

Test report No:
74836REM.002

Test report

FCC Rules and Regulations CFR 47, Part 15, Subpart B (10-1-21 Edition) & ICES-003 Issue 7 (October 2020)

(*) Identification of item tested	Lock for lockers
(*) Trademark	Ojmar
(*) Model and /or type reference	OTS Batteryless
Other identification of the product	N/A
(*) Features	Features: Mifare Classic, Mifare Desfire and Mifare Ultralight FCC ID: 2ANY7OJM006 HW Version: 1.3 SW Version: 1.0.1
Manufacturer	OJMAR S.A Polígono industrial de Ierun s/n 20870, Elgoibar, Gipuzkoa, SPAIN
Test method requested, standard	FCC Rules and Regulations CFR 47, Part 15, Subpart B (10-1-21 Edition) & ICES-003 Issue 7 (October 2020)
Summary	IN COMPLIANCE
Approved by (name / position & signature)	José Manuel Gómez EMC Consumer & RF Lab. Manager
Date of issue	2023-08-31
Report template No	FDT08_24 (* "Data provided by the client")



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Acronyms

Acronym ID	Acronym Description
Code	EMC Test Code
Freq Rng	Frequency Range
MP	Measurement Point
OM	Operation Mode
S/	Sample
V	Verdict
RE	Radiated Emission
LR	Low Range
HR	High Range

Competences and guarantees

DEKRA Testing and Certification S.A.U. is a testing laboratory accredited by the National Accreditation Body (ENAC -Entidad Nacional de Acreditación), to perform the tests indicated in the Certificate No. 51/LE 147.

In order to assure the traceability to other national and international laboratories, DEKRA Testing and Certification S.A.U. has a calibration and maintenance program for its measurement equipment.

DEKRA Testing and Certification S.A.U. guarantees the reliability of the data presented in this report, which is the result of the measurements and the tests performed to the item under test on the date and under the conditions stated on the report and, it is based on the knowledge and technical facilities available at DEKRA Testing and Certification S.A.U. at the time of performance of the test.

DEKRA Testing and Certification S.A.U. is liable to the client for the maintenance of the confidentiality of all information related to the item under test and the results of the test.

The results presented in this Test Report apply only to the particular item under test established in this document.

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General conditions

1. This report is only referred to the item that has undergone the test.
2. This report does not constitute or imply on its own an approval of the product by the Certification Bodies or competent Authorities.
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Uncertainty

Uncertainty (factor $k=2$) was calculated according to the DEKRA Testing and Certification S.A.U. internal document PODT000.

The total uncertainty of the measurement system for the measured radio disturbance characteristics of EUT from 30 MHz to 1000 MHz is $l = \pm 4,9$ dB for quasi-peak measurements, $l = \pm 4,6$ dB for peak measurements ($k= 2$).

The total uncertainty of the measurement system for the measured radio disturbance characteristics of EUT from 1000 MHz to 12.75 GHz is $l = \pm 2,6$ dB for peak and average measurements ($k = 2$).

Data provided by the client

The following data has been provided by the client:

1. Information relating to the description of the sample ("Identification of the item tested", "Trademark", "Model and/or type reference tested").
2. The sample consists of an Electromechanical lock with RFID proximity communication (13,56MHz) Compatible with Mifare Classic, Mifare Desfire and Mifare Ultralight technologies. The lock is powered by mechanical push action, with a DC motor generator that generates between 2.7 and 9V. The lock also supports 15.56MHz communication for maintenance and identification purposes, and can use an external 4.5V battery connection with three AAA batteries for FW updating or maintenance tasks.

The lock works as follows:

During the knob pressing action, which lasts less than one second, all power is generated by the motor generator and all relevant actions are performed. When power is supplied to the microcontroller, it initializes and reads the status of the door (open closed) by reading a mechanical switch. Communication is then activated between the internal side antenna of the lock and a proximity card. If the data between the lock and the card are correct, it waits for the knob to be fully depressed, detecting it thanks to a second mechanical switch and activating a motor which locks/unlocks the lock according to the case.

The lock is always de-energised until the push button is pressed.

DEKRA Testing and Certification S.A.U. declines any responsibility with respect to the information provided by the client and that may affect the validity of results.

Usage of samples

Samples undergoing test have been selected by: The client.

