

CC1100/CC1150DK Quick Start Instructions

Revision 1.2, 2007-07-24

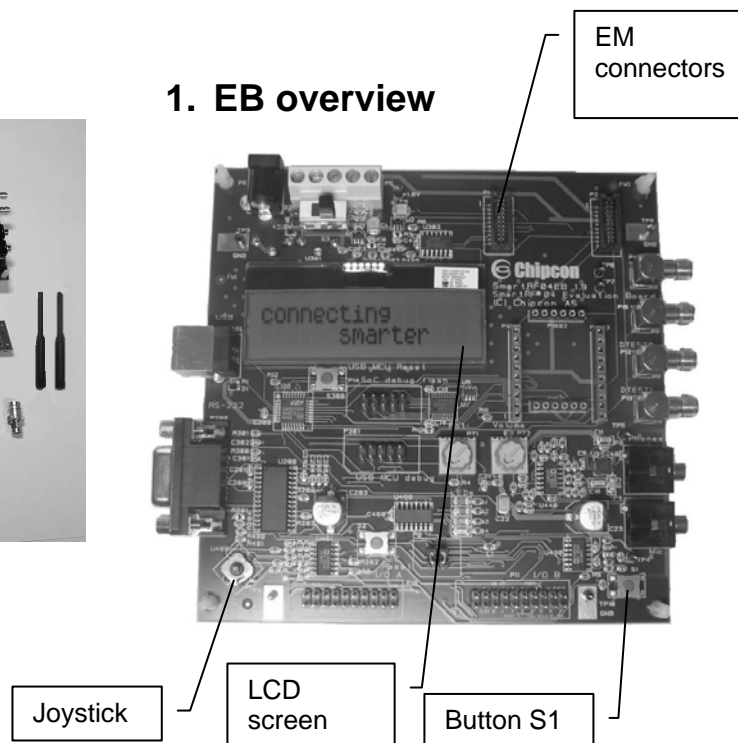
Packet Error Rate Test

0. Kit Contents



- 2 SmartRF04EB
- 2 CC1100EM
- 1 CC1150EM
- 2 antennas
- 4 SMA-BNC adapters
- 2 USB cables

1. EB overview

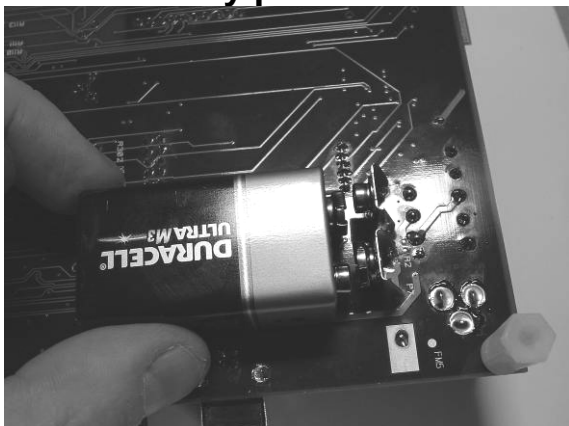


2. Plug EM into EB



Insert a CC1100EM 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. The accompanying PER test requires two-way communication and cannot be run using a CC1150EM.

