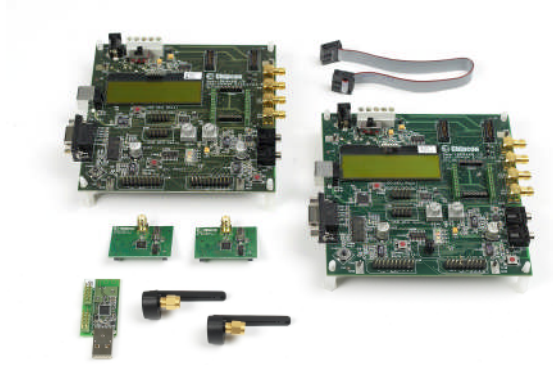
CC2510-CC2511DK Quick Start Instructions

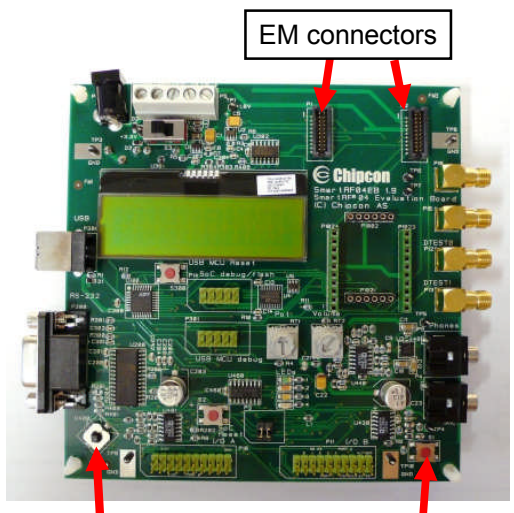
Opening the box an running the Packet Error Rate Test

1. Kit Contents

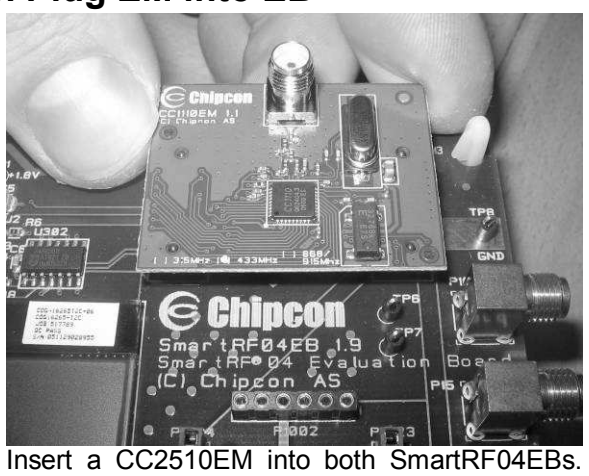


2 x SmartRF04EB
2 x CC2510EM
1 x CC2511 USB Dongle
2 x 2.4GHz antennas
2 x USB cables
1 x USB extension cable
Documentation

2. EB overview

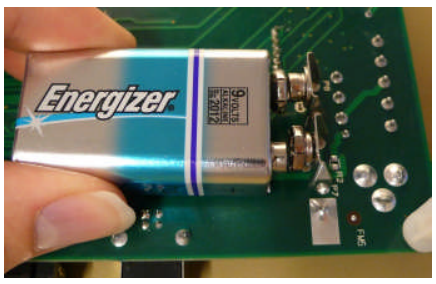


3. Plug EM into EB



Insert a CC2510EM into both SmartRF04EBs. The connectors will only fit in one position, so that the EM cannot be inserted the wrong way. Do not force the EM. Remember to mount the antenna as well.

