

Quick Start Guide - BDE-BDM209A

1. Introduction

This document is a quick guide for how to connect BDE-BDM209A module with MSP432P401R LaunchPad (MSP-EXP432P401R) and CC3200 AUDIO BOOSTERPACK (CC3200AUDBOOST) to run the demos in “CC2564C TI Dual-mode Bluetooth Stack on MSP432 MCUs” SDK. It provides an instruction of how to modify the Demo source code to run the Demos on BDE-BDM209A modules.

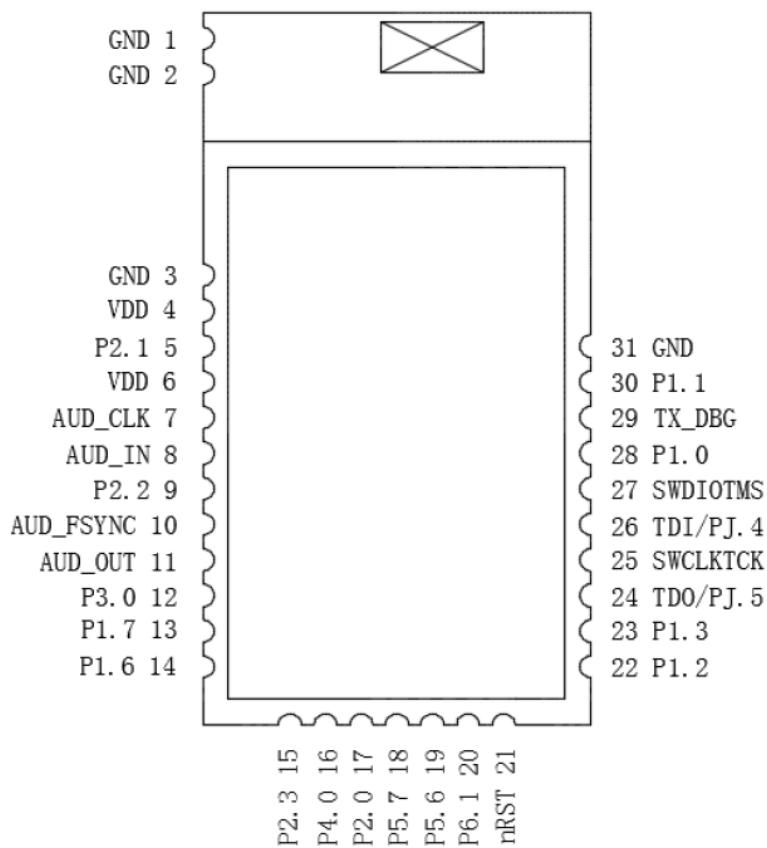


Figure 1: BDE-BDM209A Pinout Diagram Top View

2. Program and Debug on BDE-BDM209A

Developers can use MSP432P401R LaunchPad to program and to debug BDE-BDM209A.

Pins needed for Programming BDE-BDM209A: VDD, GND, TMS, TCK

Additional Pins needed when uses IDE to debug on BDE-BDM209A: TDO, TDI

Additional Pins needed if uses serial ports to debug BDE-BDM209A: P1.2/RXD, P1.3/TXD

Figure 2 shows the connection between BDE-BDM209A and MSP-EXP432P401R. Figure 3 shows the Pin matching between BDE-BDM209A and MSP-EXP432P401R.