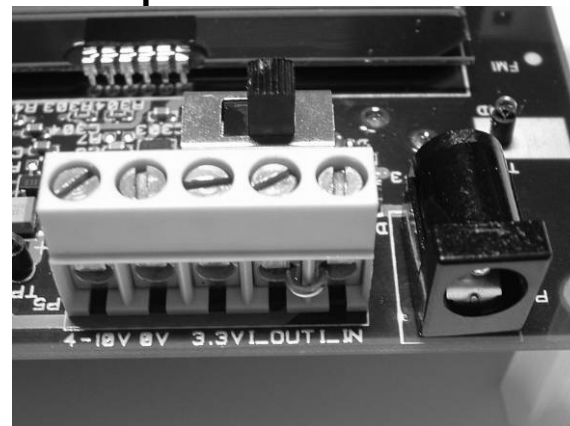
3a. Battery power



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

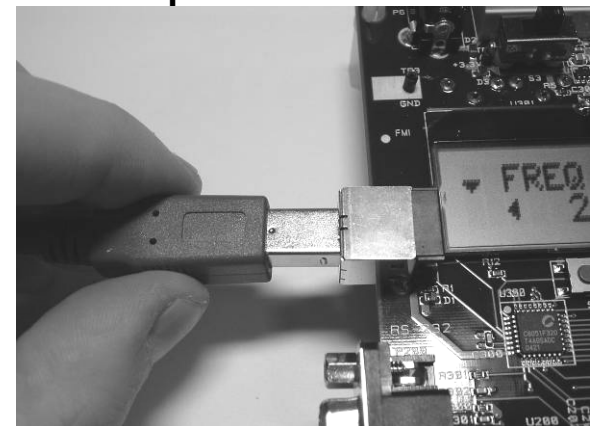
The first method involves using a battery, either a 9V or a 4xAA battery pack connected to the battery connector on the bottom side of the board

3b. 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.

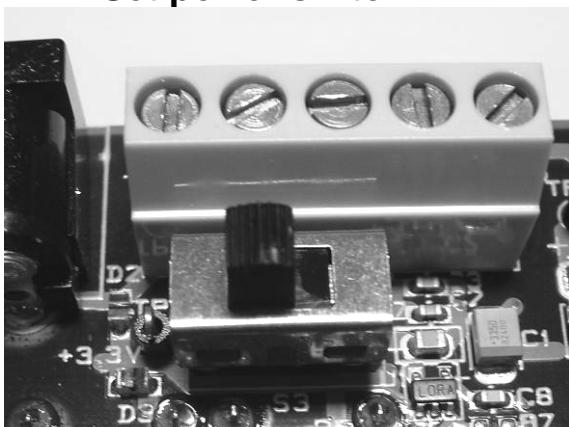
3c. USB power



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.

4. Set power switch



If a 3.3V source is used as described in 3b. 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.

5. Packet error rate test



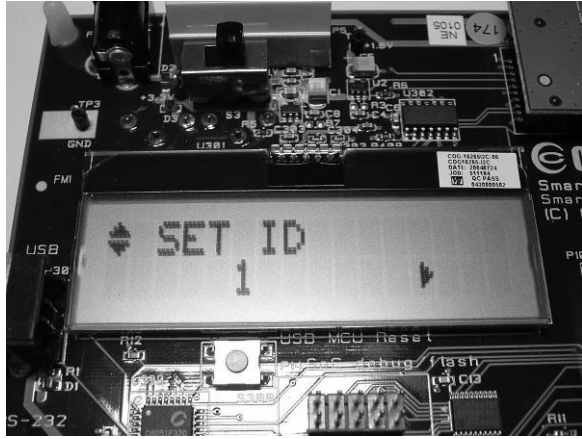
When power is applied to the board, the PER test program will start. You should see the text shown above on the LCD display on both EBs. Press the S1 button.

6. Set frequency band



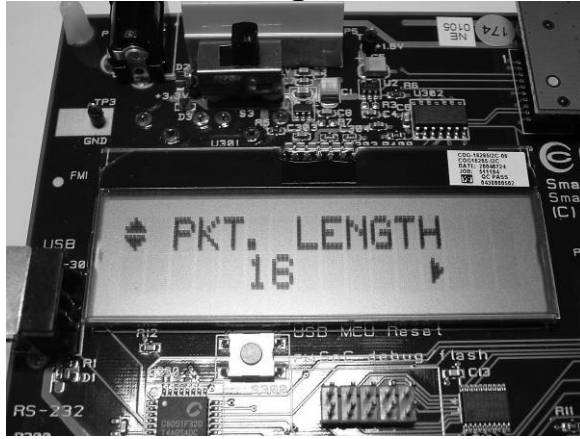
Select the correct frequency band of operation by using the joystick (correct screen shown above for 868MHz operation).

