





# Test Report

## Electromagnetic Compatibility

<b>Product</b>	Development Kit		
<b>Name and address of the applicant</b>	Nordic Semiconductor ASA Otto Nielsens vei 12, 7004 Trondheim, Norway		
<b>Name and address of the manufacturer</b>	Nordic Semiconductor ASA Otto Nielsens vei 12, 7004 Trondheim, Norway		
<b>Model</b>	nRF52840-DK		
<b>Rating</b>	3V Lithium battery or 5Vdc, 50mA (USB)		
<b>Trademark</b>	Nordic Semiconductor		
<b>Serial number</b>	683841455, 683293789 and 683703601		
<b>Additional information</b>	The tested items contains following radio technologies: - BLE, IEEE 802.15.4 and NFC-A receiver		
<b>Tested according to</b>	Final Draft ETSI EN 301 489-1:V2.2.2 EN 301 489-3:V2.1.1 Draft EN 301 489-17:V3.2.0 EN 61326-1:2013		
<b>Order number</b>	372254		
<b>Tested in period</b>	2019-05-20 – 2019-05-21		
<b>Issue date</b>	2019-10-02		
<b>Name and address of the testing laboratory</b>	<div> <b>Nemko Group</b>  Nemko AS  Philip Pedersens vei 11,  1366 Lysaker,  Norway </div> <div> TEL: +47 22 96 03 30  FAX: +47 22 96 05 50 </div> <div>   </div>		
An accredited technical test executed under the Norwegian accreditation scheme			
<div>   Prepared by [G. Suhanthakumar] </div> <div>   Approved by [Tore Løvlien] </div>			
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## REPORT REVISIONS

Revision #	Date	Order #	Description
00	2019-10-02	372254	First issued



### **THIS REPORT APPLIES ONLY TO THE ITEM(S) AND CONFIGURATION(S) TESTED.**

It is the manufacturer's responsibility to assure the additional production units of this product are manufactured with identical electrical and mechanical components. The manufacturer is responsible to the authorities for any modifications made to the product, which result in non-compliance to the relevant regulations.

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Opinions expressed within this report regarding general assessments and qualifications for PASS or FAIL to the standards limits and requirements, are not part of the current accreditation. Neither is opinions expressed regarding model variants covered by the testing performed in this report.

Deviations from, additions to, or exclusions from the test specifications are described in "Testing Report Summary".

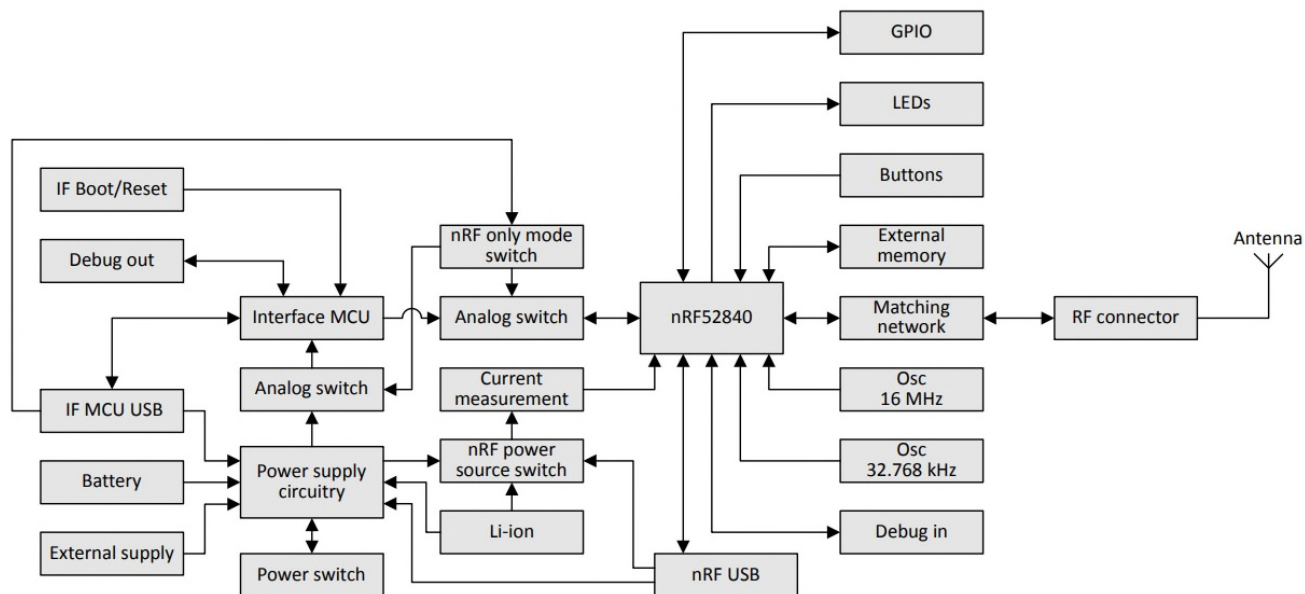
## DESCRIPTION OF TESTED ITEM(S)

