



EK-TM4C123GXL-BOOST-CC3000 Firmware Development Package

USER'S GUIDE

Copyright

Copyright © 2012-2015 Texas Instruments Incorporated. All rights reserved. Tiva and TivaWare are trademarks of Texas Instruments Instruments. ARM and Thumb are registered trademarks and Cortex is a trademark of ARM Limited. Other names and brands may be claimed as the property of others.

 Please be aware that an important notice concerning availability, standard warranty, and use in critical applications of Texas Instruments semiconductor products and disclaimers thereto appears at the end of this document.

Texas Instruments
108 Wild Basin, Suite 350
Austin, TX 78746
www.ti.com/tiva-c



Revision Information

This is version 2.1.1.71 of this document, last updated on May 07, 2015.

Table of Contents

Copyright	2
Revision Information	2
1 Introduction	5
2 Example Applications	7
2.1 CC3000 Basic WiFi Example (cc3000_basic_wifi_application)	7
2.2 CC3000 Firmware Patch Programmer (cc3000_patch_programmer)	8
2.3 CC3000 WiFi Access Point SSID Scanning Example (cc3000_ssid_scan)	9
IMPORTANT NOTICE	10

1 Introduction

The Texas Instruments® Tiva™ C Series EK-TM4C123GXL-BOOST-CC3000 evaluation board is a low cost platform that can be used for software development and to prototype a hardware design. It contains a Tiva C Series ARM® Cortex™-M4F-based microcontroller, a USB device port, two push buttons, and a RGB LED that can be used to exercise the peripherals on the microcontroller. Additionally, most of the microcontroller's pins are brought to headers, allowing for easy connection to other hardware for the purposes of prototyping. The outer rows of header pins are compatible with the MSP430™ Launchpad.

This document describes the example applications that are provided for this evaluation board when paired with the BOOST-CC3000 BoosterPack.

2 Example Applications

The example applications show how to use features of the Cortex-M4F microprocessor, the peripherals on the Tiva C Series microcontroller, and the drivers provided by the peripheral driver library. These applications are intended for demonstration and as a starting point for new applications.

There is an IAR workspace file (`ek-tm4c123gx1-boost-cc3000.eww`) that contains the peripheral driver library project, USB library project, and all of the board example projects, in a single, easy to use workspace for use with Embedded Workbench version 6.

There is a Keil multi-project workspace file (`ek-tm4c123gx1-boost-cc3000.mpw`) that contains the peripheral driver library project, USB library project, and all of the board example projects, in a single, easy to use workspace for use with uVision.

All of these examples reside in the `examples/boards/ek-tm4c123gx1-boost-cc3000` sub-directory of the firmware development package source distribution.

2.1 CC3000 Basic WiFi Example (`cc3000_basic_wifi_application`)

This is a basic WiFi application for the CC3000 BoosterPack. This application is a command line wrapper for various functions that the CC3000 can provide. Please refer to the CC3000 wiki at <http://processors.wiki.ti.com/index.php/CC3000> for more information on the commands provided.

To see available commands type “help” at the serial terminal prompt. The terminal is connected in 8-N-1 mode at 115200 baud.

To use this example you must first connect to an existing unencrypted wireless network. This can be done by using the “smartconfig” command with the associated smartphone application. Alternatively, the connection can be made manually by using the ‘connect’ command. Once connected you can do any of the following.

Configure an IP address:

1. To use DHCP to allocate a dynamic IP address “ipconfig” or “ipconfig 0 0 0” or,
2. To allocate a static IP address use “ipconfig a.b.c.d” where “a.b.c.d” is the required, dotted-decimal format address.

Send and receive UDP data:

1. Open a UDP socket “socketopen UDP”.
2. Bind the socket to a local port “bind 8080”.
3. Send or receive data “senddata 192.168.1.101 8080 helloworld” or “receivedata”. In the send-data case, the provided parameters identify the IP address of the remote host and the remote port number to which the data is to be sent.

Send and receive TCP data:

1. Open a TCP socket “socketopen TCP”.
2. Bind the socket to a local port “bind 8080”.

3. Send a request to the remote server "senddata 192.168.1.101 8080 helloworld". On the first "senddata" after opening the socket, the socket is connected to the specified remote host and port. On further "senddata" requests, the remote address and port are ignored and the existing connection is used.
4. Receive data from the remote server "receivedata".

Note that, in the current implementation, the application only supports acting as a TCP client. The CC3000 also supports incoming connections as required to operate as a TCP server but this example does not yet include support for this feature.

Send mDNS advertisement:

1. "mdnsadvertise cc3000"

Close the open socket:

1. "socketclose"

Disconnect from network:

1. "disconnect"

Reset the CC3000:

1. "resetcc3000"

Delete connection policy:

This deletes the connection policy from CC3000 memory so that the device won't auto connect whenever it is reset in future.

