TI Eval Kit User Manual

DEPRECATED

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1 Evaluation Kit Overview

The TI ANT Evaluation kit offers a comprehensive set of hardware and software tools to help users evaluate, design and prototype using ANT technology based on the single chip solution from Texas Instruments.

The TI Eval Kit contains the following components:

Component	Units	Description
CC2571 Module	4	Modules based on the CC2571 including full RF and antenna design. Used for evaluating the features of the CC2571.
EEPROM Board	2	EEPROM board used as the external memory device for Integrated ANT-FS applications.
Battery Board	2	Battery board for CR2032 battery to power module and/or battery board.
USB Sticks	2	USB sticks allow EEPROM board and/or module to be interfaced to PC software applications.
CR2032 Battery	2	CR2032 coin cell battery to be used with battery board.

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2 Up and Running with ANTware

The procedure below describes how to quickly get ANT up and running with the TI ANT Evaluation Kit and the PC application tool ANTware using two C7 modules and two USB Interface boards. For details about more advanced features and functionality please review section 4.

Download and install the PC application ANTware II from www.thisisant.com. Please note that the .NET Framework 3.5 must be installed on your PC in order for this application to run.

Select two USB Interface boards from the Eval Kit and mount C7 modules onto them.

Download and install the USB drivers as per section 5. Please note that the driver may need to be installed for both of the USB sticks individually.
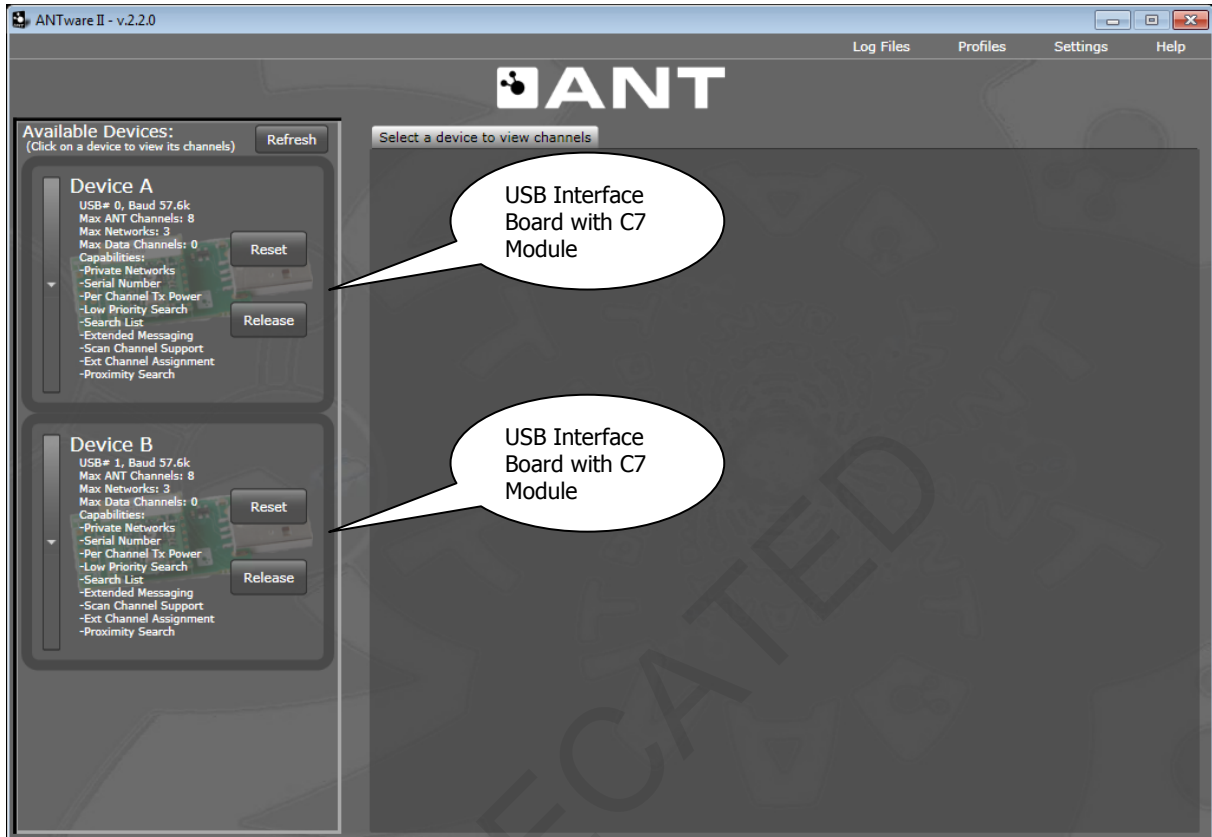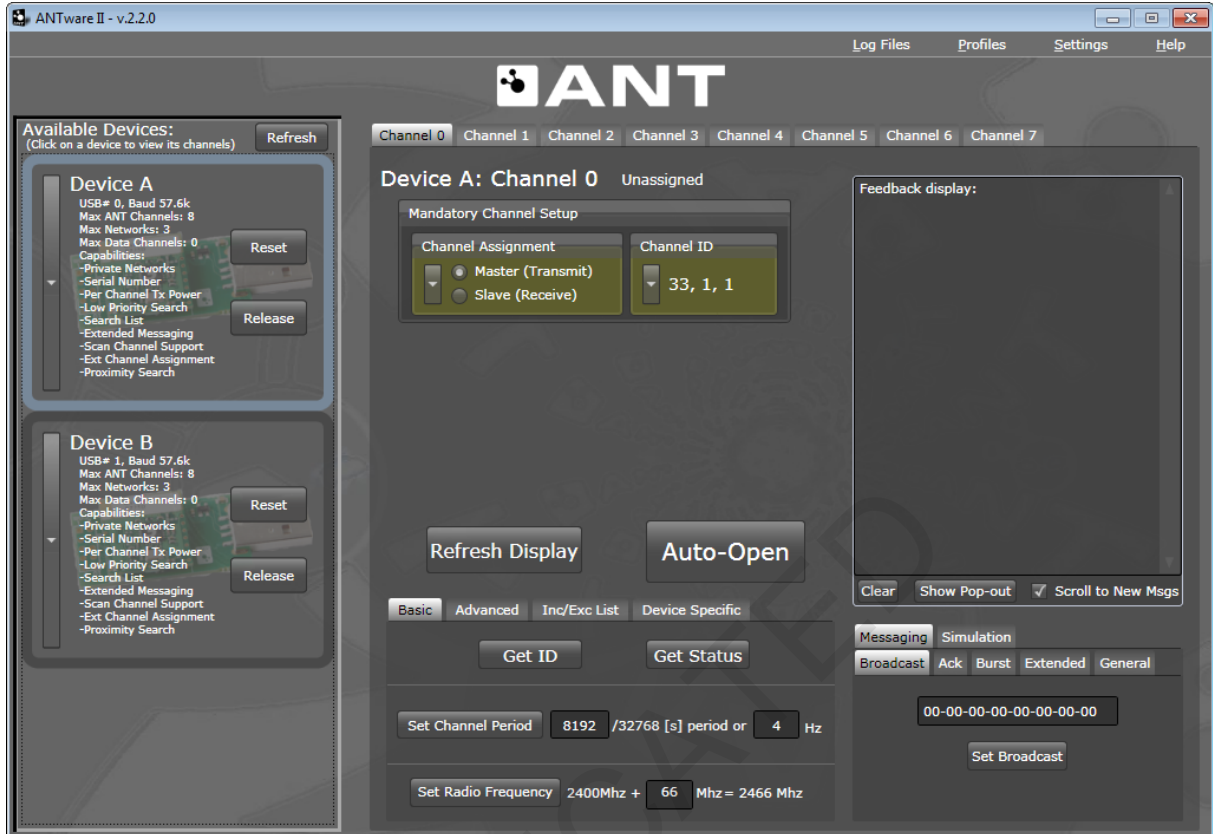
Figure 1. Enumerated USB Devices.

With both USB Interface Boards plugged in, start the ANTware II application. ANTware II will automatically enumerate the two USB sticks and show the capabilities of the C7 module.

