# CC32xx Wifi Audio Application

## Objective

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This example demonstrates 'Bi-directional Audio Streaming and Playback' on CC3200 LaunchPad setup. The Setup comprises of two LPs (in STA mode) acting as both Audio source and sink. The Source gets audio input from Onboard MIC, MIC IN or LineIn Input on Audio BP. Audio is transmitted over wifi from source to sink. The Launchpad receives and plays the audio data on Line Out of Audio BP.

**Note:** By default the application runs in loopback mode until a connection is established between the two Launchpads

## Prerequisites

### Hardware

1. 2x CC3200-LAUNCHXL 3.2 or above
2. 2x CC3200AUDBOOST-3.0A
3. 2x Headphones/Speakers
4. 2x Audio Sources
5. Android/iOS Device (For Smart Config)

### ECOs and Jumper settings

1. Ensure J2 and J3 jumpers are connected on the launchpad.

### Software

1. CC3200 wifi audio app binary
2. Latest CC3200 SDK Firmware Package
3. Uniflash Tool [1]
4. Smart Config Application [2]

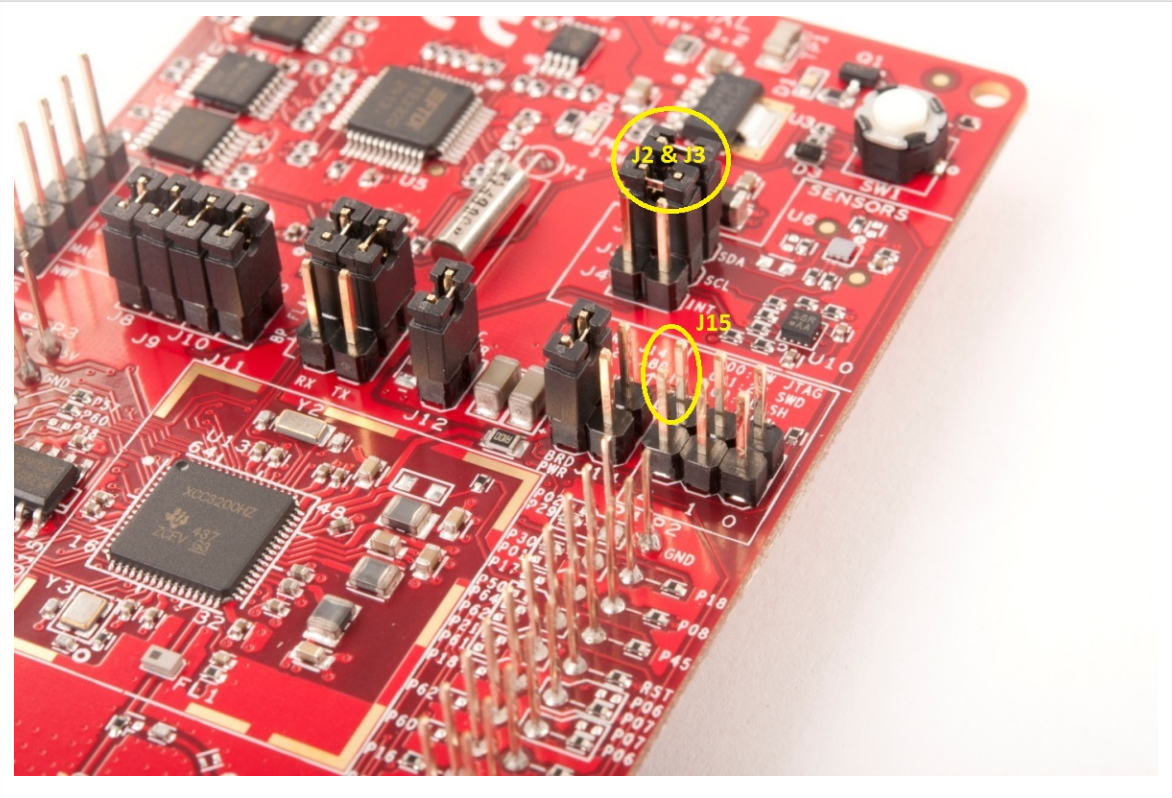
## Setup CC3200 Launchpad

Choose one of the modes and follow the steps

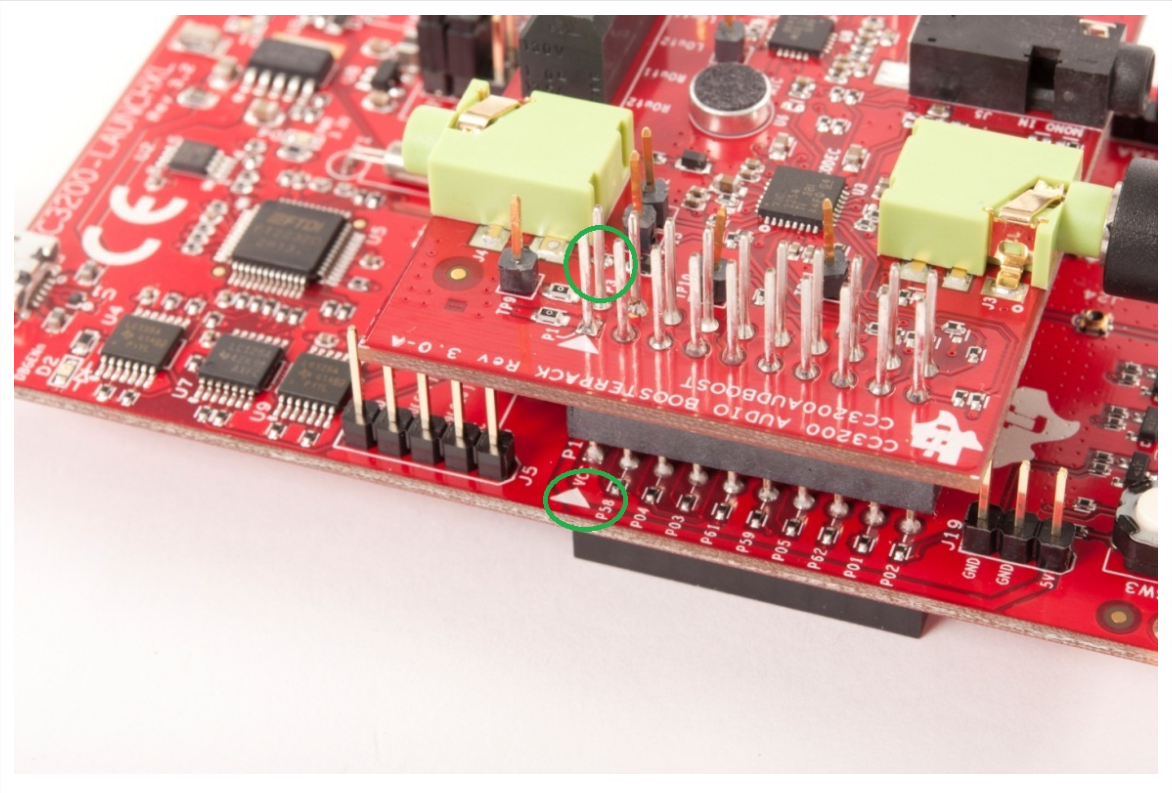
1. Debug Mode
   - Connect 2 CC3200 Launch Pad to 2 different machines running IAR/CCS using USB cable
   - Open the Project as mentioned in '<cc3200-sdk>\docs\CC3200-Getting Started Guide.pdf'
   - Ensure SOP-2 Jumper is connected
2. Functional Mode
   - Flash the binary file available in <cc3200-sdk>\example\wifi_audio_app\ewarm\UniCast\Exe folder using UniFlash. Refer to Detailed instructions at Uniflash User Guide.
   - Repeat above step for second Launch Pad
   - Ensure SOP-2 Jumper is removed after flashing

## System Configuration

1. Jumpers J2 and J3 should be Mounted as shown in below picture




1. Mount 'Audio Codec Booster Pack' on 'CC3200 LaunchPad' as shown below. Ensure 'J1 & J2' of the booster-pack are aligned with 'P1-P3 & P4-P2' of CC3200-LaunchPad



