

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.<br>Multiparametric and scalable                                   |
| (*) Trademark                             | SKYfilter   |
| (*) Model and /or type reference          | 810200110 SKYfilter LATCH   |
| Other identification of the product       | FCC ID: 2BB2S-SKYFILTER<br>IC: Not provided data  |
| (*) Features                              | Features: Bluetooth LE<br>HW version: 1<br>SW version: 10   |
| Manufacturer                              | Riegos iberia Regaber, S.A.<br>C/ Garbí, 3<br>08150, Parets del Vallès, Barcelona, SPAIN                    |
| Test method requested, standard           | FCC Rules and Regulations CFR 47, Part 15, Subpart B<br>(10-1-21 Edition) & ICES-003 Issue 7 (October 2020) |
| Summary                                   | IN COMPLIANCE   |
| Approved by (name / position & signature) | José Manuel Gómez<br>EMC Consumer & RF<br>Lab. Manager  |
| Date of issue                             | 2023-07-28  |
| Report template No                        | FDT08_24<br>(*) "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

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## Uncertainty

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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 17 GHz is  $l = \pm 2,6$  dB for peak and average measurements ( $k=2$ ).

## Data provided by the client

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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 N° | 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                                | N   | PE  |
|   | [ ]   | 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

|               |  |
|---------------|--|
| Test Location | DEKRA Testing and Certification S.A.U. |
| Date (start)  | 2023-06-14                             |
| Date (finish) | 2023-06-14                             |

## Document history

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

## Environmental conditions

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

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

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

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

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

|                          |                                   |
|--------------------------|-----------------------------------|
| <b>Temperature</b>       | Min. = 15 °C<br>Max. = 35 °C      |
| <b>Relative humidity</b> | Min. = 30 %<br>Max. = 60 %        |
| <b>Air pressure</b>      | Min. = 860mbar<br>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.<br>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)    |
| <b>Supplementary information and remarks:</b><br>(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.<br>(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. |  |         |        |

## Appendix A: Test results

# Appendix A content

DESCRIPTION OF THE OPERATION MODES .....13

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*RE Radiated emission. Electromagnetic field measure*.....15

## Description of the operation modes

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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<br>(10-1-21 Edition) & ICES-003 Issue 7<br>(October 2020) | ANSI C63.4 (2014) | RE Radiated emission.   |

Test Cases Details

RE Radiated emission. Electromagnetic field measure

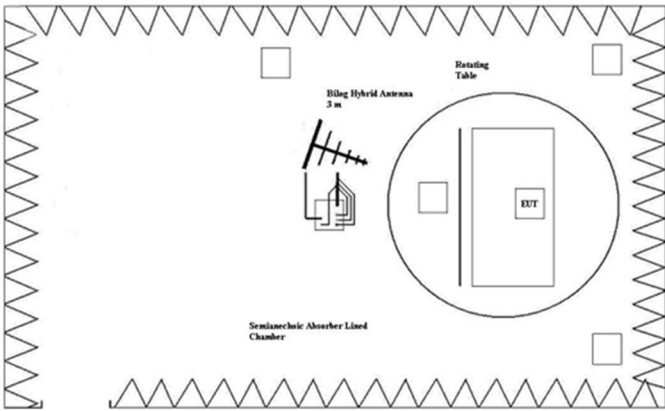
Limits of interference Class B

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)

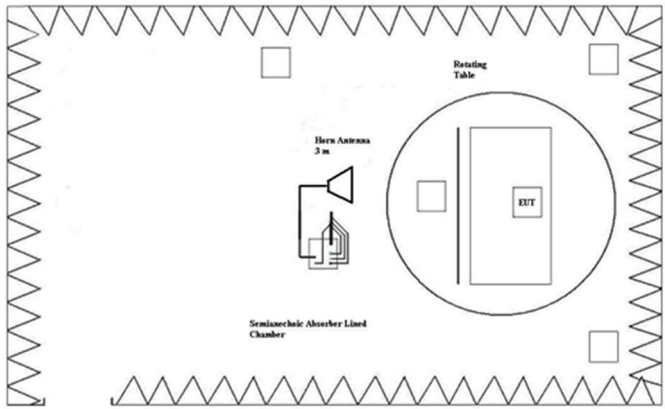
| Frequency range (MHz) | FCC Part 15B     |          | ICES-003 Issue 7 |          | FCC Part 15B & ICES-003 Issue 7 |                   |
|-----------------------|------------------|----------|------------------|----------|---------------------------------|-------------------|
|                       | QP Limit for 3 m |          | QP Limit for 3 m |          | PK Limit for 3 m                | AVG Limit for 3 m |
|                       | (µV/m)           | (dBµV/m) | (µV/m)           | (dBµV/m) | (dBµV/m)                        | (dBµV/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



