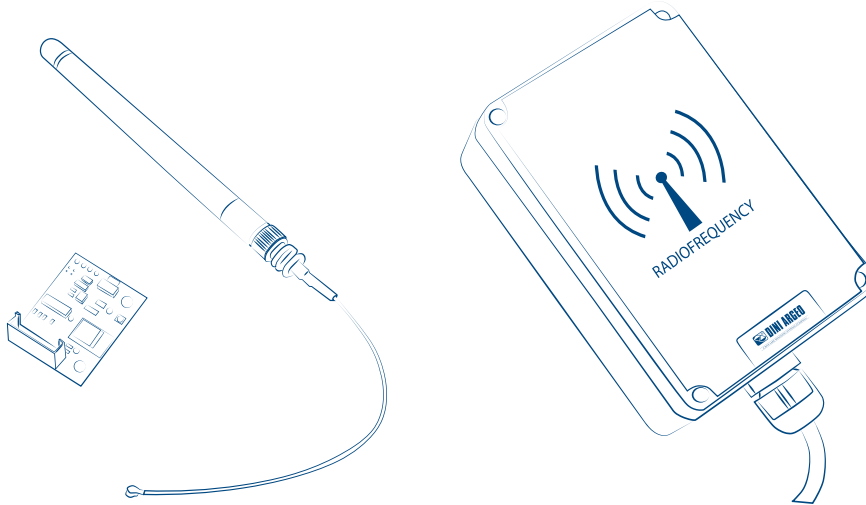# RF 2,4 GHz

For mobile weighing systems or wireless radio transmissions

USER GUIDE | **ENGLISH**

Introduction

This manual contains all the information and instructions for connecting and programming the 2G4 radio modules and the necessary knowledge for their correct use. While thanking you for purchasing this module, we would like to draw your attention to some aspects of this manual:

This publication is intended only to provide useful information for the operation and programming of the radio module to which it refers; the Manufacturer disclaims all liability resulting from the use of such information and from possible transmission errors.

The person responsible for the use of the radio module must ensure that all the safety regulations in force in the country of use are applied, guarantee that the device is used in accordance with the intended use and avoid any dangerous situation for the user.

No part of this publication may be reproduced without written permission from the manufacturer.

For further information please contact your dealer.

Warning

The instrument is covered by warranty and MUST NOT BE OPENED BY THE USER for any reason. Any attempt to repair or modify the unit may expose the user to the danger of electric shock and will void any warranty conditions. Any problem with the unit or system should be reported to the manufacturer or dealer where it was purchased.

- Do not use solvents to clean the equipment.
- Do not expose the equipment to direct sunlight or near heat sources.
- Do not install in an explosive environment (except ATEX 3GD version).
- All the connections of the equipment must be made in compliance with the regulations applicable in the area and in the environment of installation.
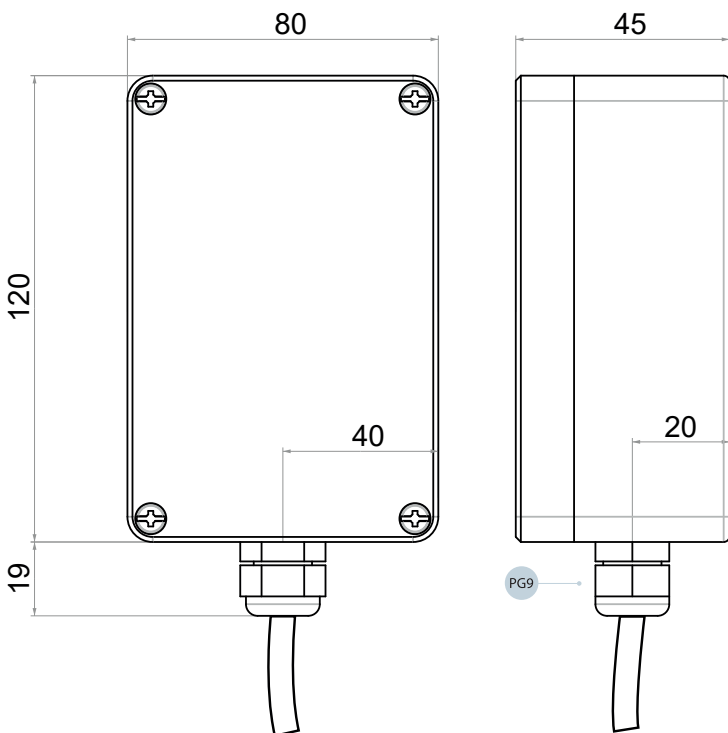
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Technical features