Product description.....:	Develoment kit with 2.4GHz BLE and IEEE 802.15.4 Transreceiver and NFC receiver.
Model/type.....:	nRF52840-DK
Serial number.....:	BLE and IEEE 802.15.4: 683841455 and 683293789 NFC: 683703601
Hardware version.....:	V1.1.0
Software version.....:	TBD
Operating voltage.....:	3.0Vdc or 5Vdc from USB
Maximum power/current.....:	50mA
Highest clock frequency.....:	32MHz
Mounting position.....:	<input checked="" type="checkbox"/> Table top equipment <input type="checkbox"/> Wall/ceiling mounted equipment <input type="checkbox"/> Floor standing equipment <input type="checkbox"/> Handheld equipment <input type="checkbox"/> Rack mounted equipment <input type="checkbox"/> Console equipment <input checked="" type="checkbox"/> Other: Develompent kit

## RF CHARACTERISTICS OF THE TRANSMITTER

Frequency range.....:	BLE:2402 - 2480 MHz IEEE 802.15.4: 2405 MHz – 2480MHz NFC-A: 13.56MHz
Channel BW.....:	BLE: 1.88MHz IEEE 802.15.4: 2.1MHz
Channel separation.....:	/
Operating modes.....:	BLE, IEEE 802.15.4 and NFC RX mode
Types of modulation.....:	BLE:GFSK IEEE 802.15.4: QPSK, DSSS PHY
Tuneable bands.....:	None
Number of channels.....:	BLE:40 IEEE 802.15.4: 16 NFC-A: 1
User frequency adjustment.....:	None
Rated output power.....:	8 dBm @ 50 ohm (for BLE and IEEE 802.15.4)
Antenna connector.....:	None
Receiver category.....:	2 (for BLE and IEEE 802.15.4)
No. of Antennas .....	1
Antenna type.....:	PCB

## CRITICAL MODULES/PARTS



## INPUT/OUTPUT PORTS

Port name and description	Cable		
	> 3m	Attached during test	Shielded
USB	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

## OPERATING MODES

No.	Description	Applied for testing	
		Emissions	Immunity
1	BLE TX/RX	<input type="checkbox"/>	<input checked="" type="checkbox"/>
2	IEEE 802.15.4 TX/RX	<input type="checkbox"/>	<input checked="" type="checkbox"/>
3	NFC RX mode	<input type="checkbox"/>	<input checked="" type="checkbox"/>

## ACCESSORIES USED DURING TEST


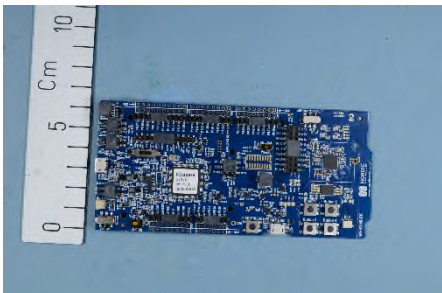
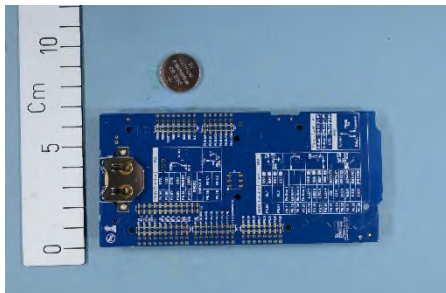
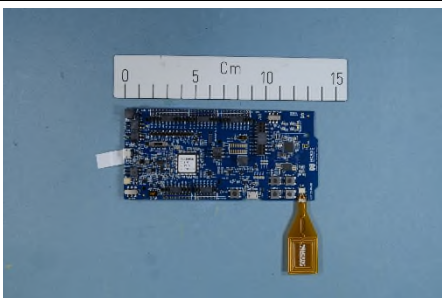
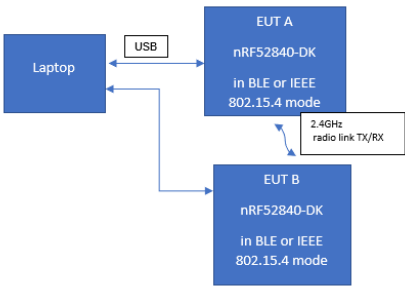
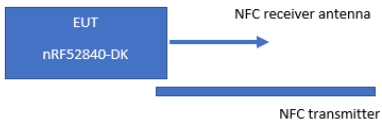
Description	Manufacturer	Type
Laptop	Dell	/
Micro USB cable	/	/
NFC transmitter	ACS LTD.	ACR122