Id	Control Number	Description	Model	Serial N°	Date of Reception	Application
S/01	74836_18.1	Lock for lockers	OTS Batteryless	--	2023-05-04	Element Under Test
S/01	74836_2.1	Power supply box	--	--	2023-05-04	Element Under Test

Notes referenced to samples during the project:

Id	Note
S/01	Sample used for testing

Test sample description

Ports..... :	Port name and description	Cable				
		Specified max length [m]	Attached during test	Shielded	Coupled to patient ⁽³⁾	
	--		[]	[]	[]	
Supplementary information to the ports..... :	--					
Rated power supply..... :	Voltage and Frequency		Reference poles			
			L1	L2	L3	N
	[]	AC:	[]	[]	[]	[]
	[X]	DC: External 4.5V connector for 3 x AAA batteries				
	[X]	DC: Generator DC 0-9V				
Rated Power..... :	2,7-9V					
Clock frequencies..... :	16Mhz					
Other parameters..... :	--					
Software version..... :	1.0.1					
Hardware version..... :	1.3					
Dimensions in cm (W x H x D)..... :	108 mm x 65 mm x 35 mm					
Mounting position..... :	[]	Table top equipment				
	[]	Wall/Ceiling mounted equipment				
	[]	Floor standing equipment				
	[]	Hand-held equipment				
	[X]	Other: On locker				
Modules/parts..... :	Module/parts of test item		Type	Manufacturer		
	--					
Accessories (not part of the test item)..... :	Description		Type	Manufacturer		
	NFC Programmer			Ojmar		
	Power Supply Box			Ojmar		
Documents as provided by the applicant..... :	Description		File name	Issue date		
	Datasheet					
	User manual					
	Assembly manual					

⁽³⁾ Only for Medical Equipment

Identification of the client

OJMAR S.A
Polígono industrial de Ierun s/n
20870, Elgoibar, Gipuzkoa, SPAIN

Testing period and place

Test Location	DEKRA Testing and Certification S.A.U.
Date (start)	2023-07-17
Date (finish)	2023-07-17

Document history

Report number	Date	Description
74836REM.002	2023-08-31	First release

Environmental conditions

In the control chamber, the following limits were not exceeded during the test:

Temperature	Min. = 15 °C Max. = 35 °C
Relative humidity	Min. = 30 % Max. = 75 %
Air pressure	Min. = 860mbar Max. = 1060mbar

In the semianechoic chamber, the following limits were not exceeded during the test.

Temperature	Min. = 15 °C Max. = 35 °C
Relative humidity	Min. = 30 % Max. = 75 %
Air pressure	Min. = 860mbar Max. = 1060mbar

In the chamber for conducted measurements, the following limits were not exceeded during the test:

Temperature	Min. = 15 °C Max. = 35 °C
Relative humidity	Min. = 30 % Max. = 60 %
Air pressure	Min. = 860mbar Max. = 1060mbar

Remarks and comments

The tests have been performed by the technical personnel: Salvador Cuellar.

Testing verdicts

Fail	F
Inconclusive	I
Not applicable	N/A
Not measured	N/M
Pass	P
Partial Passed	P*

List of equipment used during the test

Control No.	Equipment	Model	Manufacturer	Next Calibration
6064	SEMIANECHOIC ABSORBER LINED CHAMBER	SAC-3	FRANKONIA	N/A
6329	SHIELDED ROOM	--	FRANKONIA	N/A
6132	ETHERNET TEMPERATURE AND HUMIDITY LOGGER	HWg-STE	HW GROUP	2024-04-21
6126	ETHERNET TEMPERATURE AND HUMIDITY LOGGER	HWg-STE	HW GROUP	2024-04-21
5641	HYBRID BILOG ANTENNA 30MHz-6GHz	3142E	ETS LINDGREN	2024-09-15
8866	EMI TEST RECEIVER 2Hz-44GHz	ESW44	ROHDE AND SCHWARZ	2023-09-21
4612	HORN ANTENNA 1-18GHz	BBHA 9120 D	SCHWARZBECK MESS-ELEKTRONIK	2024-07-13
9360	PRE-AMPLIFIER G>40dB 1-18 GHz	BLMA 0118-1M	BONN ELEKTRONIK	2023-07-21
4848	SOFTWARE FOR EMC/RF TESTING	EMC32	ROHDE AND SCHWARZ	N/A