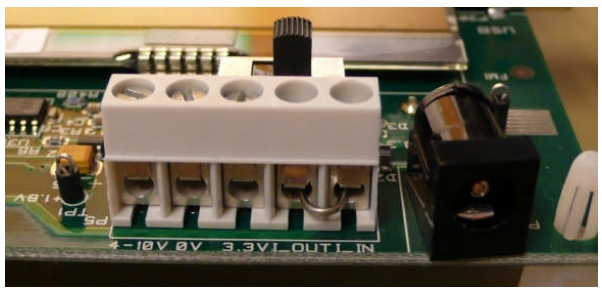
4a. Battery power



There are three different ways of applying power to the EB:

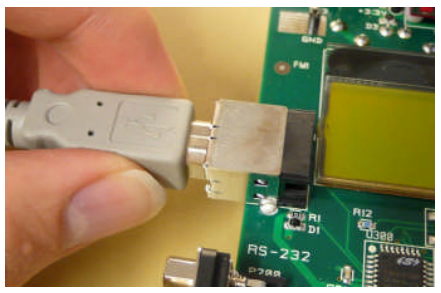
The first method involves using a battery, either a 9V or a 4xAA battery pack connected to the battery connector on the bottom side of the board

4b. DC power



The second method applies DC power using the DC input jack (right in picture, centre is +, sleeve is ground), or by connecting a 4-10V voltage source between the 4-10V and 0V terminals of the power connector (left in picture). It is also possible to connect a 3.3V voltage source between the 3.3V and 0V terminals. The on-board voltage regulators will be bypassed in this case.

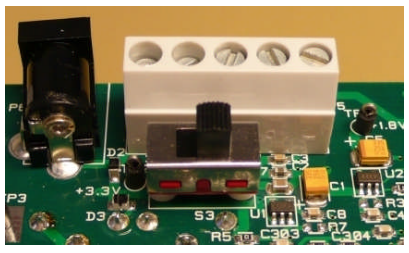
4c. USB power



The EB can also be powered from the USB bus. Make sure that the SmartRF™ Studio software is installed before connecting the EB to the PC; otherwise you may experience problems in installing it later due to driver issues.

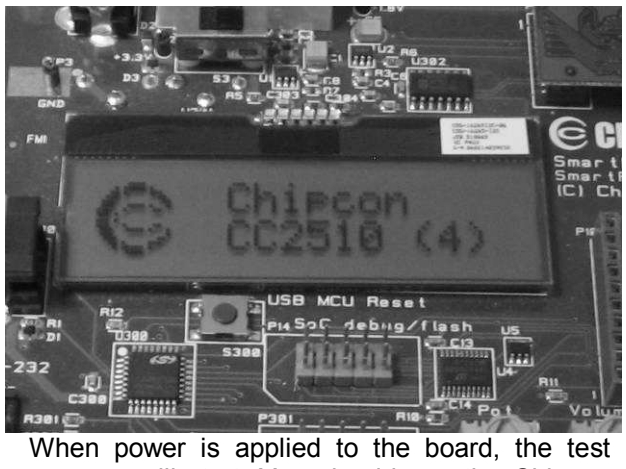
Note that if multiple power sources are connected, the source with the highest voltage will power the EB. This means that you should disconnect any attached battery when using a lab supply or USB power; otherwise the battery will be drained.

5. Set power switch



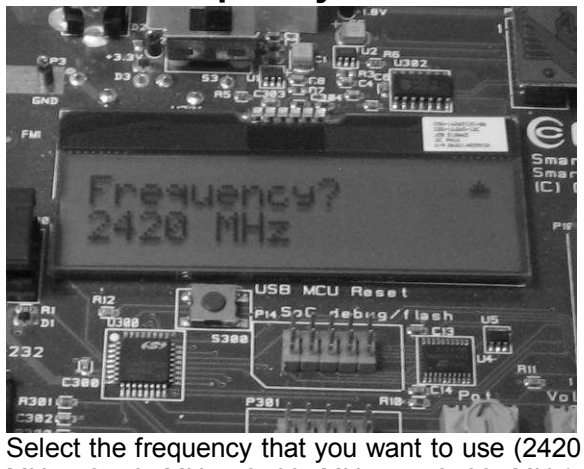
If a 3.3V source is used as described in 4b above, the switch should be set to the leftmost position. For all other cases, the switch should be set to the rightmost position. This switch can be used to turn off the EB by switching it to the opposite position of that used to turn it on.

