



Test report issued under the responsibility of:
EMITECH MONTPELLIER laboratory
MRA US-EU Designation Number: FR0006
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EMF TEST REPORT

KDB 447498 D01 V06

Company : **XPLORER**
Address..... : 40 chemin du Moulin
31320 MERVILLA
FRANCE

Test item description : **Wireless metal detection sensor**
Trade Mark : FMF
Manufacturer..... : XPLORER
Model/Type reference..... : XPMF / FMF22, FMF28 and FMF3428
FCC ID..... : XFJMF
IC : 8392A-MF
Ratings..... : 3.45Vdc to 4.2Vdc

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

Report Reference No..... : **RT410-20-101751-1A**
Test procedure : FCC IC Certification
Diffusion..... : Mr LOUBET
Applicant's name : XPLORER
Date of issue..... : November 4, 2021
Total number of pages..... : 13
Revision : 0
Modified page(s)..... : Creation
Compiled by..... : Alexis TOUZET
Approved by (+ signature) : Olivier HEYER (Laboratory Manager)

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REVISION HISTORY:

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1. GENERAL INFORMATIONS

This document submits the results of Radio tests performed on the equipment **Wireless metal detection sensor Disk FMF 22cm** (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					
Address : 145 rue de Massacan					
34740 VENDARGUES					
FRANCE					
Test procedure : FCC IC Certification					
Tested by : Olivier AELBRECHT & Alexis TOUZET					
Test supervisor : Olivier AELBRECHT					
Date of receipt of test item : N/A					
Date (s) of performance of tests : From February the 15 th of 2021 to April the 30 th of 2021					
APPLICANT'S GENERAL INFORMATIONS:					
Company name : XPLOER					
Company address : 40 chemin du Moulin					
31320 MERVILLA					
FRANCE					
Person(s) present during the tests : No representative for company attended the tests.					
Responsible : Mr LOUBET					
GENERAL REMARKS:					
<p>The information in italics is declared by the manufacturer and is under his responsibility</p> <p>The test results presented in this report relate only to the object tested.</p> <p>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.</p> <p>"(see appended table)" refers to a table appended to the report.</p> <p>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	NTR	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: April 2020

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.

RR410-21-100495-1A Ed.0

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. : Wireless metal detection sensor
Model/Type reference..... : XPMF / FMF22, FMF28 and FMF3428
Trade Mark. : FMF
FCC ID..... : XFJMF
IC. : 8392A-MF
Serial number (S/N)..... : 513046, 51303E and 51304A
Part number (P/N). : Not communicated
Software version..... : 20210126
Firmware version. : *Not communicated*
Type of sample. : Pre-serial
Function(s)..... : Wireless object detection sensor
Manufacturer name. : XPLOER
Address. : 8 rue du Développement - ZI de Vic
31320 CASTANET-TOLOSAN
FRANCE

General product information:

N/A

3.2.EUT Marking plate



3.3.EUT General view





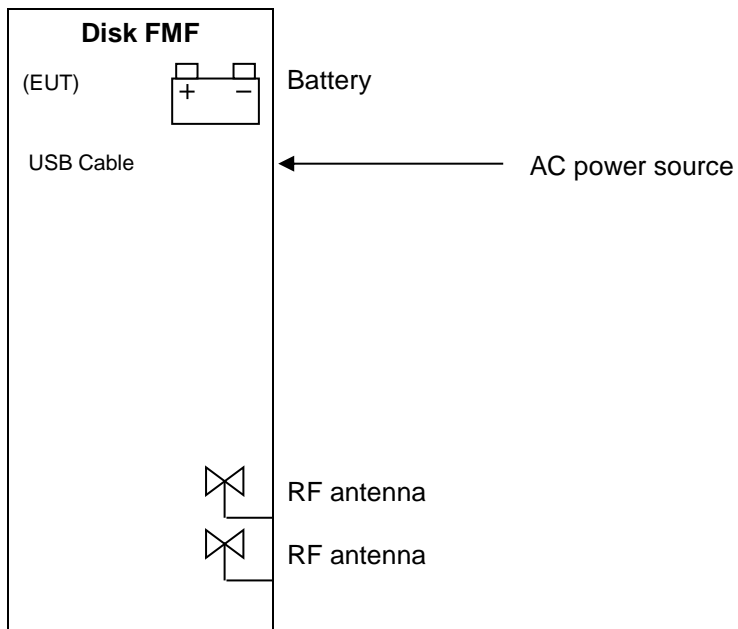
3.4. EUT Mechanical and Electrical Design

Power supply.....	: 3.7Vdc
Power supply range.....	: 3.45Vdc to 4.2Vdc
Power type.....	: Battery powered
Power (W).....	: 5
Nominal current (A).....	: 1
Dimensions (L x W x H) (m).....	: 0.225x0.225x0.04, 0.28x0.28x0.04 and 0.34x0.28x0.04
Weight (kg).....	: 0.323, 0.417 and 0.501
Temperature range (°C).....	: -5°C to +40°C
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	Plastic	
1	Battery	DC	N/A	N/A	
2	AC power source	AC/DC	1m	2P	
3	RF antenna	RF	N/A	N/A	2.4GHz
4	RF antenna	RF	N/A	N/A	Metal detector