Summary

Test Specification	Requirement – Test case	Verdict	Remark
FCC CFR 47, Part 15, Subpart B (10-1-21 Edition) & ICES-003 Issue 7 (October 2020)	RE Radiated emission. Electromagnetic field measure	P	(1)
	CE Continuous conducted emission	N/A	(2)
<u>Supplementary information and remarks:</u> (1) Test required only to the 5th harmonics of the maximum internal work frequency in the EUT. (2) According to the standard, this test is not applicable because EUT is powered in DC (battery)			

Appendix A: Test results

Appendix A content

DESCRIPTION OF THE OPERATION MODES	13
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Description of the operation modes

The operation modes described in this paragraph constitute a functionality of the sample under test for itself.
The operation modes used by the samples to which the present report refers, are shown in the following table:

Id	Description
OM/01	EUT ON. EUT waiting to read a valid RFID card. Power supply: 4.5Vdc (3 x AAA batteries)

Test standards version applied

The product standards and test standards applied for each test cases are shown in the following table:

Product Test Standard	Test standard	Requirement – Test case
FCC CFR 47, Part 15, Subpart B (10-1-21 Edition) & ICES-003 Issue 7 (October 2020)	ANSI C63.4 (2014)	RE Radiated emission.

Test Cases Details

RE Radiated emission. Electromagnetic field measure

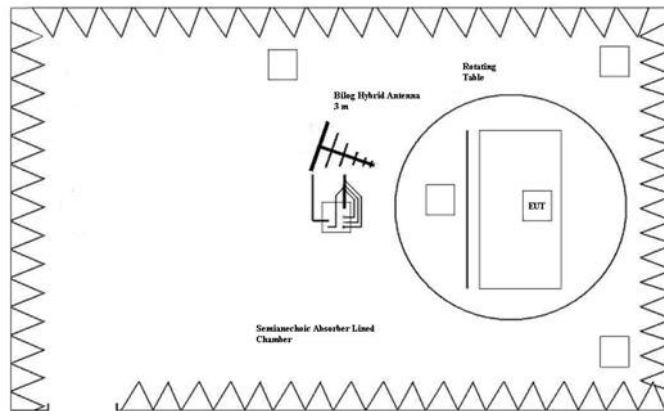
Limits of interference Class B

The applied limit for radiated emissions, 3 m distance, according to the requirements of FCC Rules and Regulations 47 CFR Part 15, Subpart B (10-1-21 Edition), Secs. 15.109 & ICES-003 Issue 7 (October 2020)

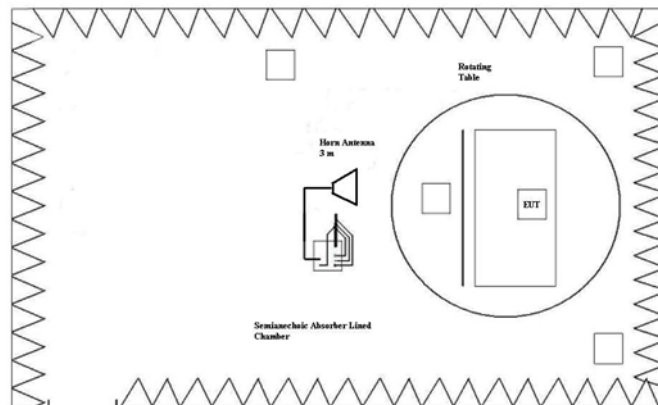
Frequency range (MHz)	FCC Part 15B		ICES-003 Issue 7		FCC Part 15B & ICES-003 Issue 7	
	QP Limit for 3 m		QP Limit for 3 m		PK Limit for 3 m	AVG Limit for 3 m
	($\mu\text{V/m}$)	($\text{dB}\mu\text{V/m}$)	($\mu\text{V/m}$)	($\text{dB}\mu\text{V/m}$)	($\text{dB}\mu\text{V/m}$)	($\text{dB}\mu\text{V/m}$)
30 to 88	100	40	100	40	---	---
88 to 216	150	43.5	150	43.5	---	---
216 to 230	200	46	200	46	---	---
230 to 960	200	46	224	47		
960 to 1000	500	54	500	54	---	---
Above 1000	---	---	---	---	74	54

Limits according to FCC Part 15B, are equal or more stringent than those of ICES-003 Issue 7.

