

CC2420 MSP430 ZigBee Development Kit Quick Start Guide

1. Introduction

This document provides a brief introduction on how to set up and run a ZigBee sample application on the MSP430 Experimenter Boards with CC2420EM Evaluation Modules. For more in depth information, please refer to the Z-stack User's Guide for ATC461x. This document is found in the installation folder after installing Z-stack.

All the necessary software can be downloaded from the product page on TI's website:
<http://focus.ti.com/docs/toolsw/folders/print/cc2420msp430zdk.html>

2. Prerequisites

Download Elprotronic Fet Lite programmer from Elprotronic's websites:

<http://www.elprotronic.com/files/FET-Pro430-Lite-Setup.zip>

Unzip the file and run Setup.exe to install.

Install IAR Embedded Workbench. A 30-days free evaluation version can be downloaded from IAR's website www.iar.com. This is needed to get the correct drivers for the USB FET programmer.

Note: IAR Embedded Workbench should be installed before connecting the FET programmer to make sure the appropriate drivers can be found when the hardware is detected. If the USB FET programmer is not recognized, please refer to the MSP430 FET User's Guide.

After installing the FET programmer, download SampleApp.a43 file from the CC2420MSP430ZDK product page on TI's website:

<http://focus.ti.com/docs/toolsw/folders/print/cc2420msp430zdk.html#supportsoftware>

3. Getting Started

1. Connect the FET programmer to the MSP Experimenter board, and connect an USB cable from the FET programmer to the PC. See Figure 1. The cable from the FET programmer must be connected to the JTAG connector closest to the CC2420EM. This connector is marked JTAG1. Power the board with 2 AAA batteries. Connect the jumper marked with *Batt* on the boards (This jumper is placed beside Button S2). Make sure that the jumper on the CC2420EM is connected to the center pin and the pin longest away from the antenna.

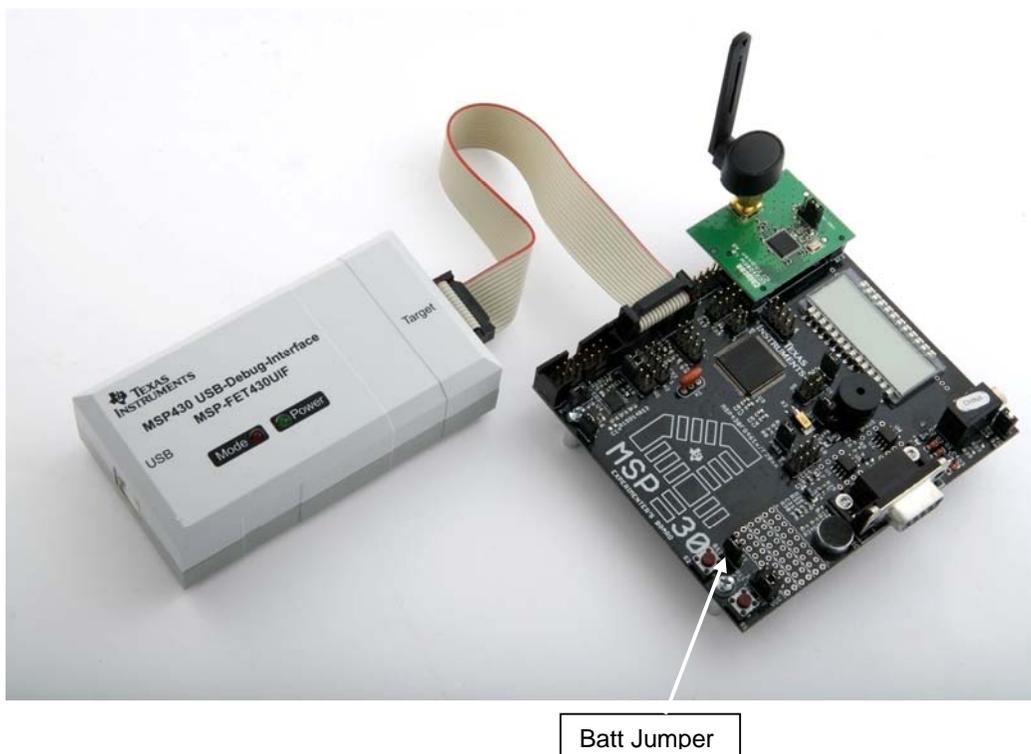


Figure 1 Experimenter board and CC2420EM with FET programmer

2. Start FET lite programmer tool. Press *Setup->Connection/Device Reset* and set COM port to USB. Then Click *OK*. Set *Microcontroller Type* to MSP430FG4618. Push the button *Open Code File* and navigate to the downloaded *SampleApp.a43* file (See Figure 2).

