RC-SPIRIT2-XXX-EK

Radio(controlli
Wireless Modules

Sub-1 GHz transceiver development kit based on RC-SPIRIT2-XXX module.

The **RC-SPIRIT2-XXX-EK** is an evaluation board based on the RC-SPIRIT2-XXX module.
This module is based on STMicroelectronics chip (S2-LP) that is a sub-1 GHz ultra-low power,
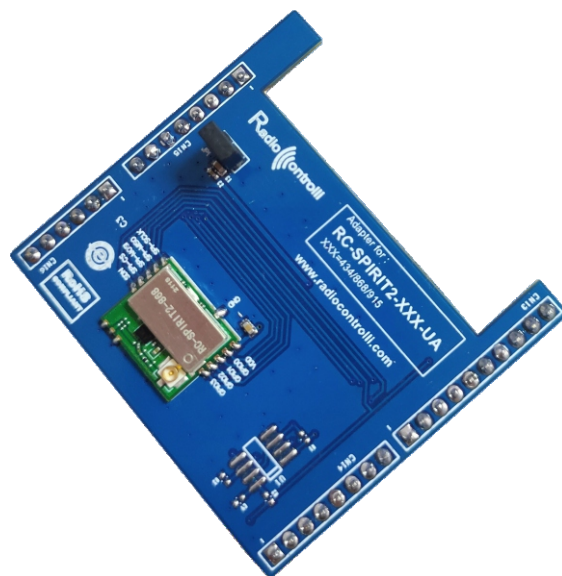data-rate transceiver, suitable for ISM bands and Wireless M-Bus.

RC-SPIRIT2 - XXX - EK

Frequency
**434=434MHz**
868=868MHz
915=915MHz

The Evaluation board can be used instead of those provided by the chip manufacter (www.st.com)
denominated STEVAL-FKIXXXV2. With this board it is possible to use all the SW resources provided for
the development activity.

Development kit with **STEVAL-FKI868V1**

Development kit with **STEVAL-FKI433V2**

Development kit with **STEVAL-FKI915V1**
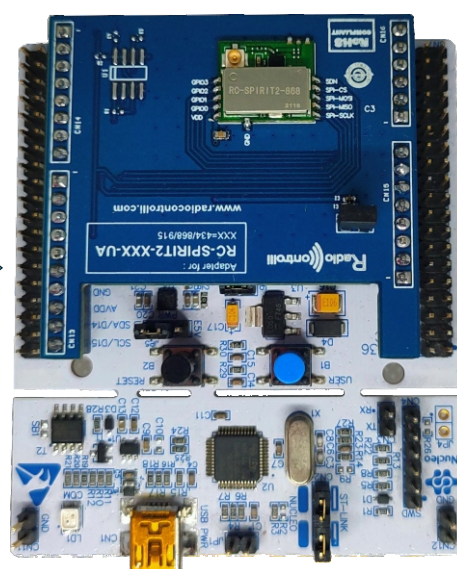
Development kit with **RC-SPIRIT2-868-EK**