## MODEL VARIANTS

The following model variants have been inspected and are confirmed to be identical or believed to be less disposed with regard to electromagnetic compatibility.

Model/type	Comment	Tested
/	/	<input type="checkbox"/>

## PHOTOS AND DRAWINGS


Copy of marking label.....:		
Photo of the test item.....:	 <p>Front view</p>	 <p>Rear view</p>
	 <p>With NFC antenna</p>	
Drawing of test setup.....:	 <p>IN BLE/IEEE 802.15.4 mode</p>	 <p>NFC mode</p>

## OTHER INFORMATION

Modifications to the test item.....:	None
Additional information.....:	Develoment kit with 2.4GHz BLE and IEEE 802.15.4 Transreceiver and NFC receiver.

Note: This equipment has been tested with certain cable types and cable configurations. Any changes to these parameters when installed may influence on the EMC properties of this equipment

## TEST ENVIRONMENT

Test laboratory.....:	<input type="checkbox"/> GAUSTAD (Gaustadalleen 30, N-0314 Oslo, Norway) <input checked="" type="checkbox"/> KJELLER (Instituttveien 6, N-2007 Kjeller, Norway)
Laboratory accreditation.....:	 <b>Norsk Akkreditering – TEST 033</b> P06 – Electromagnetic Compatibility
Environmental ref. conditions.....:	<p>The climatic conditions during the tests are within limits specified by the manufacturer for the operation of the product and the test equipment.  The climatic conditions during tests are within the following limits:</p> <p><b>Ambient temperature:</b> 15 – 35 °C  <b>Relative humidity:</b> 25 – 75 %RH  <b>Atmospheric pressure:</b> 86 – 106 kPa</p> <p>If explicitly required by the test standard, or the requirements are tighter than the above; the climatic conditions are recorded and documented separately in this test report.</p>
Calibration.....:	<p>All instruments used in the tests of this test report are calibrated and traceable to national or international standards. Between calibrations test set-ups are controlled and verified on a regular basis by intermediate checks to ensure, with 95% confidence that the instruments remain within their calibrated levels.</p> <p>The instrumentation accuracy is within limits agreed by the IEC/CEC/CTL and defined by Nemko reference document TM-NO/301</p>
Measurement uncertainties.....:	<p>EMC uncertainty is specified in CISPR 16-4-2. Only if our uncertainty is larger than the maximum value UCISPR, the uncertainty is added to the measurement result.</p> <p>EMC test uncertainties for transient immunity are kept within the requirements of the relevant basic standard.</p> <p>Further information about measurement uncertainties is provided on request</p>

## POWER SUPPLY SYSTEM UTILISED

Power supply voltage.....:	<input type="checkbox"/> 240V AC 50Hz <input type="checkbox"/> 230V AC 50Hz <input type="checkbox"/> 200V AC 60Hz <input type="checkbox"/> 115V AC 60Hz	<input type="checkbox"/> 400V 3NAC 50Hz <input type="checkbox"/> 230V 3AC 50Hz <input type="checkbox"/> 12V DC <input checked="" type="checkbox"/> 3 - 5V DC
Grounding conditions .....	<input checked="" type="checkbox"/> Not grounded <input type="checkbox"/> Ground is received from its power supply connection <input type="checkbox"/> Additional chassis grounding	

