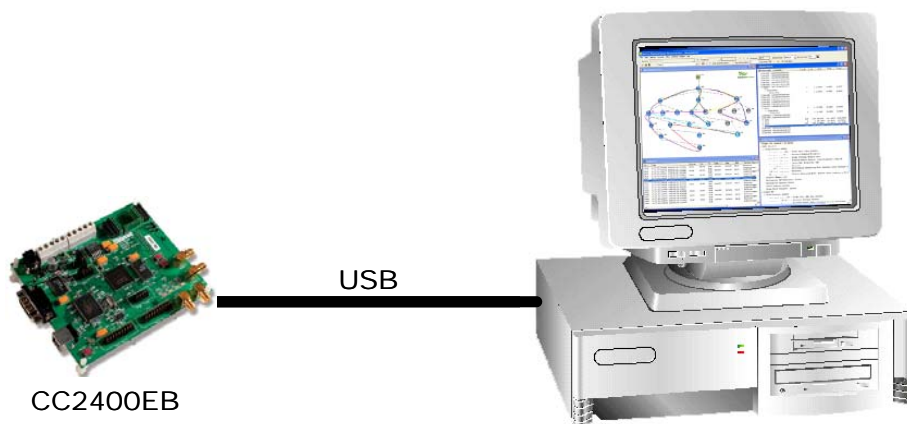


# Using the TI/Chipcon CC2400EB with the Daintree Networks Sensor Network Analyzer

Application Note AN001



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Sensor Network Analyzer Release 2.3 (2008-07-31)

## About the Sensor Network Analyzer

The Daintree Networks Sensor Network Analyzer (SNA) combines a powerful protocol analyzer with network visualization, measurements and diagnostics for IEEE 802.15.4™ and ZigBee™ applications. It provides automatic display of network formation, topology changes, and router and coordinator state changes allowing rapid detection of incorrect network behavior and identification of device or network failures.

The SNA works in conjunction with Daintree's 2400E Sensor Network Adapter to provide analysis for small and large networks. With multi-node capture, analysis of large networks across wide areas (such as multiple rooms within a facility) is possible.

The SNA application can also use the CC2400EB Evaluation Board as a packet sniffing node. Each CC2420DK development kit ships with two CC2400EB and two CC2420EM. Each CC2420 ZigBee Development Kit ships with one CC2400EB and one CC2420EM and multiple CC2420DB boards. Note: The CC2420DB developer boards cannot be used as packet sniffer nodes.

This application note describes how to use the SNA software with the TI/Chipcon CC2400EB board. You can find out more about the SNA software in general, refer to the following:

- **Quick Start Guide:** Included with the SNA application. From the SNA **Help** menu, select **Quick Start Guide**, or else from the Windows **Start** menu, select **Daintree Networks > Documentation > SNA Quick Start Guide**.
- **User Guide:** Included with the SNA application. From the SNA **Help** menu, select **User Guide**, or else from the Windows **Start** menu, select **Daintree Networks > Documentation > SNA User Guide**.
- **FAQs and other support resources:** These are available from the Daintree Networks web site at [www.daintree.net/support](http://www.daintree.net/support)

To find out more about the TI/Chipcon CC2400EB board in general, refer to the following (which is provided in the development kit):

- User Manual, SmartRF® CC2420DK: Packet Sniffer for IEEE 802.15.4 and ZigBee, Rev 1.2

## Getting started

In summary, getting started involves the following steps, each of which is described in detail in the following sections:

1. Install the Sensor Network Analyzer software
2. Install the CC2400EB software and connect the board to your PC via USB.
3. Start the SNA software, and then add the CC2400EB board as a capture device.
4. Select the CC2400EB as the current capture device.

Once connected and configured, you can use the CC2400EB as a packet sniffer/capture node with the Sensor Network Analyzer.