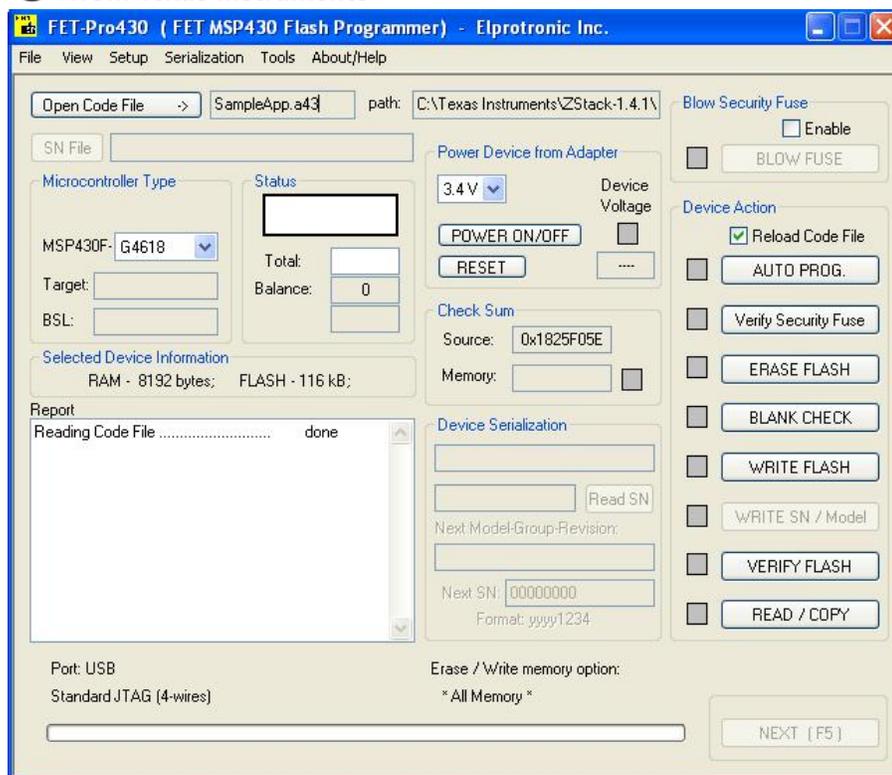


Figure 2 FET programmer

3. Press **AUTO PROG.** to program the device. The status window should indicate successful programming with status **Pass** as shown in Figure 3 after the programming has finished.

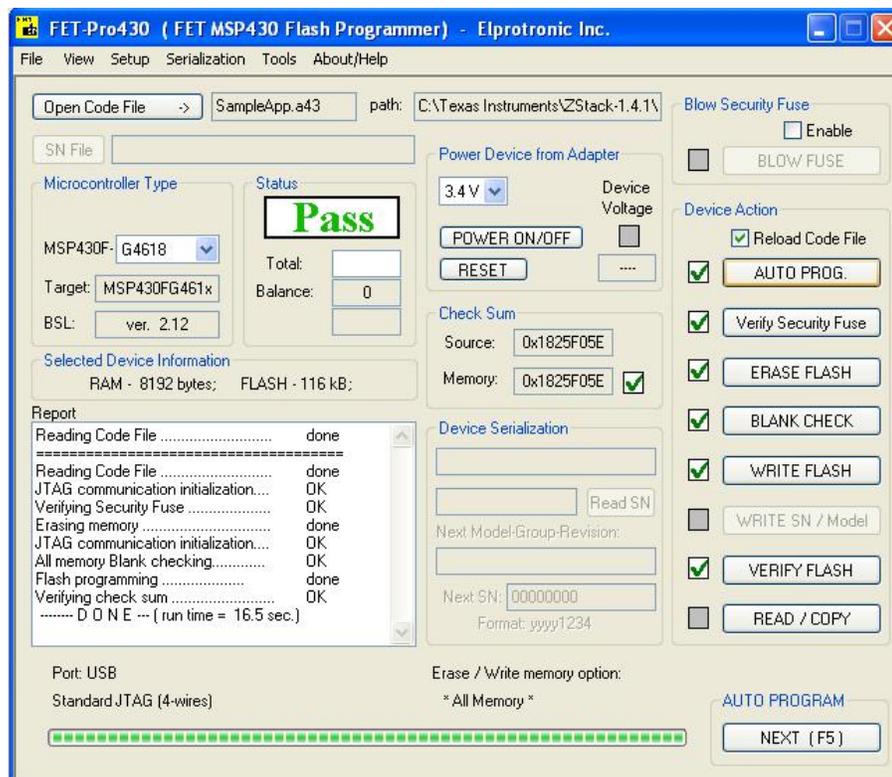


Figure 3 Successful programming

4. Repeat the process for the other MSP430 Experimenter Board. Power off the boards by removing the jumper marked *Batt*.

4. Running the demo

The demo application is very simple and is just meant to illustrate how to communicate between the boards. This application sends its messages either as broadcast or broadcast filtered group messages. Button S1 is used to send a buzz command to all devices in a group. Button S2 on the boards is used to add or remove (toggles) this device in and out of the group. This will enable and disable the buzzer when the sending device triggers a buzz.