## EVALUATION OF PERFORMANCE

### PERFORMANCE TESTS

Performance checks.....:	<p>BLE :</p> <p>The application uses LEDs to indicate the state. Central and peripheral behavior is similar.</p> <p>LED1: ON means connected. OFF means disconnected.</p> <p>LED2: is turned ON whenever a disconnect event triggers. If turned on, it will not turn off (only on reset). Can be used to test if a disconnect has occurred, but re-connected very fast.</p> <p>LED3: ON means that the application is running.</p> <p>IEEE 802.15.4:</p> <p>The application uses LEDs to indicate the state, the Receiver. LED1-3 means the following:</p> <ul style="list-style-type: none"> <li>- LED1: 95 or more of the 100 packets was received the last second.</li> <li>- LED2: 90 or more of the 100 packets was received the last second.</li> <li>- LED3: 80 or more of the 100 packets was received the last second.</li> </ul> <p>NFC RX mode:</p> <p>The nRF52840-DK places stable at a distance of 2 – 3cm over NFC transmitter .</p> <p>When the nRF 52840-DK receive data or when there is a link between nRF52840-DK , the all 4 LED's lights on nRF52840 board.</p>
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Monitoring during tests.....:	<p>BLE and IEEE 802.15.4:</p> <ul style="list-style-type: none"> <li>- LED1 and LED3 was ON during and after the test on Central and peripheral .(Visually observed)</li> </ul> <p>NFC RX mode:</p> <ul style="list-style-type: none"> <li>- All 4 LED's ON (Visually observed)</li> </ul>
<p>Note 1: Performance check is a short functional test carried out during or after a technical test to confirm that the equipment operates.</p> <p>Note 2: Performance test is a measurement or a group of measurements carried out during and/or after a technical test to confirm that the equipment complies with selected parameters as defined in the equipment standard.</p> <p>Note 3: Monitoring during tests describes which functions were monitored and how.</p>	

## GENERAL PERFORMANCE CRITERIA

In order to pass each test, the specimen shall meet the following general criteria:

During test	After test
<b>Performance criterion A:</b> Operate as intended. No loss of function. No unintentional responses.	<b>Performance criterion A:</b> Operate as intended. No loss of function. No degradation of performance. No loss of stored data or user programmable functions.
<b>Performance criterion B:</b> May be loss of function (one or more). No unintentional responses.	<b>Performance criterion B:</b> Operate as intended. Lost function(s) shall be self-recoverable. No degradation of performance. No loss of stored data or user programmable functions

## TRANSMITTER PERFORMANCE CRITERIA

In order to pass each test, the transmitter functions shall meet the following criteria:

During continuous tests	During transient tests
<b>Performance criterion CT:</b> During and after the test, the apparatus shall continue to operate as intended. No degradation of performance or loss of function is allowed below a permissible performance level specified by the manufacturer when the apparatus is used as intended. In some cases this permissible performance level may be replaced by a permissible loss of performance. During the test the EUT shall not unintentionally transmit or change its actual operating state and stored data. If the minimum performance level or the permissible performance loss is not specified by the manufacturer, then either of these may be deduced from the product description and documentation and what the user may reasonably expect from the apparatus if used as intended.	<b>Performance criterion TT:</b> After the test, the apparatus shall continue to operate as intended. No degradation of performance or loss of function is allowed below a permissible performance level specified by the manufacturer, when the apparatus is used as intended. In some cases this permissible performance level may be replaced by a permissible loss of performance. During the EMC exposure to an electromagnetic phenomenon, a degradation of performance is, however, allowed. No change of the actual mode of operation (e.g. unintended transmission) or stored data is allowed. If the minimum performance level or the permissible performance loss is not specified by the manufacturer, then either of these may be deduced from the product description and documentation and what the user may reasonably expect from the apparatus if used as intended.
<b>Modification by the manufacturer:</b> Not modified	<b>Modification by the manufacturer:</b> Not modified



## RECEIVER PERFORMANCE CRITERIA

In order to pass each test, the receiver functions shall meet the following criteria:

During continuous tests	During transient tests
<p><b>Performance criterion CR :</b> During and after the test, the apparatus shall continue to operate as intended. No degradation of performance or loss of function is allowed below a permissible performance level specified by the manufacturer when the apparatus is used as intended. In some cases this permissible performance level may be replaced by a permissible loss of performance. During the test the EUT shall not unintentionally transmit or change its actual operating state and stored data. If the minimum performance level or the permissible performance loss is not specified by the manufacturer, then either of these may be deduced from the product description and documentation and what the user may reasonably expect from the apparatus if used as intended.</p>	<p><b>Performance criterion TR :</b> After the test, the apparatus shall continue to operate as intended. No degradation of performance or loss of function is allowed below a permissible performance level specified by the manufacturer, when the apparatus is used as intended. In some cases this permissible performance level may be replaced by a permissible loss of performance. During the EMC exposure to an electromagnetic phenomenon, a degradation of performance is, however, allowed. No change of the actual mode of operation (e.g. unintended transmission) or stored data is allowed. If the minimum performance level or the permissible performance loss is not specified by the manufacturer, then either of these may be deduced from the product description and documentation and what the user may reasonably expect from the apparatus if used as intended.</p>
<p><b>Modification by the manufacturer:</b> Not modified</p>	<p><b>Modification by the manufacturer:</b> Not modified</p>