7. Set ID



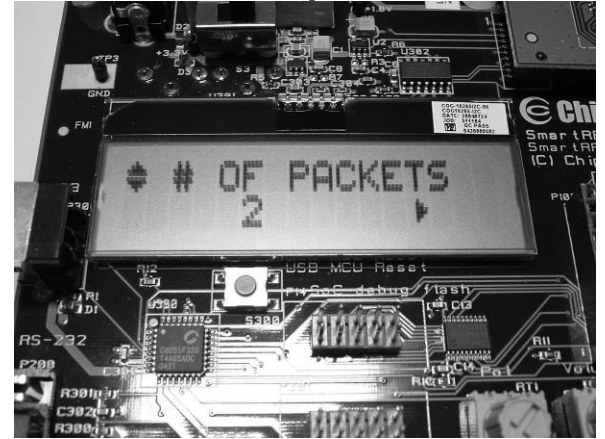
Push the joystick down to display the screen shown above. This lets you set the ID of the EB in case you need to run several PER tests simultaneously and you have multiple development kits. Leave this set to 1 for now.

8. Packet length



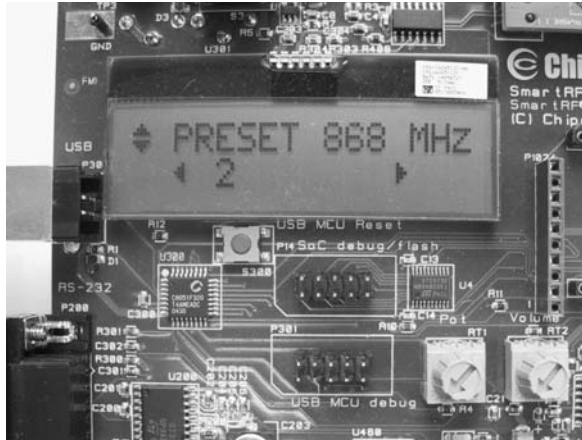
Push the joystick down to display the screen shown above. This lets you set the length of the packets to be transmitted. The packet length will affect the measured packet error rate. Push the joystick left or right to select the packet length you want to use.

9. Number of packets



Push the joystick down to display the screen shown above. This lets you set the number of packets to be transmitted. Set this to a high value (1024 or so) using the joystick.

10. Preset



Push the joystick down to display the screen shown above. This lets you select a preset. This is a combination of modulation, data rate and other settings. 0: 10 kbps 2-FSK, 1: 1.2 kbps 2-FSK, 2: 38.4 kbps 2-FSK, 3: 500 kbps MSK. Select the preset you want to use using the joystick.

11. Select mode



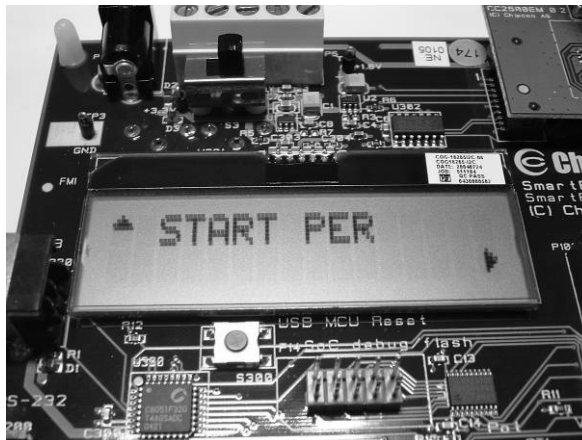
Push the joystick down to display the screen shown above. Use the joystick to select master mode. The EB you have configured now will be the master in the PER test.

12. Configure 2nd EB



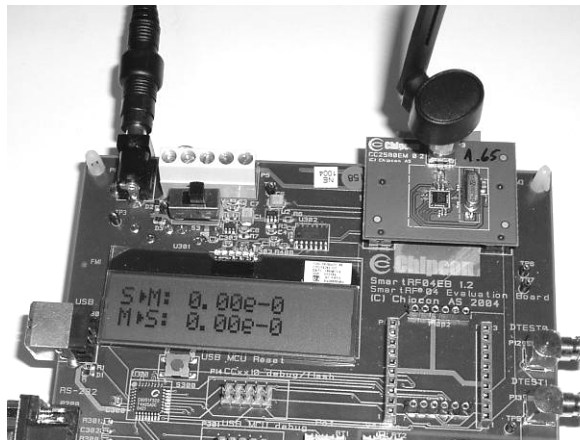
Perform steps 3 through 7 on the second EB. Push the joystick down until you get the display shown above. Leave this EB in slave mode.