Connect a jumper to pinrow H6 pins 7 & 8 on one of the boards. The board with this jumper connected will be the ZigBee Coordinator. Make sure that only one of the boards has a jumper in this position. Power up the Coordinator first by connecting the jumper marked *Batt*. When the coordinator has successfully started the network this is indicated by turning on LED2.

Next, Power up the other board. When this board has successfully joined the network LED2 is turned on.

Press S1 on the boards to make a sound in the other board's buzzer. Button S2 is used to add or remove the device from the group.

5. Software Development

IAR Embedded Workbench for MSP430 is needed in order to develop software for this kit. A 30-days free evaluation version can be downloaded from IAR's website www.iar.com, see also section 2. Note that when compiling the ZigBee stack either the Evaluation version or the full version of IAR Embedded Workbench is needed since the code size will be larger than what is supported by the Kickstart version.

Download and install the Z-stack software for the MSP430 Experimenter Board. A link to the download is found on the product page: www.ti.com/z-stack

For further information please read the User's Guide and other documentation that can be found in the installation folder after installing Z-stack.

IMPORTANT NOTICE

Texas Instruments Incorporated and its subsidiaries (TI) reserve the right to make corrections, modifications, enhancements, improvements, and other changes to its products and services at any time and to discontinue any product or service without notice. Customers should obtain the latest relevant information before placing orders and should verify that such information is current and complete. All products are sold subject to TI's terms and conditions of sale supplied at the time of order acknowledgment.

TI warrants performance of its hardware products to the specifications applicable at the time of sale in accordance with TI's standard warranty. Testing and other quality control techniques are used to the extent TI deems necessary to support this warranty. Except where mandated by government requirements, testing of all parameters of each product is not necessarily performed.

TI assumes no liability for applications assistance or customer product design. Customers are responsible for their products and applications using TI components. To minimize the risks associated with customer products and applications, customers should provide adequate design and operating safeguards.

TI does not warrant or represent that any license, either express or implied, is granted under any TI patent right, copyright, mask work right, or other TI intellectual property right relating to any combination, machine, or process in which TI products or services are used. Information published by TI regarding third-party products or services does not constitute a license from TI to use such products or services or a warranty or endorsement thereof. Use of such information may require a license from a third party under the patents or other intellectual property of the third party, or a license from TI under the patents or other intellectual property of TI.

Reproduction of information in TI data books or data sheets is permissible only if reproduction is without alteration and is accompanied by all associated warranties, conditions, limitations, and notices. Reproduction of this information with alteration is an unfair and deceptive business practice. TI is not responsible or liable for such altered documentation.

Resale of TI products or services with statements different from or beyond the parameters stated by TI for that product or service voids all express and any implied warranties for the associated TI product or service and is an unfair and deceptive business practice. TI is not responsible or liable for any such statements.

TI products are not authorized for use in safety-critical applications (such as life support) where a failure of the TI product would reasonably be expected to cause severe personal injury or death, unless officers of the parties have executed an agreement specifically governing such use. Buyers represent that they have all necessary expertise in the safety and regulatory ramifications of their applications, and acknowledge and agree that they are solely responsible for all legal, regulatory and safety-related requirements concerning their products and any use of TI products in such safety-critical applications, notwithstanding any applications-related information or support that may be provided by TI. Further, Buyers must fully indemnify TI and its representatives against any damages arising out of the use of TI products in such safety-critical applications.

TI products are neither designed nor intended for use in military/aerospace applications or environments unless the TI products are specifically designated by TI as military-grade or "enhanced plastic." Only products designated by TI as military-grade meet military specifications. Buyers acknowledge and agree that any such use of TI products which TI has not designated as military-grade is solely at the Buyer's risk, and that they are solely responsible for compliance with all legal and regulatory requirements in connection with such use.

TI products are neither designed nor intended for use in automotive applications or environments unless the specific TI products are designated by TI as compliant with ISO/TS 16949 requirements. Buyers acknowledge and agree that, if they use any non-designated products in automotive applications, TI will not be responsible for any failure to meet such requirements.

Following are URLs where you can obtain information on other Texas Instruments products and application solutions:

Products		Applications	
Amplifiers	amplifier.ti.com	Audio	www.ti.com/audio
Data Converters	dataconverter.ti.com	Automotive	www.ti.com/automotive
DSP	dsp.ti.com	Broadband	www.ti.com/broadband
Interface	interface.ti.com	Digital Control	www.ti.com/digitalcontrol
Logic	logic.ti.com	Military	www.ti.com/military
Power Mgmt	power.ti.com	Optical Networking	www.ti.com/opticalnetwork
Microcontrollers	microcontroller.ti.com	Security	www.ti.com/security
RFID	www.ti-rfid.com	Telephony	www.ti.com/telephony
Low Power Wireless	www.ti.com/lpw	Video & Imaging	www.ti.com/video
		Wireless	www.ti.com/wireless

Mailing Address: Texas Instruments, Post Office Box 655303, Dallas, Texas 75265
Copyright © 2007, Texas Instruments Incorporated