Dual-Mode Bluetooth® CC2564 Evaluation Board

This quick start guide offers an overview of the CC256XQFNEM evaluation board, including the required hardware and software tools, and describes the basic settings. For more information on using the CC256XQFNEM board, see the *Dual-Mode Bluetooth CC2564 Evaluation Board User Guide* (SWRU450).

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1 Introduction

The TI CC256XQFNEM board is used to evaluate the dual-mode *Bluetooth* CC2564 controller, which supports classic *Bluetooth* and *Bluetooth* low energy (LE) wireless technology. The CC256XQFNEM board works with the following hardware development kits (HDKs):

- MSP-EXP430F5529
- MSP-EXP430F5438
- DK-TM4C123G
- DK-TM4C129X

The CC256x *Bluetooth* device is a complete basic rate (BR), enhanced data rate (EDR), and LE host controller interface (HCI) solution that reduces design effort and enables fast time to market. Based on TI's seventh-generation core, the module is a product-proven solution supporting *Bluetooth* 4.1 dual-mode protocols.

Figure 1 shows the CC256XQFNEM board.

Figure 1. CC256XQFNEM Board

2 CC256XQFNEM Kit Contents

The CC256XQFNEM kit contains the following contents:

- One CC256XQFNEM board with the TI dual-mode *Bluetooth* CC2564 controller
- One block jumper for the MSP-EXP430F5438 board
- Four jumpers for the MSP-EXP430F5529 board

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3 CC256XQFNEM Requirements

For a complete evaluation, the CC256XQFNEM board requires hardware and software tools selected from the following list:

- Hardware requirements: MSP430™ experimenter boards (sold separately) or TM4C development kits (sold separately):
  - MSP430 experimenter board options
    - MSP-EXP430F5529
    - MSP-EXP430F5438
  - TM4C development kit options
    - DK-TM4C123G
    - DK-TM4C129X
- Software requirements:
  - TI dual-mode *Bluetooth* stack:
    - On MSP430 MCUs: CC256XMSPBTBLESW
    - On TM4C MCUs: CC256XM4BTBLESW
  - Other MCUs:
    - On STM32F4 MCUs: CC256XSTBTBLESW

Figure 2 shows example hardware setups for the CC256XQFNEM board using the MSP-EXP430F5529 and MSP-EXP430F5438 experimenter boards.

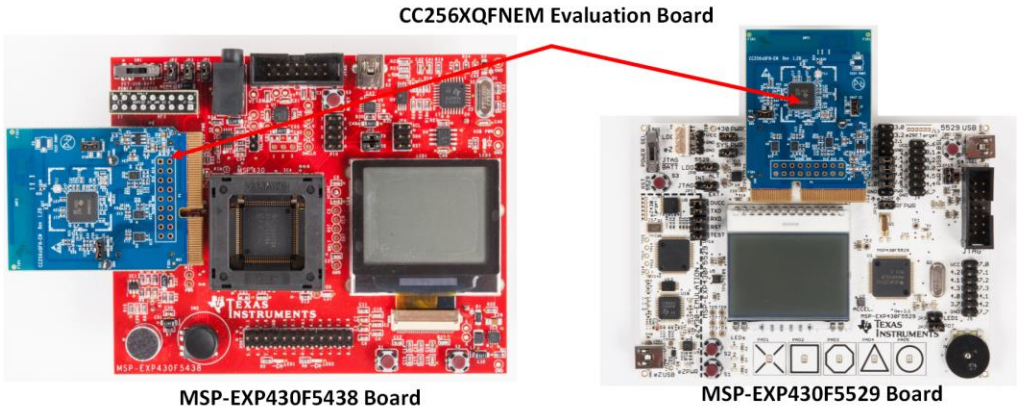

Figure 2. Hardware Setup Examples

4 CC256XQFNEM Board Overview

The CC256XQFNEM board supports the following connectors:

- EM (default): I/Os are at 3.3 V.
- COM: I/Os are at 1.8 V.

Figure 3 shows the connectors on the front side of the CC256XQFNEM board.

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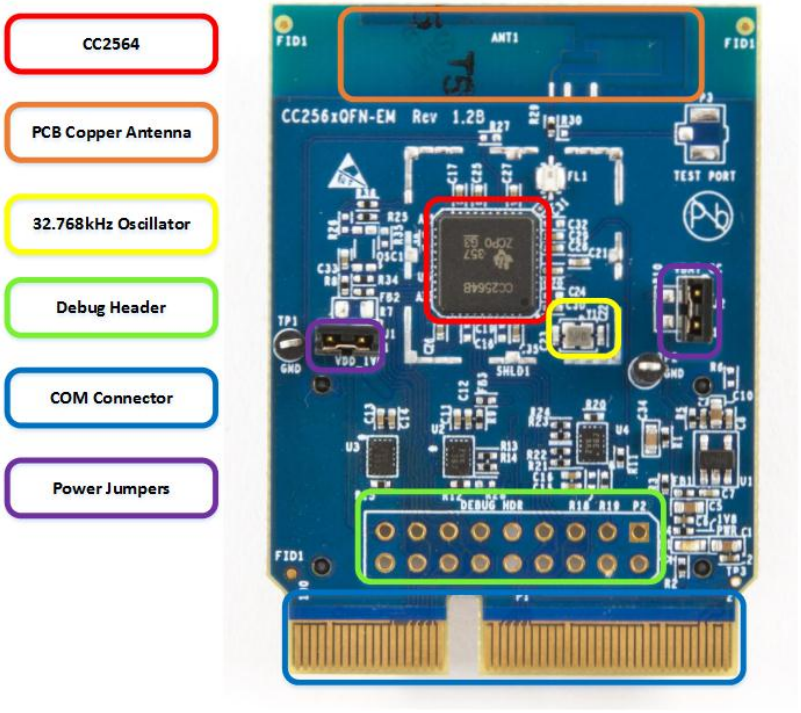

Figure 3. CC256XQFNEM Front View

Figure 4 shows the connectors on the back side of the CC256XQFNEM board.

