

Test report No:  
73893REM.001

## 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	Automatic water filter programmer device. Multiparametric and scalable
(*) Trademark	SKYfilter
(*) Model and /or type reference	810200110 SKYfilter LATCH
Other identification of the product	FCC ID: 2BB2S-SKYFILTER IC: Not provided data
(*) Features	Features: Bluetooth LE HW version: 1 SW version: 10
Manufacturer	Riegos iberia Regaber, S.A. C/ Garbí, 3 08150, Parets del Vallès, Barcelona, 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	2023-07-28
Report template No	FDT08_24 (*) "Data provided by the client"



## Index

ACRONYMS .....	3
COMPETENCES AND GUARANTEES .....	3
GENERAL CONDITIONS .....	3
UNCERTAINTY .....	4
DATA PROVIDED BY THE CLIENT .....	4
USAGE OF SAMPLES .....	5
TEST SAMPLE DESCRIPTION .....	6
IDENTIFICATION OF THE CLIENT .....	7
TESTING PERIOD AND PLACE .....	7
DOCUMENT HISTORY .....	7
ENVIRONMENTAL CONDITIONS .....	8
REMARKS AND COMMENTS .....	9
TESTING VERDICTS .....	9
LIST OF EQUIPMENT USED DURING THE TEST .....	9
SUMMARY .....	10
APPENDIX A: TEST RESULTS .....	11

## 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.

DEKRA Testing and Certification S.A.U. is an FCC-recognized accredited testing laboratory with the appropriate scope of accreditation that covers the performed tests in this report, FCC designation number ES0004.

DEKRA Testing and Certification S.A.U. is an ISED recognized accredited testing laboratory, CABid: ES1909, Company Number: 4621A, with the appropriate scope of accreditation that covers the performed tests in this report.

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.

**IMPORTANT:** No parts of this report may be reproduced or quoted out of context, in any form or by any means, except in full, without the previous written permission of DEKRA Testing and Certification S.A.U.

## 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.
3. This document is only valid if complete; no partial reproduction can be made without previous written permission of DEKRA Testing and Certification S.A.U.
4. This test report cannot be used partially or in full for publicity and/or promotional purposes without previous written permission of DEKRA Testing and Certification S.A.U. and the Accreditation Bodies.

## 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  $I = \pm 4,9$  dB for quasi-peak measurements,  $I = \pm 4,6$  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 17 GHz is  $I = \pm 2,6$  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 Automatic water filter programmer device. Multiparametric and scalable. Automatic water filter programmer for any type of water filter (sand, mesh, ring, hydrocyclone, ...), multiparametric and scalable up to 10 inputs/outputs, (10 solenoids outputs, 1 digital input, 1 relay output or 1 analog input 4-20mA). Programable by user by Bluetooth Low Energy by Android/iOS App Datalogger and alarm management LED indicators for any working process Powered by conventional AA type batteries. Low power consumption.

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 Nº	Date of Reception	Application
S/01	73893_1.1	Automatic water filter programmer device	810200110 SKYfilter LATCH	136	2023-06-09	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 <sup>(3)</sup>
.....	.....	[ ]	[ ]	[ ]	[ ]
Supplementary information to the ports.....	.....				
Rated power supply .....	Voltage and Frequency		Reference poles		
			L1	L2	L3
	[ ]	AC: .....	[ ]	[ ]	[ ]
[X] DC: 6 to 14 Volts					
Rated Power .....	.....				
Clock frequencies.....	.....				
Other parameters .....	.....				
Software version .....	10				
Hardware version .....	1				
Dimensions in cm (W x H x D) ....	25,2x15,5x6,1				
Mounting position .....	[ ]	Table top equipment			
	[X]	Wall/Ceiling mounted equipment			
	[ ]	Floor standing equipment			
	[ ]	Hand-held equipment			
	[X]	Other: .....			
Modules/parts.....	Module/parts of test item			Type	Manufacturer
	.....			.....	.....
Accessories (not part of the test item) .....	Description			Type	Manufacturer
	G75-A3P			SOLENOID	BACCARA
	BLE PROGRAMMER XDS1110			BLE PROGRAMMER	TEXAS INSTRUMENTS
	CABLE BLE PROGRAMMER			CABLE	GENERIC
	.....			.....	.....
Documents as provided by the applicant.....	Description			File name	Issue date
	Description of the steps to commissioning the product			Preparación TEST FCC SKYfilter v1.0.docx	07/06/2023
	.....			.....	.....