1. "deletepolicy"

2.2 CC3000 Firmware Patch Programmer (cc3000_patch_programmer)

This is the Patch Programmer tool for the CC3000 BoosterPack running on an EK-TM4C123GXL LaunchPad. Run the application to download new firmware and driver patches to the CC3000 processor. When run the LED on the board will glow red for up to 10 seconds, then the led will turn blue when the firmware update is complete. Status is also output via UART0 which is available via the virtual COM port provided by the ICDI debug interface.

Two patches are downloaded using this tool with the patch data is linked directly into the application binary. The driver patch can be found in an array named "wlan_drv_patch" and the firmware patch can be found in "fw_patch". When new patches are available, these arrays must be replaced with versions containing those new patches and then the application rebuilt and run to apply the patches to the CC3000 hardware.

To view output from the application, set your host system's serial terminal to use 115200bps, 8-N-1.

For information on the CC3000 software stack and API, please consult the wiki at <http://processors.wiki.ti.com/index.php/CC3000>.

2.3 CC3000 WiFi Access Point SSID Scanning Example (cc3000_ssid_scan)

This example requires a CC3000 WiFi BoosterPack attached to the EK-TM4C123GXL LaunchPad. After booting and initializing the CC3000, the application initiates a WiFi scan for access points. When the scan completes, the SSID, BSSID and security protocol supported by each detected access point are output on the UART0 connection available over the virtual COM port connection provided by the board's ICDI debug interface.

To view output from the application, set your host system's serial terminal to use 115200bps, 8-N-1.

For information on the CC3000 software stack and API, please consult the wiki at <http://processors.wiki.ti.com/index.php/CC3000>.

IMPORTANT NOTICE

Texas Instruments Incorporated and its subsidiaries (TI) reserve the right to make corrections, enhancements, improvements and other changes to its semiconductor products and services per JESD46, latest issue, and to discontinue any product or service per JESD48, latest issue. Buyers should obtain the latest relevant information before placing orders and should verify that such information is current and complete. All semiconductor products (also referred to herein as "components") are sold subject to TI's terms and conditions of sale supplied at the time of order acknowledgment.

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

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

TI does not warrant or represent that any license, either express or implied, is granted under any patent right, copyright, mask work right, or other intellectual property right relating to any combination, machine, or process in which TI components or services are used. Information published by TI regarding third-party products or services does not constitute a license 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 significant portions of TI 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. TI is not responsible or liable for such altered documentation. Information of third parties may be subject to additional restrictions.

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

Buyer acknowledges and agrees that it is solely responsible for compliance with all legal, regulatory and safety-related requirements concerning its products, and any use of TI components in its applications, notwithstanding any applications-related information or support that may be provided by TI. Buyer represents and agrees that it has all the necessary expertise to create and implement safeguards which anticipate dangerous consequences of failures, monitor failures and their consequences, lessen the likelihood of failures that might cause harm and take appropriate remedial actions. Buyer will fully indemnify TI and its representatives against any damages arising out of the use of any TI components in safety-critical applications.

In some cases, TI components may be promoted specifically to facilitate safety-related applications. With such components, TI's goal is to help enable customers to design and create their own end-product solutions that meet applicable functional safety standards and requirements. Nonetheless, such components are subject to these terms.

No TI components are authorized for use in FDA Class III (or similar life-critical medical equipment) unless authorized officers of the parties have executed a special agreement specifically governing such use.

Only those TI components which TI has specifically designated as military grade or "enhanced plastic" are designed and intended for use in military/aerospace applications or environments. Buyer acknowledges and agrees that any military or aerospace use of TI components which have **not** been so designated is solely at the Buyer's risk, and that Buyer is solely responsible for compliance with all legal and regulatory requirements in connection with such use.

TI has specifically designated certain components as meeting ISO/TS16949 requirements, mainly for automotive use. In any case of use of non-designated products, TI will not be responsible for any failure to meet ISO/TS16949.

"So long and thanks for all the fish." - Douglas Adams

Products

Audio	www.ti.com/audio
Amplifiers	amplifier.ti.com
Data Converters	dataconverter.ti.com
DLP® Products	www.dlp.com
DSP	dsp.ti.com
Clocks and Timers	www.ti.com/clocks
Interface	interface.ti.com
Logic	logic.ti.com
Power Mgmt	power.ti.com
Microcontrollers	microcontroller.ti.com
RFID	www.ti-rfid.com
OMAP Applications Processors	www.ti.com/omap
Wireless Connectivity	www.ti.com/wirelessconnectivity

Applications

Automotive and Transportation	www.ti.com/automotive
Communications and Telecom	www.ti.com/communications
Computers and Peripherals	www.ti.com/computers
Consumer Electronics	www.ti.com/consumer-apps
Energy and Lighting	www.ti.com/energy
Industrial	www.ti.com/industrial
Medical	www.ti.com/medical
Security	www.ti.com/security
Space, Avionics and Defense	www.ti.com/space-avionics-defense
Video and Imaging	www.ti.com/video

TI E2E Community

e2e.ti.com

Mailing Address: Texas Instruments, Post Office Box 655303, Dallas, Texas 75265
Copyright © 2012-2015, Texas Instruments Incorporated