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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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

CONTENTS

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 Procedures for ComplianceTesting 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 dBµV/m = 0.00993 W at 2439.5 MHz
with $P = (E \times d)^2 / (30 \times Gp)$ *with d = 3 m and Gp = 1*

LoRa Modulation :

Maximum measured power = 106 dBµV/m = 0.01194 W at 2439.5 MHz
with $P = (E \times d)^2 / (30 \times Gp)$ *with d = 3 m and Gp = 1*

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

PSD= $EIRP/(4*\pi*R^{2)}$

⇨ $11.94/(4*\pi*(20\ cm)^2)$= ***0.2375 x 10^{-2} mW/cm² (limit = 1 mW/cm²)***

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