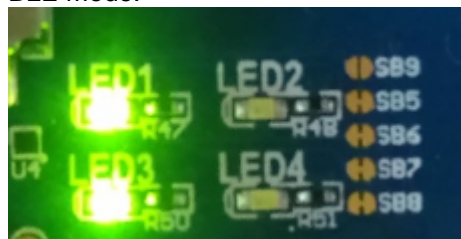
Note: In the subsequent test sections of this report, the required and actual specimen performance during immunity testing is indicated by the nomenclatures as given by the tables above (A or B and CT, TT, CR or TR).

Visuell observation during immunity test:

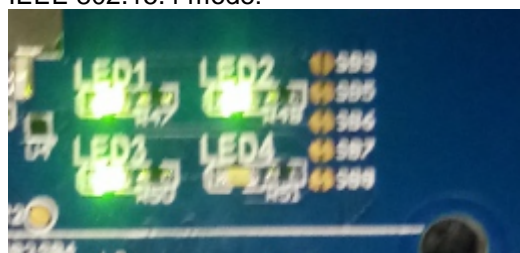
NFC mode :



BLE mode:



IEEE 802.15.4 mode:



## SUMMARY OF TESTING

### APPLIED STANDARDS

Standards	Titles
<b>Final Draft ETSI EN 301 489-1:V2.2.2</b>	<i>ElectroMagnetic Compatibility (EMC) standard for radio equipment and services; Part 1: Common technical requirements; Harmonised Standard for electromagnetic Compatibility</i>
<b>ETSI EN 301 489-3:V2.1.1</b>	<i>Electromagnetic compatibility (EMC) standard for radio equipment and services; Part 3: Specific conditions for Short-Range Devices (SRD) operating on frequencies between 9 kHz and 246 GHz; Harmonised Standard covering the essential requirements of article 3.1(b) of Directive 2014/53/EU</i>
<b>Draft EN 301 489-17:V3.2.0</b>	<i>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</i>
<b>EN 61326-1:2013</b>	<i>Electrical equipment for measurement, control and laboratory use - EMC requirements - Part 1: General requirements</i>

## TEST SUMMARY

Requirements – Tests	Reference standards	Verdict
Conducted Emissions	EN 301 489-01:V2.2.2 EN 301 489-03:V2.1.1 EN 301 489-17:V3.2.0 EN 61326-1:2013 CISPR 16-2-1 (2014), Ed.3.0	N/A
Conducted Emissions (Telecom Port)	EN 301 489-01:V2.2.2 EN 301 489-03:V2.1.1 EN 301 489-17:V3.2.0 EN 55022:2010	N/A
Discontinuous Conducted Emissions	EN 61326-1:2013 EN 55014-1:2006 + A1:2009 + A2:2011	N/A
Radiated Emissions (30MHz-12.75GHz)	EN 301 489-01:V2.2.2 EN 301 489-03:V2.1.1 EN 301 489-17:V3.2.0 EN 61326-1:2013 CISPR 16-2-3 (2014), Ed.3.2	§
Harmonic Current Emissions	EN 301 489-01:V2.2.2 EN 301 489-03:V2.1.1 EN 301 489-17:V2.2.1 EN 61326-1:2013 EN 61000-3-2:2014, Ed.4.0	N/A
Voltage Variations/Fluctuations/Flicker	EN 301 489-01:V2.2.2 EN 301 489-03:V2.1.1 EN 301 489-17:V3.2.0 EN 61326-1:2013 EN 61000-3-3:2013, Ed.3.0	N/A
Electrostatic Discharge (ESD) Immunity	EN 301 489-01:V2.2.2 EN 301 489-03:V2.1.1 EN 301 489-17:V3.2.0 EN 61326-1:2013 EN 61000-4-2 (2009), Ed.2.0	PASS
Radiated RF Disturbance Immunity	EN 301 489-01:V2.2.2 EN 301 489-03:V2.1.1 EN 301 489-17:V3.2.0 EN 61326-1:2013 EN 61000-4-3 (2006)+A1+A2, Ed.3.2	PASS
Electric Fast Transients Immunity	EN 301 489-01:V2.2.2 EN 301 489-03:V2.1.1 EN 301 489-17:V3.2.0 EN 61326-1:2013 EN 61000-4-4:2012, Ed.3.0	N/A
Surge Immunity	EN 301 489-01:V2.2.2 EN 301 489-03:V2.1.1 EN 301 489-17:V3.2.0 EN 61326-1:2013 EN 61000-4-5 (2014), Ed.3.0	N/A
Conducted RF Disturbance Immunity	EN 301 489-01:V2.2.2 EN 301 489-03:V2.1.1 EN 301 489-17:V3.2.0 EN 61326-1:2013 EN 61000-4-6 (2014), Ed.4.0	N/A

