CC2590
Evaluation Module Kit

Quick Start Guide

1 Introduction

Thank you for purchasing a CC2590 Evaluation Module Kit. CC2591 is a cost-effective and high performance RF Front End for low-power and low-voltage 2.4-GHz wireless applications. It increases the link budget by providing a power amplifier (PA) for increased output power, and an LNA with low noise figure for improved receiver sensitivity.

2 Using the CC2590EM

The CC2590 standalone EM can be used as a simple add-on to your existing system to improve output power and sensitivity. Use a 50 Ohm coaxial cable with SMA connectors to connect the RF signal from the radio to the CC2590EM connector P4 (top side of EM). Connect the antenna to connector P3 (bottom side of EM). See the picture below to locate the connectors.

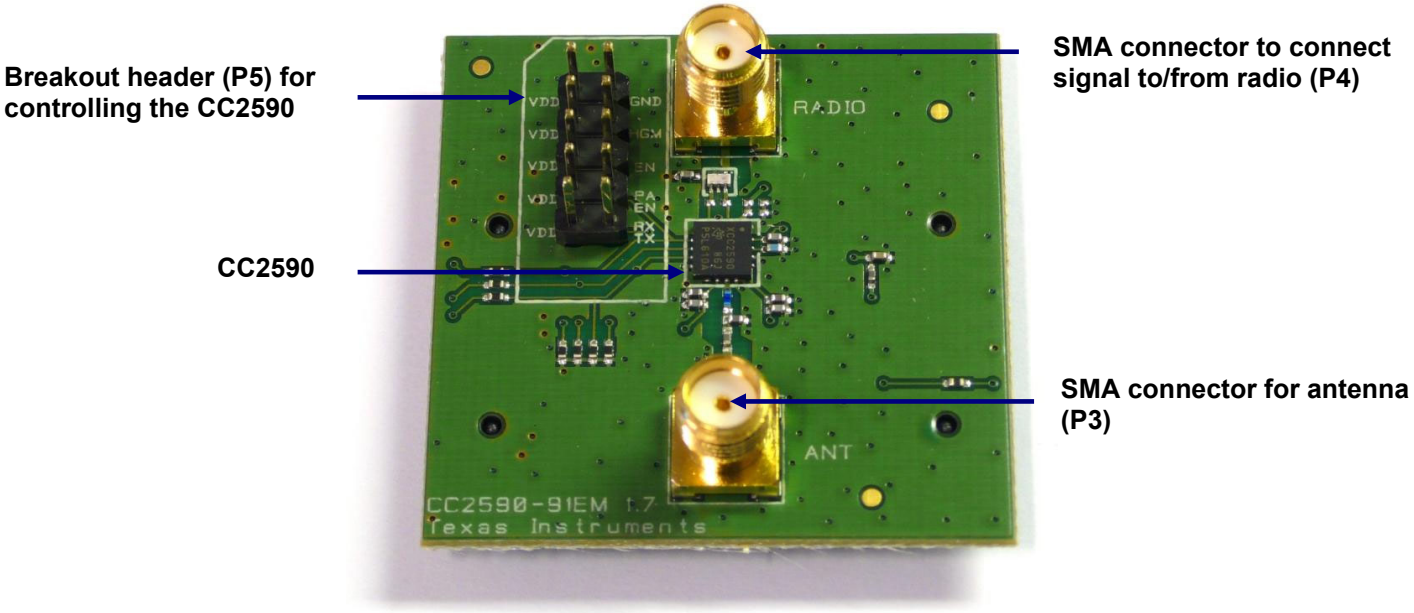


Figure 1 - CC2590EM

The picture below shows one possible set up where the output of a radio is connected to the radio input of the CC2590. Note that since there are no discrete control lines between the radio node and CC2590 in the example below, control of the LNA and PA enable signals has to be done manually by placing jumpers on header P5. Connect control signals from your microcontroller to P5 for automatic control for the device.