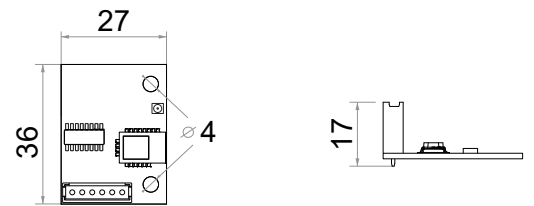|	
POWER SUPPLY	5 ÷ 12 Vdc, 20mA max
OPERATING TEMPERATURE	From -40 to +85 °C.
MAXIMUM POWER	6 dbm
OPERATING RATE	From 2403 to 2479 Mhz
NUMBER OF CHANNELS	Up to 38
RADIO TRANSMISSION RATE	Up to 115.2 kbps
SERIAL TRANSMISSION RATE	9.6 kbps
SERIAL INTERFACE	1 RS232 (AMP) / 1 TTL (AMP) / USB port.
WORKING DISTANCE UNDER APPROPRIATE CONDITIONS (*)	Up to 50m indoor, up to 150m outdoor
IP PROTECTION RATING	IP65 (only OBRF models with plastic box)
COMMUNICATION PARAMETERS	9600, N-8-1

> * **RF2G4** models are installed directly inside the instrument. This solution guarantees a smaller footprint, but in the case of stainless steel indicators it causes a decrease in the radio signal range. In case a large working distance is required, it is recommended to use the **OBRF** model.
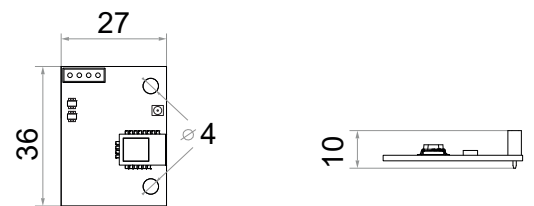
Dimensions

Radio module with plastic box (OBRF2G4, OBRF2G4-USB)

RF2G4 board

RF2G4-TTL board

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The radio module, including the antenna, must not be located inside a metal enclosure or near any metallic parts or metal devices.

The antenna should be located away from electronic parts that may cause interference.

Maintain a minimum distance of 3 m between modules with the same radio channel, and a minimum distance of 10 m between modules having a different radio channel.

Verify the presence of adequate environmental conditions necessary to ensure the desired performance, paying attention to the radio signal attenuation factors shown in the following table:

Factor / Environment	Signal loss in %
Open space	0
Window	15
Thin or medium thickness walls (e.g. plasterboard or wood)	da 35 a 50
Thick or reinforced walls, floors or ceilings	da 60 a 80
Rain or fog	95

Before proceeding with the configuration and use of the radio modules it is necessary to make an analysis of the area in which they will be used to identify the correct radio channel.

The frequencies that radio modules use are the same as those used by most WiFi modems / routers and other equipment, such as microwave ovens.

We recommend the use of a smartphone app that can analyze the surrounding access points and identify the best frequency to use:
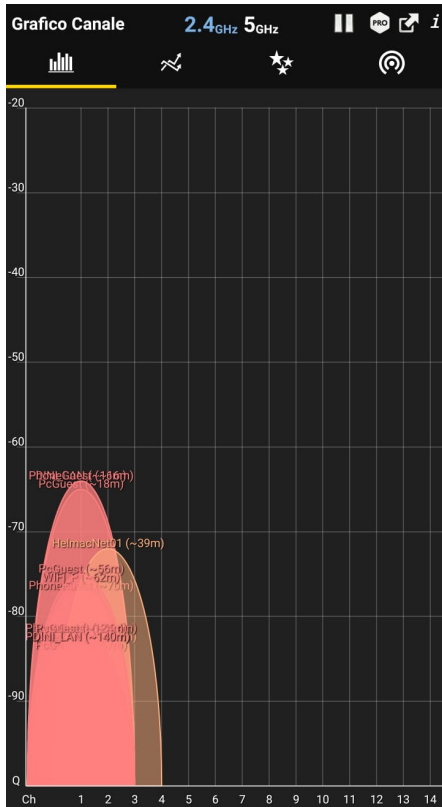
Android   WiFi Analyzer   **iOS**   Airport Utility