Requirements – Tests	Reference standards	Verdict
Power Frequency Magnetic Field Immunity	EN 61326-1:2013 EN 61000-4-8:2010, Ed.2.0	\$\$
Dips and Interruptions Immunity	EN 301 489-01:V2.2.2 EN 301 489-03:V2.1.1 EN 301 489-17:V3.2.0 EN 61326-1:2013 EN 61000-4-11 (2004), Ed.2.0	N/A

§ The radiated spurious emissions measurements are done according to EN 300 328 and EN 300 330 radio standard. Please ref. test reports Nemko TRF 372254-01, -02, and -03

§§According to the manufacturer the EUT is not susceptible for magnetic field.

PASS	: Tested and complied with the requirements
FAIL	: Tested and failed the requirements
N/A	: Test not relevant to this specimen (evaluated by the test laboratory)
–	: Test not performed (instructed by the applicant)
*	: An asterisk (*) placed after the verdict in the Result column indicates test items that are not within Nemko's scope of accreditation
#	: A grid (#) placed after the verdict in the Result column indicates test items that are only partly covered by Nemko's scope of accreditation. Further information is detailed in the test section

## NOTES

Note 1: Product standards with dated references to basic standards may have been performed by Nemko AS according to the newest edition of the basic standard. This may impact the compliance criteria or technical performance of the test, still this is considered to be adequate as long as the test is expected to confirm compliance to the intention of the product standard. The table above lists the actual editions of the basic standards which have been used during testing.

Note 2: The choice of immunity test levels could be higher than those specified by the reference standards when we take into account the nature of the specimen and its intended use, or based on customer requests.

# Test Results

# ELECTROSTATIC DISCHARGE (ESD) IMMUNITY

## TEST DESCRIPTION

### Method

The reference method for this test is listed in the table under clause TEST SUMMARY.

### Set-up

The specimen was energized and in normal operating condition.

- ☐ Floor standing equipment. Specimen was elevated 10 cm above the ground reference plane.
- ☒ Table top equipment. Specimen was placed on a test table 80 cm above the reference ground plane.  
A horizontal coupling plane (HCP) of 160x80 cm was placed on the test table, just beneath the specimen, and connected to the reference plane via a cable with two 470kΩ resistors located one in each end of the cable. The specimen was separated from the HCP by a 0.5mm insulating support.

A vertical coupling plane (VCP) of 50x50 cm was placed 10 cm from the specimen exterior. This VCP is connected to the reference plane via a cable with two 470kΩ resistors located one in each end of the cable.

The ESD generator's reference ground was connected to the reference ground plane.

### Procedure

- ☒ Indirect contact discharges were applied to the mid edge of the VCP.
- ☒ Indirect contact discharges were applied to the mid edge of the HCP.
- ☐ Direct contact discharges were applied to various selected test points of the specimen at conductive surfaces,
- ☒ Direct air discharges were applied to various selected test points of the specimen at non-conductive surfaces.

Discharges were applied at increasing levels to each test point.

Uncertainty figures: Peak voltage: ± 10 %; Transient shape: ± 30 %

A functional test was performed before and after the exposure. The specimen was observed during exposure in order to detect unintended responses.

