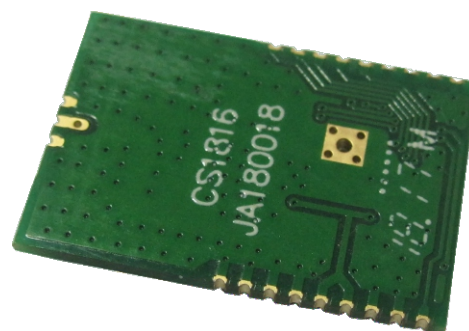


Low Power sub 1GHz Multichannels Radio Transceiver

The **RC-SPIRIT1-XXX** module is based on STMicroelectronics Spirit1 transceiver. This device is a high performance very low power RF transceiver designed for RF wireless application in the sub 1GHz band.

The module is designed for maximum performance in a minimal space, with 4 programmable I/O pins. Programmable from external microcontroller via SPI interface. Ready for use SMD mounting (15x 22mm) - Metal shield.

For more information and details, please refer to the Spirit1 datasheet (www.st.com).



Module Information :

RC-SPIRIT1 - XXX - XX(*)

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

Antenna Type
HA = Helical Antenna
NA = No Antenna
 (*) UFL connector default version

Applications :

- Low-Power Wireless Systems
- Home and Building Automation
- Smart Grid and Automatic Meter Reading
- Wireless Sensor Network
- 6LoWPAN systems

