CC2510 Mini Development Kit
Quick Start Guide

1 Kit Contents

2 x SmartRFCC2510 target boards
1 x CC Debugger
1 x 10- pin flat cable with 2x5 2.54 mm connector
1 x 10-pin flat cable with 2x5 1.27 mm connector
1 x Converter board 2.54 mm – 1.27 mm connector
1 x Mini USB cable
Batteries
CD with Evaluation Version of the IAR EW8051
Documentation

2 Running the Preprogrammed Link Test

2.1 Introduction

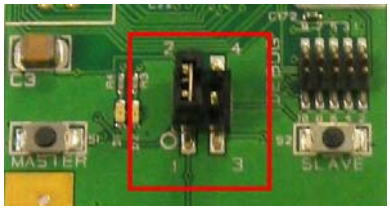
The CC2510 on the SmartRFCC2510 target board is preprogrammed with a link test which operates at 2.42575 GHz, and uses GFSK modulation and a bit rate of 2.4 kbps.

The link test runs a point-to-point communication between a Slave and a Master node based on the SimpliciTI 1.1.0 protocol.

First the Master and Slave nodes must be configured as described in the following sections. The two nodes will then establish a link. When this link is established, the Master starts to periodically send packets to the Slave. Between each transmission, the Master goes to receive mode and waits 250 ms for an acknowledgement packet from the Slave. The Slave node is in receive mode waiting for packets from the Master. For each received packet, the Slave automatically responds with an acknowledgement packet.

2.2 Powering the boards

Place 2 AAA batteries in the battery holder placed on the bottom side of each of the SmartRFCC2510 boards. Place the jumper on the power selection connector P1 between pin 1 and pin 2 on each board.

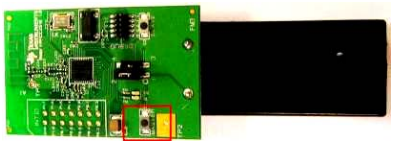


Applying power to the SmartRFCC2510 starts the preprogrammed link test on the CC2510 and the two LEDs on the board are on for 1 s.

2.3 Configure the Master Node

Press the MASTER button that is placed on the left hand side of the board.

When this button is pushed, the two LEDs on the board will blink rapidly. The Master now waits for a Slave node to establish a link.



Note that the board only responds to the first button push. To reconfigure the board, the board must be reset, see point 2.8 in this manual.

2.4 Configure the Slave Node

On the other board, press the SLAVE button that is placed on the right side of the board.

When the button has been pushed, the two LEDs on this board will blink very slowly until a link with a Master node is established. Note that establishing the link may finish in less than 1 s depending on the environment.

2.5 The LEDs on the Master Node

LEDs	State
Both LEDs blink rapidly	The Master is trying to establish a link with a Slave
Green LED on for 0.5 s	The Master has received an ACK to a packet sent, link ok
Red LED on for 0.5 s	The Master has not received an ACK to the last 3 packets sent
Red LED on for 3 s	If the Master does not receive ACKs from the SLAVE in ~70 s, the Master will stop to send packets to save power. Press S1/MASTER to resume the link test
Red LED on for 5 s	For test only: When the link is established, pressing the S2/SLAVE button turns the red LED on for 5 s

2.6 The LEDs on the Slave node

LEDs	State
Both LEDs blink slowly	The Slave is trying to establish a link with a Master
Red LED on continuously	The link between the Slave and Master is established and the Slave is in RX waiting for packets from the Master
Green LED on for 0.5 s while red LED on continuously	The Slave has received a packet from the Master and sent an ACK, link is good

2.7 Range testing

The preprogrammed link test is well suited for range testing. Place the Slave in an open field and bring the Master a known distance away. Use the LED signaling to decide the link quality.

Note that the environment, antenna, etc greatly affect the range, see DN018 www.ti.com/lit/swra169.