### Instruments used during measurement

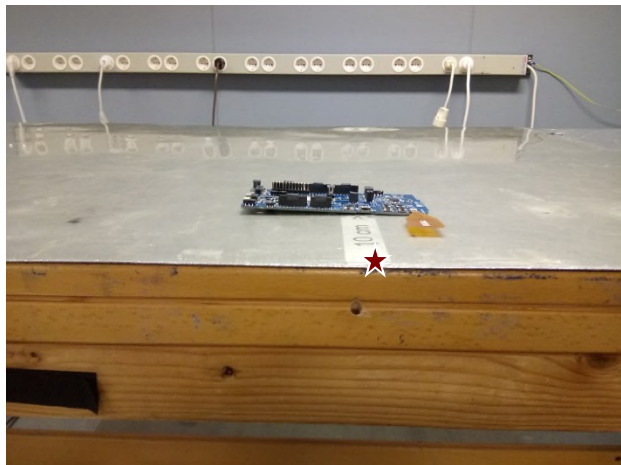
Instrument list: ESD Generator: EMTesT / ESD30N (N-4643) (03/2020)

Temperature:	23°C
Humidity:	58 %RH
Atmos. pressure:	1001 hPA

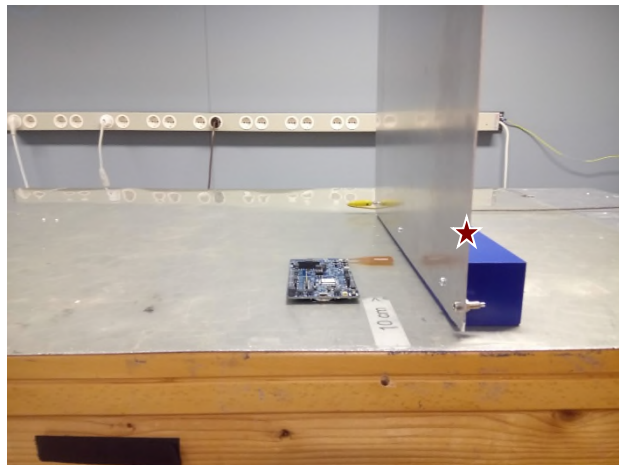
### Conformity

Verdict:	PASS
Test engineer:	gns

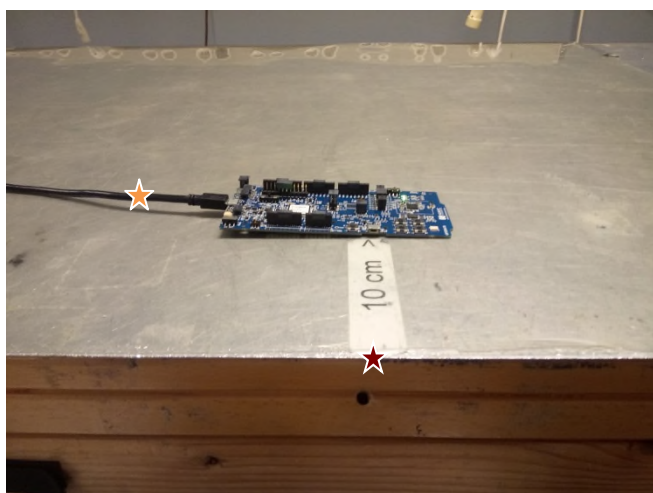
## PHOTO OF SELECTED TEST POINTS



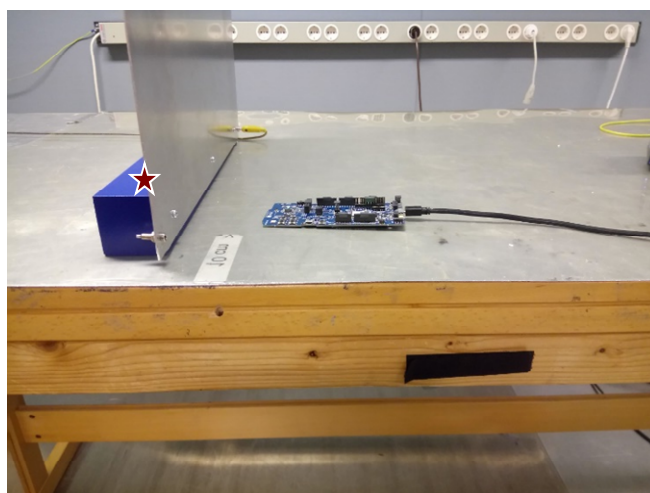
NFC mode



NFC mode



BLE and IEEE 802.15.4 mode



BLE and IEEE 802.15.4 mode

- ★ = Contact discharge points
- ★ = Air discharge points

## DETAILED TEST LOG

Tested in BLE, IEEE 802.15.4 and in NFC RX mode.