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Figure 2. Connected to both devices, Device A selected

Connect to each device by clicking somewhere in the enumeration box. Please note that once connected to a device, connecting to another device will not disconnect it. After connection, a device can be selected by clicking on the enumeration box. The screen shot above shows both devices connected with Device A as the selected device.
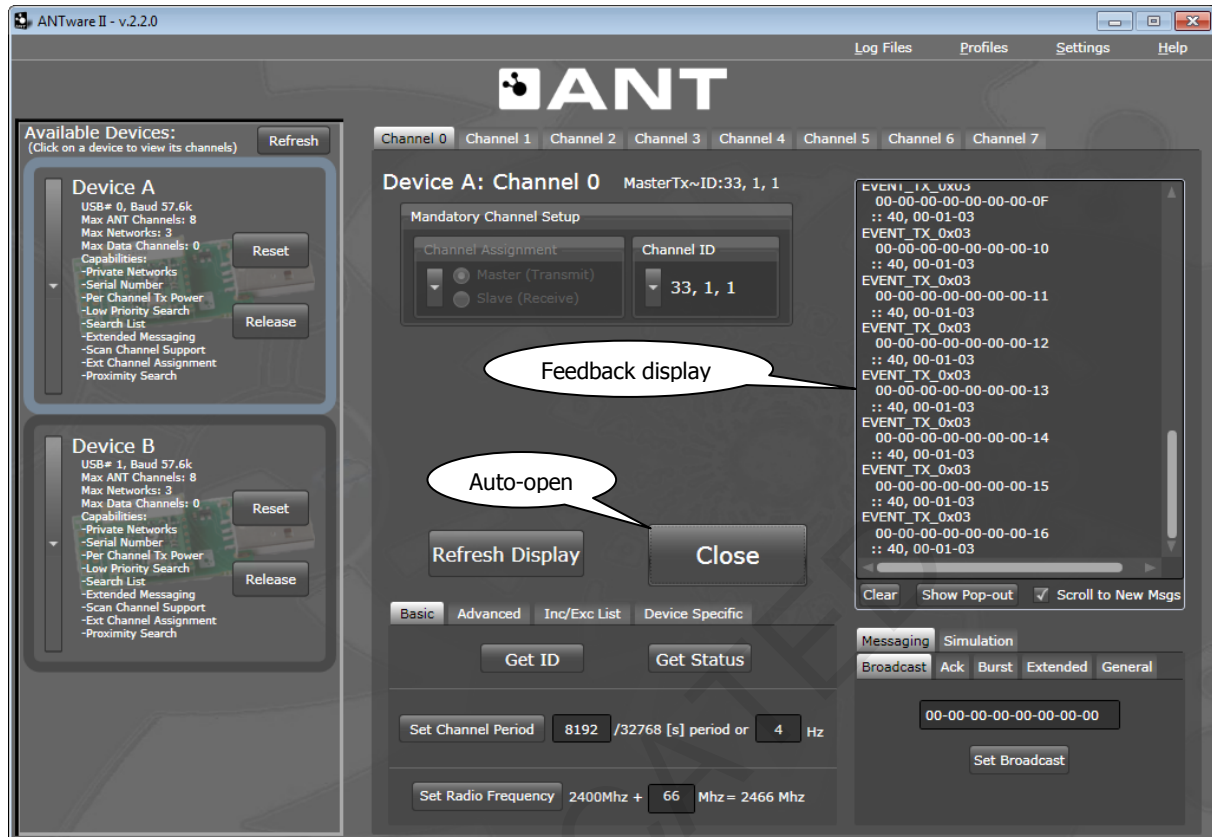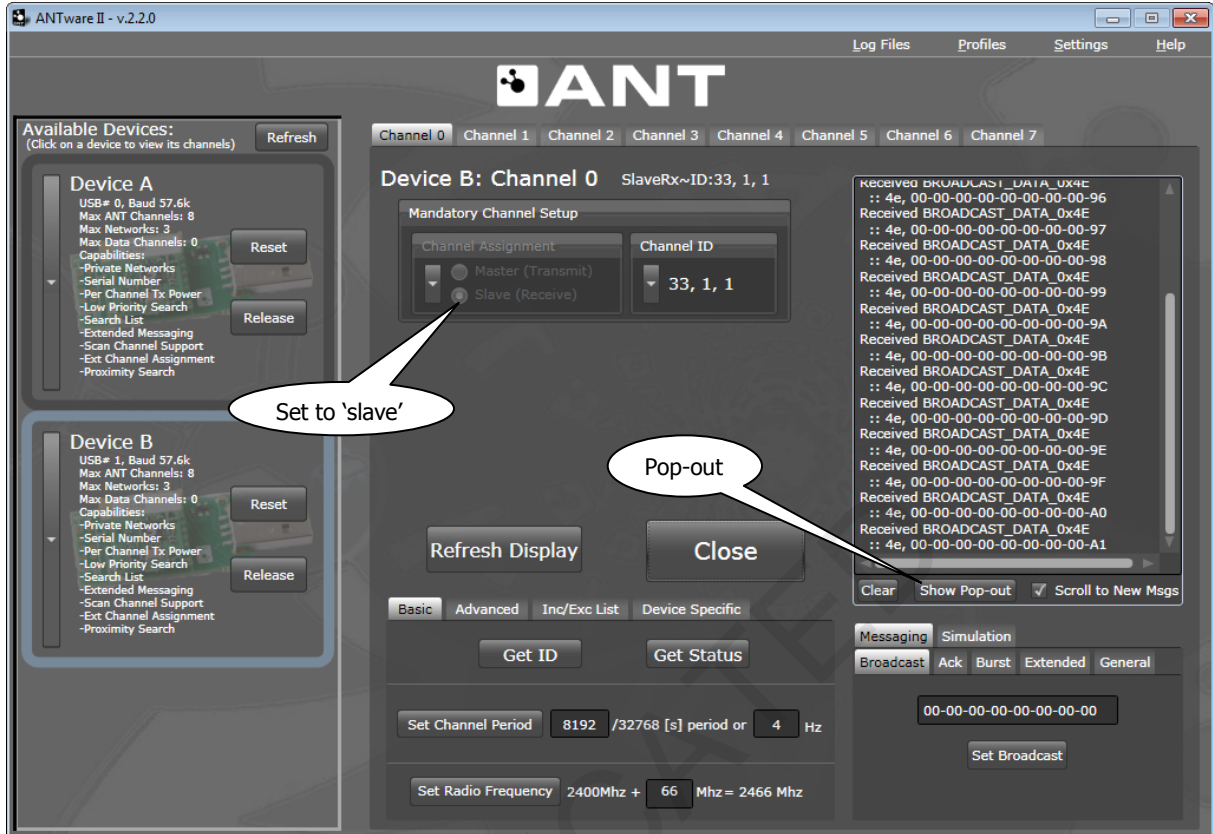
Figure 3. Opening the Master channel

