signature)	Rafael López EMC LAB Manager
<b>Fecha de realización .....</b> Date of issue	2018-04-05
<b>Formato de informe No. ....:</b> Report template No	FDT08_20

# Index

Competences and guarantees .....3

General conditions .....3

Usage of samples .....4

Test sample description .....4

Identification of the client.....4

Testing period .....4

Environmental conditions .....5

Remarks and comments .....6

Testing verdicts (Legend) .....6

Appendix A – Test result.....7

Appendix B - Photographs..... 13

## Competences and guarantees

DEKRA Testing and Certification, S.A.U. is a testing laboratory accredited by the National Accreditation Body (ENAC - Entidad Nacional de Acreditación), to perform the tests indicated in the Certificate No. 51/LE 147.

In order to assure the traceability to other national and international laboratories, DEKRA Testing and Certification, S.A.U. has a calibration and maintenance program for its measurement equipment.

DEKRA Testing and Certification, S.A.U. guarantees the reliability of the data presented in this report, which is the result of the measurements and the tests performed to the item under test on the date and under the conditions stated on the report and, it is based on the knowledge and technical facilities available at DEKRA Testing and Certification, S.A.U. at the time of performance of the test.

DEKRA Testing and Certification, S.A.U. is liable to the client for the maintenance of the confidentiality of all information related to the item under test and the results of the test.

The results presented in this Test Report apply only to the particular item under test established in this document.

**IMPORTANT:** No parts of this report may be reproduced or quoted out of context, in any form or by any means, except in full, without the previous written permission of DEKRA Testing and Certification, S.A.U.

## General conditions

1. This report is only referred to the item that has undergone the test.
2. This report does not constitute or imply on its own an approval of the product by the Certification Bodies or competent Authorities.
3. This document is only valid if complete; no partial reproduction can be made without previous written permission of DEKRA Testing and Certification, S.A.U.
4. This test report cannot be used partially or in full for publicity and/or promotional purposes without previous written permission of DEKRA Testing and Certification, S.A.U. and the Accreditation Bodies.

## Uncertainty

Uncertainty (factor  $k=2$ ) was calculated according to the DEKRA Testing and Certification, S.A.U. internal document PODT000.

## Usage of samples

Samples under test have been selected by: the Client.

Sample S/01 is composed of the following elements:

Control N°	Description	Model	Serial number	Reception date
55958/001	SoC	N52840	---	2018-02-19

Auxiliary element used with the sample S/01:

Control N°	Description	Model	Serial number	Reception date
54505/003	Qualification Motherboard	---	#2	2018-01-23
54033/003	Antenna	---	---	2017-07-12

## Test sample description

System-on-Chip (SoC) for wireless application, contains CPU, flash and radio interface.

## Identification of the client

NORDIC SEMICONDUCTOR ASA  
Otto Nielsen veg 12, 7052 Trondheim, Norway.

## Testing period

The performed test started on 2018-02-26 and finished on 2018-02-27.  
The tests have been performed at DEKRA Testing and Certification S.A.U.

## Environmental conditions

In the control chamber, the following limits were not exceeded during the test:

<b>Temperature</b>	Min. = 15 °C Max. = 35 °C
<b>Relative humidity</b>	Min. = 30 % Max. = 60 %
<b>Air pressure</b>	Min. = 860 mbar Max. = 1060 mbar

In the semianechoic chamber, the following limits were not exceeded during the test.

<b>Temperature</b>	Min. = 15 °C Max. = 35 °C
<b>Relative humidity</b>	Min. = 30 % Max. = 60 %
<b>Air pressure</b>	Min. = 860 mbar Max. = 1060 mbar

In the chamber for conducted measurements, the following limits were not exceeded during the test:

<b>Temperature</b>	Min. = 15 °C Max. = 35 °C
<b>Relative humidity</b>	Min. = 30 % Max. = 60 %
<b>Air pressure</b>	Min. = 860 mbar Max. = 1060 mbar

## Remarks and comments

The tests have been performed by the technical personnel: David Rubio & Jesús García.