Setup for measurements



Setup for measurements < 1GHz.



Setup for measurements > 1GHz.

Results

S/	OM	Code	Freq Rng (MHz)	V
01	OM/01	RE0101LR	[30, 1000]	P

Verdict

Pass

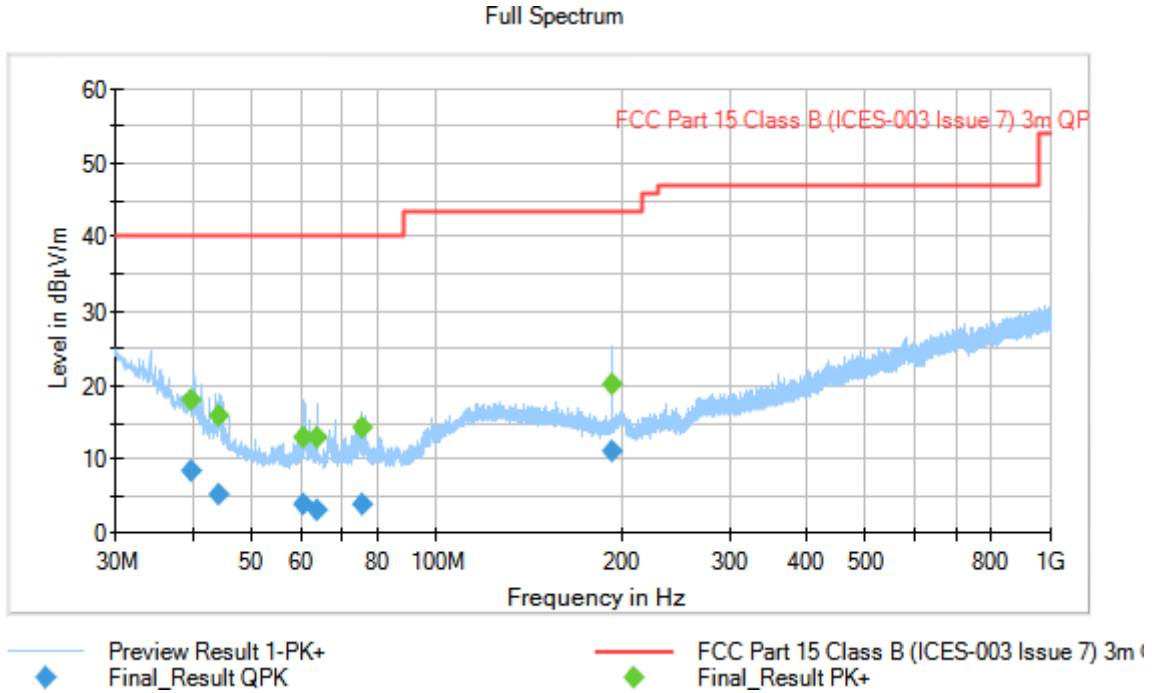
Attachments

EMC Test Code = RE0101LR Frequency Range MHz = [30, 1000]

Sample ID: S/01

Operation Mode: OM/01. EUT ON. EUT waiting to read a valid RFID card. Power supply: 4.5Vdc (3 x AAA batteries)

Images:



Tables:

Frequency(MHz)	QuasiPeak(dBµV/m)	MaxPeak(dBµV/m)	Limit(dBµV/m)	Margin(dB)	Height(cm)	Po l	Azimuth(deg)
39.643000	8.55	---	40.00	31.45	342.0	H	-155.0
39.643000	---	18.08	---	---	342.0	H	-155.0
44.054000	5.34	---	40.00	34.66	367.0	V	82.0
44.054000	---	15.90	---	---	367.0	V	82.0
60.373000	3.85	---	40.00	36.15	300.0	V	111.0
60.373000	---	12.95	---	---	300.0	V	111.0
63.556000	---	12.94	---	---	303.0	V	-76.0
63.556000	3.07	---	40.00	36.93	303.0	V	-76.0
75.215000	---	14.21	---	---	371.0	V	64.0
75.215000	3.89	---	40.00	36.11	371.0	V	64.0
193.247100	11.26	20.30	40.00	32.26	376.0	V	159.0
193.247100	---	---	---	---	376.0	V	159.0