<sup>(3)</sup> Only for Medical Equipment

## Identification of the client

Riegos iberia Regaber, S.A.  
C/ Garbí, 3  
08150, Parets del Vallès, Barcelona, SPAIN

## Testing period and place

<b>Test Location</b>	DEKRA Testing and Certification S.A.U.
<b>Date (start)</b>	2023-06-14
<b>Date (finish)</b>	2023-06-14

## Document history

Report number	Date	Description
73893REM.001	2023-07-28	First release

## Environmental conditions

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

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

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

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

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

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

## Remarks and comments

---

The tests have been performed by the technical personnel: Beatriz Cabello De Alba and Victor Aguilera.

## 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
7614	SEMIANECHOIC ABSORBER LINED CHAMBER V	FACT 3 200 STP	ETS LINDGREN	N/A
6607	ETHERNET TEMPERATURE AND HUMIDITY LOGGER	HWg-STE	HW GROUP	2024-04-18
5779	ETHERNET TEMPERATURE AND HUMIDITY LOGGER	HWg-STE	HW GROUP	2024-04-18
6666	EMI TEST RECEIVER 2Hz-44GHz	ESW44	ROHDE AND SCHWARZ	2024-03-04
6815	HYBRID BILOG ANTENNA 30MHz-6GHz	3142E	ETS LINDGREN	2025-03-04
7743	HORN ANTENNA 0,75-18GHz	3115	ETS LINDGREN	2023-08-24
9361	PRE-AMPLIFIER G>40dB 1-18 GHz	BLMA 0118-1M	BONN ELEKTRONIK	2024-06-12
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)
FCC CFR 47 15C (§ 15.207 Conducted limits) and RSS GEN (8.8 AC power-line conducted emissions limits).	CE Continuous conducted emission in communication mode	N/A	(2)
<u>Supplementary information and remarks:</u>			
<p>(1) Test performed in the worst case power supply configuration. Preliminary scan previews were performed to select the worst case power supply between internal battery and external. The external battery configuration was selected as a worst case to perform the complete measurements. Test required only to the 5th harmonics of the maximum internal work frequency in the EUT.</p> <p>(2) According to the standard, this test is not applicable because EUT is powered in DC (battery). There is no indirect connection to AC port.</p>			

## Appendix A: Test results

## Appendix A content

DESCRIPTION OF THE OPERATION MODES .....	13
TEST STANDARDS VERSION APPLIED .....	13
TEST CASES DETAILS .....	15
<i>RE Radiated emission. Electromagnetic field measure</i> .....	15

## 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. Programmed with activation of the solenoids every 5 minutes, with a duration of opening / closing of the solenoids of 45 seconds and delay between one solenoid and another of 12 seconds. Power Supply external: 12Vdc (worst case).

Note: Scan previews were performed to select the worst case power supply between internal battery and external. The external battery configuration was selected as a worst case to perform the complete measurements.

## 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

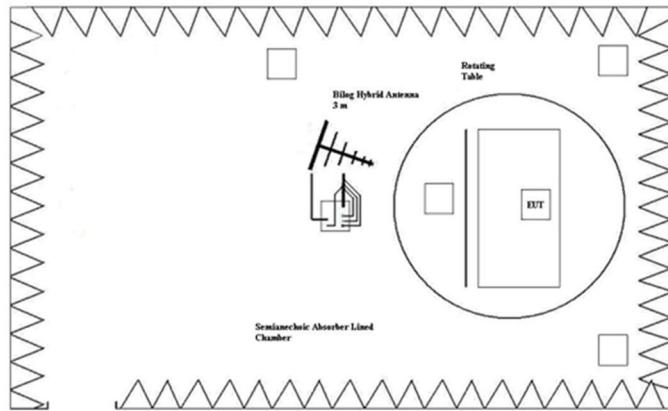
#### Limits of interference Class B

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)