The total uncertainty of the measurement system for the measured radio disturbance characteristics of EUT from 30 MHz to 1000 MHz is  $I = \pm 4,8$  dB for quasi-peak measurements,  $I = \pm 4,4$  dB for peak measurements ( $k = 2$ ).

The total uncertainty of the measurement system for the measured radio disturbance characteristics of EUT from 1 to 6GHz is  $I = \pm 4,2$  dB for peak & average measurements ( $k = 2$ ).

## Testing verdicts (Legend)

Not applicable .....	:	N/A
Pass .....	:	P
Fail .....	:	F
Not measured .....	:	N/M

## Appendix A – Test result

**APPENDIX A CONTENT**

DESCRIPTION OF THE OPERATION MODES .....9

RADIATED EMISSION. ELECTROMAGNETIC FIELD MEASURE ..... 10



## DESCRIPTION OF THE OPERATION MODES

The operation modes described in this paragraph constitute a functionality of the sample under test for itself.

The operation modes used by the samples to which the present report refers, are shown in the following table:

OPERATION MODE	DESCRIPTION
OM#01	EUT ON. Stand-alone basis. Power supply: 3Vdc.

## RADIATED EMISSION. ELECTROMAGNETIC FIELD MEASURE

<b>LIMITS:</b>	Product standard:	Draft ETSI EN 301 489-1 V2.2.0 (2017-03) & Draft ETSI EN 301 489-17 V3.2.0 (2017-03)
	Test standard:	EN 55032 (2015) / AC (2016)

### Limits for EN 55032 (2015) / AC (2016) Class B:

FREQUENCY RANGE (MHz)	MEASURED FIELD LIMIT TO 3 m (dB $\mu$ V/m) QUASI-PEAK MEASUREMENT
30 to 230	40
230 to 1000	47

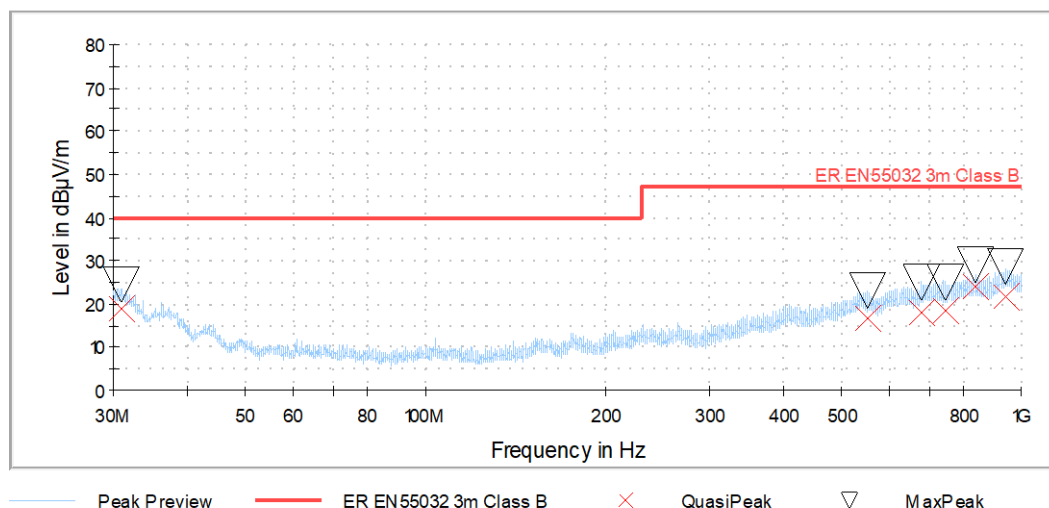
FREQUENCY RANGE (MHz)	MEASURED FIELD LIMIT TO 3 m (dB $\mu$ V/m)	
	AVERAGE	PEAK
1000 to 3000	50	70
3000 to 6000	54	74

<b>TESTED SAMPLES:</b>	S/01
<b>TESTED OPERATION MODES:</b>	OM#01
<b>TEST RESULTS:</b>	CRmmnn: CR, Radiated Condition; mm: Sample number; nn: Operation mode; RR: Measured range.

