Test report issued under the responsibility of:
EMITECH MONTPELLIER laboratory
MRA US-EU Designation Number: FR0006
Canadian CAB Identifier: FR0003

RF EXPOSURE TEST REPORT

KDB 447498 D01 V06
RSS-102 - Issue 5, March 2015

Company ..... :	**STMICROELECTRONICS (Rousset) SAS**
Address..... :	190 AVENUE CELESTIN COQ 13106 ROUSSET FRANCE

Test item description. ..... :	**NFC card reader evaluation board**
Trade Mark. ..... :	STMICROELECTRONICS
Manufacturer..... :	STMICROELECTRONICS
Model/Type reference..... :	X-NUCLEO-NFC10A1
FCC ID. ..... :	YCPNFC10A1
IC. ..... :	8976A-NFC10A1
Ratings..... :	5Vdc

Testing Laboratory ..... :	**EMITECH MONTPELLIER laboratory**
Address..... :	145 rue de Massacan 34740 VENDARGUES FRANCE

Report Reference No..... :	**RE-EVE-24D107-1A**
Test procedure. ..... :	FCC IC Certification
Diffusion..... :	Mr. DAVID DAUBOIS
Applicant's name. ..... :	STMICROELECTRONICS
Date of issue..... :	September 20, 2024
Total number of pages..... :	10
Revision. ..... :	0
Compiled by..... :	Olivier HEYER
Approved by (+ signature). ..... :	David MONTAULON (Technical Manager)

Duplication of this test report is only permitted for an integral photographic facsimile. It includes the number of pages referenced here above. This document is the result of testing a specimen or a sample of the product submitted. It does not imply an assessment of the conformity of the whole manufactured products of the tested sample.

REPORT INDEX:

REVISION HISTORY:

Revision	Date	Modified pages	Modifications
0	September 20, 2024	/	Creation

1. GENERAL INFORMATIONS

This document submits the valuation of RF human exposure on the equipment **NFC demo board X-NUCLEO-NFC10A1** (denominated hereafter E.U.T.: equipment under test) according to document(s) listed in §2 of this test report.

TESTING PROCEDURE AND TESTING LOCATION:

Testing Location ..... :	EMITECH MONTPELLIER laboratory
Address. ..... :	145 rue de Massacan 34740 VENDARGUES FRANCE
Test procedure. ..... :	FCC IC Certification
Tested by ..... :	Olivier AELBRECHT
Test supervisor ..... :	None
Date of receipt of test item ..... :	N/A
Date (s) of performance of tests ..... :	June the 7th of 2024

APPLICANT'S GENERAL INFORMATIONS:

Company name ..... :	**STMICROELECTRONICS (Rousset) SAS**
Company address. ..... :	190 AVENUE CELESTIN COQ 13106 ROUSSET FRANCE
Person(s) present during the tests. ..... :	No representative for company attended the tests.
Responsible. ..... :	Mr. DAVID DAUBOIS

GENERAL REMARKS:

The information in italics is declared by the manufacturer and is under his responsibility
The test results presented in this report relate only to the object tested.
The results contained in this report reflect the results for this particular model and serial number. It is the responsibility of the manufacturer to ensure that all production models meet the intent of the requirements detailed within this report.

"(see Enclosure #)" refers to additional information appended to the report.
"(see appended table)" refers to a table appended to the report.
Throughout this report the decimal separator is point.

POSSIBLE TEST CASE VERDICTS:

Test case does not apply to the test object.:	N/A
Test case not performed ..... :	N/P
Test object does meet the requirement. ..... :	P (Pass)
Test object does not meet the requirement. ..... :	F (Fail)

DEFINITIONS AND ABBREVIATIONS:

E.U.T.	Equipment Under Test	AE	Ancillary Equipment	Pk	Peak detector
RBW	Resolution BandWidth	VBW	Video BandWidth	QP	Quasi-peak detector
FSOATS	Free Space Open Area Test Site	FAR	Full Anechoic Room	Av	Average detector
VP	Vertical Polarization	HP	Horizontal Polarization	RMS	Root Mean Square
RF	Radio Frequency	N.T.R	Nothing To Report	N/C	Not Communicated
SAC	Semi Anechoic Chamber				

2. REFERENCE DOCUMENT(S)

NORMATIVE REFERENCES:
The following referenced documents are necessary for the application of the present test report. **FCC 47 CFR PART 15** Code of federal regulations – Title 47 telecommunication Part 15- Radio frequency devices **KDB 447498 D01 v06** RF exposure procedures and equipment authorization policies for mobile and portable devices. **RSS-102 - Issue 5, March 2018** Radio Frequency (RF) Exposure Compliance of Radiocommunication Apparatus (All Frequency Bands) **RR-EVE-24D107-1A** Radio Test Report Emitech. Although the product standard uses obsolete technical standards, the latest versions of standards achievable by the laboratory will be used for testing.
INFORMATIVE REFERENCES:
The following referenced documents are not necessary for the application of the present test report but they assist the user with regard to a particular subject area.

