# EM9101: 2.4GHz LoRa™ Fully Integrated Controller

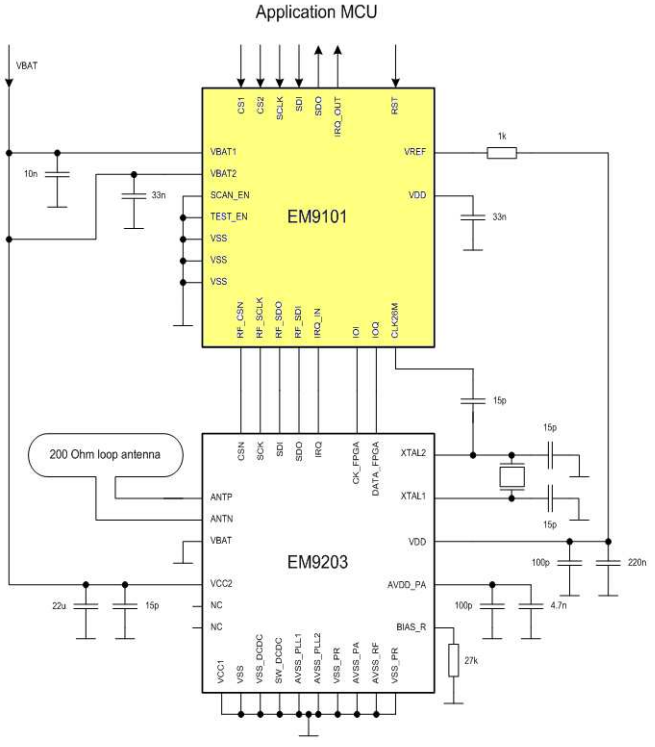
## Description

The EM9101 LoRa™(*1) companion chip is a small digital chip designed to work with the EM9203 2.4GHz RF transceiver. The EM9101 uses the EM9203 to transmit and receive a proprietary modulation allowing very long range wireless communication in the 2.4GHz ISM band.

In this mode the EM9203 internal GFSK modem is bypassed. A specifically designed 2 wires interface is used to transfer I/Q sampled data to/from the EM9101 companion chip.

The EM9101 integrates a Low Drop-out linear regulator and can be supplied directly from the battery voltage. Active mode and power-down mode are available. An on-chip MCU is included to offload real time tasks from the external application MCU.

## Application Schematic



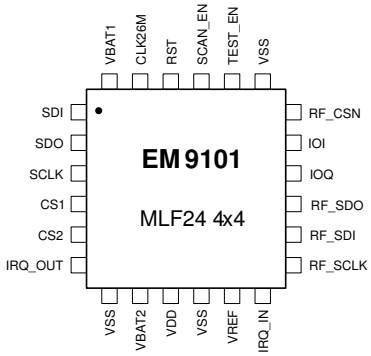

## Features

- On-chip power management
- Compatible with 1.2V power-down mode (reduced supply during stand-by).
- Ultra low power baseband.
- Small and optimized companion chip designed to work with the EM9203 2.4GHz RF transceiver.
- Long range wireless communication in the 2.4GHz ISM band.
- Implements LoRa™ technology.
- Spread-spectrum modulation with tune-able bandwidth.
- Variable data rate from 1.7 kbit/s to 32 kbit/s, for a constant 812.5 Mhz modulated bandwidth.
- Link budget of -126dBm at lower data rate.
- SPI bridge enabling control of the EM9203 through the EM9101.
- Integrated 8bit MCU managing EM9203 radio and EM9101 modem.

## Typical Applications

- Data collection
- Sensors Network
- Monitoring, access, tracking
- Long range M2M data transmission
- Long range 2.4 GHz voice transmission
- Keyfobs (additional functions e.g auxiliary heater )
- Gaming and Toys

## Pin Assignment




(*1) LoRaTM is a trademark of Cycleo a Semtech company.