CRmmnnRR	DESCRIPTION	RESULT
CR0101LR	Range: 30 MHz - 1000 MHz	P
CR0101HR	Range: 1 - 6 GHz	P

## Radiated Emission: CR0101LR

Project: 55958REM.001  
Company: NORDIC SEMICONDUCTOR ASA.  
Sample: S/01  
Operation mode: OM#01  
Description: EUT ON. Stand alone basis. Power Supply: 3 Vdc.



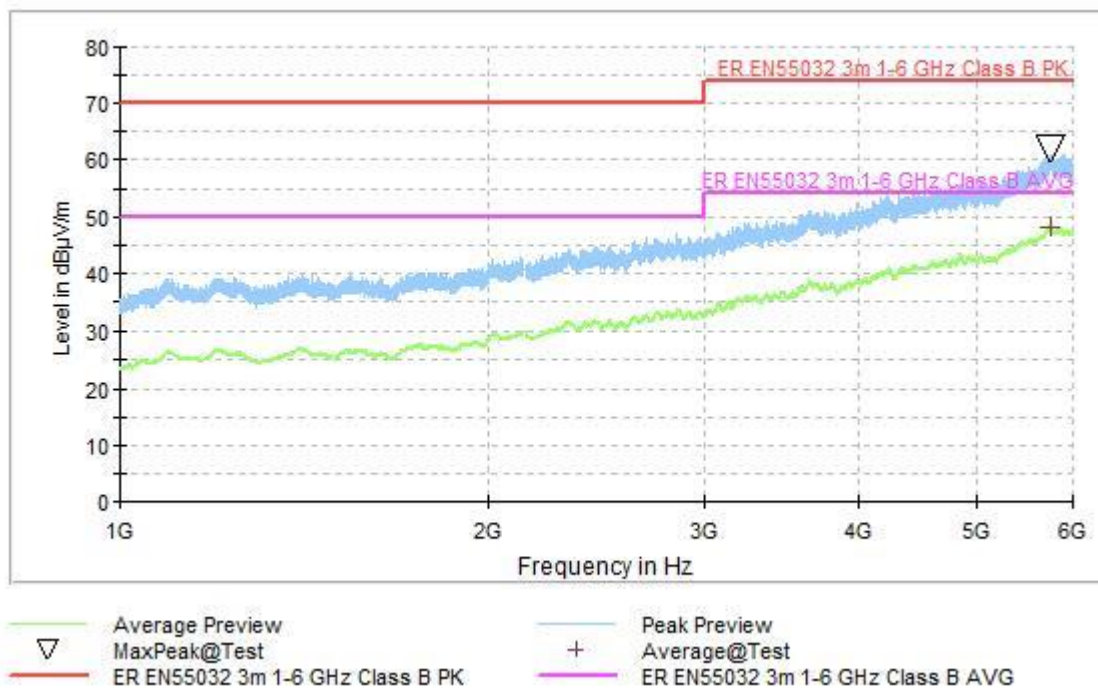
## Maximizations

Frequency (MHz)	QuasiPeak (dBµV/m)	MaxPeak (dBµV/m)	Height (cm)	Pol	Azimuth (deg)
30.860000	18.78	24.51	226.0	V	177.0
551.320000	16.59	23.16	294.0	V	-178.0
680.550000	18.20	25.08	180.0	V	87.0
743.640000	18.50	24.96	216.0	V	-11.0
840.000000	23.87	29.06	107.0	H	68.0
939.710000	21.90	28.89	298.0	V	50.0

## Radiated Emission: CR0101HR

Project: 55958REM.001  
Company: NORDIC SEMICONDUCTOR ASA.  
Sample: S/01  
Operation mode: OM#01  
Description: EUT ON. Stand alone basis. Power Supply: 3 Vdc.

Full Spectrum



## Maximizations

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)
5749.500000	61.99	48.14

## Appendix B - Photographs