AC/DC : AC/DC Converter port AC.....: Alternative current port DC.....: Discontinuous current port
 I/O: Input or Output port TP: Telecommunication port RF: Radio frequency port
 N/E: Non Electrical 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
Battery charger (AC/DC)	Sinohero Industrial Ltd.	SJ-0510-E	Used for conducted emission

BATTERY CHARGER (AC/DC) (AE)

3.7. EUT Radio Specifications

a) GENERAL INFORMATIONS	
According to manufacturer's declarations :	
EUT type.....	<i>Transmitter</i>
Technology	<i>SRD (Metal and object detection sensors) SRD 2.4GHz</i>
Environmental profile.....	<i>Data transmissions</i>
Temperature range.....	<i>-5°C to +40°C</i>
Antenna type	<i>Integral</i>
Antenna Gain.....	<i>Not communicated</i>
Comments:	
<i>N/A</i>	
b) TRANSMITTER PARAMETERS (Tx)	
Frequency bands.....	<i>1kHz to 148.5kHz 2400 MHz to 2483.5MHz</i>
RF Power.....	<i>Not communicated</i>
Number of channels / Separation.....	<i>Multiple</i>
Modulation type	<i>GFSK</i>
Duty cycle	<i>Not communicated</i>
Tested frequency.....	<i>4.1kHz Low Channel 45.19kHz High Channel 2404MHz Low channel 2440MHz Mid channel 2476 High channel</i>
c) RECEIVER PARAMETERS (Rx)	
Frequency bands.....	<i>1kHz to 148.5kHz 2400 MHz to 2483.5MHz</i>
Category/Class	<i>N/A Category 2</i>
Bandwidth.....	<i>N/A 2404MHz to 2476MHz</i>

4. RESULT SUMMARY

TEST DESIGNATION	SEVERITY	VERDICT	BASIC STANDARDS / COMMENTS
SAR evaluation (exclusion consideration for handheld product 10-g) FMF22 - Low channel - Mid channel - High channel FMF28 - Low channel - Mid channel - High channel FMF3428 - Low channel - Mid channel - High channel	 3.0 w/kg 3.0 w/kg 3.0 w/kg 3.0 w/kg 3.0 w/kg 3.0 w/kg 3.0 w/kg 3.0 w/kg 3.0 w/kg	 PASS PASS PASS PASS PASS PASS PASS PASS PASS	KDB 447498 D01 v06 §4.3.1

5. RESULTS

5.1. SAR EVALUATION

Reference document:	KDB 447498 D01 v06
Calculation method:	KDB 447498 D01 v06 §4.3.1
<p>General test setup (in test report RR410-20-101751-11A Ed.0 to RR410-20-101751-13A Ed.0): It is acceptable to employ a different resolution bandwidth, and a correspondingly different peak emission limit, following the procedures described in §15.521.</p> <p>For $f > 1\text{GHz}$, EUT is set on an insulating support at 150cm above the ground reference plane.</p> <p>Measurements are performed in a semi-anechoic chamber. For portable equipments a research of maximum level is done on the 3 axes. Only the highest levels are recorded.</p>	

TESTED CONFIGURATION	SAR VALUE	SEVERITY	VERDICT
FMF22			
Low channel (2404 MHz)	1.13 W/kg	3.0 W/kg	PASS
Mid channel (2440 MHz)	0.83 W/kg	3.0 W/kg	PASS
High channel (2476 MHz)	0.65 W/kg	3.0 W/kg	PASS
FMF28			
Low channel (2404 MHz)	0.73 W/kg	3.0 W/kg	PASS
Mid channel (2440 MHz)	0.58 W/kg	3.0 W/kg	PASS
High channel (2476 MHz)	0.45 W/kg	3.0 W/kg	PASS
FMF3428			
Low channel (2404 MHz)	0.67 W/kg	3.0 W/kg	PASS
Mid channel (2440 MHz)	0.54 W/kg	3.0 W/kg	PASS
High channel (2476 MHz)	0.37 W/kg	3.0 W/kg	PASS

SAR EVALUATION			
TESTED CONFIGURATION	POWER (dBm)	POWER (mW)	SAR (W/kg)
FMF22			
Low channel (2404 MHz)	2,11	1,63	1,13
Mid channel (2440 MHz)	0,73	1,18	0,83
High channel (2476 MHz)	-0,36	0,92	0,65
FMF28			
Low channel (2404 MHz)	0,25	1,06	0,73
Mid channel (2440 MHz)	-0,8	0,83	0,58
High channel (2476 MHz)	-1,95	0,64	0,45
FMF3428			
Low channel (2404 MHz)	-0,13	0,97	0,67
Mid channel (2440 MHz)	-1,14	0,77	0,54
High channel (2476 MHz)	-2,74	0,53	0,37

The calculation of the SAR is done using the equation in §4.3.1 of the KDB KDB 447498 D01 v06 document for a minimum distance (5mm). The product could be near body, the evaluated value is compared to the 1-g limit (3.0 W/kg).

End of evaluation report