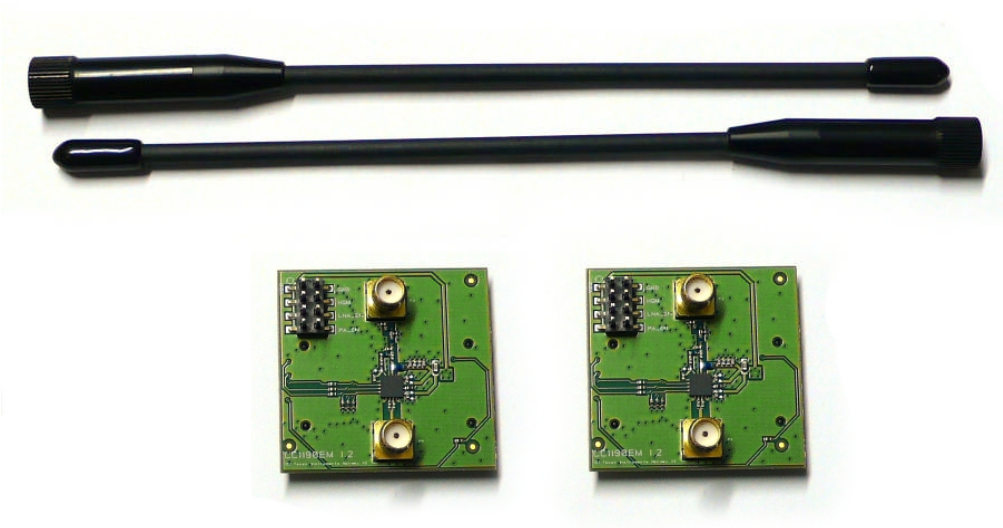
CC1190
Evaluation Module Kit

www.ti.com/cc1190emk

Quick Start Guide



1 Introduction

Thank you for purchasing a CC1190 Evaluation Module Kit.

The CC1190 is an integrated RF front-end comprising a Power Amplifier (PA) for increased RF output power and a Low Noise Amplifier (LNA) for improved receive sensitivity. CC1190 is designed for operation in the 850-950 MHz frequency band.

This Quick Start Guide will show you how to connect the CC1190EM to an existing system and how to perform simple RX and TX tests using a signal generator and spectrum analyzer.

2 Connecting to an Existing System

2.1 RF Connection

Use a 50 Ohm coaxial cable with SMA connectors to connect the RF signal from the radio to the CC1190EM connector P4 on the bottom of the image below. Connect the antenna to the connector P3 on the top of the image below.

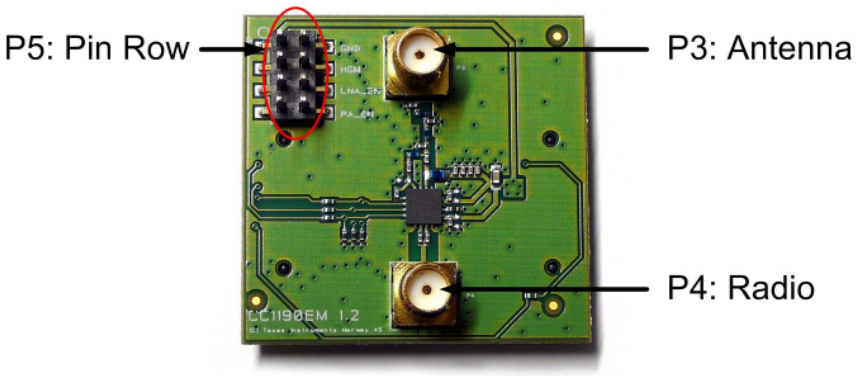


Figure 1 - CC1190EM

Figure 2 shows one possible set up where the output of a radio is connected to the radio input of the CC1190. The CC1190 is controlled by the jumper settings in this example.