Device A will use the default configuration as a Master transmitting at 2466MHz at 4H channel period. To begin transmitting data simply click Auto-Open. This button will send all channel configuration commands to the ANT chip. Once the channel is opened, the Master channel will continuously transmit 8 byte data packets at 4Hz. These will be displayed in the 'Feedback display' on the right side of the application.

Figure 4. Opening the Slave channel

Device B will be configured as the slave. After opening the channel it will search for and synchronize with the master (Device A). To configure Device B simply change the channel assignment from 'Master' to 'Slave'. Open the channel by clicking "Auto-Open". The slave may take up to 3 seconds to find the master. Once it does, the messages received from the master will be displayed in the 'Feedback display'.

The data received and transmitted by the master can be shown simultaneously by pressing the 'Show Pop-out' button.
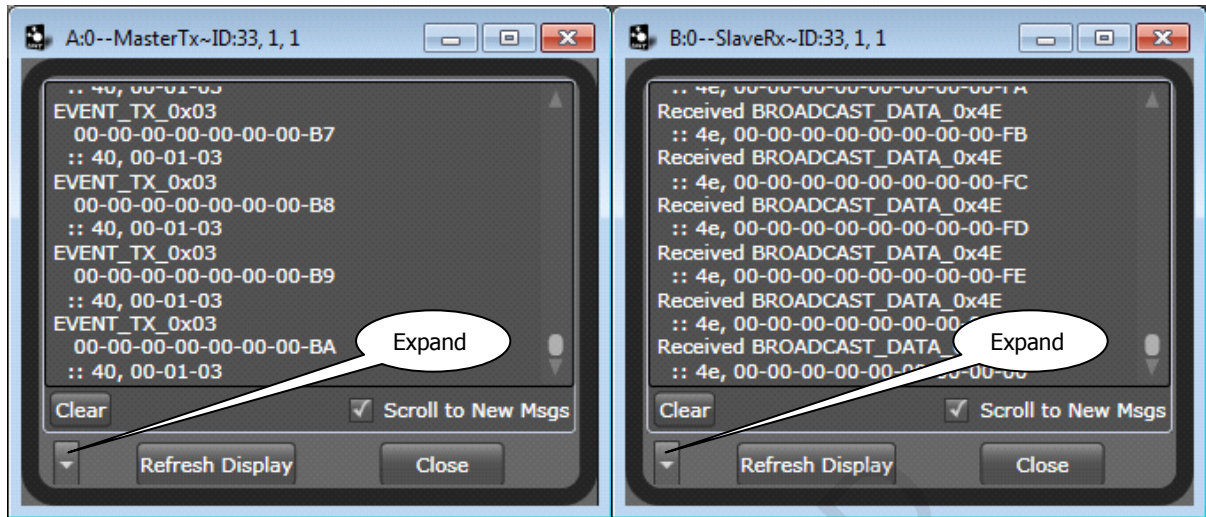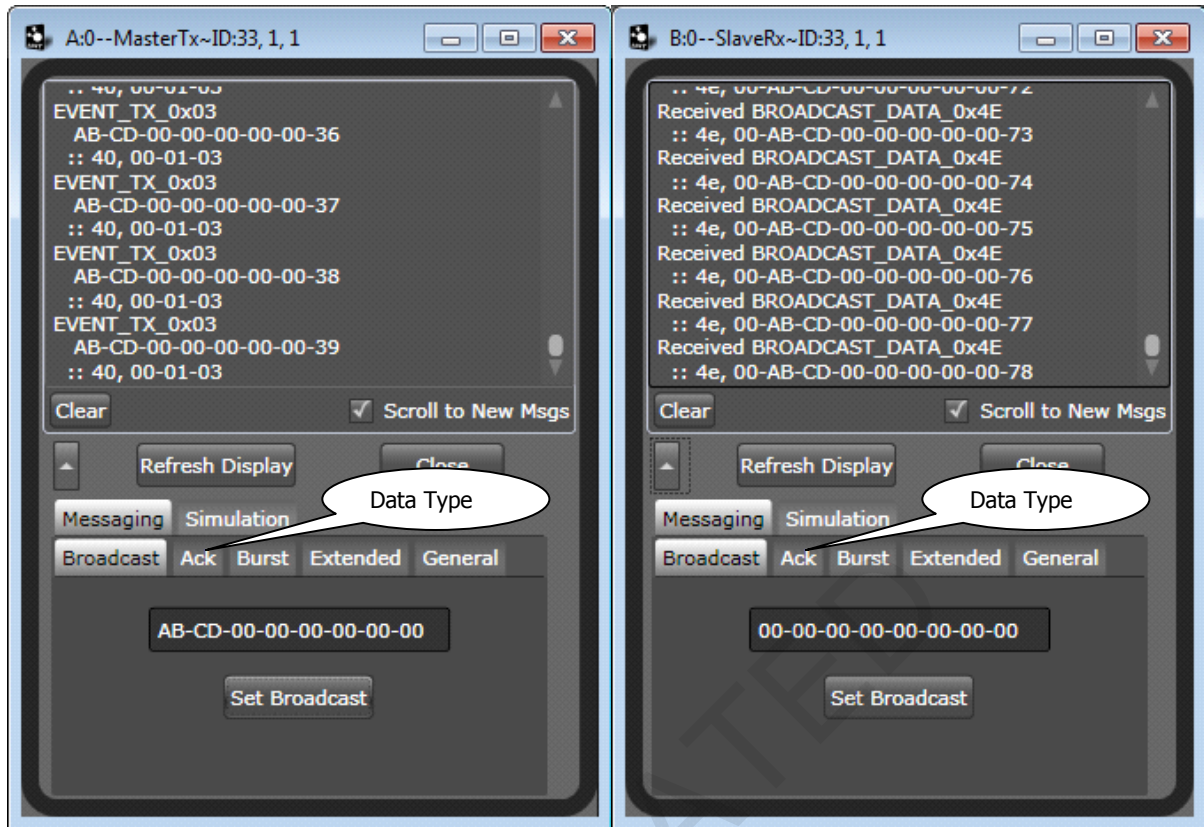
Figure 5. Pop-out Windows for Device A and B

