

Using the Freescale Technology 1322x Developer Kit with the Daintree Networks Sensor Network Analyzer

Application Note AN032



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Sensor Network Analyzer Release 2.3 (2008-10-21)

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 software is also compatible with boards from the Freescale 1322x Developer Kit. The 1322x NCB and SRB boards from this kit can be used as packet sniffing capture devices. No additional hardware is required.

This application note describes how to use the SNA software with NCB and SRB boards from the Freescale 1322x Developer Kit. 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**.
- **Online Help:** Included with the SNA application. From the SNA **Help** menu, select **User Guide**, or else from the Windows **Start** menu, select **Daintree Networks > Documentation > Online Help**.
- **FAQs and other support resources:** These are available from the Daintree Networks web site at www.daintree.net/support

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 packet sniffer firmware on the Freescale board.
3. Start the SNA software, and then add the Freescale board as a capture device.
4. Select the Freescale 1322x board as the current capture device.

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

1. Installing the SNA software

1. Go to 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 sniffer firmware

The Freescale NCB and SRB boards require dedicated packet sniffer firmware to run with the Daintree Networks Sensor Network Analyzer.

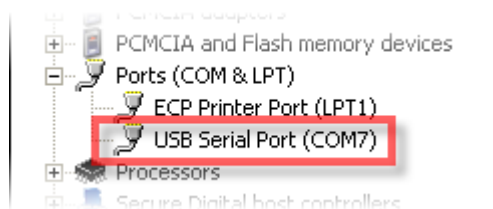
1. Attach the 1322x board to your computer and turn it on.
2. Install the sniffer firmware provided with the SNA: **C:\Program Files\Daintree Networks\Firmware\Freescale\MC1322x_sniffer_v00.bin**


Refer to the product documentation that came with the Freescale developer kit for instructions on how to install the firmware on your chosen board.

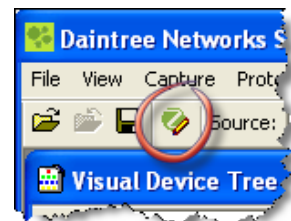
3. Adding the 1322x board as an SNA capture device

Before you can add the Freescale board as a capture device, you need to find which virtual COM port your computer assigned to it.

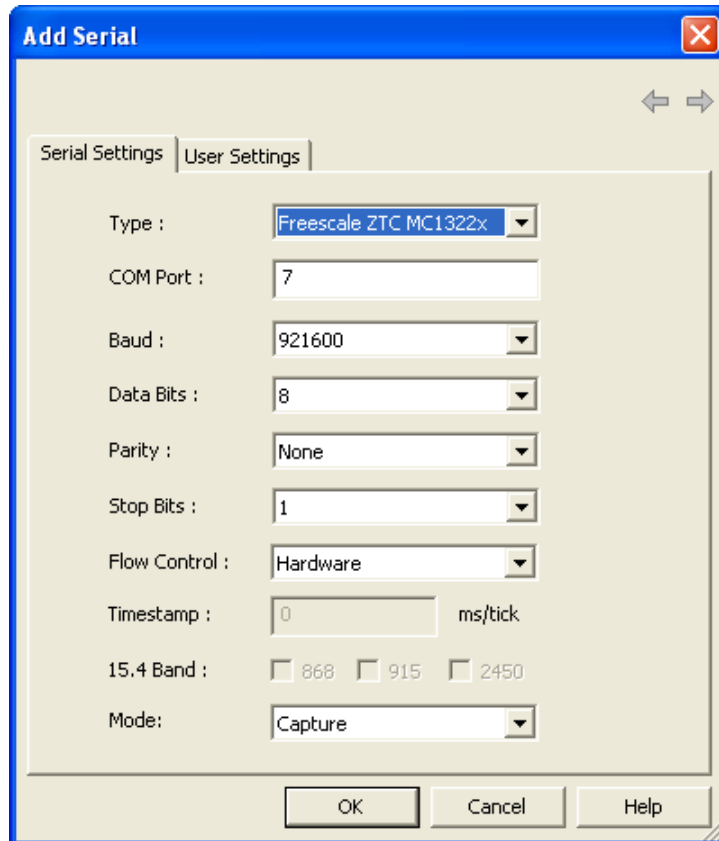
1. Connect the 1322x board to your computer via a serial cable and power it on.
2. Open Windows **Control Panel**, and then double-click the **System** icon.
3. On the System Properties dialog box, select the **Hardware** tab, and then click the **Device Manager** button.
4. Expand **Ports (COM & LPT)** to find the COM port for to your board.



5. If you have not already done so, start the SNA software.
6. From the SNA's **Settings** menu, select **Device Manager**, or click the Device Manager icon from the main SNA toolbar.
7. On the Device Manager **Summary** tab, click  and then select **Add Serial**.



8. On the Add Serial dialog box **Serial Settings** tab, enter the following values:
 - **Type:** Freescale ZTC MC1322x (should be selected by default)
 - **COM Port:** Enter the virtual COM port assigned in Windows Device Manager
 - Accept the default value for all other fields

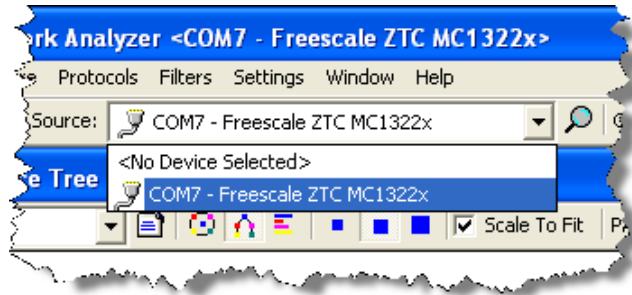



9. Click the **User Settings** tab, and then enter the following values:
 - **User Label:** 1322xNCB (or SRB)
 - **Image:** Add if required (this image will be used in the SNA's Visual Device windows)
10. Click **OK** to save the new definition.


When you return to the Device Manager Summary tab, you'll notice that the Freescale ZTC MC1322x board has been added to your list of devices.

4. Selecting the Freescale board as the current capture device

1. In the SNA main window, select the Freescale 1322x board from the **Source** list.



If the Freescale board 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.
3. Click  to start the capture.

Known limitations

As long as the entry in the Device Manager corresponds to a valid COM port, the Freescale device will be shown in the list of available devices. However, this does not reflect that the device is actively communicating with the SNA application. In order for packets to be captured, the COM port parameters must be configured correctly in the Device Manager; the sniffer firmware must be correctly downloaded and the board must be plugged in and powered on. To validate the connection to the device, select the device as the active capture source from the drop down list, select a channel, and start capture.

If the Freescale board is in use by the SNA application, it cannot be used concurrently by any other application.

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

The Daintree web site includes other useful information, such as

- www.daintree.net/solutions for product information including data sheets and an animated tour
- www.daintree.net/purchase to purchase Daintree products online
- www.daintree.net/contact to contact the Daintree sales or support teams