13. Start PER test



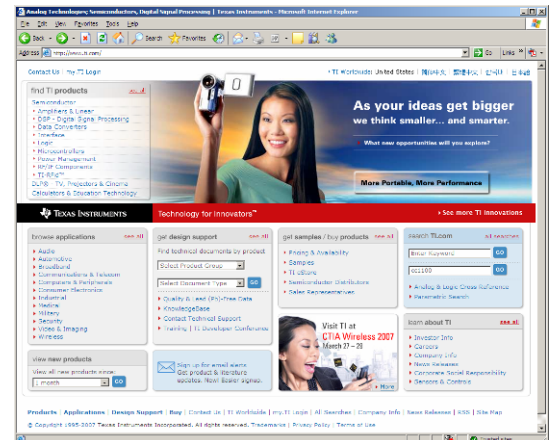
Push the joystick down on both EBs, and the screen shown above is displayed. Push the joystick right on the slave EB first, then push the joystick right on the master EB. Note that the PER test uses 0dBm as default output power, so for testing of maximum range the output power should be increased to 10dBm using SmartRF[®]Studio (See CC1100/CC1150DK user manual). With 10dBm output power the EBs should be placed at least 1m apart to avoid saturation when starting the PER test.

14. Run PER test



The PER test will now run. The uppermost line of both displays will show the packet error rate for the information going from the slave to the master, while the second line will show the packet error rate for the information going from the master to the slave. You can now move the EBs around; the numbers will be continuously updated. The PER test will end when the number of packets you selected in step 9 is reached or if 100 consecutive packets are lost.

15. Documentation

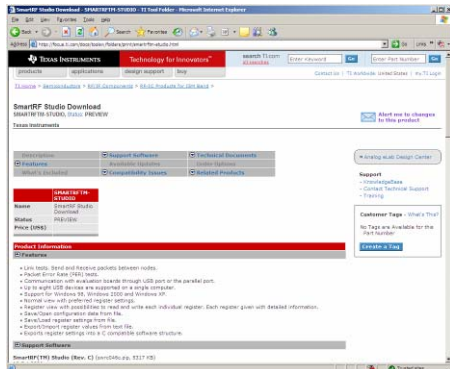


Please visit www.ti.com to download the CC1100/CC1150DK User Manual, the SmartRF[®]Studio software, examples, as well as relevant datasheets and application notes.

If you for some reason cannot access the TI web site and download the files, please contact your local TI representative for assistance.

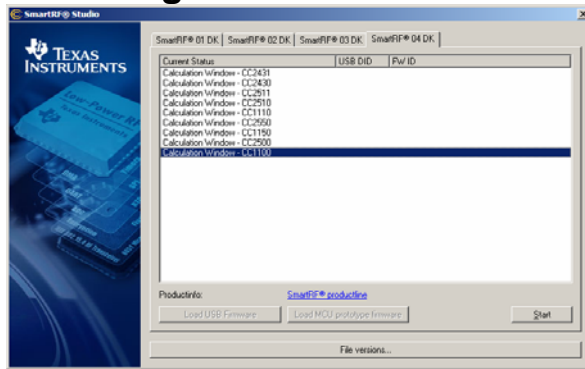
SmartRF[®] Studio

1. Download



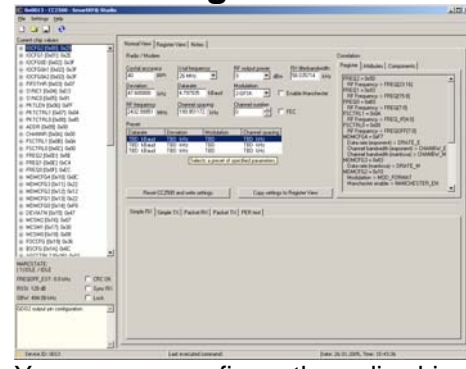
Before connecting the EB to your PC, download SmartRF[®] Studio from www.ti.com. To find it, type "SmartRF Studio" in the keyword search field and click Go. Install the program.

2. Plug in EB



After the install program finishes, connect the EB to the PC using the USB cable. Run SmartRF[®] Studio. Select the SmartRF[®]04 tab. Select the CC1100 board, and click the Run button.

3. Configure



You can now configure the radio chip, run tests or communicate with another EB.

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Mailing Address: Texas Instruments, Post Office Box 655303, Dallas, Texas 75265
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