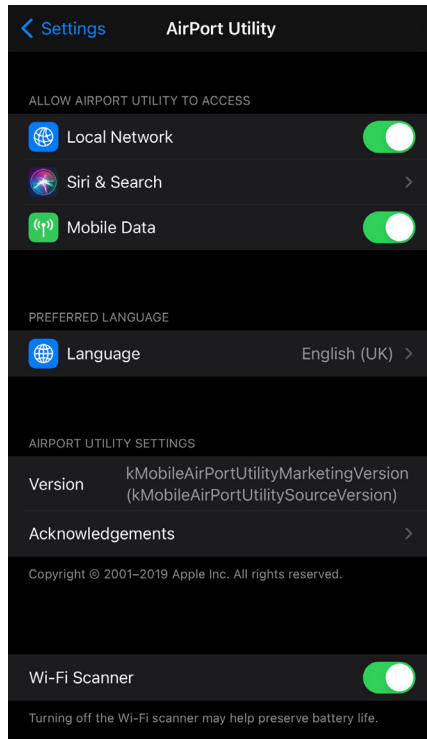The application automatically scans the WiFi channels:

Devices are displayed on a graph. Channels are shown at the bottom.
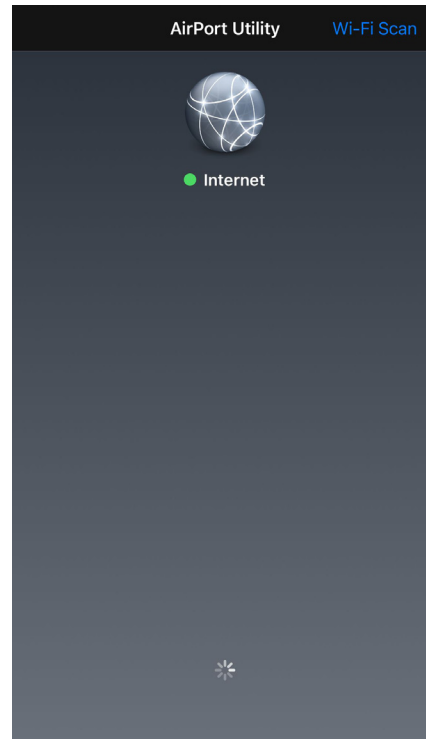
In the example on the left, only one device is set to channel 2, while all others are on channel 1.
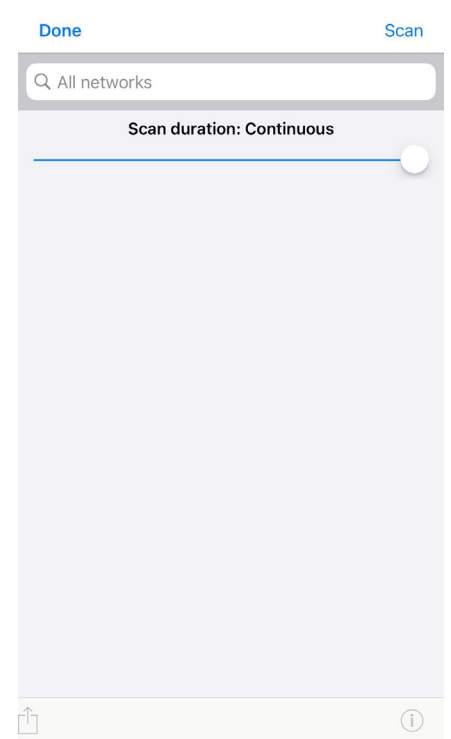
Airport Utility

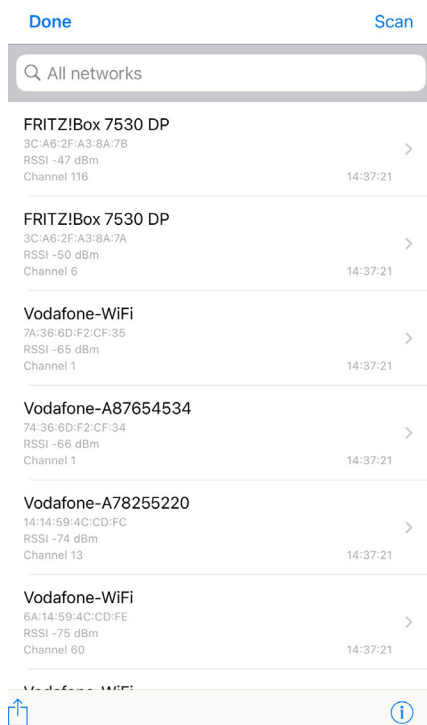1. Enable the Wi-Fi Scanner feature in the iPhone settings app
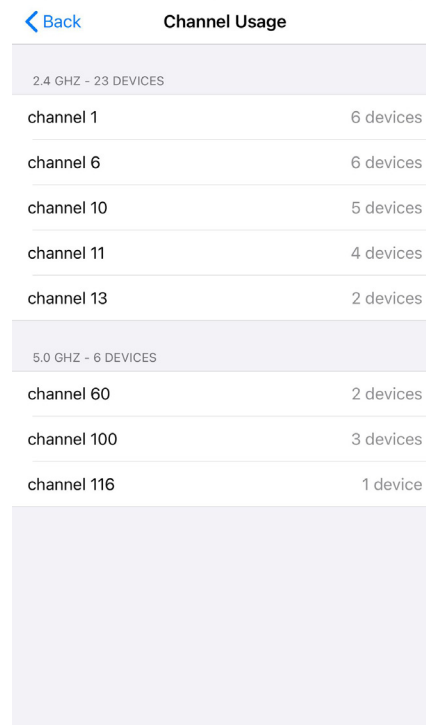