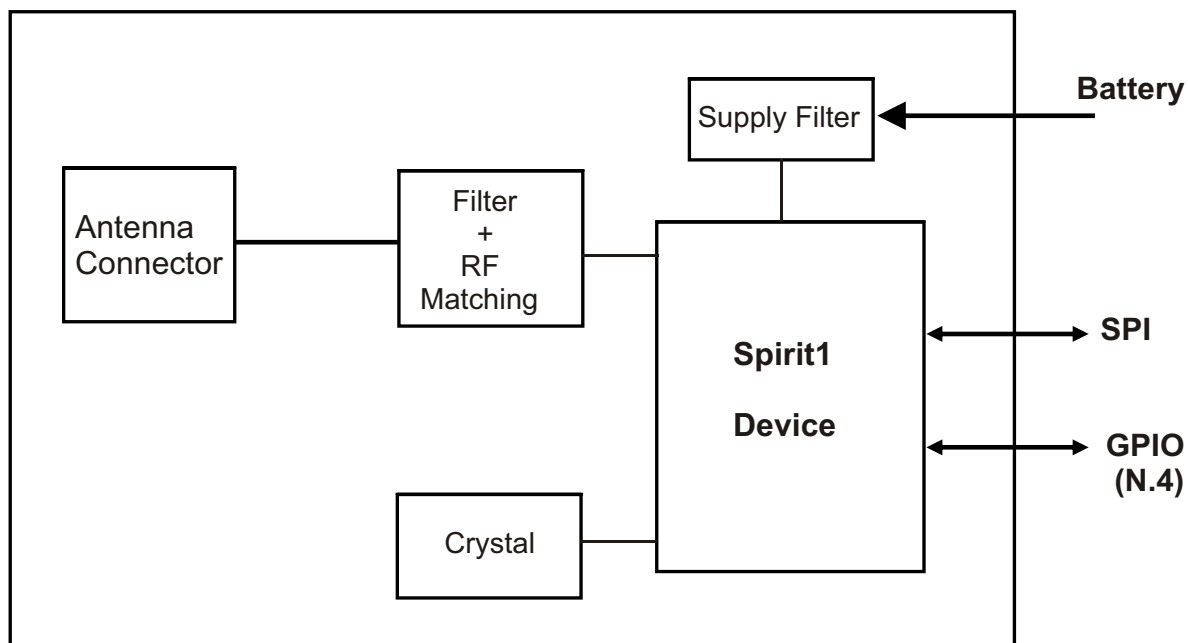
Features

- Ultra Low consumption technology
- Easy to Use
- Small Dimension SMD mounting

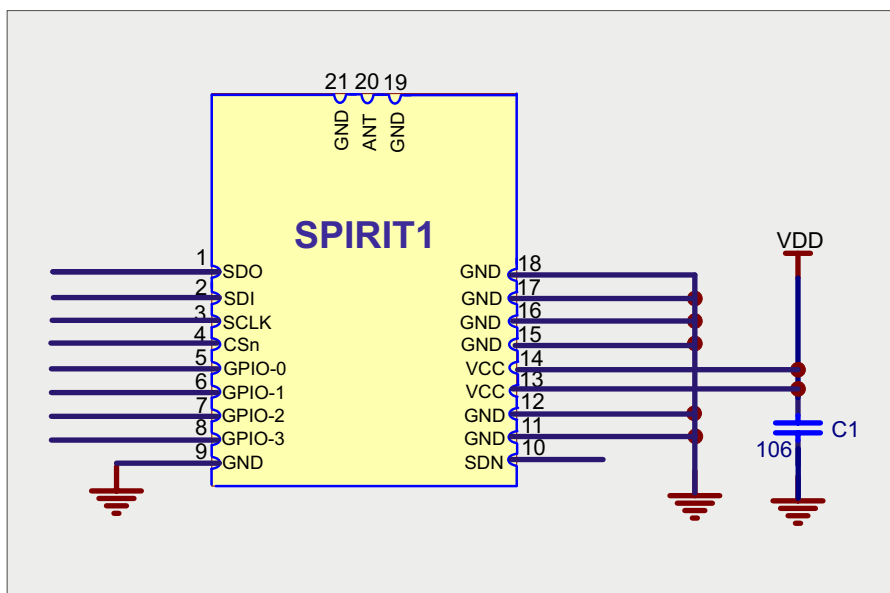
Technical Characteristics

Characteristics	MIN	TYP	MAX	UNIT
Supply Voltage	1.8	3	3.6	VDC
Supply Current RX mode		10		mA
Supply Current TX mode ---> -7dBm		9		mA
Supply Current TX mode ---> +11.6dBm		22		mA
Supply Current Standby Mode		600		nA
Supply Current Shut Down Mode		2.5		nA
Supply Current Sleep Mode		850		µA
Operative Frequency		434/868/915		MHz
RF Power Output 50ohm (*)			+16	dBm
RF Sensitivity		- 118		dBm
Operative Temperature	-30		+75	°C

