

RE051-20-104230-1-A Ed. 0

## MPE test report

According to the standard:

CFR 47 FCC PART 15

Equipment under test:  
Wireless seismic acquisition unit  
AFU

FCC ID: KQ9-0800A

Company:  
SERCEL Inc

Distribution: Mr TIJOU

(Company: SERCEL NANTES)

Number of pages: 5

| Ed. | Date      | Modified Page(s) | Technical Verification and Quality Approval |      |
|-----|-----------|------------------|---|------|
|     |           |                  | Name and Function                           | Visa |
| 0   | 18-Mar-22 | Creation         | M. DUMESNIL, Radio Laboratory Manager       |      |

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Siège Social : Emitech - 3, rue des Coudriers - Z.A. de l'Observatoire - 78180 MONTIGNY LE BX - France  
Siret : 344 545 645 00022 - Tél. : 33 (0)1 30 57 55 55 - Fax : 33 (0)1 30 43 74 48 - E-mail : contact@emitech.fr - URL : www.emitech.fr  
S.A. au capital de 1 560 000 € - R.C.S. VERSAILLES 344 545 645 - APE 7112B

**DESIGNATION OF PRODUCT:** *Wireless seismic acquisition unit*

**Serial number (S/N):** Sample 1: 1562674

**Reference / model (P/N):** AFU

**Firmware version:** 0.9.11

**MANUFACTURER:** SERCEL Inc

**COMPANY CERTIFYING THE PRODUCT:**

**Company:** SERCEL Inc

**Address:** 17200 Park Row  
TEXAS 77084  
UNITED STATES

**Responsible:** Mr PARRISH

**COMPANY SUBMITTING THE PRODUCT:**

**Company:** SERCEL NANTES

**Address:** 16, RUE DU BEL AIR  
BP 30439  
44470 CARQUEFOU  
FRANCE

**Responsible:** Mr TIJOU

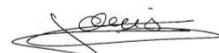
**Person(s) present during the tests:** Mr ALLAIN (the first day)

**DATES OF TEST:** From 2-Nov-20 to 4-Nov-20

**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: Wireless seismic acquisition unit, AFU, in accordance with normative reference.

The equipment under test integrates:

- SRD Multifrequencies proprietary transceiver operational in the band (2400MHz – 2483.5MHz).  
Two different modulations are used (GFSK and FHSS).
- GNSS module operational in the band 1559MHz – 1610MHz

This report refers only of proprietary transceiver radio part.

## 2. PRODUCT DESCRIPTION

|                            |  |
|----------------------------|--|
| Class:                     | A  |
| Utilization:               | Industrial                               |
| Antenna type and gain:     | 2 dBi / integral antenna                 |
| Operating frequency band:  | From 2400 MHz to 2483.5 MHz              |
| Operating frequency range: | From 2402.5 MHz to 2478.5 MHz            |
| Center frequency:          | 2439.5MHz                                |
| Channel spacing:           | 1MHz                                     |
| Modulation:                | GFSK & LoRa                              |
| Power source:              | 3.6Vdc by internal Li-ion Batteries Pack |
| Power soft adjusted to     | 7dBm                                     |

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 (2020)                               | Radio Frequency Devices   |
| ANSI C63.10                                 | 2013<br>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

#### GFSK Modulation :

Maximum measured power = 105.2 dB $\mu$ V/m = 0.00993 W at 2439.5 MHz  
with  $P = (E \times d)^2 / (30 \times Gp)$  with  $d = 3 \text{ m}$  and  $Gp = 1$

#### LoRa Modulation :

Maximum measured power = 106 dB $\mu$ V/m = 0.01194 W at 2439.5 MHz  
with  $P = (E \times d)^2 / (30 \times Gp)$  with  $d = 3 \text{ m}$  and  $Gp = 1$

In accordance with KDB 447498 D01 General RF Exposure Guidance v06:

$$\text{PSD} = EIRP / (4 \times \pi \times R^2)$$
$$\Rightarrow 11.94 / (4 \times \pi \times (20 \text{ cm})^2) = 0.2375 \times 10^{-2} \text{ mW/cm}^2 \text{ (limit} = 1 \text{ mW/cm}^2\text{)}$$

**The equipment fulfils the requirements on power density for general population/uncontrolled exposure and therefore fulfils the requirements of 47 CFR §1.1310.**