Select Device A and press the "Show Pop-out' button. Next, select Device B and do the same. The two display windows may now be shown side by side. Expand both windows by clicking on the down arrow in the lower left hand corner of the window.

Figure 6. Sending data packets

Data packets with specific data may be sent from the master to the slave, or from the slave to the master by selecting the message type and clicking send

Please note that the last data packet set by the master will always be the data that is sent over the channel for subsequent message period epochs.

3   Hardware

The following sub-sections describe the dev kit component pieces in detail

3.1   ANTC782M5IB Module

Figure 7. C7 Modules

The 20 mm x 20 mm C7 module uses the latest ANT system on chip offering from Texas Instruments, the CC2571 chip. It is based on Texas Instruments new generation of ultra low power radio platform and incorporates many enhancements on the ANT core stack, including Integrated ANT-FS.

## 3.2   ANT Battery Board
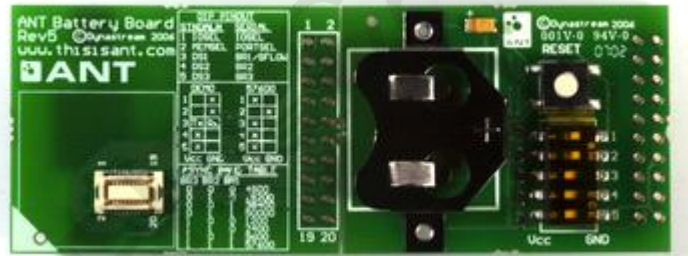
Figure 8. ANT Battery Board

The purpose of the battery board is to power the C7 module and allow the user to interface an external MCU to the ANT chip through the 20 pin header. The module can stack directly onto the battery board. Optionally, the EEPROM board may be mounted instead if using the ANT-FS feature of the CC2571. The pinout of the 20 pin connector on the battery board is listed below.

Table 1. Battery Board Pin-out

Pin #	Signal Names
1	Vcc
2	GND
3	RXD/SIN/AIO2
4	TXD/SOUT/IO6
5	IOSELECT/RTS/ $\overline{SEN}$
6	RST
7	TIE_GND
8	GND
9	$\overline{SUSPEND}$ / $\overline{SRDY}$ / AIO0
10	SLEEP/MRDY/AIO1
11	RXD/SIN/AIO2
12	AIO3
13	AIO4
14	IO5
15	TXD/SOUT/IO6
16	IO7
17	PORTSEL
18	BR1/SFLOW/DevSel1
19	BR2/SCLK/DevSel2
20	BR3/DevSel3

3.3 ANT EEPROM Board
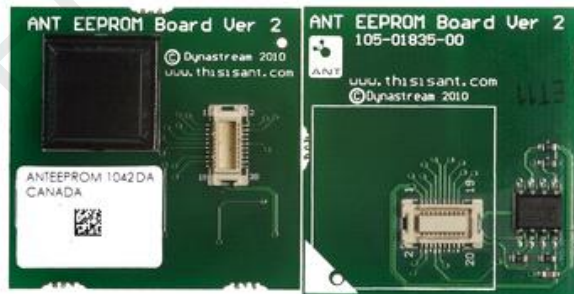
Figure 9. EEPROM

The purpose of the EEPROM board is to allow the interfacing of an external EEPROM directly to the CC2571 ANT chip on the C7 module, thereby allowing the user to test and configure the Integrated FS and ANT-FS capabilities of the CC2571. The EEPROM board can be mounted directly onto the battery board or onto the ANT-UIF USB stick. The C7 module mounts directly on top of the EEPROM board. The EEPROM chip used is the M95 series from ST with 1M bit of memory.