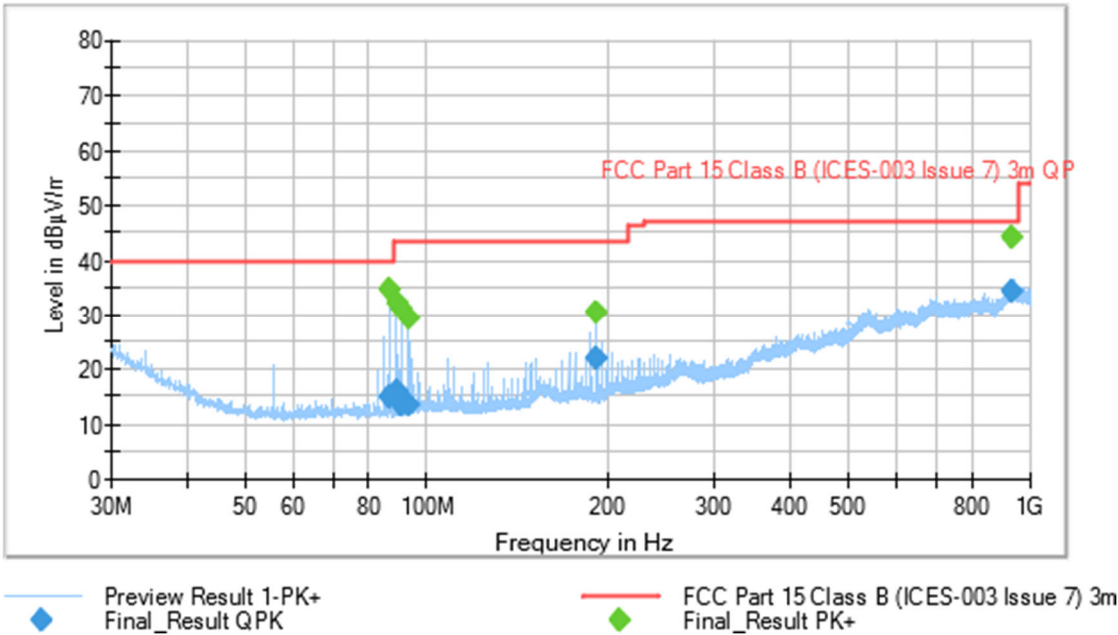
Attachments

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:

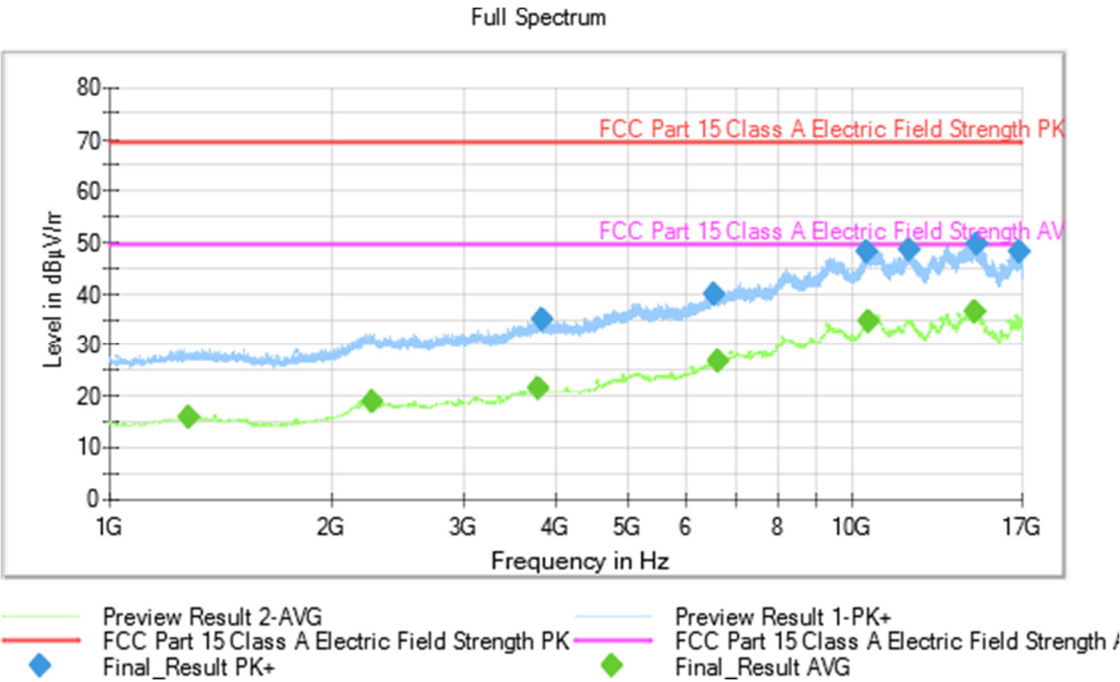
| Frequency(M Hz) | QuasiPeak(dBµ V/m) | MaxPeak(dBµ V/m) | Limit(dBµV /m) | Margin(d B) | Height(c m) | P ol | Azimuth(d eg) | Corr.(dB/ m) |
|-----------------|--------------------|------------------|----------------|-------------|-------------|------|---------------|--------------|
| 87.022000       | 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   |