Development kit with **RC-SPIRIT2-434-EK**

Development kit with **RC-SPIRIT2-915-EK**

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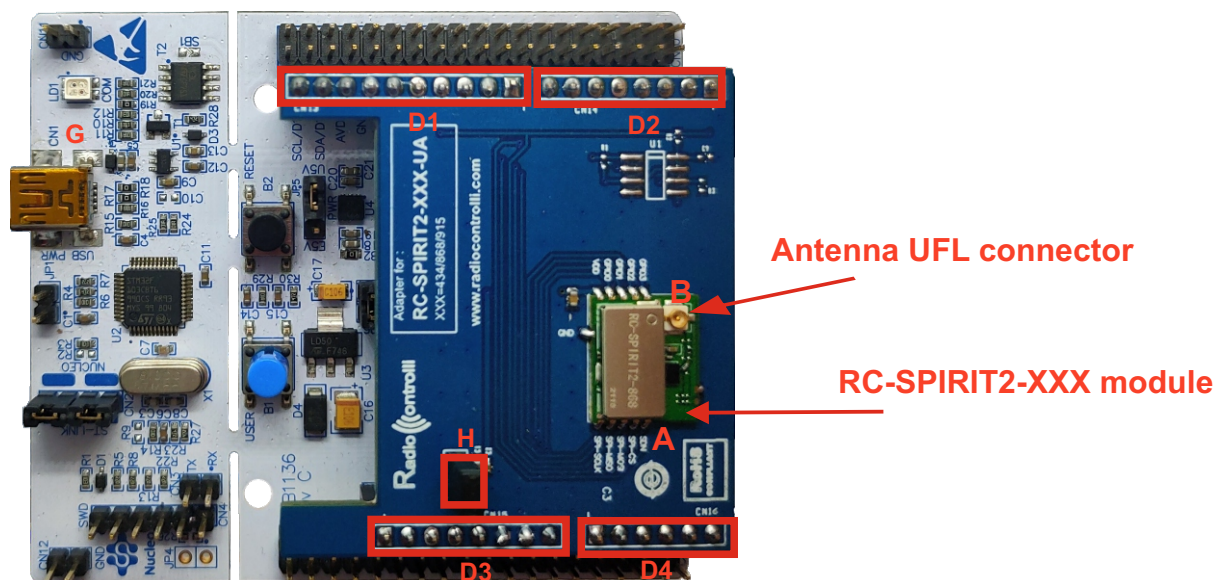
Radio(((ontrolli
Wireless Modules

Hardware description

The RC-SPIRIT2-XXX-EK evaluation boards are designed to work in the sub 1GHz band (433/868).
Some features on the boards are (see the picture below) :
• RC-SPIRIT2-XXX module (A)
• Two rows with Arduino compliant connectors (D1-4)
• UFL connector (B)
• A NUCLEO-L152RE or NUCLEO-L053R8 evaluation board (G)
• A jumper for RC-SPIRIT2-XXX current measurement (H)

RC-SPIRIT2-XXX signal test points are split across two rows which are Arduino compliant connectors:
CN1,CN2,CN3,CN4.
The RC-SPIRIT2-XXX shield is connected to the Nucleo motherboard via the Arduino connectors.

Antenna UFL connector

RC-SPIRIT2-XXX module

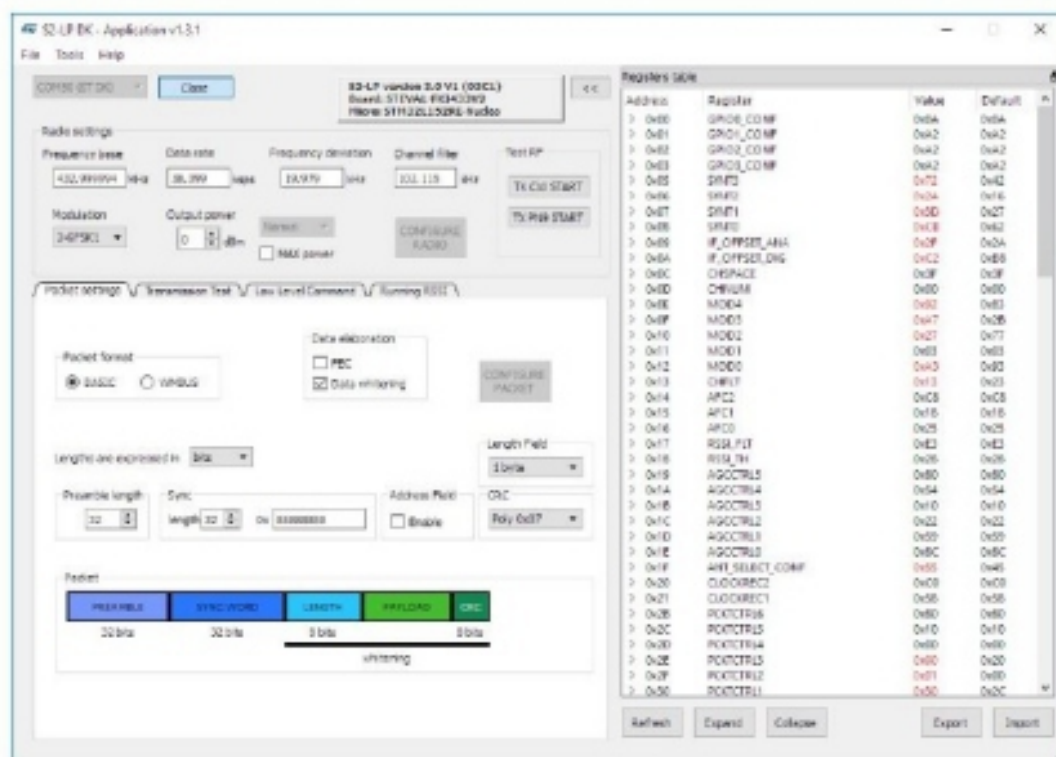| RadioControlli Module		ARDUINO Connector			
Pin	Name	CN1 (D1)	CN2 (D2)	CN3 (D3)	CN4 (D4)
1	SDO	Pin 5 (MISO)			
2	SDI	Pin 4 (MOSI)			
3	SCLK		Pin 4 (SCLK)		
4	CSn				Pin 2 (CS)
5	GPIO-0				Pin 1 (GPIO-0)
6	GPIO-1				Pin 3 (GPIO-1)
7	GPIO-2				Pin 4 (GPIO-2)
8	GPIO-3				Pin 6 (GPIO-3)
9	GND	Pin 7		Pin 6, 7	
10	SDN		Pin 8 (SDN)		
11	GND	Pin 7		Pin 6, 7	
12	GND	Pin 7		Pin 6, 7	
13	VCC			Pin 4	
14	VCC			Pin 4	
15	GND	Pin 7		Pin 6, 7	
16	GND	Pin 7		Pin 6, 7	
17	GND	Pin 7		Pin 6, 7	
18	GND	Pin 7		Pin 6, 7	