6. Packet error rate test



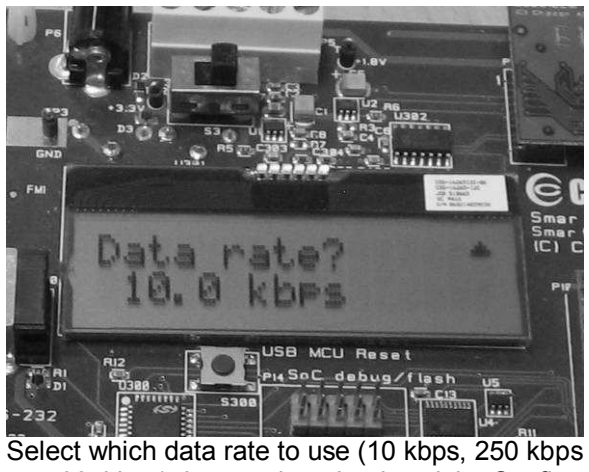
When power is applied to the board, the test program will start. You should see the Chipcon logo with chip name and revision number as shown above on the LCD display on both EBs. Pushing button S1 in the lower right corner of the board will show the first menu item.

7. Select Frequency



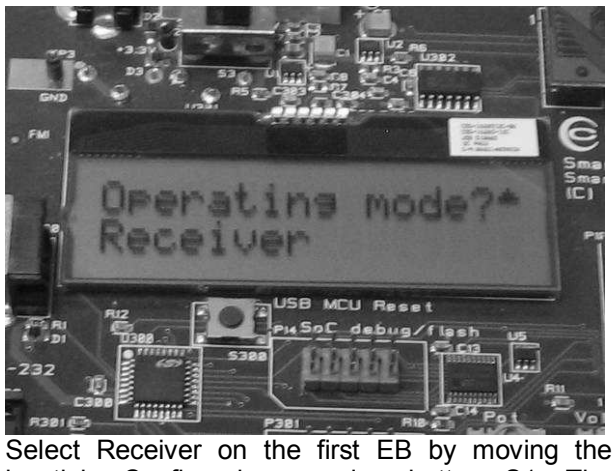
Select the frequency that you want to use (2420 MHz, 2440 MHz, 2460 MHz or 2480 MHz). Move the joystick up or down to display the choices and push button S1 in the lower right corner of the board to select the displayed frequency.

8. Select Data Rate



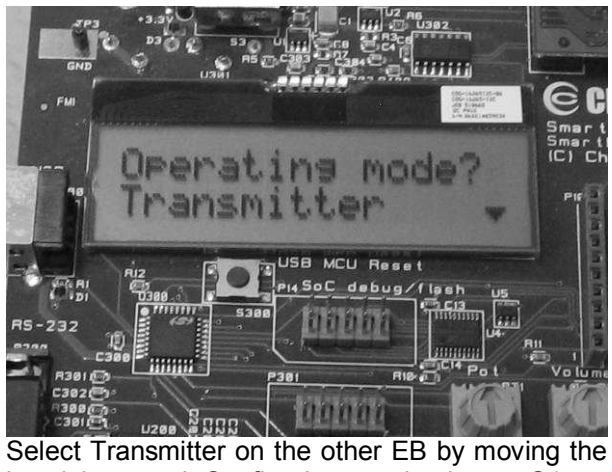
Select which data rate to use (10 kbps, 250 kbps or 500 kbps) by moving the joystick. Confirm your choice by pushing button S1.

