

## USB dongle for SPIRIT1 low power RF modules SP1ML-868 and SP1ML-915

Data brief



### Features

- Based on SPIRIT1 sub GHz modules SP1ML-868 and SP1ML-915
- USB interface and power supply
- RESET button
- On-board antenna
- RoHS compliant

### Description

The STEVAL-SP1ML868 and STEVAL-SP1ML915 boards are design tools that allow evaluation of ST's SP1ML-868 and SP1ML-915 low power RF modules in a quick and simple way.

The dongle includes the module to evaluate, an on-board RF antenna, and a USB connector. The USB connector is used to connect the dongle to a PC, to access the sub GHz RF module and to supply the dongle.

The STEVAL-SP1ML868 and STEVAL-SP1ML915 downloaded firmware enables the user to create a SPIRIT1 link using simple AT commands.

The SP1ML-based dongle is not qualified. It is a demonstration tool only, to be used strictly for evaluation purposes. It is not a product in itself.

# 1 Recommended operating conditions

Table 1: Recommended operating conditions

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
V <sub>DD</sub>	Board supply voltage	-20 °C < T < 70 °C	4.5	5	5.5	V
T <sub>op</sub>	Operating case temperature range		-20		+70	°C

## 2 Dongle layout

Figure 1: Dongle component layout, top side

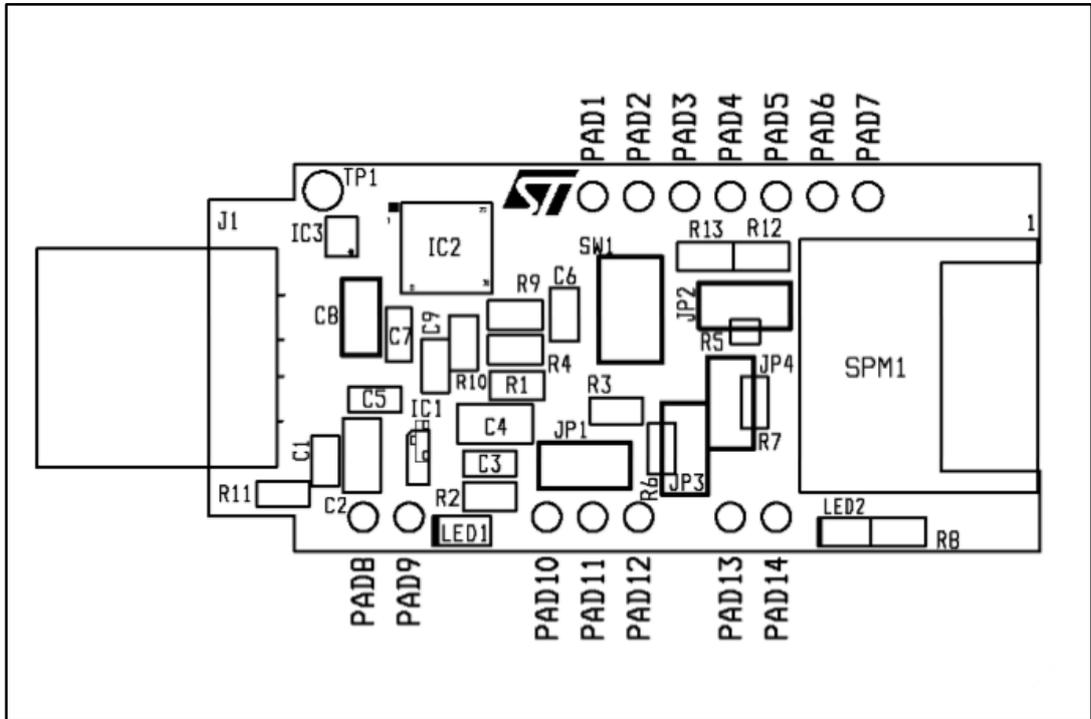


Figure 2: Dongle component layout, bottom side

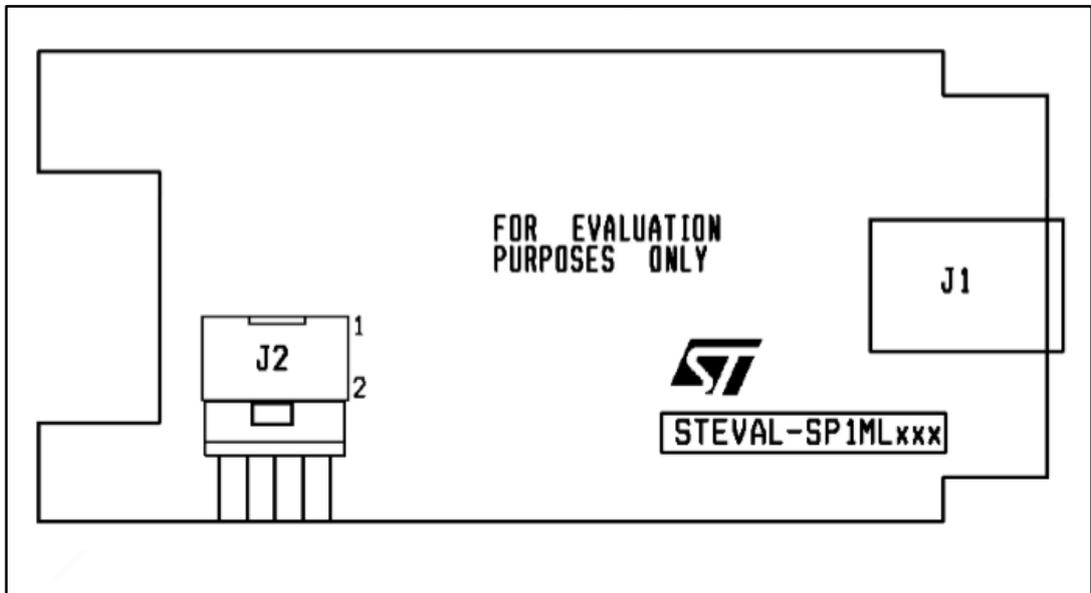




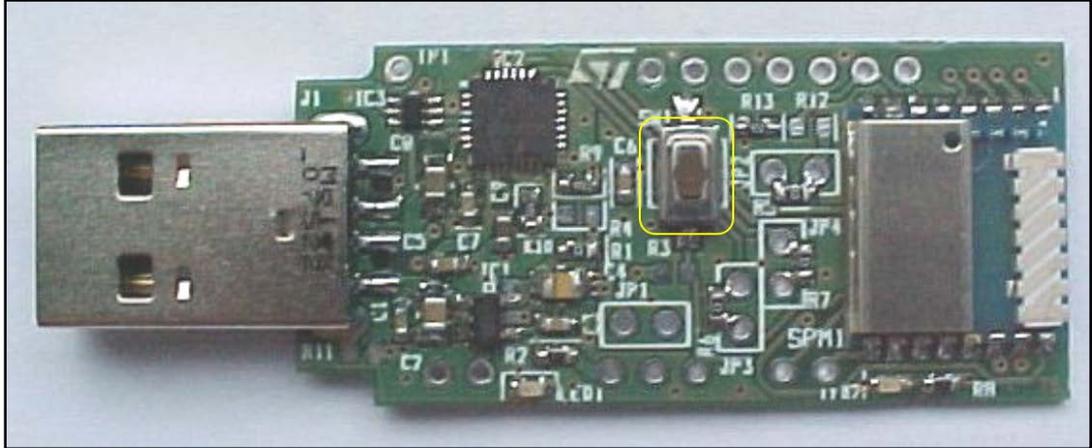
Table 2: Pad connections

Description		
Pad	1	GND (SP1ML-868 / SP1ML-915MODULE GND)
	2	MODE0 SP1ML-868 / SP1ML-915 I/O signal
	3	WKUP SP1ML-868 / SP1ML-915 signal (WAKE-UP high level digital voltage / SHUTDOWN low level digital voltage)
	4	GPIO0 SP1ML-868 / SP1ML-915 programmable I/O signal
	5	GPIO1 SP1ML-868 / SP1ML-915 programmable I/O signal
	6	MODE1 SP1ML-868 / SP1ML-915 programmable I/O signal
	7	TxRx_LED SP1ML-868 / SP1ML-915 programmable I/O signal (LED2 is internally connected to this signal)
	8	GND
	9	+5 V (USB)
	10	+3.3 V
	11	BOOT0 (boot pin used for firmware downloading - used for testing purpose)
	12	Reset - connected in parallel to on-board reset switch
	13	SWCLK SP1ML-868 / SP1ML-915 I/O signal (firmware dependent)
	14	SWDIO SP1ML-868 / SP1ML-915 I/O signal (firmware dependent)

