



Test report issued under the responsibility of:
EMITECH MONTPELLIER laboratory
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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-NFC09A1
FCC ID..... : YCPNFC09A1
IC : 8976A-NFC09A1
Ratings..... : 5 Vdc

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

Report Reference No..... : **RE-EVE-24C933-1A**
Test procedure : FCC IC Verification
Diffusion..... : Mr DAUBOIS
Applicant's name : STMICROELECTRONICS
Date of issue..... : September 17, 2024
Total number of pages..... : 10
Revision..... : 0
Compiled by..... : Olivier HEYER
Approved by (+ signature)..... : Olivier AELBRECHT (RF Expert)

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.

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REVISION HISTORY:

Revision	Date	Modified pages	Modifications
0	September 17, 2024	/	Creation

1. GENERAL INFORMATIONS

This document submits the results of Human Exposure valuation on the equipment **X-NUCLEO-NFC09A1** (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 & Open Area Test Site in SALINELLES (30)				
Address.	145 rue de Massacan 34740 VENDARGUES FRANCE				
Test procedure.	FCC IC Certification				
Tested by	Morgan PATEY				
Test supervisor	None				
Date of receipt of test item	N/A				
Date (s) of performance of tests	From May 30 th of 2024				
APPLICANT'S GENERAL INFORMATIONS:					
Company name	STMICROELECTRONICS				
Company address.	190 AVENUE CELESTIN COQ 13106 ROUSSET FRANCE				
Person(s) present during the tests.	No representative for company attended the tests.				
Responsible	Mr DAUBOIS				
GENERAL REMARKS:					
<p>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.</p> <p>"(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.</p>					
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
OATS	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

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-24C933-2A

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-NFC09A1
Trade Mark. :	STMICROELECTRONICS
Serial number (S/N)..... :	Not communicated
Part number (P/N). :	Not communicated
Software version..... :	<i>Not communicated</i>
Firmware version..... :	<i>Not communicated</i>
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

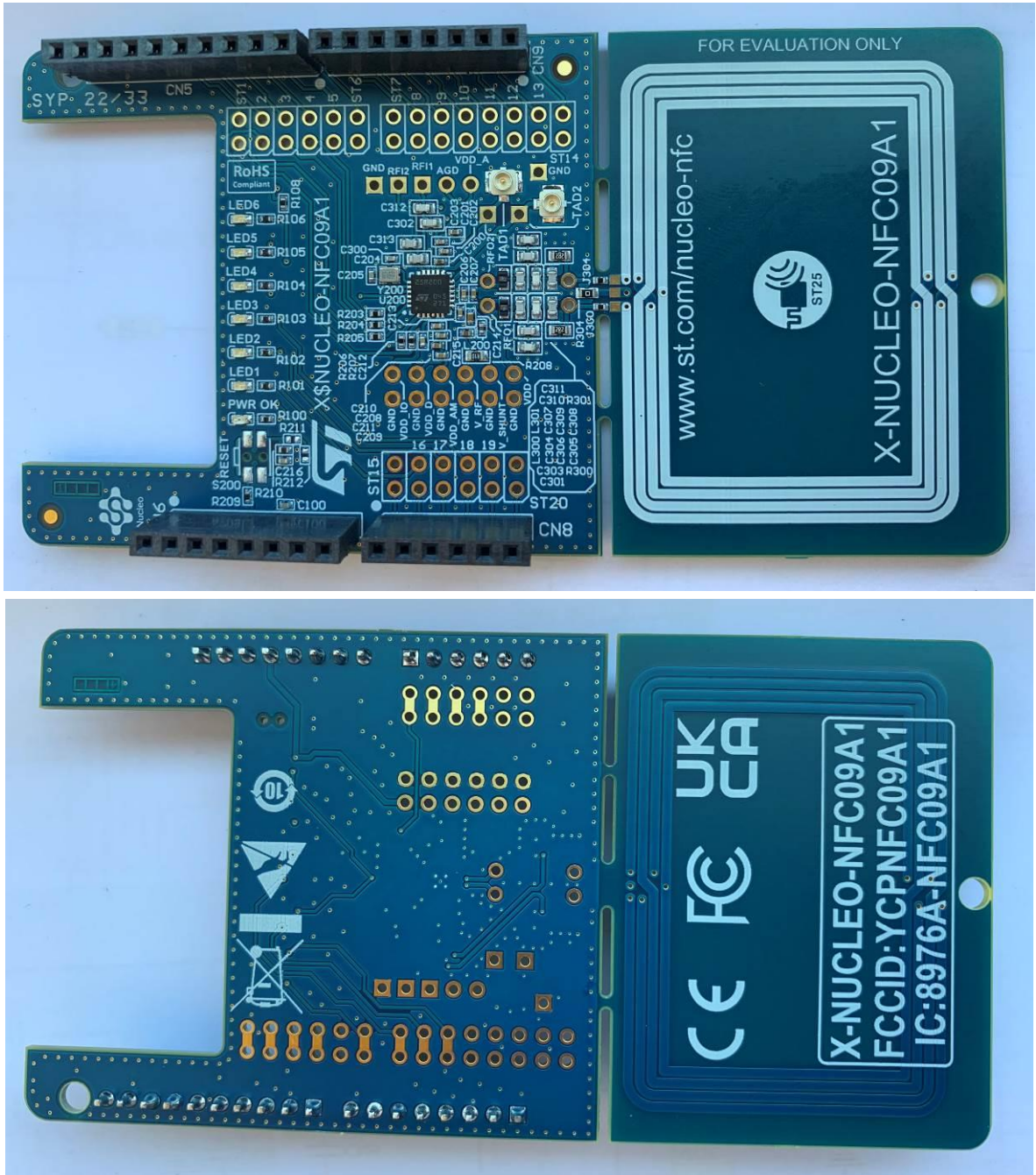
General product information:

N/A

3.2. EUT Marking plate



3.3.EUT General view



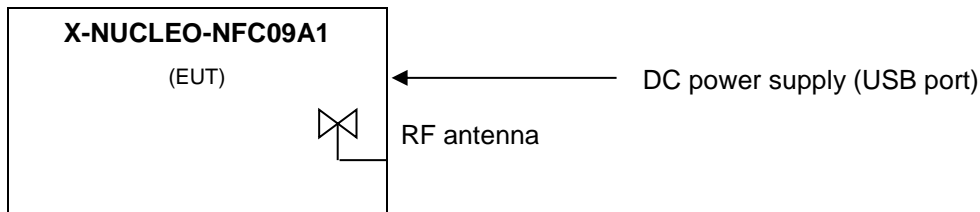
3.4. EUT Mechanical and Electrical Design

Power supply..... : 5 Vdc
 Power supply range..... : 5 Vdc
 Power type..... : USB
 Power (W)..... : 1.7
 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. EUT Input/Output ports



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

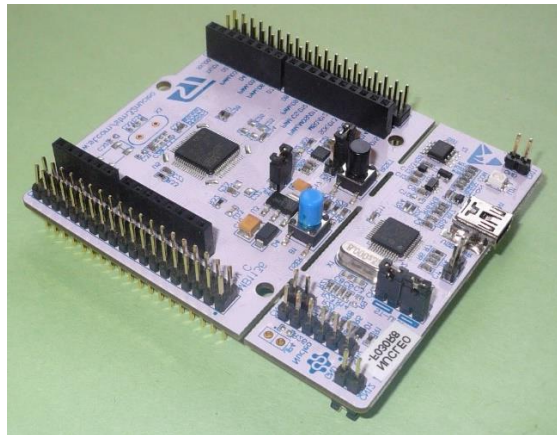
Sample subject to the tests was tested with following equipment.

PRODUCT TYPE	MANUFACTURER	MODEL	N°EMITECH / COMMENTS
NFC TAG	STMICROELECTRONICS	ST25TV02KC	Used to initiate NFC communications.
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 demo board.

NFC TAG (AE)



NUCLEO DEMO BOARD (AE)



POWER BANK (AE)



3.7. EUT Radio Specifications

a) GENERAL INFORMATIONS	
According to manufacturer's declarations :	
EUT type.....	: <i>Transceiver</i>
Technology	: <i>RFID</i>
Environmental profile.....	: <i>Data transmissions</i>
Temperature range.....	: <i>0°C to +60°C</i>
Antenna type	: <i>PCB</i>
Antenna Gain.....	: <i>Not communicated</i>
Comments:	
<i>N/A</i>	
b) TRANSMITTER PARAMETERS (Tx)	
Frequency bands.....	: <i>13.553 MHz to 13.567 MHz</i>
RF Power.....	: <i>1.7 W</i>
Number of channels / Separation.....	: <i>1</i>
Modulation type	: <i>AM</i>
Duty cycle	: <i>100%</i>
Tested frequency.....	: <i>13.56 MHz</i>
c) RECEIVER PARAMETERS (Rx)	
Frequency bands.....	: <i>13.553 MHz to 13.567 MHz</i>

4. RF EXPOSURE

Maximum Radiated magnetic field = 4.16 dB μ A/m (1.61 μ A/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 strength in V/m

H = magnetic field strength in A/m

D = measurement distance in m

Then equivalent EIRP = 1.23×10^{-3} mW

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 ≤ 5 mm.

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 ≤ 5 mm.

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

●●● End of test report ●●●