9. EB 1: Select Receiver



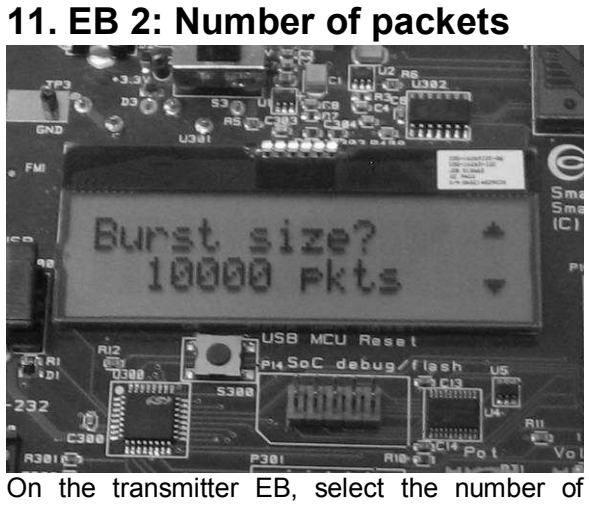
Select Receiver on the first EB by moving the joystick. Confirm by pressing button S1. The Receiving node will display “Ready to receive”.

10. EB 2: Select Transmitter



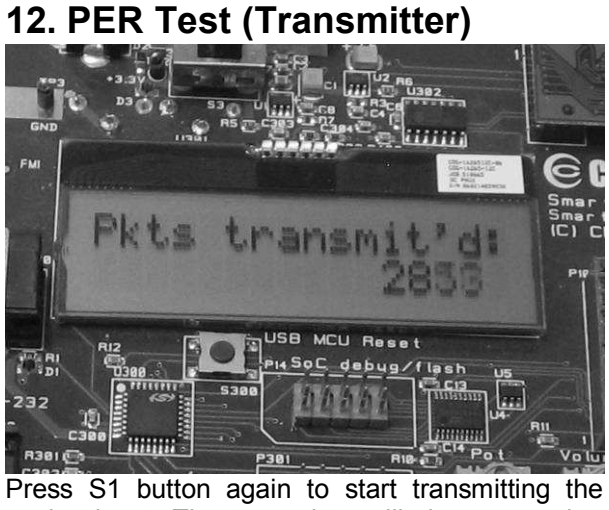
Select Transmitter on the other EB by moving the joystick upward. Confirm by pressing button S1.

11. EB 2: Number of packets



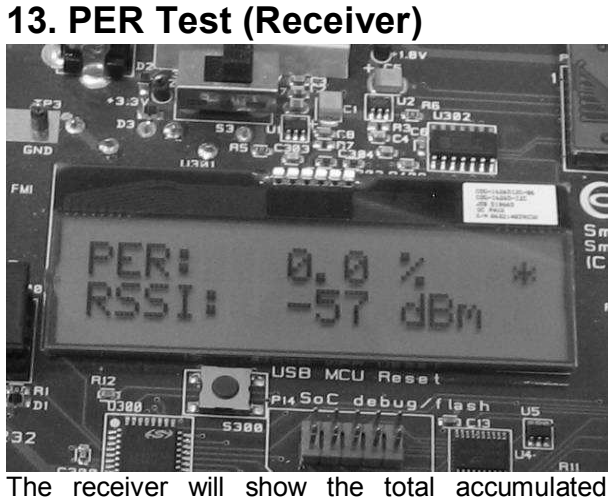
On the transmitter EB, select the number of packets to send. More packets take longer, but give a better statistical result. Confirm by pressing button S1.