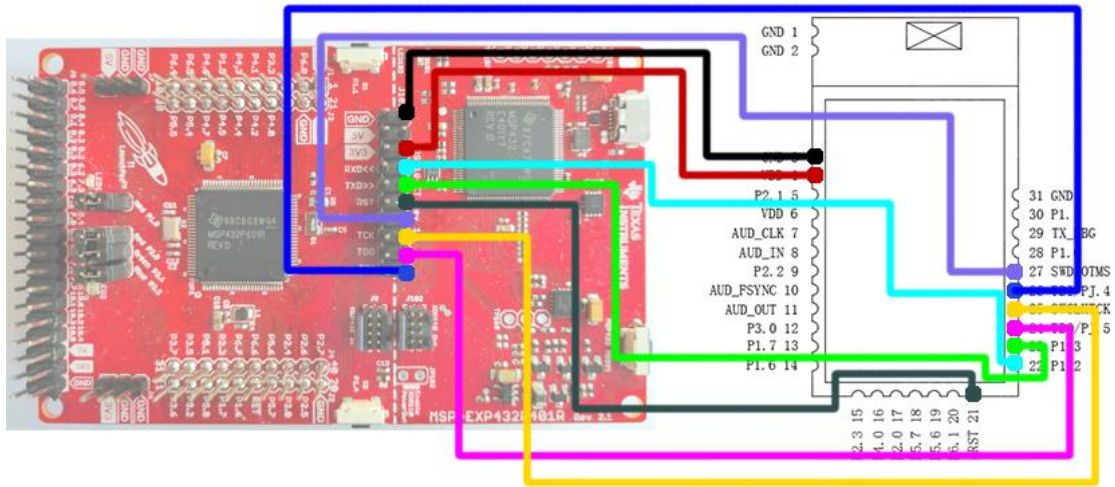


Figure 2: Connection between BDE-BDM209A and MSP-EXP432P401R

Connection Designator	BDM209A Pin	MSP-EXP432P401R Pin
3V3 Power	VDD	XDSET-VCCTARGET
Ground	GND	XDSET-GND
RST	nRST	XDSET-RESET-OUT
TMS	SWDIO/TMS	XDSET-TMS-SWDIO
TCK	SWCLK/TCK	XDSET_TCK_SWDCLK
TDO	TDO/PJ.5	XDSET_TDO_SWO
TDI	TDI/PJ.4	XDSET_TDI
RXD	P1.2	XDSET_TXD
TXD	P1.3	XDSET_RXD

Figure 3: Pin Matching between BDE-BDM209A and MSP-EXP432P401R

3. Download SDK

CC2564C TI Dual-mode Bluetooth Stack on MSP432 MCUs SDK includes many profiles and demo codes. Download SDK from the following link:

<https://www.ti.com/tool/CC2564CMSP432BTBLESW>

Part Number	Buy from Texas Instruments or Third Party	Alert Me	Status	Current Version	Version Date
CC2564CMSP432BTBLESW1: CC2564C TI Dual-mode Bluetooth® Stack on MSP432 MCUs	Download	Alert Me	ACTIVE	v4.2.1.1	24-JUL-2018

User's Guide for the SDK: '[CC2564C TI Dual-Mode Bluetooth® Stack on MSP432™ MCUs](#)'.

Please follow the above User's Guide when develop or evaluate with MSP-EXP432P401R and CC256XCQFN-EM.



After your code is able to run on MSP-EXP432P401R and CC256XCQFN-EM, please follow the following steps to make your code run on BDE-BDM209A.

4. Run the Demos in the CC2564CMSP432BTBLESW SDK on BDE-BDM209A

To run the sample Demo codes in the CC2564CMSP432BTBLESW SDK on BDE-BDM209A, please take the following three steps.

