

REM-EMIESS22N643ALL-02Av0

MPE test report

According to the standard:

CFR 47 FCC PART 15

Equipment under test:

RS420NFC_SCR READER

FCC ID: **NQY-30022**

Company:

ALLFLEX USA, Inc

Distribution: Mr LANGOUET

(Company: ALLFLEX USA, Inc)

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DESIGNATION OF PRODUCT: RS420NFC_SCR READER

Serial number (S/N): C143 01542

Reference / model (P/N): 30022

Software version: 2.51.00 – Jun 24 2021

MANUFACTURER: ALLFLEX USA, Inc

COMPANY SUBMITTING THE PRODUCT:

Company: ALLFLEX USA, Inc

Address: 2805 East 14th Street
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Responsible: Mr LANGOUET

Person(s) present during the tests: /

DATES OF TEST: From 6-Oct-22 to 12-Sep-23

TESTING LOCATION: EMITECH ANGERS laboratory at JUIGNE SUR LOIRE (49) FRANCE

FCC Accredited under US-EU MRA Designation Number: FR0009
Test Firm Registration Number: 873677

TESTED BY: B. VOVARD

VISA:



WRITTEN BY: B. VOVARD

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REVISIONS HISTORY

Revision	Date	Modified pages	Modifications
0	26-Oct-22	/	Creation

1. INTRODUCTION

This report presents the results of radio test carried out on the following radio equipment: **RS420NFC SCR READER**, in accordance with normative reference.

The equipment under test integrates:

- Bluetooth radio part module already certified using 2.4 GHz (FCC ID: X3ZBTMOD3 / IC ID: 8828A-MOD3),
- RFID radio part already certified operational at 134.2 kHz,
- NFC radio part already certified operational at 13.56MHz,

All tests are performed, firstly on battery only then on representative AC/DC Adapter referenced **FJ-SW20181201500**.

2. PRODUCT DESCRIPTION

Class: B

Utilization: Handheld animal control tag

Antenna type and gain: Integral antenna (unknown gain)

Operating frequency range: 134.2 kHz
13.56 MHz
From 2400 MHz to 2483.5 MHz

Number of channels: 1 for RFID and NFC
79 for Bluetooth

Channel spacing: Not concerned for RFID and NFC
1 MHz for Bluetooth

Modulation: ASK for RFID and NFC
GFSK for Bluetooth

Power source: 7.4 Vdc Ni-MH batteries, Rechargeable
by AC/DC Adapter 100-240Vac to 12Vdc

The applicant declares that the equipment can emit during the recharge of batteries.

Power level, frequency range and channels characteristics are not user adjustable.
The details pictures of the product and the circuit boards are joined with this file.

3. NORMATIVE REFERENCE

The standards and testing methods related throughout this report are those listed below.

They are applied on the whole test report even though the extensions (version, date and amendment) are not repeated.

CFR 47 (2022) Radio Frequency Devices

ANSI C63.10 2013
Procedures for Compliance Testing of Unlicensed Wireless Devices.

447498 D04 Interim General RF Exposure Procedures and Equipment Authorization Policies for Mobile and RF Exposure Guidance v01 Portable Devices

4. RF EXPOSURE**RFID Radio part:**

In accordance with KDB 447498 D04 Interim General RF Exposure Guidance v01.

1-mW Test Exemption according paragraph 2.1.2

Maximum measured power = 87.49 dB μ V/m = 0.000078955 mW at 134.2 kHz
with $P = (E \times d)^2 / (30 \times G_p)$ with $d = 10$ m and $G_p = 1$

The equipment fulfils the requirements on 1-mW Test Exemption according §1.1307(b)(3)(i)(A).

The MPE ratio is then calculated for the simultaneous transmission.

$$\text{MPE ratio(RFID)} = \frac{0.000078955}{1} = 78.955 \times 10^{-6}$$

NFC Radio part:

In accordance with KDB 447498 D04 Interim General RF Exposure Guidance v01.

1-mW Test Exemption according paragraph 2.1.2

Maximum measured power = 74.34 dB μ V/m = 0.000017373 mW at 13,56 MHz
with $P = (E \times d)^2 / (30 \times G_p)$ with $d = 10$ m and $G_p = 1$

The equipment fulfils the requirements on 1-mW Test Exemption according §1.1307(b)(3)(i)(A).

The MPE ratio is then calculated for the simultaneous transmission.

$$\text{MPE ratio(NFC)} = \frac{0.000017373}{1} = 17.373 \times 10^{-6}$$

Bluetooth Radio part:

In accordance with KDB 447498 D04 Interim General RF Exposure Guidance v01.

SAR-Based Exemption according paragraph 2.1.3

The test separation distance declared is 5 mm (with a minimum value of 5 mm).

According §1.1307, at frequency 2402 MHz for this distance, the ERP exemption threshold is **2.79 mW ERP**

According §2.1.1 of KDB 447498 D04 Interim General RF Exposure Guidance v01, this exemption threshold is based on a threshold for exposure for 1-g SAR (head and body). For a threshold corresponding to a 10-g extremity SAR exposure, it is necessary to apply a factor of 2.5 to the determined exemption threshold.

Therefore, **10-g extremity SAR threshold** resulting is $2.79 \text{ mW ERP} \times 2.5 = 6.975 \text{ mW ERP}$

According grant, the maximum conducted power of the module FCC ID: X3ZBTMOD3 is 6 dBm at frequency 2402 MHz

The antenna gain declared is 2.1 dBi.

Therefore maximum time averaged conducted power is **3.981 mW** and maximum ERP power is 3.935 mW at 2402 MHz

The maximum time-averaged power or effective radiated power (ERP), whichever is greater, is less than or equal to the threshold P_{th} (mW).

The equipment fulfils the requirements on SAR-Based Exemption according §1.1307(b)(3)(i)(B).

The MPE ratio is then calculated for the simultaneous transmission.

$$\text{MPE ratio(BT)} = \frac{3.98}{6.975} = 0.570$$

Calculus for simultaneous transmission

$$\sum \text{ of MPE ratio} = \text{MPE ratio(RFID)} + \text{MPE ratio(NFC)} + \text{MPE ratio(BT)} = 78.955 \times 10^{-6} + 17.373 \times 10^{-6} + 0.570 = 0.570 \leq 1.0$$

The product meets the requirement for Simultaneous transmission MPE test exclusion from §2.2 of KDB 447498

□□□ End of report □□□