## 4 Reset switch

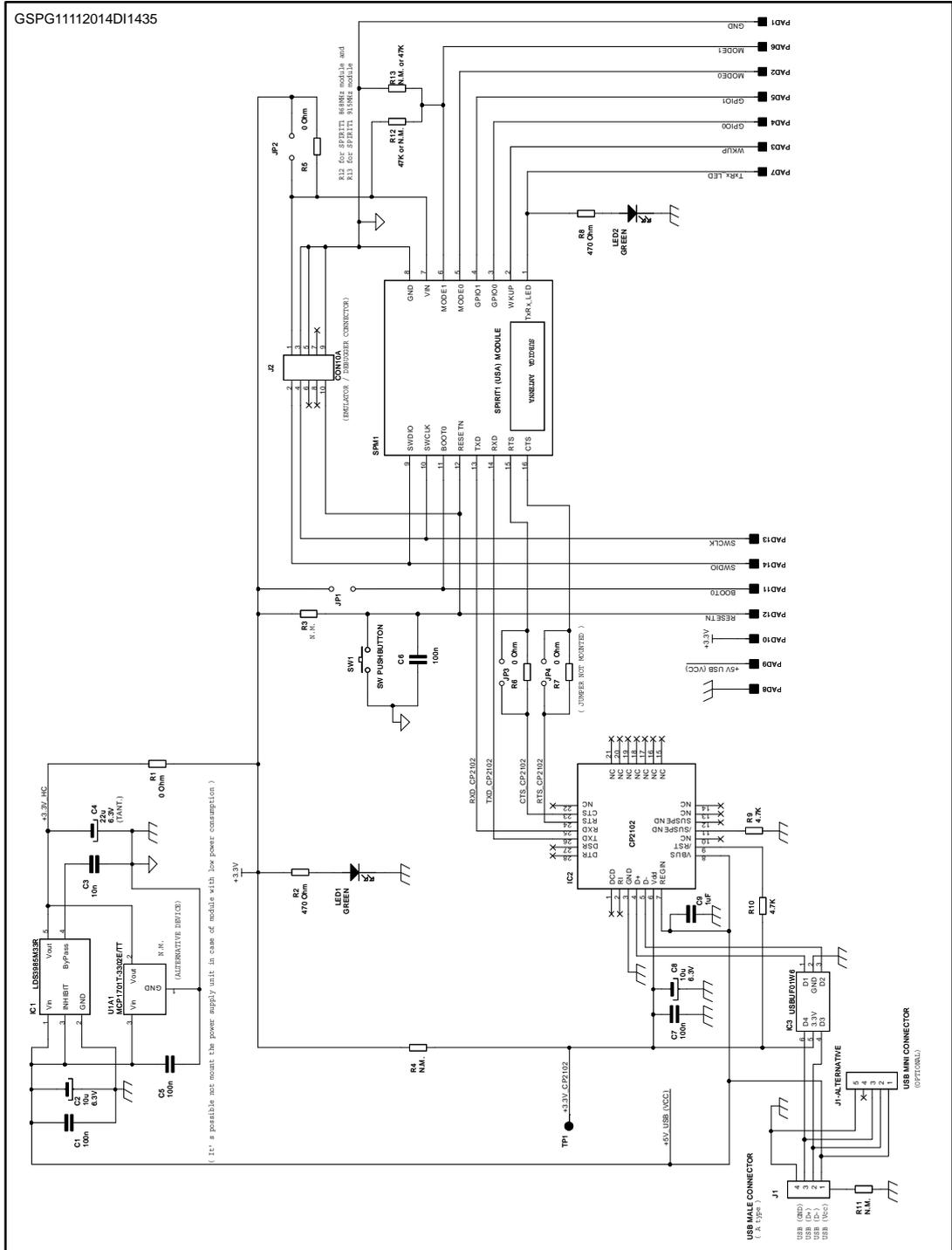
A reset switch (SW1) is present on the dongle. When SW1 is pressed the SP1ML-868 / SP1ML-915 module is forced to reset.

Figure 4: Reset switch



# 5 Dongle schematics

Figure 5: Dongle circuit schematic



## 6 Revision history

Table 3: Document revision history

Date	Rev	Changes
22-Jan-2015	1	First release.

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