## 1. Installing the SNA software

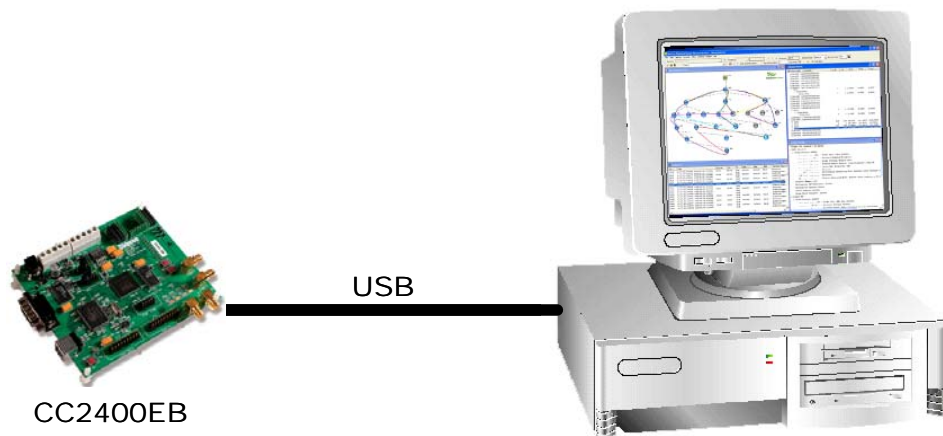
1. Go to [www.daintree.net/register](http://www.daintree.net/register) to register your software and download the latest release.
2. Enter your email address together with the 15-digit alpha-numeric registration code from the software CD case. After you click Next, an activation code will be emailed to the address you supply.
3. Follow the link provided to download the latest release of the SNA software, plus the *Sensor Network Analyzer Quick Start Guide*. Daintree **strongly** recommends that you download the latest version of the software to ensure you have the latest functionality and fixes.
4. Follow the instructions in the *Quick Start Guide* to install and activate the software.

## 2. Installing the CC2400EB software and connecting the board to your PC via USB

1. Install the TI Packet Sniffer software, which is provided with the development kit and can also be downloaded from the TI website at <http://focus.ti.com/docs/toolsw/folders/print/cc2420zdk.html#supportsoftware>.

To install the software, unpack the zip file, and then run the setup file.

2. Power on the CC2400EB board.
3. Use a USB cable to connect the USB port of the CC2400EB board to the USB connector of your PC. Note that the packet sniffer software is not supported over the serial port.

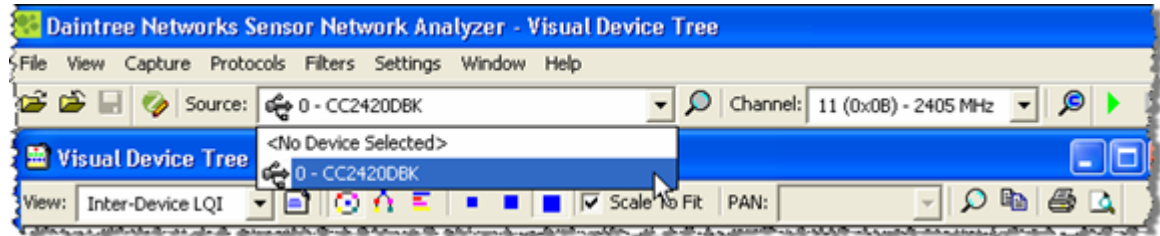



The first time you connect this board to your PC, a Found New Hardware wizard will open.

4. Select to **Install the software automatically**, and then click **Next**. The wizard will locate the install the required driver files.
5. When installation is complete, we recommend you use the TI Packet Sniffer software or SmartRF Studio software to verify that the CC2400EB board is correctly connected and configured. See the TI/Chipcon User Manual for instructions.

### 3. Selecting the CC2400EB board as the current capture device

1. In the SNA main window, select the CC2400EB board (shows up as CC2420DBK) from the **Source** list.



If the CC2400EB is not available from the list, click  to get the SNA software to search/scan for capture devices and refresh the Source list.


2. Select the **Channel** on which you want to capture traffic.

Click  to start the capture.

## Known limitations

The TI/Chipcon CC2400EB packet sniffer function is available only over the USB interface. It is not supported through the board's serial port.

If the CC2400EB board is in use by the SNA application, it cannot be used concurrently by any other application. Similarly, if the board is in use by one of the TI/Chipcon applications, it cannot be used by the SNA.

If the CC2400EB is not detected by the SNA application the first time it is connected to the PC via USB, try disconnecting and then reconnecting it. Then click  to refresh the list of available capture devices.

## Where to next?

We recommend that you start exploring the SNA menus to get an understanding of the full capabilities of this product.

Detailed descriptions of all options are available in the *Sensor Network Analyzer User Guide*, which you can open from the SNA **Help** menu and the Windows **Start** menu. You can also find FAQs and other supporting information on the Daintree web site at [www.daintree.net/support](http://www.daintree.net/support)

The Daintree web site includes other useful information, such as

- [www.daintree.net/solutions](http://www.daintree.net/solutions) for product information including data sheets and an animated tour
- [www.daintree.net/purchase](http://www.daintree.net/purchase) to purchase Daintree products online
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