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Hardware Setup

The board can be powered by the Nucleo evaluation board mini USB connector.
When the JP1 jumper is fitted (H) in the previous figure, the radio section is supplied.
By removing this jumper and connecting a power meter, you can measure the RC-SPIRIT2-XXX current consumption.

1) Connect an antenna to the SMA connector
2) Ensure the jumper configuration on the board is correct
3) Connect the STM32 Nucleo board to the PC through a USB cable (via CN5 connector)

To use the application Notes STSW-S2LP-DK follow step by step the document «*Getting Started with the S2-LP development kit*» from STMicroelectronics denominated UM2149.pdf.

Evaluation Software package

The STSW-S2LP-DK is an evaluation SW package based on the S2-LP high performance ultra-low power RF transceiver for RF wireless applications in the sub-1 GHz band. It is designed to operate in the license-free ISM and SRD frequency bands at 433, 868 and 920 MHz, but can also be programmed to operate at additional frequencies in the 413-479, 452-527, 826-958, 904-1055 MHz bands. The STSW-S2LP-DK package supports the S2-LP kit platforms available on the associated web pages. It provides an S2-LP library with a complete set of APIs to interface with the S2-LP features, as well as a set of applications demonstrating the use of features of the same device. Each demonstration application comes with a complete set of source files.
The S2-LP_DK GUI application provides an interactive PC interface for the registers on the S2-LP. Its main function is to configure the analog radio section and the packet handler in a user friendly manner for the most common applications.

Radiocontrolli s.r.l refuses any responsibility for irregular uses of the devices and for any possible lack or inaccuracy of the data and reserves the right to change in whole or in part these information without notice.