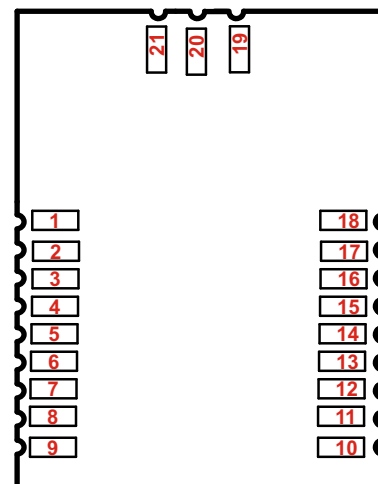
Block Diagram



Reference Schematics



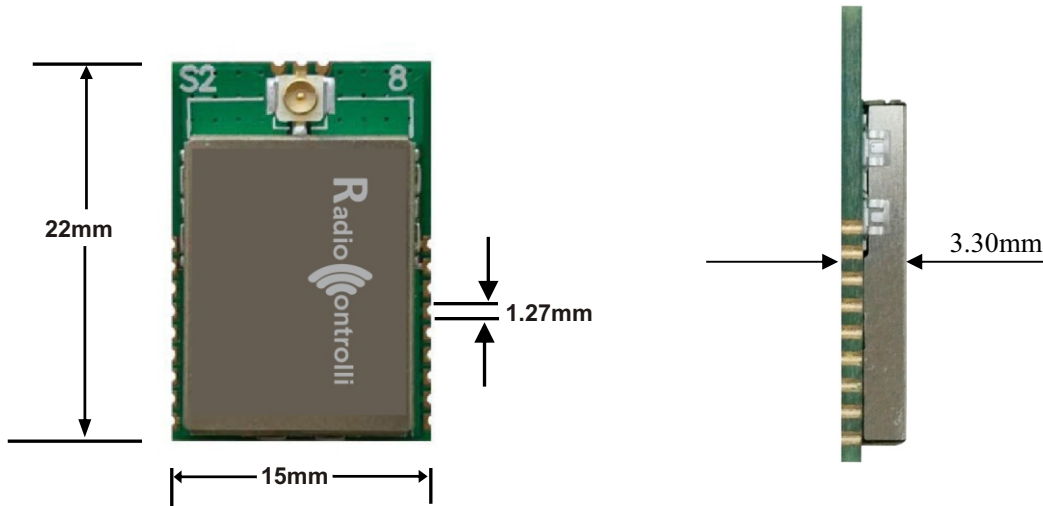
Pin out device



Terminal description RC-SPIRIT1-XXX

Pads	Name	Description	Pin Type
1	SDO	SPI slave data output	Digital out
2	SDI	SPI slave data input	Digital in
3	SCLK	SPI slave clock input	Digital in
4	CSn	SPI chip select	Digital in
5	GPIO-0	General purpose I/O that may be configured through the SPI registers to perform various function.	Digital I/O
6	GPIO-1	General purpose I/O that may be configured through the SPI registers to perform various function.	Digital I/O
7	GPIO-2	General purpose I/O that may be configured through the SPI registers to perform various function.	Digital I/O
8	GPIO-3	General purpose I/O that may be configured through the SPI registers to perform various function.	Digital I/O
9	GND	Connect to GND	Ground pin
10	SDN	Shutdown input pin. SDN should be = '0' in all modes, except shutdown mode.	Digital in
11	GND	Connect to GND	Ground pin
12	GND	Connect to GND	Ground pin
13	VCC	1.8Volt to 3.6 Volt power	Power Supply
14	VCC	1.8Volt to 3.6 Volt power	Power Supply
15	GND	Connect to GND	Ground pin
16	GND	Connect to GND	Ground pin
17	GND	Connect to GND	Ground pin
18	GND	Connect to GND	Ground pin
19	GND	Connect to GND	Ground pin
20	ANT	Connect to an external Antenna	Antenna
21	GND	Connect to GND	Ground pin

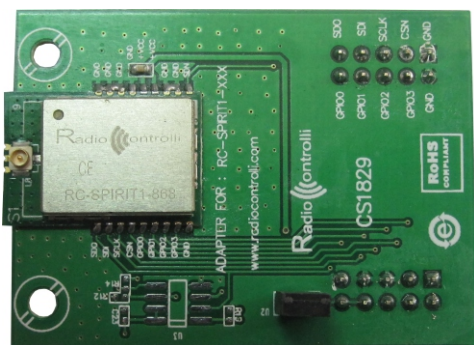
Mechanical dimensions



RC-SPIRIT1-XXX Evaluation Board

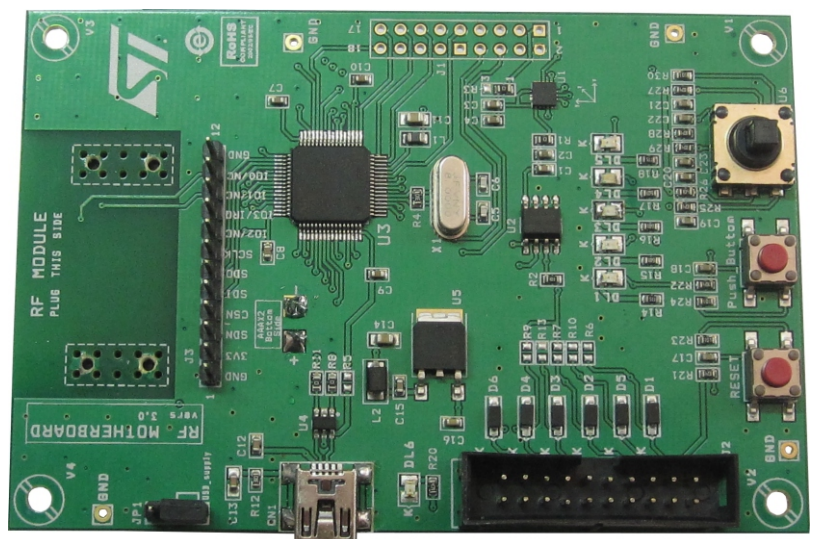
To make immediate usable this module with STMicroelectronics development system, has been realized the following board adapter (see picture below).

The RC-SPIRIT1-XXX-EW is equipped with Antenna (with SMA connector) and UFL-SMA cable.



RC-SPIRIT1-XXX-EW

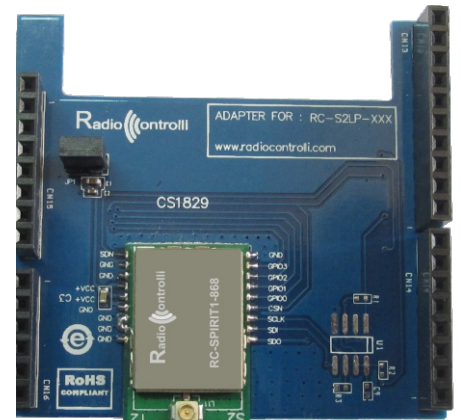
Frequency
434=434MHz
868=868MHz
915=915MHz