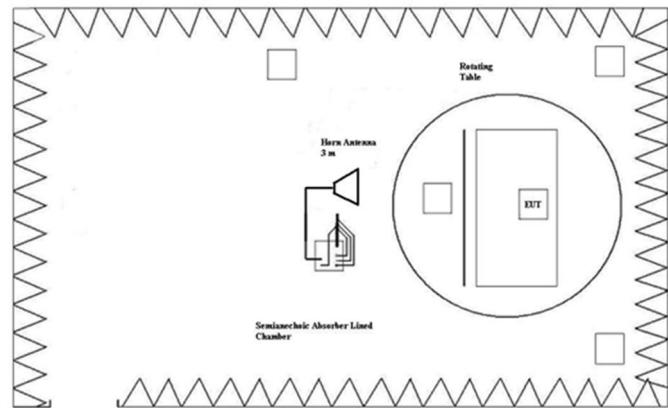
Frequency range (MHz)	FCC Part 15B		ICES-003 Issue 7		FCC Part 15B & ICES-003 Issue 7	
	QP Limit for 3 m		QP Limit for 3 m		PK Limit for 3 m	AVG Limit for 3 m
	( $\mu$ V/m)	(dB $\mu$ V/m)	( $\mu$ V/m)	(dB $\mu$ V/m)	(dB $\mu$ V/m)	(dB $\mu$ V/m)
30 to 88	100	40	100	40	---	---
88 to 216	150	43.5	150	43.5	---	---
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
01	OM/01	RE0101HR	[1000, 17000]	P

**Verdict**

Pass

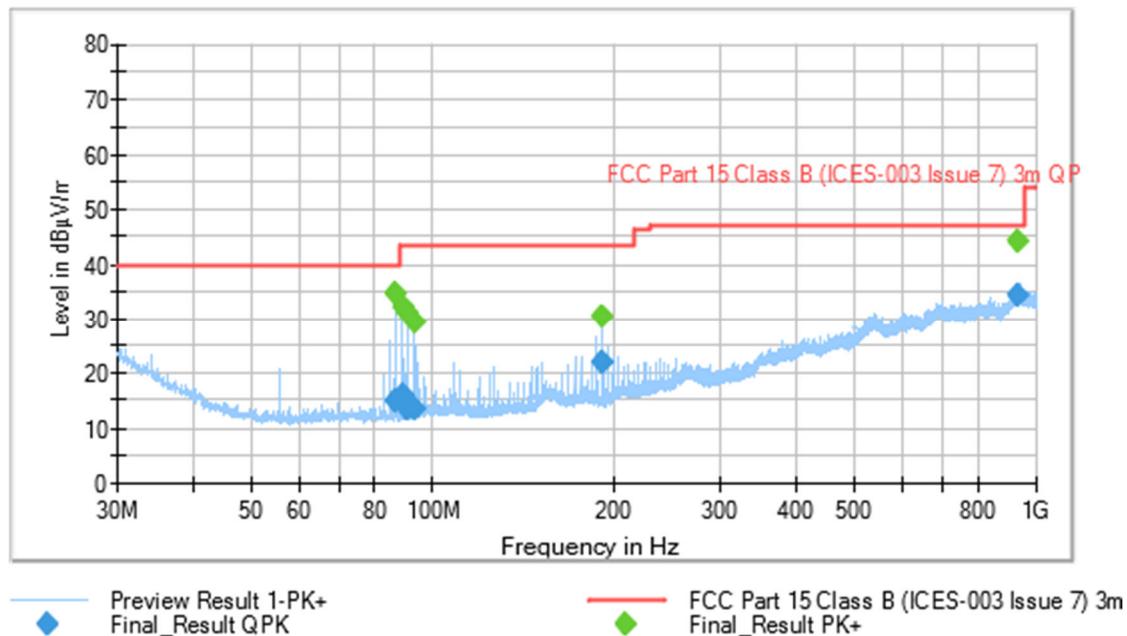
## Attachments

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

Sample ID: S/01

Operation Mode: OM/01. EUT ON. Programmed with activation of the solenoids every 5 minutes, with a duration of opening / closing of the solenoids of 45 seconds and delay between one solenoid and another of 12 seconds.  
 Power Supply: 12Vdc (worst case).