3.4   USB Interface Board

Figure 10. USB Interface Board

The purpose of the USB Interface board is to allow the user to connect modules directly to the PC, enabling the PC as the external MCU. This allows us of PC based programs such as ANTware or custom applications to directly drive the ANT hardware. The C7 module may be mounted directly on the USB Interface Board. Alternatively, the EEPROM board may be mounted on the USB board with the C7 mounted directly on top of the USB Interface board. The pinout of the 10-pin header on the USB Interface Board is described below.

Table 2. 10-Pin 0.1" Header

Pin #	Signal Names
1	Vcc
2	GND
3	RXD/SIN/AIO2
4	TXD/SOUT/IO6
5	IOSELECT/RTS/ $\overline{\text{SEN}}$
6	RST
7	TIE_GND
8	GND
9	$\overline{\text{SUSPEND}}$ / $\overline{\text{SRDY}}$ / AIO0
10	SLEEP/MRDY/AIO1

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3.5 CR2032 Batteries

Figure 11. CR2032 Batteries

Two CR2032 Batteries are included with the Evaluation kit. These fit directly into the battery board and can be used to power the module.

4 To Learn More

To learn more about ANT, the following documents are available on the www.thisisant.com website. To access some of these documents it may be necessary to register your kit and create an account.

Document	Description
CC257x Datasheet	The technical specification of the CC257x chip
ANT Message Protocol and Usage Document	Describes the ANT protocol and the software interface
Interfacing with ANT General Purpose Chipsets and Modules	Describes how to interface external microcontrollers to ANT
Integrated ANT-FS Interface Control Document	Describes the Integrated File System and ANT-FS feature of the CC257x and the software interface.
Integrated ANT-FS Reference Design User Manual	Describes how to use a PC based reference design for the Integrated File System and ANT-FS feature of the CC257x
ANT-FS Technical Specification	Describes the ANT-FS specification
ANT-FS User Manual	Describes how to use the ANT-FS PC Client and PC Host SW utilities.
ANTware User Manual	Describes how to use the advanced features of ANTware.
Embedded Reference Design User Manual	Describes embedded reference designs that show how to interface an external MCU to ANT and how to set up embedded sw applications to run ANT.

There are also many application and technical notes available that describe specific features and applications.

5   USB Driver Installation

Download the ANT USB Driver from www.thisisant.com and copy the entire contents onto your hard drive. Connect an ANT module to one of the ANT Development Kit's USB interface boards.
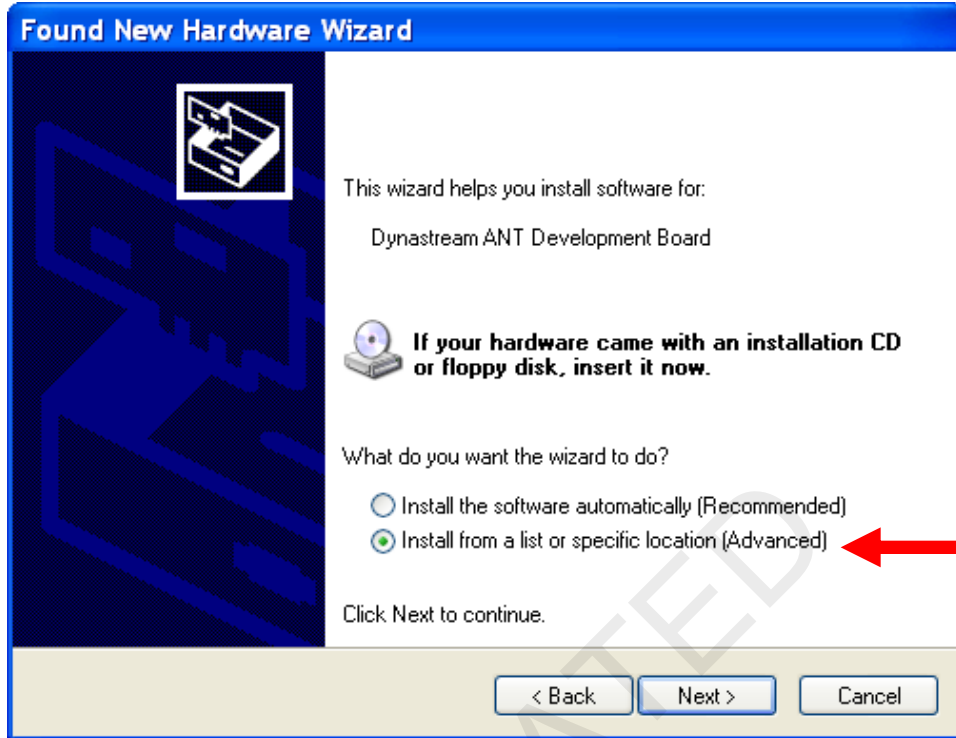