1. On BDE-BDM209A, the low frequency clock for CC2564C is provided by MSP432P401R ACLK. The MSP432P401R ACLK (P4.2) output needs to be enabled. The REFOCLK needs to be disabled. (#define ENABLE_ACLK 1 #define USE_REFOCLK 0)
2. Find the HAL.c file in the project, locate the function: static void ConfigureClocks(void) and replace it with the following ConfigureClocks(void) code.

```
#define ENABLE_ACLK 1
#define USE_REFOCLK 0

/* The following function configures the system clocks. */
static void ConfigureClocks(void)
{
    /* Configure the HFXT external oscillator pins. */
    GPIO_setAsPeripheralModuleFunctionOutputPin(GPIO_PORT_PJ, GPIO_PIN2 | GPIO_PIN3,
    GPIO_PRIMARY_MODULE_FUNCTION) ;
    #if ENABLE_ACLK
    #if !USE_REFOCLK
        GPIO_setAsPeripheralModuleFunctionOutputPin(GPIO_PORT_PJ, GPIO_PIN0 | GPIO_PIN1,
    GPIO_PRIMARY_MODULE_FUNCTION);
    #endif
    #endif

    /* Set the external clock source frequencies for LFXTCLK and HFXTCLK.*/
    #if ENABLE_ACLK
    #if !USE_REFOCLK
        CS_setExternalClockSourceFrequency(32768, HFXTCLK_FREQUENCY);
    #else
        CS_setExternalClockSourceFrequency(0, HFXTCLK_FREQUENCY);
    #endif
    #else
        CS_setExternalClockSourceFrequency(0, HFXTCLK_FREQUENCY);
    #endif

    /* Starting HFXT in non-bypass mode without a timeout. Before we */
    /* start we have to change VCORE to 1 to support the 48 MHz */
}
```

```
/* frequency. */
PCM_setCoreVoltageLevel(PCM_VCORE1);
FlashCtl_setWaitState(FLASH_BANK0, 2);
FlashCtl_setWaitState(FLASH_BANK1, 2);
CS_startHFXT(false);
#if ENABLE_ACLK
#if !USE_REFOCLK
    CS_startLFXT(false);
#endif
#endif

/* Initialize the clock sources. */
#if ENABLE_ACLK
#if !USE_REFOCLK
    CS_initClockSignal(CS_ACLK, CS_LFXTCLK_SELECT, CONCAT(CS_CLOCK_DIVIDER_1));
#else
    CS_initClockSignal(CS_ACLK, CS_REFOCLK_SELECT, CONCAT(CS_CLOCK_DIVIDER_1));
#endif
#endif
    CS_initClockSignal(CS_MCLK, MCLK_SOURCE,
CONCAT(CS_CLOCK_DIVIDER_MCLK_DIVIDER));
    CS_initClockSignal(CS_HSMCLK, HSMCLK_SOURCE,
CONCAT(CS_CLOCK_DIVIDER_HSMCLK_DIVIDER));
    CS_initClockSignal(CS_SMCLK, SMCLK_SOURCE,
CONCAT(CS_CLOCK_DIVIDER_SMCLK_DIVIDER));

#if ENABLE_ACLK
    GPIO_setAsPeripheralModuleFunctionOutputPin(GPIO_PORT_P4, GPIO_PIN2,
GPIO_PRIMARY_MODULE_FUNCTION);

    while (!BITBAND_PERI(CS->STAT, CS_STAT_ACLK_ON_OFS));
#endif
}
```

3. Find HRDWCFG.h file, change the I2C pins to P1.6 and P1.7

```
#define HRDWCFG_I2C_MODULE          EUSCI_B0_BASE

#define HRDWCFG_I2C_SDA_PORT_NUM    GPIO_PORT_P1
#define HRDWCFG_I2C_SDA_PIN_NUM     GPIO_PIN6

#define HRDWCFG_I2C_SCL_PORT_NUM    GPIO_PORT_P1
#define HRDWCFG_I2C_SCL_PIN_NUM     GPIO_PIN7
```

5. Run Bluetooth Stereo Audio Streaming Demo on BDE-BDM209A

CC2564CMSP432BTBLESW SDK provides two A3DP demos for Audio streaming: A3DP Sink Demo and A3DP Source Demo.

Before trying to run the demos on BDE-BDM209A, please make sure you can run the demos on MSP-EXP432P401R and CC3200AUDBOOST (follow the user guide CC2564C TI Dual-Mode Bluetooth® Stack on MSP432™ MCUs:

<https://www.ti.com/lit/ug/swru497a/swru497a.pdf>)

You will need two BDE-BDM209A and two CC3200AUDBOOST boards to run Audio streaming from A3DP Source to A3DP Sink.

