

MPE test report

According to the standard:
CFR 47 FCC PART 15

Equipment under test:
RS420NFC_SCR READER

FCC ID: NQY-30014

Company:
ALLFLEX USA, Inc

Distribution: Mr LANGOUET

(Company: ALLFLEX USA, Inc)

Number of pages: 8

Ed.	Date	Modified Page(s)	Technical Verification and Quality Approval	
			Name and Function	Visa
0	1-Aug-18	Creation	M. DUMESNIL, Radio Technical Manager	

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DESIGNATION OF PRODUCT: RS420NFC_SCR Reader

Serial number (S/N): C143 00070

Reference / model (P/N): RS420NFC-60

Software version: 2.31.00 – Apr 4 2018

MANUFACTURER: BIOMARK

COMPANY SUBMITTING THE PRODUCT:

Company: ALLFLEX USA, Inc

Address: 2805 East 14th Street
P.O. Box 612266
75261-2266 Dallas/Ft Worth Airport
Texas
USA

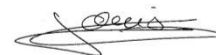
Responsible: Mr LANGOUET

DATE(S) OF TEST: From 16-Apr-18 to 24-Apr-18

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: S. LOUIS

VISA:



WRITTEN BY: S. LOUIS

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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:

- A Bluetooth radio module, already certified (FCC ID: X3ZBTMOD3)
- A RFID radio module operational at 134.2 kHz,
- A NFC radio module operational at 13.56 MHz.

2. PRODUCT DESCRIPTION

Class: A

Utilization: Handheld control terminals

The applicant declares that the highest local oscillator used is 24MHz.

Frequency generation: A microcontroller with its 24 MHz crystal and an oscillator circuitry with a 17.1776 MHz crystal

Power source: 7.4Vdc Ni-MH batteries
12Vdc by AC / DC Adapter

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.

RFID part:

Antenna type and gain: Integral antenna, gain unknown

Operating frequency range: 134.2 kHz

Number of channels: 1

Channel spacing: Not concerned

Modulation: RFID Protocol

NFC part:

Antenna type and gain:	Integral antenna, gain unknown
Operating frequency range:	13.56 MHz
Number of channels:	1
Channel spacing:	Not concerned
Modulation:	NFC Protocol

Bluetooth part:

Antenna type and gain:	Ceramic antenna, 2.1 dBi
Operating frequency range:	from 2402 to 2480 MHz
Number of channels:	79
Channel spacing:	1 MHz
Modulation:	Bluetooth Protocol

3. <i>NORMATIVE REFERENCE</i>

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 FCC Part 15 (2018)	Radio Frequency Devices
ANSI C63.10	2013 Procedures for Compliance Testing of Unlicensed Wireless Devices.
447498 D01 General RF Exposure Guidance v06	RF Exposure procedures and equipment authorization policies for mobile and portable equipment

4. RF EXPOSURE**RFID part:**

In accordance with KDB 447498 D01 General RF Exposure Guidance v06, Paragraph 4.3.1.

The product must respect the exclusion limit for 10-g extremity SAR and a separation distances less than 50mm:

Maximum measured power = 85.86 dB μ V/m = **65.4 x 10⁻⁶ mW** at 134.2 kHz.
with $P = (E \times d)^2 / (30 \times G_p)$ with $d = 10$ m and $G_p = 1$

The power threshold determined by the equation in 4.3.1.c) 1) for 50 mm and 100 MHz is multiplied by ½

According this formula:

Power threshold, mW = $\left[\left[\frac{(50 \times 7.5)}{\sqrt{0.100}} \right] + (50 - 50) \times (100/150) \right] \times [1 + \log(100/0.1342)] \times \frac{1}{2}$
Power threshold, mW = 2295.96 mW

The equipment fulfils the requirements on maximum conducted or equivalent isotropically radiated power (e.i.r.p) for general population/uncontrolled exposure and therefore fulfils the requirements of 47 CFR §1.1310 at the distance greater than 5 mm between the user and the antenna.

NFC part:

In accordance with KDB 447498 D01 General RF Exposure Guidance v06, Paragraph 4.3.1.

The product must respect the exclusion limit for 10-g extremity SAR.

Maximum measured power = 61.08 dBμV/m = **3.77 x 10⁻⁶ mW** at 13.56 MHz

with $P = (E \times d)^2 / (30 \times G_p)$ with $d = 10\text{ m}$ and $G_p = 1$

For test separation distances $\leq 50\text{ mm}$

The power threshold determined by the equation in 4.3.1.c) 1) for 50 mm and 100 MHz is multiplied by $\frac{1}{2}$

According this formula:

For 10-g SAR power exclusion threshold is:

Power threshold, mW = $\left[\left[\left(\frac{50 \times 7.5}{\sqrt{0.100}} \right) + (50 - 50) \times (100 / 150) \right] \times [1 + \log(100 / 0.1)] \right] \times \frac{1}{2}$

Power threshold, mW = 1107.43 mW

The equipment fulfils the requirements on maximum conducted or equivalent isotropically radiated power (e.i.r.p) for general population/uncontrolled exposure and therefore fulfils the requirements of 47 CFR §1.1310 at the distance greater than 5 mm between the user and the antenna.

Bluetooth part:

In accordance with KDB 447498 D01 General RF Exposure Guidance v06, Paragraph 4.3.1.

The product must respect the exclusion limit for 10-g extremity SAR.

Maximum measured power = 10 mW (according grant) / **6.46** mW at 2402 MHz according test report

Min. test separation distance, is 5 mm

According this formula::

*[(max. power of channel, including tune-up tolerance, mW) / (min. test separation distance, mm)] * [$\sqrt{f}$ (GHz)] ≤ 3.0 for 1-g SAR, and ≤ 7.5 for 10-g extremity SAR.*

$$[6.46(\text{mW}) / 5] * \sqrt{(2.48)} = 2.035$$

For 10-g SAR power exclusion threshold is 7.5

The equipment fulfils the requirements on maximum conducted or equivalent isotropically radiated power (e.i.r.p) for general population/uncontrolled exposure and therefore fulfils the requirements of 47 CFR §1.1310 at the distance greater than 5 mm between the user and the antenna.

□□□ End of report □□□