## Images:



## Tables:

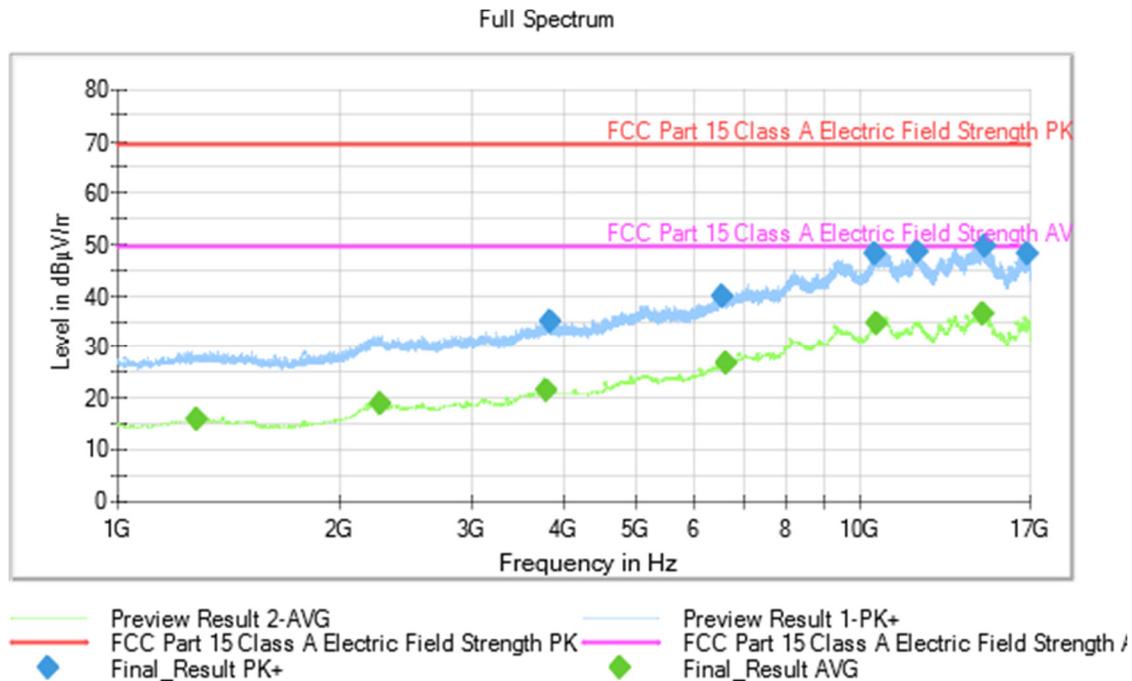
Frequency(M Hz)	QuasiPeak(dB $\mu$ V/m)	MaxPeak(dB $\mu$ V/m)	Limit(dB $\mu$ V /m)	Margin(d B)	Height(c m)	P ol	Azimuth(d eg)	Corr.(dB/ m)
87.022000	14.97	---	40.00	25.03	247.0	V	161.0	10.6
87.022000	---	34.36	---	---	247.0	V	161.0	10.6
89.502000	---	32.17	---	---	395.0	V	129.0	10.7
89.502000	15.92	---	43.52	27.60	395.0	V	129.0	10.7
90.833000	---	30.96	---	---	383.0	V	172.0	10.8
90.833000	13.32	---	43.52	30.20	383.0	V	172.0	10.8
93.165000	13.44	---	43.52	30.08	199.0	V	181.0	11.0
93.165000	---	29.29	---	---	199.0	V	181.0	11.0
191.037000	21.85	---	43.52	21.67	108.0	H	149.0	13.7
191.037000	---	30.40	---	---	108.0	H	149.0	13.7
936.477000	34.15	---	47.00	12.85	330.0	V	200.0	31.4
936.477000	---	44.18	---	---	330.0	V	200.0	31.4

EMC Test Code = RE0101HR Frequency Range MHz = [1000, 17000]

Sample ID: S/01

Operation Mode: OM/01. EUT ON. Programmed with activation of the solenoids every 5 minutes, with a duration of opening / closing of the solenoids of 45 seconds and delay between one solenoid and another of 12 seconds.

Power Supply: 12Vdc (worst case)

**Images:****Tables:**

Frequency(MHz)	MaxPeak(dBµV/m)	Average(dBµV/m)	Limit(dBµV/m)	Margin(dB)	Pol
1277.200000	---	15.83	49.54	33.71	H
2260.800000	---	18.87	49.54	30.67	V
3798.800000	---	21.23	49.54	28.31	H
3836.000000	35.01	---	69.54	34.53	H
6564.000000	39.69	---	69.54	29.85	H
6610.800000	---	26.65	49.54	22.89	V
10526.000000	48.03	---	69.54	21.51	H
10596.400000	---	34.57	49.54	14.97	H
11998.400000	48.44	---	69.54	21.10	H
14711.600000	---	36.40	49.54	13.14	H
14804.000000	49.45	---	69.54	20.09	H
16928.400000	48.03	---	69.54	21.51	H