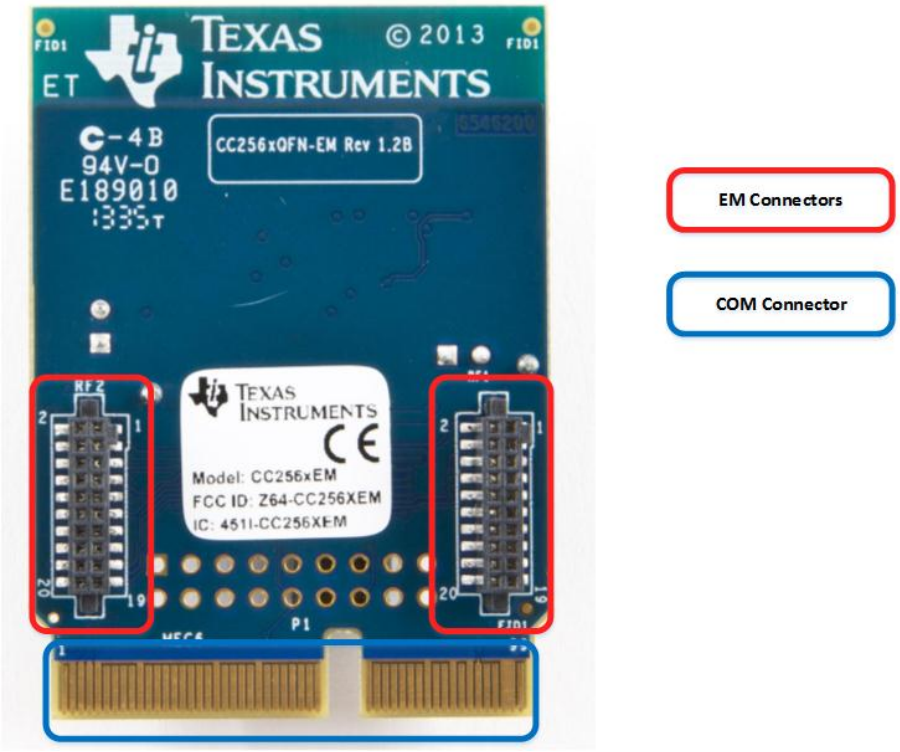

Figure 4. CC256XQFNEM Back View

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5 CC256XQFNEM Board Settings

This section describes the settings for the EM connector and the COM connector.

5.1 EM Connector Settings

The EM connectors can be mounted on a wide variety of TI MCU platforms, such as the MSP430 (MSP-EXP430F5529 and MSP-EXP430F5438) and TM4C (DK-TM4C123G and DK-TM4C129X).

All EM I/Os are at 3.3-V levels. Pin assignments are described with respect to the front (CC2564) side. For example, MODULE_UART_RX refers to the receiving UART RX pin on the CC256x device that connects to the UART_TX pin on the MCU.

Table 1 describes the standard pinout for EM1.

Table 1. EM1 Standard Pinout

Pin	EM Adapter Assignment[1]	Pin	EM Adapter Assignment[1]
1	GND	2	NC
3	MODULE_UART_CTS	4	NC
5	SLOW_CLK	6	NC
7	MODULE_UART_RX	8	NC
9	MODULE_UART_TX	10	NC
11	NC	12	NC
13	NC	14	NC
15	NC	16	NC
17	NC	18	NC
19	GND	20	NC

(1) NC = not connected

Table 2 describes the standard pinout for EM2.

Table 2. EM2 Standard Pinout

Pin	EM Adapter Assignment[1]	Pin	EM Adapter Assignment[1]
1	NC	2	GND
3	NC	4	NC
5	NC	6	NC
7	3.3V	8	MODULE_AUDIO_DATA_OUT
9	3.3V	10	MODULE_AUDIO_DATA_IN
11	MODULE_AUDIO_FSINK	12	NC
13	NC	14	NC
15	NC	16	NC
17	MODULE_AUDIO_CLK	18	MODULE_UART_RTS
19	nSHUTD	20	NC

(1) NC = not connected

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5.2 COM Connector Settings

The COM connector interfaces with TI's MPU platforms, such as the AM335x evaluation module (TMDXEVM3358).

NOTE:

- All I/Os for the COM connector are at 1.8 V.
- Some components must not be installed (DNI) to use the COM connector. For more information, see the *Dual-Mode Bluetooth CC2564 Evaluation Board User Guide* (SWRU450).

Table 3 describes the COM connector pinout.

Table 3. COM Connector Pinout

Pin[1]	Relevant COM Connector Pin Assignment
1	SLOW_CLK_EDGE
8	1V8_IN
52	AUD_CLK_1V8
54	AUD_FSYNC_1V8
56	AUD_IN_1V8
58	AUD_OUT_1V8
66	HCI_TX_1V8
68	HCI_RX_1V8
70	HCI_CTS_1V8
72	HCI_RTS_1V8
76	TX_DEBUG_1V8
89	nSHUTDOWN_1V8
3, 9, 19, 37, 47, 63, 77, 83, 87, 95, 97	GND
2, 6, 18, 22, 42, 60, 64, 92	GND

(1) Pins not listed are NC.

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