12. PER Test (Transmitter)



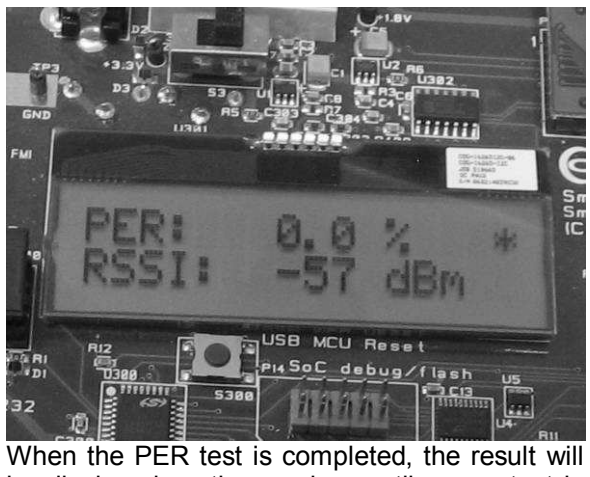
Press S1 button again to start transmitting the packet burst. The transmitter will show a running counter that shows the number of packets sent.

13. PER Test (Receiver)



The receiver will show the total accumulated packet error rate (PER) together with the average signal strength (RSSI) of the previous 32 received packets. A symbol in the upper right corner will blink for every 32nd incoming packet to indicate whether the link is maintained.

14. Per Test results



When the PER test is completed, the result will be displayed on the receiver until a new test is started. A new test can be started from the transmitter.

15. References

Please visit www.ti.com and

http://focus.ti.com/docs/toolsw/folders/print/cc2510-cc2511dk.html

Download the CC2510-CC2511DK User Manual, the SmartRF™ Studio PC Tool, software examples, as well as datasheets, reference designs and application notes. Documentation and application examples written for the CC2511 USB dongle are also available for download from this site.

You will also find a lot of information on the TI E2E forum at http://e2e.ti.com

We hope that you will enjoy working with the CC2510 and CC2511 devices.

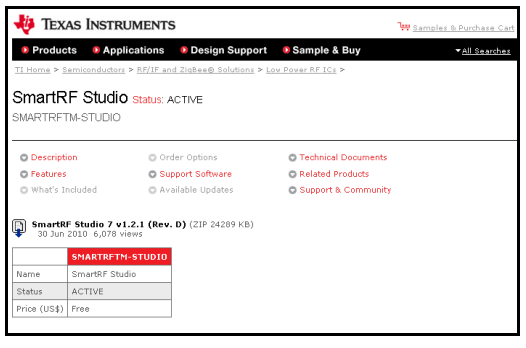
16. Troubleshooting

It you are experiencing problems with this test, please check the following:

a. The data rate affects the obtainable link range.
b. The source code for the packet error rate test application is available on the web. You may modify the source code to test at other frequencies or data rates.
c. See “DN300 -- SmartRF04EB Troubleshooting” for general troubleshooting of your EB board.

SmartRF™ Studio

1. Download and Install

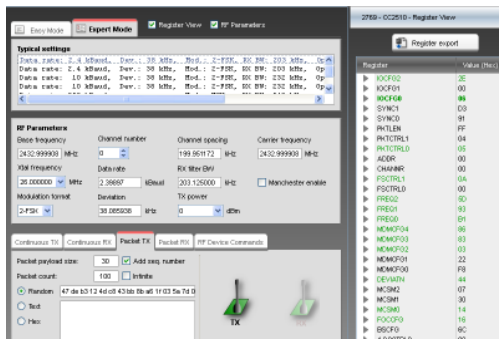


Before connecting SmartRF04EB to your PC, download SmartRF Studio from www.ti.com/smartrfstudio.

2. Launch SmartRF Studio

After installing the tool, connect the EB to the PC using the USB cable and start SmartRF Studio. Select the “2.4 GHz” tab and double click the CC2510 device icon.

3. Configure the Radio



You can now configure the radio, run tests, export register settings and run link tests with another CC2510 on a SmartRF04EB connected to the PC.

Web sites: www.ti.com/lprf
E2E Forum: www.ti.com/lprf-forum

Make sure to subscribe to the Low-Power RF Newsletter to receive information about updates to documentation, new product releases and more. Sign up on the TI web pages.

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