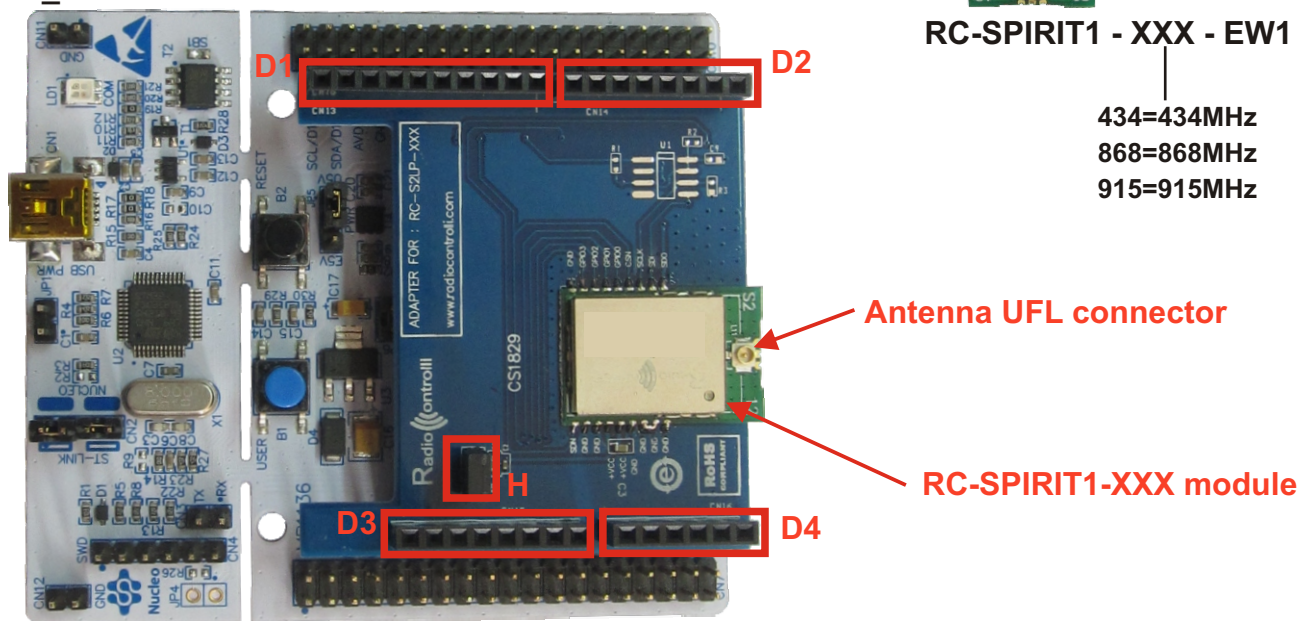
RF Motherboard STM32L microcontroller

RC-SPIRIT1-XXX Evaluation board with Arduino connector

The main board to use is the NUCLEO-L152RE development board, equipped with a low power microcontroller STM32L to control the SPIRIT1 and the ST-LINK/V2-1 debugger and programmer for firmware updating. The RC-SPIRIT1-XXX-EK is equipped with Antenna (with SMA connector) and UFL-SMA cable.



NUCLEO_L152RE

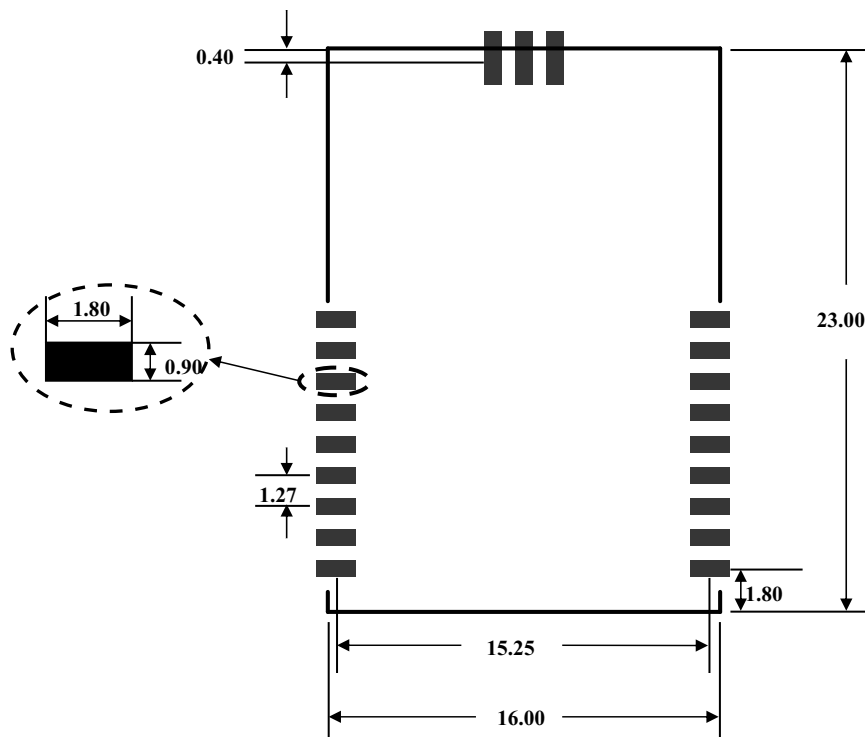


RC-SPIRIT1 - XXX - EW1

- 434=434MHz
- 868=868MHz
- 915=915MHz

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	

Recommended PCB Layout



Recommended Reflow Profile for Lead Free Solder