2. Select Wi-Fi Scan

3. Select Scan

4. Wait for the scan and select Stop, then press the info button in the lower right corner

5. The list of occupied channels and the number of devices for each are displayed.

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Radio and WiFi channels

The default channel set on the radio modules is number 27, which corresponds to WiFi channel 10.
Below is a list of available channels and their respective frequencies:

Channel	Operating Frequency (MHz)	Channel	Operating Frequency (MHz)
0	2403	20	2443
1	2405	21	2445
2	2407	22	2447
3	2409	23	2449
4	2411	24	2451
5	2413	25	2453
6	2415	26	2455
7	2417	27	2457
8	2419	28	2459
9	2421	29	2461
10	2423	30	2463
11	2425	31	2465
12	2427	32	2467
13	2429	33	2469
14	2431	34	2471
15	2433	35	2473
16	2435	36	2475
17	2437	37	2477
18	2439	38	2479
19	2441		

Below is a list of WiFi channels and their respective center frequencies (each channel is 22 MHz wide):

WiFi channel	Frequency (MHz)
1	2412
2	2417
3	2422
4	2427
5	2432
6	2437
7	2442
8	2447
9	2452
10	2457
11	2462
12	2467
13	2472
14	2484

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Frequency usage restrictions

Depending on the country of use, there may be limitations on the frequencies that can be used:

EUROPE	channel 14
USA	channel 14. Channels 12 and 13 can only be used at low power
JAPAN	some limitations on the channel 14

(source https://en.wikipedia.org/wiki/List_of_WLAN_channels)

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ALWAYS CHECK THE DIRECTIVES OF THE PLACE OF INSTALLATION BEFORE THE START-UP.

Setting the radio channel

Depending on the instrument on which the radio module is installed, the procedure for setting the channel is different. Refer to the technical manual of the instrument for more information.

On OBRF2G4 and OBRF2G4-USB models, channel setting is done via a PC script.

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Compatibility with 868 MHz modules

There is no compatibility between 868 MHz modules and 2.4 GHz modules:

868 MHz

✓

868 MHz

868 MHz

✗

2,4 GHz

2,4 GHz

✓
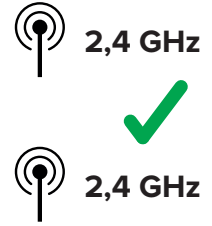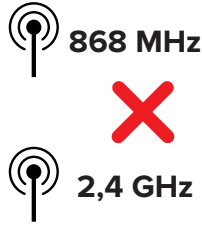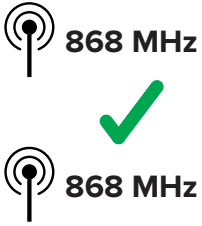
2,4 GHz

Therefore, all radio modules in a system must be of the same type.

Compatibility with Dini Argeo products

The 2.4 GHz radio modules are fully compatible with Dini Argeo instruments with the firmwares shown below.
The lack of the firmware shown (or later) still allows communication, (if the modules are already set on the same radio channel) but prevents the modification of the radio channel of the module.
Dini Argeo recommends to keep the instruments always updated to the last available version.

Product	Version		Product	Version
3590E-AF08	04.03.01		3590E-AF09	02.07.02
3590EGT-AF01	05.12.01		3590EGT-AF02	05.09.01
3590EGT-AF03	08.08.01		3590EGT-AF04	06.13.01
3590EGT-AF05	05.12.01		3590EGT-AF08	06.08.01
3590EGT-AF09	08.08.01		3590EGT-BATCH	05.13.01
3590EGT-BATCH1	05.12.01		3590EGT-CHECK	06.13.01
DFW v3	03.21.01		DFW v5	05.06.01
DFWKR	03.21.01		DGT60	08.04.01
DGT100	08.04.01		MCW09, MCWPRO, MCWHU	03.21.01
MCWN	05.06.01		WWS	03.21.01

ℹ️ You can ask Dini Argeo to pre-configure the 2.4 GHz radio modules on the same channel for a faster replacement and quicker start-up.

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Authorized service center stamp