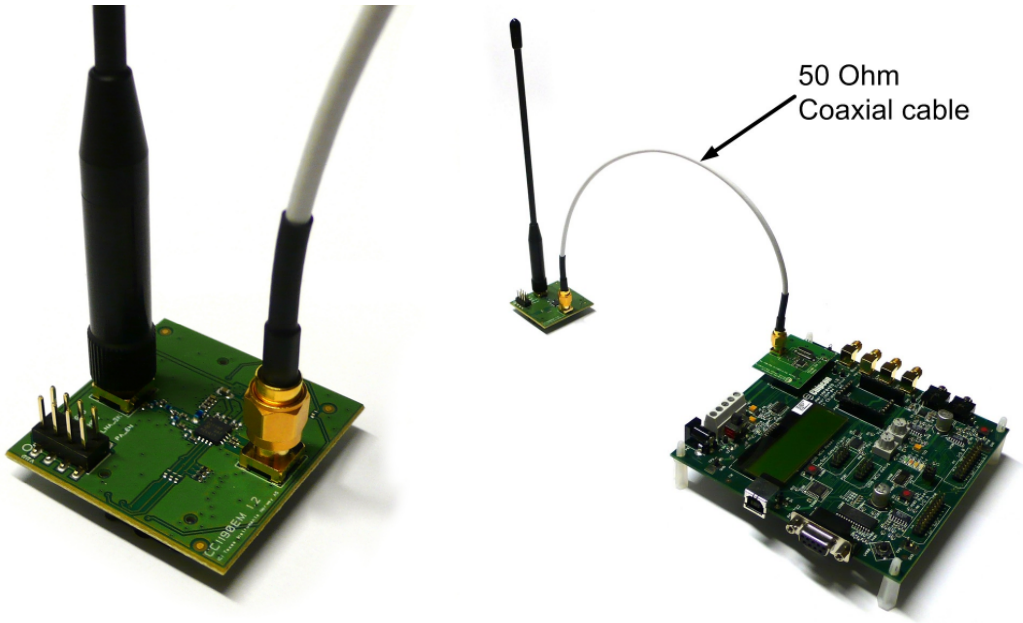
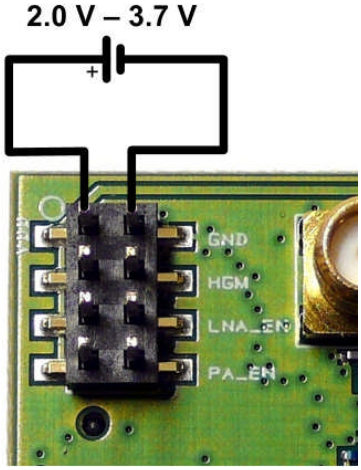


Figure 2 - Possible set up of CC1190 + radio (no control signals or power supply are shown)

2.2 Power Supply

Using the Pin Row Header (P5)



WARNING: Do not connect a jumper between P5 pins 1-2, as this will short-circuit the power supply!

Make sure your power supply can provide sufficient current for the CC1190. See the CC1190 datasheet for details.

Using the Sockets

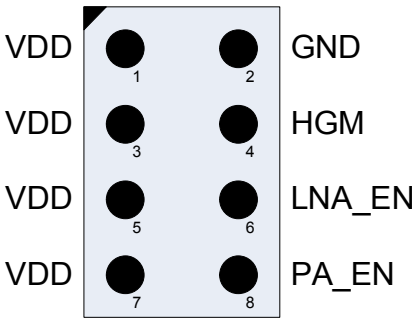
Power can also be supplied through the P1 and P2 sockets on the backside of the CC1190EM. Connecting the CC1190EM to a SoC Battery Board or a SmartRF05EB (version 1.8 or newer) will provide power to the CC1190EM.

Note: SmartRF04EB and SmartRF05EB (older than version 1.8) are not compatible with the CC1190EMs due to limitations in the power supply.

2.3 Digital Control Signals

Using the Pin Row Header (P5)

Controlling the modes of the CC1190 can be done manually by placing jumpers on this header, or by connecting wires to the header pins and using an external micro controller to set the appropriate signal levels.