Connect BDE-BDM209A and CC3200AUDBOOST board:

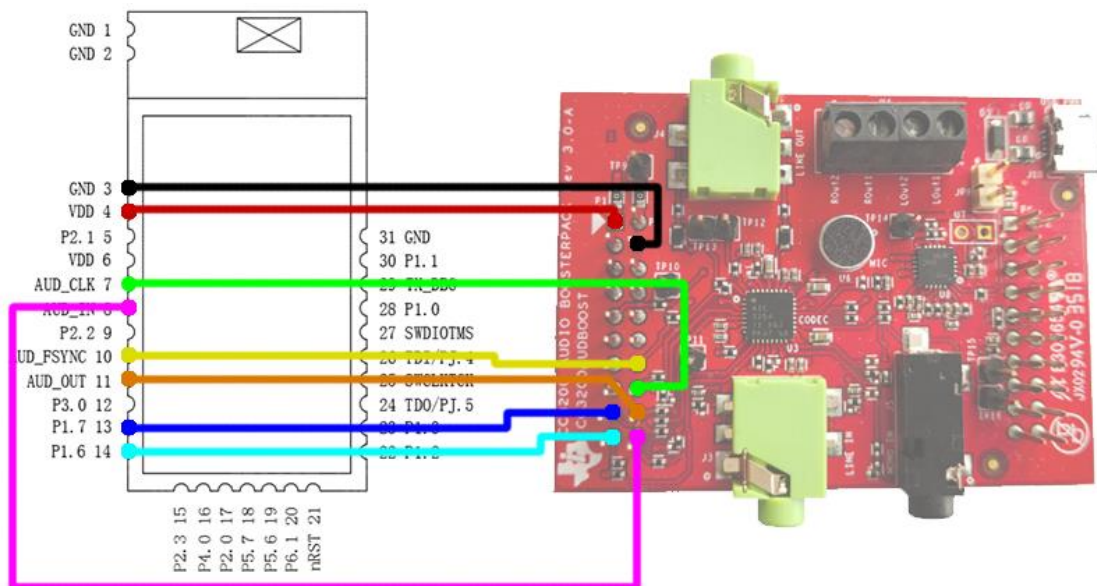


Figure 4: Connection between BDE-BDM209A and CC3200AUDBOOST

Connection Designator	BDM209A Pin	CC3200AUDBOOST Pin
Ground	GND	J1-4
3V3 Power	VDD	J1-1
AUD_CLK	AUD_CLK	J1-16
AUD_IN	AUD_IN	J1-20
AUD_FSYNC	AUD_FSYNC	J1-14
AUD_OUT	AUD_OUT	J1-18
I2C_SCL	P1.7	J1-17
I2C_SDA	P1.6	J1-19

Figure 5: Pin Matching between BDE-BDM209A and CC3200AUDBOOST



A3DP Sink Demo code location:

CC256x MSP432 Bluetopia SDK\v4.2.1.1\Samples\A3DPDemo_SNK

A3DP demo sink wiki:

https://processors.wiki.ti.com/index.php/CC256x_TI_Bluetooth_Stack_AssistedA2DPSinkDemo_App

A3DP Source Demo code location:

CC256x MSP432 Bluetopia SDK\v4.2.1.1\Samples\A3DPDemo_SRC

A3DP demo source wiki:

https://processors.wiki.ti.com/index.php/CC256x_TI_Bluetooth_Stack_AssistedA2DPSourceDemo_App

NOTE: To run any demo in the SDK on BDE-BDM209A, you need to make the code modification in Step 4: Run the Demos in the CC2564CMSP432BTBLESW SDK on BDE-BDM209A

Contact us for more help.

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