2.8 Resetting the board

The recommended reset sequence is:

- Remove jumper on P1 completely
- Push one of the buttons to discharge the large capacitor on the power line. If this capacitor is not discharged, the SmartRFCC2510 boards may continue to run the current application until the capacitor is discharged. This may take several seconds.
- Replace the jumper on P1 to power the board again

3 Using the CC Debugger with the Development Kit

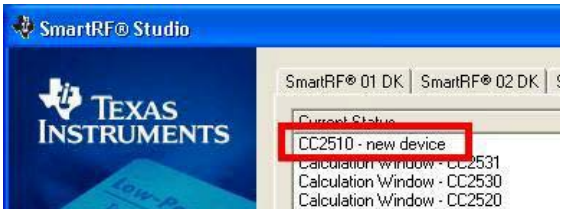
3.1 The CC Debugger

The CC Debugger connects to the PC via a mini USB and uses the DEBUG interface to communicate with the radio. The tool can be used for:

- Programming the flash and debugging an application running on the CC2510. The PC tools available for these purposes are the SmartRF Flash Programmer from Texas Instruments and IAR Embedded Workbench for 8051 from IAR Systems.
- Testing the radio performance of CC2510 using SmartRF Studio.

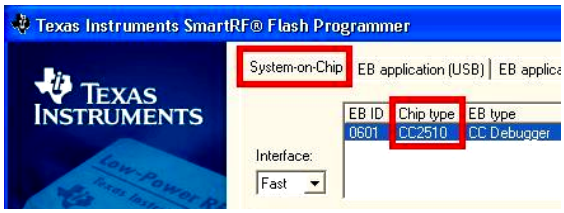
For more details, please refer to the CC Debugger User's Guide www.ti.com/lit/swru197 and the CC1110 & CC2510 Mini Development Kit User's Guide www.ti.com/lit/swru236.

3.2 SmartRF Studio



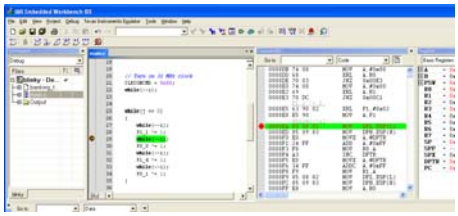
SmartRF Studio can be used for RF testing, evaluation of CC2510 and to find optimal register settings. It is available on http://www.ti.com/smartrfstudio.

3.3 Flash Programmer



The Flash Programmer application, available on the kit web page http://focus.ti.com/docs/toolsw/folders/print/flash-programmer.html can be used to program Intel HEX files, read the contents of CC2510 flash, and several other operations.

3.4 IAR Embedded Workbench



To develop software, program and debug the CC2510, the IAR Embedded Workbench for 8051 is recommended. An evaluation version of IAR EW8051 is included in the kit. This free evaluation version and also a free code size limited version, can also be downloaded from the web, see www.iar.com/ew8051.

A. Available Software and User's Guides

CC1110 & CC2510 Mini DK Software Example User's Guide and Source Code
Source and documentation for the link test for the SmartRFCC2510 target board www.ti.com/lit/zip/swrc133 and www.ti.com/lit/swru237

CC1110 & CC2510 Mini Development Kit User's Guide
More documentation and details on the use of the SmartRFCC2510 target board www.ti.com/lit/swru236

CC1110, CC2510 Basic Software Examples
Source code for other, simple examples for the CC2510
www.ti.com/lit/zip/swrc117

SimpliciTI™ Network Protocol
An RF protocol targeting simple, small RF networks
www.ti.com/simpliciti

B. More information

The Low Power RF Online Community www.ti.com/lprf-forum has forums, blogs and videos. Use the forums to find information, application and design notes, FAQs, or to discuss and get help with your design.

On the Texas Instruments' Low-Power RF web site www.ti.com/lprf, you will find all our latest products, news and events updates, and much more.

The TI LPRF eNewsletter keeps you up to date on e.g. new products, application notes, software and events. Sign up at www.ti.com/lprfnewsletter

We hope you will enjoy working with the C2510 Mini Development Kit and associated Low-Power RF products from Texas Instruments.

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