Pin	Signal
1	VDD (used for power connection)
2	GND (used for power connection)
3	VDD (used for pull-up jumper)
4	HGM (High Gain Mode), both for RX and TX 1 = High gain (with jumper in place) 0 = Low gain (no jumper)
5	VDD (used for pull-up jumper)
6	LNA_EN 1 = LNA enabled (with jumper in place) 0 = LNA in power down (no jumper)
7	VDD (used for pull-up jumper)
8	PA_EN 1 = PA enabled (with jumper in place) 0 = PA in power down (no jumper)

The three control signals have pull-down resistors, giving a default value of 0. To force any of the signals to 1, connect a jumper between pins 3-4, 5-6 or 7-8.

See the CC1190 datasheet for detailed description on the usage of the three control signals.

Note: The CC1190EM cannot be controlled directly from SmartRF Studio.

Using the P1 and P2 Sockets

The CC1190 control signals are routed to the P1 and P2 sockets according to the table below.

Signal	EM Connector
VDD	P2.7, P2.9
GND	P1.1, P1.19, P2.2
HGM	P1.9
LNA_EN	P1.7
PA_EN	P1.3

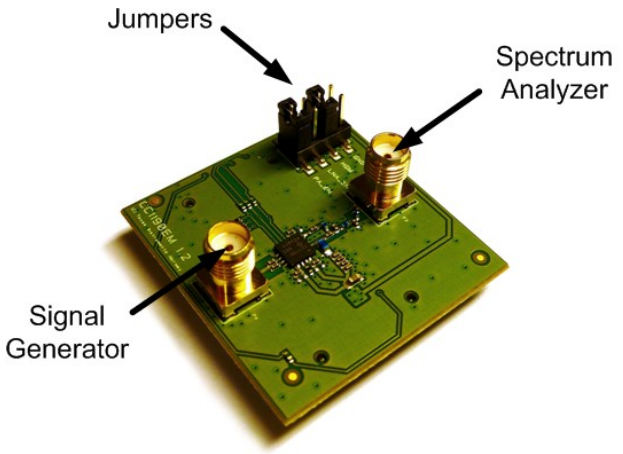
Note (if using SmartRF05EB to power the CC1190EM): P1.3, P1.7 and P1.9 are sharing the UART signals on SmartRF05EB. Please disconnect the jumpers in position 5-6 and 7-8 on header P1 on the SmartRF05EB. It is also recommended to disable the UART level converter (P10 in position 1-2) on the SmartRF05EB.

3 Test Setup

3.1 TX Testing

To test the CC1190 PA:

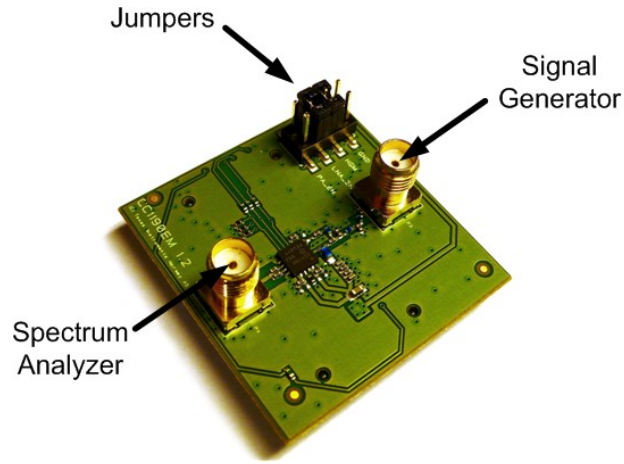
- Connect a signal generator to P4 (radio side).
- Connect a spectrum analyzer to P3 (antenna side). Make sure it is capable of handling the high output power from CC1190.
- Set the control signal jumpers as shown in the picture on the right.
- Connect power and ground to the CC1190EM.



3.2 RX Testing

To test the CC1190 LNA:

- Connect a spectrum analyzer to P4 (radio side).
- Connect a signal generator to P3 (antenna side).
- Set the control signal jumpers as shown in the picture on the right.
- Connect power and ground to the CC1190EM.



4 Document History

Revision	Date	Description/Changes
-	2009-12-03	Initial version

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