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# TIMAC CC2538 Sample Application - Quick Start Guide

## STEP 1 – Introduction

This Quick Start Guide provides instructions for software installation, configuration and illustrates the procedure to run the out-of-the-box TIMAC software on SmartRF06 + CC2538EM platforms and sniff over the air packets using Wireshark and TiWsPc with a CC2531 USB dongle. Following the instructions in this document should allow for a quick launch into application development using TIMAC software.

## STEP 2 – Installing the Required Software

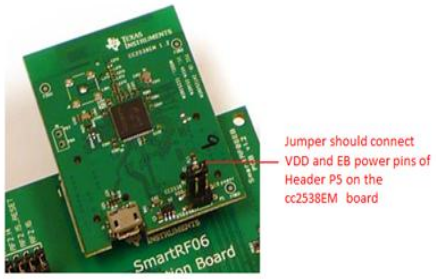
Install the following required software packages from the links provided. Note that Wireshark and TiWsPc are required to sniff only over the air packets. Developers can use other packet sniffers as well.

- TIMAC installer - http://www.ti.com/tool/timac
- TiWsPc - installed with TIMAC, no need to install it saperately
- Wireshark - from http://www.gridmerge.com/download.html
- IAR Embedded Workbench for ARM (version specified in the TIMAC Readme) - www.iar.com/download

## STEP 3 – Required Hardware

You will need the following hardware to run the TIMAC Sample Application on SmartRF06+CC2538 and CC2531 USB dongle to sniff over the air packets

- 2 SmartRF06 http://www.ti.com/tool/smartrf06ebk
- 2 CC2538EM http://www.ti.com/tool/cc2538emk
- 1 CC2531 USB Dongle http://www.ti.com/tool/cc2531emk
- 2 USB to Micro-USB cables




## STEP 4 – Download the Application

- Note that the Jumper on CC2538 should be connected between VDD and EB power pin, as shown in the figure above
- Follow the steps in section 5.1 of MAC User's Guide included with the install of TIMAC to download the application on two CC2538 boards mounted on the SmartRF06 boards
- After programming, you should see that the LED 4 on two SmartRF06 boards starts blinking several times per second to indicate that it is waiting to start or join a network

## STEP 5 – Start the Packet Sniffer

- Plug the CC2531EM, programmed with TI Packet Sniffer firmware, into the PC (see section 4.4 of MAC User's Guide)
- Configure the TiWsPc and Wireshark as explained in section 4.4 of the MAC User's Guide
- Now, Wireshark will display the over the air packets once the network is started

## STEP 6 – Start the Network

- Press the UP button, as explained in section 5.2 of the MAC User's Guide, to start the network. LED4 should stop blinking and stay lit to indicate that a network has been created
- If LED4 begins blinking, the device found an existing network to join and did not become a Coordinator. Press EM RESET again to reset the board and retry. If the problem persists, reprogram the boards to use a different radio channel. See section 6 of the MAC User's Guide on how to change the channel

## STEP 7 – Associate Device to the Network

- Press the UP button on the end-device - it will join the network started in the step 6 above and LED 4 will blink once per second indicating the device is connected to the network

## STEP 8 – Sending the Application Data

- After the network is created and a device has joined the network, you can begin transmitting data by pressing the RIGHT button on either the coordinator or the end device. LED1 on the transmitter toggles quickly, indicating that data is being transmitted. LED3 on the receiver toggles a little slower, indicating that data is being received
- Pressing the RIGHT button on a device while it is transmitting data stops the transmission
- You can see the messages being sent over the air on the Wireshark window on the PC

## STEP 9 – Additional Resources

For additional information developers can refer to the MAC User's Guide and other documents included with The TIMAC install.
Useful Links:

- Find answers to your questions and common issues, post your questions, and answer questions from other developers at the TI e2e forums: http://e2e.ti.com/support/low_power_rf/default.aspx.
- CC-Debugger - http://www.ti.com/tool/cc-debugger
- SmartRF Studio - http://www.ti.com/tool/smartrftm-studio
- Smart-RF Flash Programmer http://www.ti.com/tool/flash-programmer
- IAR Embedded Workbench www.iar.com/download