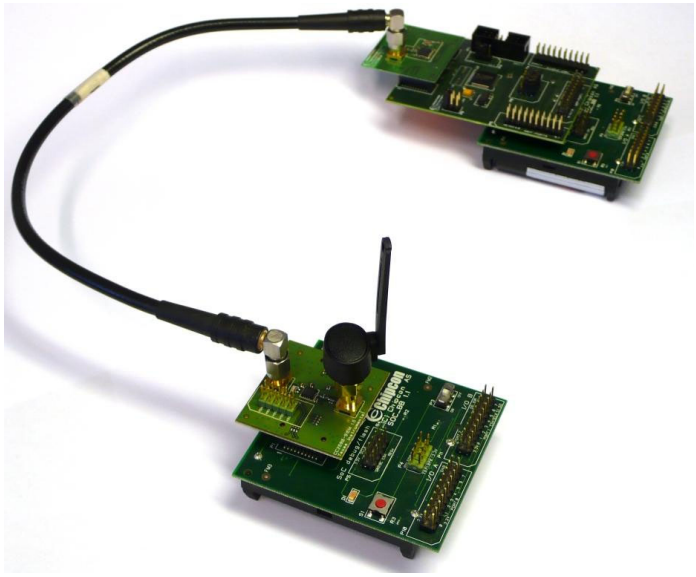
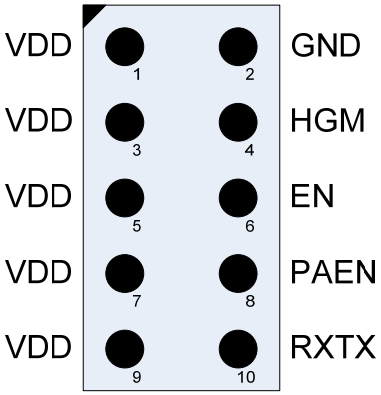


Figure 2 - Possible set up of CC2590 + radio (no control signals)

In order to test the performance of the CC2590 PA, it is possible to connect a signal generator to P4 (radio side) and a spectrum analyzer to P3 (antenna side). To test the LNA, reverse the connections.

The CC2590EM contains a 2x5 pin row header (P5). This can be used both to power and control the CC2590. Controlling the modes of the CC2590 can be done manually by using jumpers on the board, or by using an external controller to set the appropriate signal levels on the pins on P5.



Pin	Signal
1	VDD (used for power connection)
2	GND (used for power connection)
3	VDD (used for pull-up jumper)
4	HGM
5	VDD (used for pull-up jumper)
6	EN
7	VDD (used for pull-up jumper)
8	PAEN
9	VDD (used for pull-up jumper)
10	RXTX

The four 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, 7-8 or 9-10. **Do not connect a jumper between pins 1-2, as this will short-circuit the device!**

See the CC2590 datasheet for detailed description on the usage of the four control signals.

3 CC2590EM socket connectors

The sockets P1 and P2 can also be used to power and control the device, as seen in the schematic drawing. The EM can be connected to a SoC Battery Board, a SmartRF04EB or a SmartRF05EB to power the device. Note that the EM cannot be controlled directly from SmartRF Studio.

The CC2590 control signals are routed to the EM connector according to the table below

Signal	EM Connector
VDD	P2.7, P2.9
GND	P1.1, P1.19
HGM	P1.9
EN	P1.7
PAEN	P1.3
RXTX	P2.18

Note that P2.18, P1.3, P1.7 and P1.9 are sharing the UART signals on both SmartRF04EB and SmartRF05EB. On SmartRF05EB, please disconnect the jumpers in position 5-6 and 7-8 on header P1. It is also recommended to disable the UART level converter (P10 in position 1-2). On SmartRF04EB, try removing the appropriate 0-Ohm resistors if the EM does not operate as expected. Please refer to the SmartRF04EB Schematics for details.

4 Document history

Revision	Date	Description/Changes
-	2008-09-08	First revision

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