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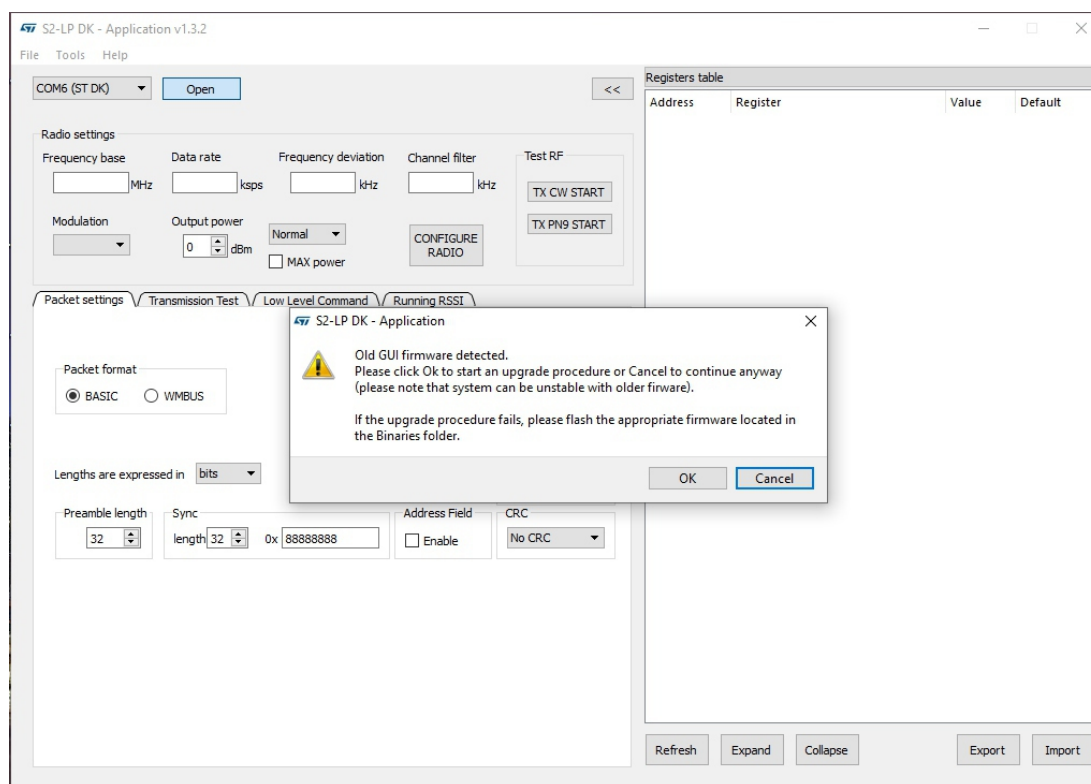
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Rev 1.1

NUCLEO BOARD L0

Notes for using the STMicroelectronics application «STSW-S2LP-DK»

In the last version of this application (versions higher than 1.3.1) the following things happen:

- When you work with the STEVAL board everything works fine !!
- When you work with the RC-SPIRIT2-XXX-EK board there will be the following request :

If your answer is "CANCEL" everything works well and you can use this software to verify all the features about the RadioControlli module .

We suggest pressing the «CANCEL» button, in this way it will be possible to use the application created by STMicroelectronics to check all the features of the RC-S2LP-XXX module.

Instead, if your answer is "OK"   there will be the update of the NUCLEO board and it will no longer be possible to work with the Radiocontrolli board (instead with the STEVAL is everything OK).
(*The problem is that in the STEVAL board there is an EEPROM where the STMicroelectronics write a secret code, and this application re ognizes this code, instead the RadioControlli eevaluation board does not contain this secret code (infact the EEPROM is not mounted on the board).*

To return in the old condition and enable you to try the RadioControlli module, you will must update the NUCLEO board with another software version (provided by us) and transfer it to the Node_L053R8.

Contact sales@radiocontrolli.com to achieve this Nucleo version.

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Rev 1.1

NUCLEO BOARD L1

Notes for using the STMicroelectronics application «STSW-S2LP-DK»

Using a board NUCLEO L1 is not possible to run the application STWS-S2LP-DK with the RadioControlli evaluation board RC-SPIRIT2-XXX-EK.
The application always tries to recognize the secret code (STMicroelectronics) inserted in the EEPROM of the STEVAL board.
The RadioControlli evaluation board does not contain this secret code (the EEPROM is not mounted).

You will must update the NUCLEO with another software version (provided by us) and transfer it to the Node_L152RE.

Contact sales@radiocontrolli.com to achieve this NUCLEO L1 version.

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Rev 1.1