Test Point	Applied Level [kV]	Discharge Type	Discharges per test level	Required Criteria	Complied Criteria	Result
USB cable	$\pm 4, \pm 8$	Air	10	B	A	PASS
HCP	$\pm 2, \pm 4$	Contact	10	B	A	PASS
VCP	$\pm 2, \pm 4$	Contact	10	B	A	PASS

Air discharge on the module is not tested as the radio module and evaluation board where the radio module is mounted is not encapsulated.

Note: ND = No Discharge, indicates discharge attempts, which have given no actual observable discharge.

## OBSERVATIONS

No malfunctions were recorded during or after the applied test(s).  
Observations showed no unintended responses during test(s).



# RADIATED RF DISTURBANCE IMMUNITY

## TEST DESCRIPTION

### Method

The reference method for this test is listed in the table under clause TEST SUMMARY.

### Set-up

The tests were performed at 3 meter antenna distance in an anechoic chamber.

- ☐ The specimen was placed on a Styrofoam support 10 cm above the floor.  
☒ The specimen was placed on a Styrodur/styrofoam table 80 cm above the floor.

The specimen was placed within the calibrated volume, and the cables connected to the specimen was arranged so that 100 cm of each cable was exposed to the electromagnetic field.  
Interconnecting cables specified  $\leq 300$  cm whose length exceeded 100 cm were bundled to achieve 100 cm length.  
Interconnecting cables specified  $> 300$  cm and other cables connected to the specimen are exposed for 100 cm, and the remaining cable length was decoupled with the use of ferrites.

### Procedure

The specimen was exposed to the RF electromagnetic field generated by one or more antennas. The polarization of the field requires testing each side of the specimen twice, once with the antenna horizontally and again with the antenna vertically. The antenna height during test was 150 cm.

Exposed side of the specimen:

- ☒ 0° (front) ☐ Top (handheld)  
☒ 90° ☐ Bottom (handheld)  
☒ 180° (rear)  
☒ 270°

Frequency sweep rate:

- ☒ 1% step with 3 sec dwell time  
☐  $1.5 \times 10^{-3}$  decades/sec (80 – 1000MHz)  
☐  $0.5 \times 10^{-3}$  decades/sec (1000 – 2000MHz)  
☐ Other:

Frequency range:

- ☐ 80MHz – 1000MHz  
☐ 1400MHz – 2000MHz  
☐ 2000MHz – 2700MHz  
☐ 80MHz – 2000MHz  
☒ 80MHz – 6000MHz

Modulation:

- ☒ 80% AM @ 1000Hz  
☐ 80% AM @ 400Hz  
☐ 50% PM @ 217Hz

Uncertainty figures:

Field level:  $\pm 2.4$  dB

A functional test was performed before and after the exposure. The specimen was observed during exposure in order to detect unintended responses.

### Instruments used during measurement

Instrument list: Amplifier, RF: R&S / BBA150-BC500 (LR-1720) (N/A)  
Amplifier, RF: R&S / BBA150-D110E100 (LR-1721) (N/A)  
Antenna Log-periodic: AR / ATR80M6G (LR-1724) (N/A)  
Field Meter: ETS / HI-6113 (LR-1723) (N/A)  
Field probe: ETS / HI-6153 (LR-1722) (04/2019)  
Generator, RF: R&S / SMB100A (LR-1688) (06/2019)  
Power Sensor: R&S / NRP6AN (LR-1718) (03/2019)  
Power Sensor: R&S / NRP6AN (LR-1719) (03/2019)

### Conformity

Verdict:

PASS

Test engineer:

gns

## DETAILED TEST LOG

Tested in BLE, IEEE 802.15.4 and in NFC RX mode.

Frequency range [MHz]	Field strength [V/m]	Polarization	Required Criteria	Complied Criteria	Result
80 - 6000	3	HOR	A	A	PASS
80 - 6000	3	VER	A	A	PASS

## OBSERVATIONS

No malfunctions were recorded during or after the applied test(s).  
Observations showed no unintended responses during test(s).

# Annexes

## PHOTOS

Test set-up for EMC immunity tests



NFC mode, active



NFC mode, standby



BLE and IEE 802.15.4