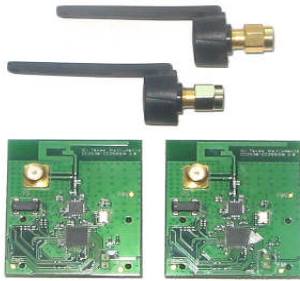


# CC2530-CC2591EMK Quick Start Guide

## 1. Kit Contents



2 x CC2530-CC2591EM  
 2 x 2.4 GHz antennas  
 Documentation

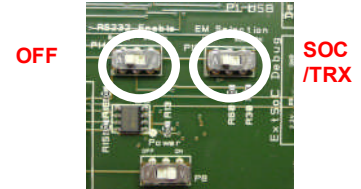
## 2. Plug EM into SmartRF05EB



The CC2530-CC2591EM can be plugged into the SmartRF05EB. Please refer to the SmartRF05EB User Guide for more information about SmartRF05EB (<http://www.ti.com/lit/pdf/swru210>)

## 3. Configure the SmartRF05EB

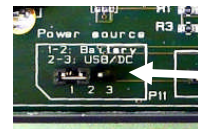
Set the EM Selection switch in position SOC/TRX.



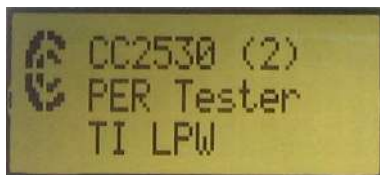
For best performance, it is recommended to turn off the RS232 interface.

Select power source with the jumper on header P11:

- Position 1-2: Batteries
- Position 2-3: USB or DC supply



## 4. Packet Error Rate (PER)



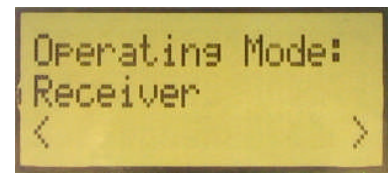
When power is applied to the SmartRF05EB, the preprogrammed PER test on the CC2530 will start running. The LCD will display the screen as shown in the picture above. The number in the parentheses is the revision of the CC2530. Press Button S1 to enter the menu.

## 5. Set channel



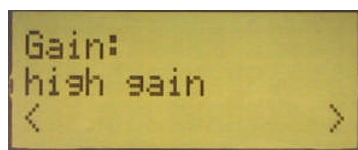
Select a channel between 11 and 26 (2405-2480 MHz). The channel is selected by navigating the joystick to the right or left. Confirm the selection by pressing Button S1.

## 6. Select TX or RX



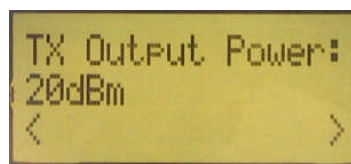
Select receiver on one of the SmartRF05EB's and transmitter on the other. Use the joystick to select mode. Confirm the selection by pressing Button S1.

## 7. RX: Select Gain



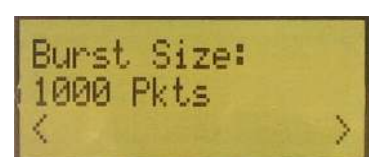
For the receiver select LNA gain on the CC2591 with the joystick. Either high gain or low gain mode are possible settings. Normally, high gain mode should be selected. Confirm the selection with Button S1. The receiver is now ready to receive packets.

## 8. TX: Select Output Power



On the transmitter node, select the TX output power (signal strength). Use the joystick to select between 0 dBm, 13 dBm, 16 dBm, 18 dBm or 20 dBm. Confirm the selection with Button S1.

## 9. TX: Select # of Packets



Select burst size (number of packets to send) by using the joystick, either 1000, 10K, 100K or 1M packets. Confirm the selection with Button S1.

### 10. TX: Select Packet Rate



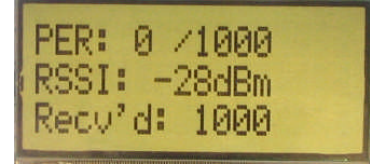
Select packet rate (number of packets transmitted per second) on the transmitter. Confirm the selection with Button S1.

### 11. TX: Start PER Test



The transmitter is now configured for the PER test. The PER test is started by pushing the joystick (as a button). The transmitter will display the number of packets sent during the PER test. The PER test is stopped by pushing the joystick again.

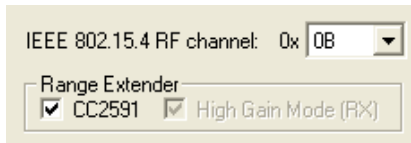
### 12. RX: Observe PER



The PER test receiver will display the PER value (number of lost and erroneous packets divided by the total number of packets sent, displayed as a fraction of 1000). It will also display a moving average RSSI value (received signal strength). The test can be reset by pressing Button S1.

### 13. SmartRF Studio

SmartRF® Studio supports the CC2530-CC2591. When the board is connected to the SmartRF05EB, it is possible to tick the CC2591 box in the "Range Extender" pane.



Studio will then make sure that I/O on the CC2530 is set up for proper control of the CC2591.

### 14. More Information

For more information about the CC2591, please visit the product web page on [www.ti.com](http://www.ti.com).

#### Kit and Software

The source code for the PER tester and EM reference design can be downloaded from the CC2530-CC2591EMK web page. The latest version of SmartRF® Studio can be downloaded from [www.ti.com/smarterfstudio](http://www.ti.com/smarterfstudio)

We hope you will enjoy working with the CC2591 and associated LPRF products from Texas Instruments.

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