Plug the USB interface into one of your computer's USB ports. The Found New Hardware Wizard appears on your computer screen.
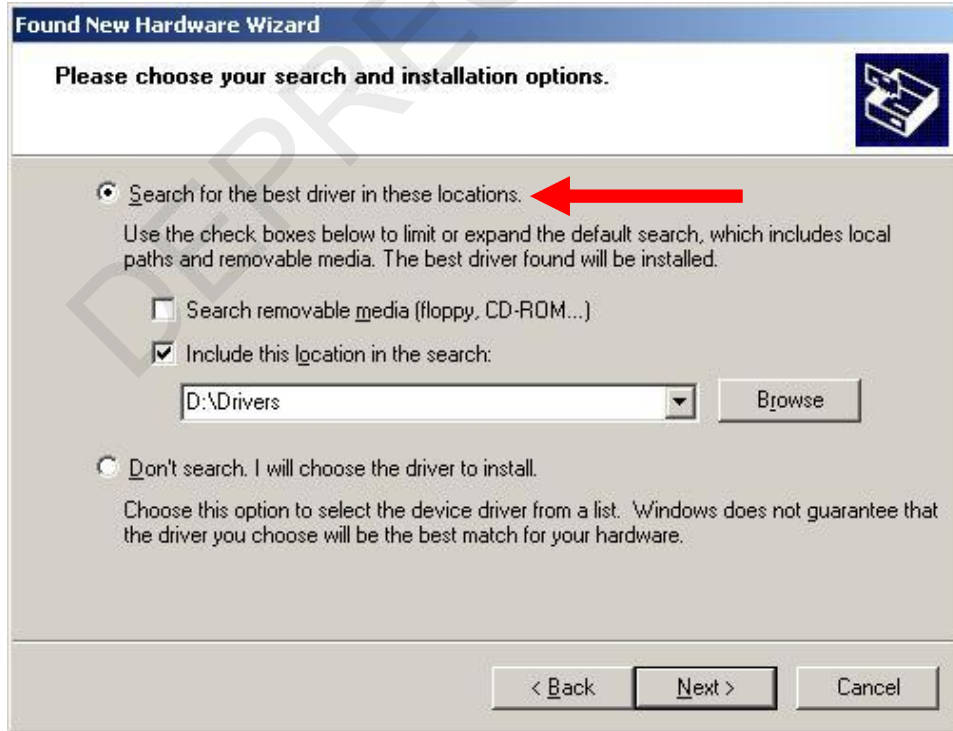

Select No, not this time and then click the Next> button to continue.

Select Install from a list or specific location (Advanced) and then click Next> to continue.

Select Search for the best driver in these locations. Browse to the Drivers folder in the directory on your hard drive (D:\Drivers in this case) and click Next>.

Click the Continue Anyway button.

Click the Finish button to complete installation of the ANT USB driver.

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