3. EQUIPMENT TECHNICAL DESCRIPTION

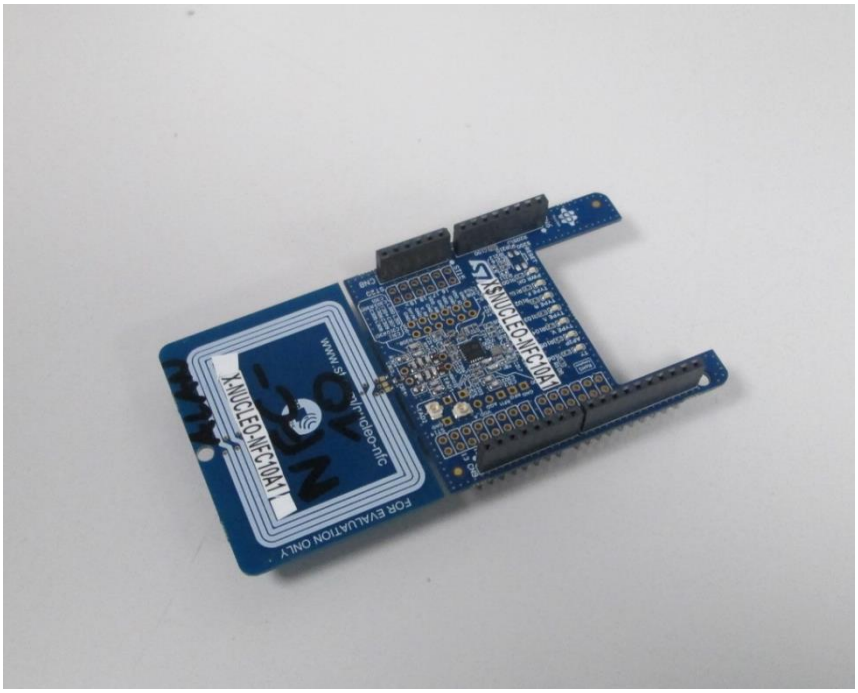
3.1. Test Conditions

Test item description.	:	NFC card reader evaluation board
Model/Type reference	:	X-NUCLEO-NFC10A1
Trade Mark.	:	STMICROELECTRONICS
Serial number (S/N).	:	Not communicated
Part number (P/N).	:	Not communicated
Software version.	:	*Not communicated*
Firmware version.	:	*Not communicated*
Type of sample.	:	Pre-serial
Function(s)	:	NFC demo board
Manufacturer name.	:	STMICROELECTRONICS
Address.	:	776 RUE ALBERT CAQUOT SKY SOPHIA BATIMENT B 06410 BIOT FRANCE

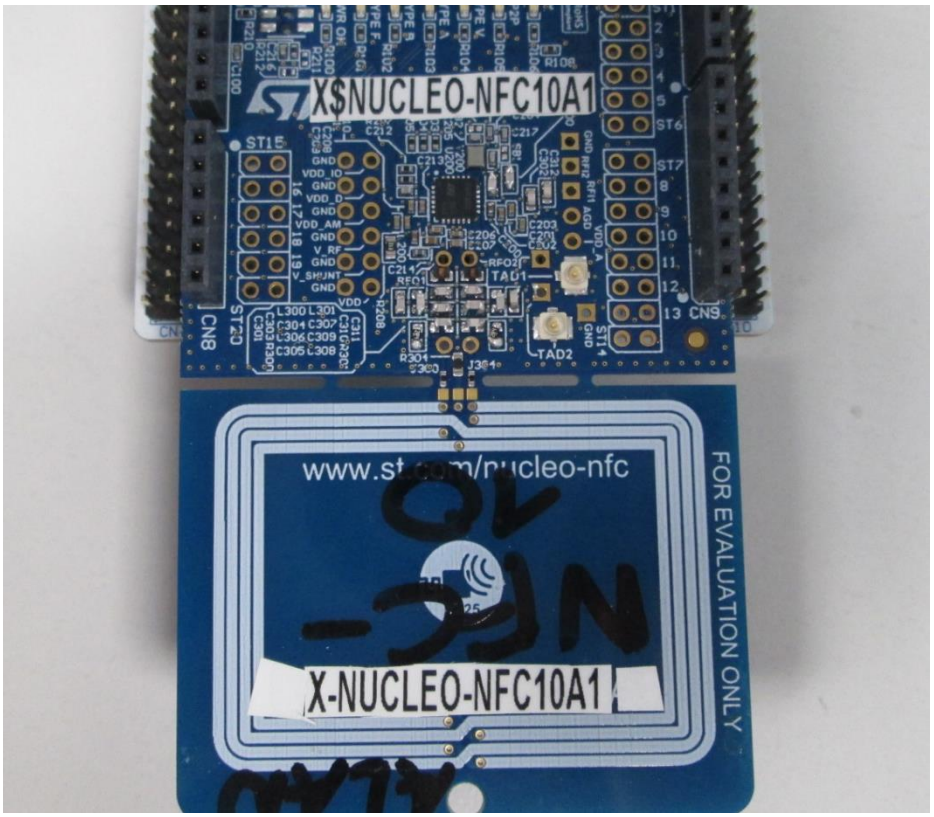
General product information:

N/A

3.2. E.U.T. General view



3.3. E.U.T. Marking plate



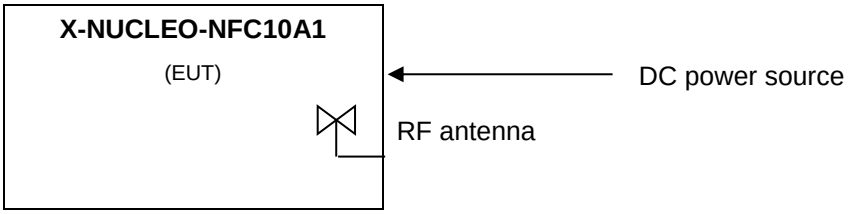
3.4. E.U.T. Mechanical and Electrical Design

Power supply.	:	*5Vdc*
Power supply range.	:	*5Vdc*
Power type.	:	*USB*
Power (W).	:	*Not communicated*
Nominal current (A).	:	*Not communicated*
Dimensions (L x W x H) (m).	:	*0.104 x 0.054 x 0.007*
Weight (kg).	:	*0.01*
Temperature range (°C).	:	*0 to +60*
Ground bounding strap.	:	*No*

Comments:

N/A

3.5. E.U.T. Input/Output ports



PORT	NAME	TYPE	LENGTH	CABLE TYPE	COMMENTS
0	Main frame	N/E	N/A	Plastic	N/A
1	DC power source	DC	N/A	N/A	5Vdc
2	RF antenna	RF	N/A	N/A	13.56MHz PCB printed

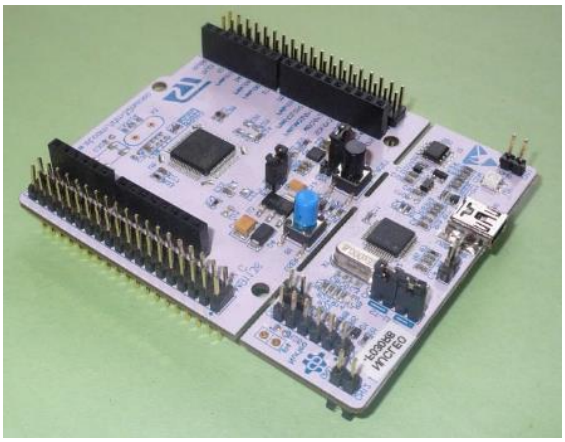
AC/DC : AC/DC Converter port
I/O .....: Input or Output port
N/E .....: Non Electrical port
AC..... : Alternative current port
TP ..... : Telecommunication port
DC..... : Direct current port
RF ..... : Radio frequency port

3.6. Supporting Equipment Used During Test

Sample subject to the tests was tested with following equipment.

PRODUCT TYPE	MANUFACTURER	MODEL	N°EMITECH / COMMENTS
Nucleo demo board	STMICROELECTRONICS	Not communicated	Used to powered the EUT and set it in test mode.
Power Bank	Xindao B.V.	P324.25	Provide the 5Vdc to the Nucleo demo board (AE) during radiated measurement.

NUCLEO DEMO BOARD (AE)



POWER BANK (AE)

3.7. EUT Radio Specifications

a) General Informations

According to manufacturer's declarations :

EUT type..... : *Transceiver*
Technology..... : *RFID*
Environmental profile..... : *Data transmissions*
Temperature range..... : *0°c to +60°C*
Antenna type ..... : *Integral*
Antenna Gain..... : *Not communicated*

Comments:
N/A

b) Transmitter Parameters (Tx)

Frequency bands..... : *13.553MHz to 13.567MHz*
RF Power..... : *Not communicated*
Number of channels / Separation..... : *1 channel*
Modulation type ..... : *AM*
Duty cycle ..... : *Not communicated*
Tested frequency..... : *13.56MHz*

c) Receiver Parameters (Rx)

Frequency bands..... : *13.553MHz to 13.567MHz*
Category/Class ..... : *Not communicated*
Bandwidth..... : *Not communicated*

4. RF EXPOSURE

Maximum Radiated magnetic field = 3.16 dBµA/m (1.44µA/m) at 13.56 MHz (see Radio test report referenced in §2)

From ANSI C63.10 Annexe G.2 : EIRP = $(E \times d)^2/30 = (377H \times d)^2/30$

where
- E = electric field strend in V/m
- H = magnetic field strend in A/m
- D = measurement distance in m

Then equivalent EIRP = $1x10^{-6}$W

For USA

In accordance with KDB 447498 D01 Appendix C, as EIRP is lower than 459 mW at 13.56 MHz, SAR exemption for FCC can be considered for a distance ≤ 5mm.

Then it is therefore not necessary to carry out measurements to assess human exposure to radiofrequencies.

For Canada

In accordance with RSS-102, Issue 5, Section 2.5.1., as EIRP is lower than 71 mW at 13.56 MHz, SAR exemption for ISED can be considered for a distance ≤ 5mm.

Then it is therefore not necessary to carry out measurements to assess human exposure to radiofrequencies.

End of test report