3. The different connectors in the Audio Booster Pack are detailed below. For Bi-directional audio player

```
Connect headphone or speaker on J4 of 'Audio Codec Booster Pack'
J3 on Audio Codec BP can be used for LINE -IN
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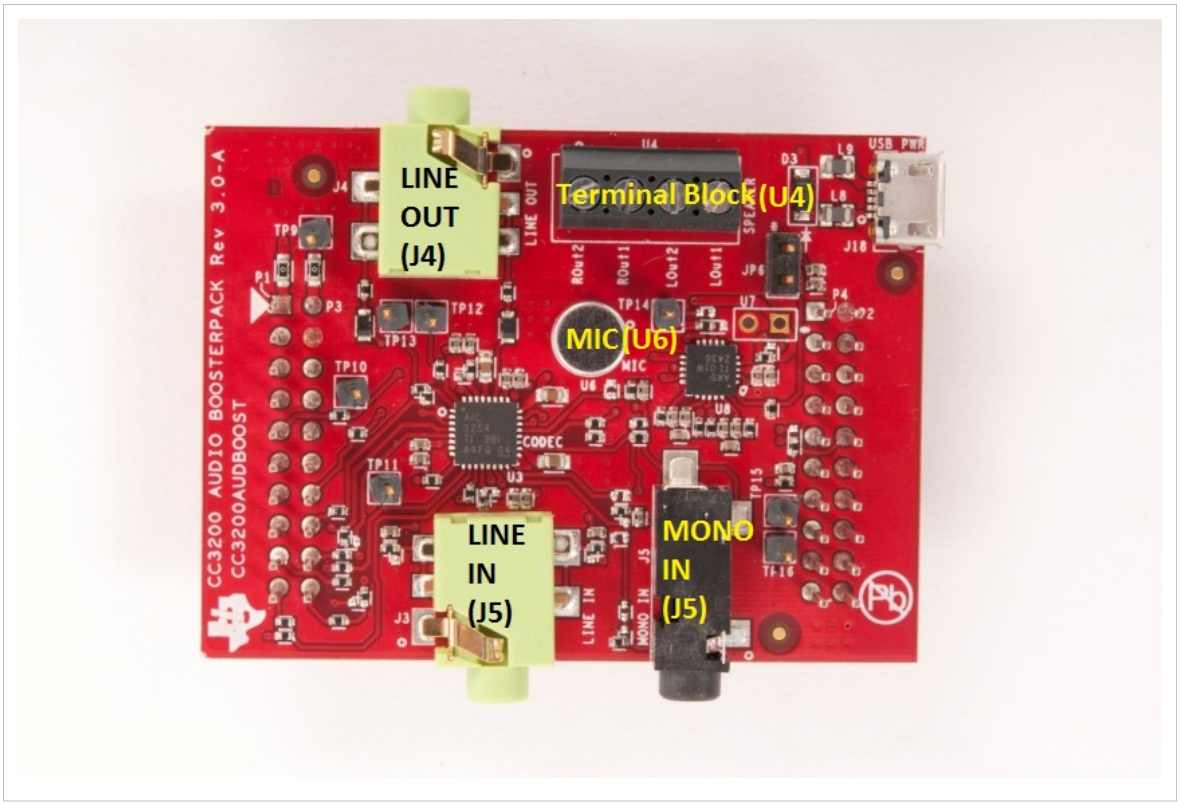
```
Alternatively,

Onboard MIC (U6) or Mono-Jack (J5) of 'Audio Codec Booster Pack' can be used for MIC-IN and U4, U5 can be used to connect speakers(Left & Right).
```




## Launch SmartConfig Application

1. Choose an AP that you want to configure on CC32XX Device
2. Connect your Android/iOS device to this AP
3. Launch the SmartConfig [2] Application

## Running Bi-directional Audio Demo

Once the Audio-BP and LaunchPad connections are intact, Run the Reference Application. Based on mode selected, follow the steps

1. Debug Mode
   - Build and download the application to the board as mentioned in '<cc3200-sdk>\docs\CC3200-Getting Started Guide.pdf'
   - Repeat above steps for second Launchpad
2. Functional Mode
   - Press Reset (SW1) Button on both the Launchpads

     - Green LED will come up and blink for few seconds which indicates that device is trying to connect to an AP

     - If it can't connect to the AP, Green LED will glow continuously. Run SmartConfig on your Android/iOS device.

- During Smartconfig, device will try to connect to the AP. If Connection is successful Green LED will turn off. Smartconfig Application will show the notification about the successful connection.

Ensure that Green LED is Off in both the Launchpads before proceeding further

## Audio Streamer/Player

On the launchpads, the following switches invoke microphone and speaker on/off actions.

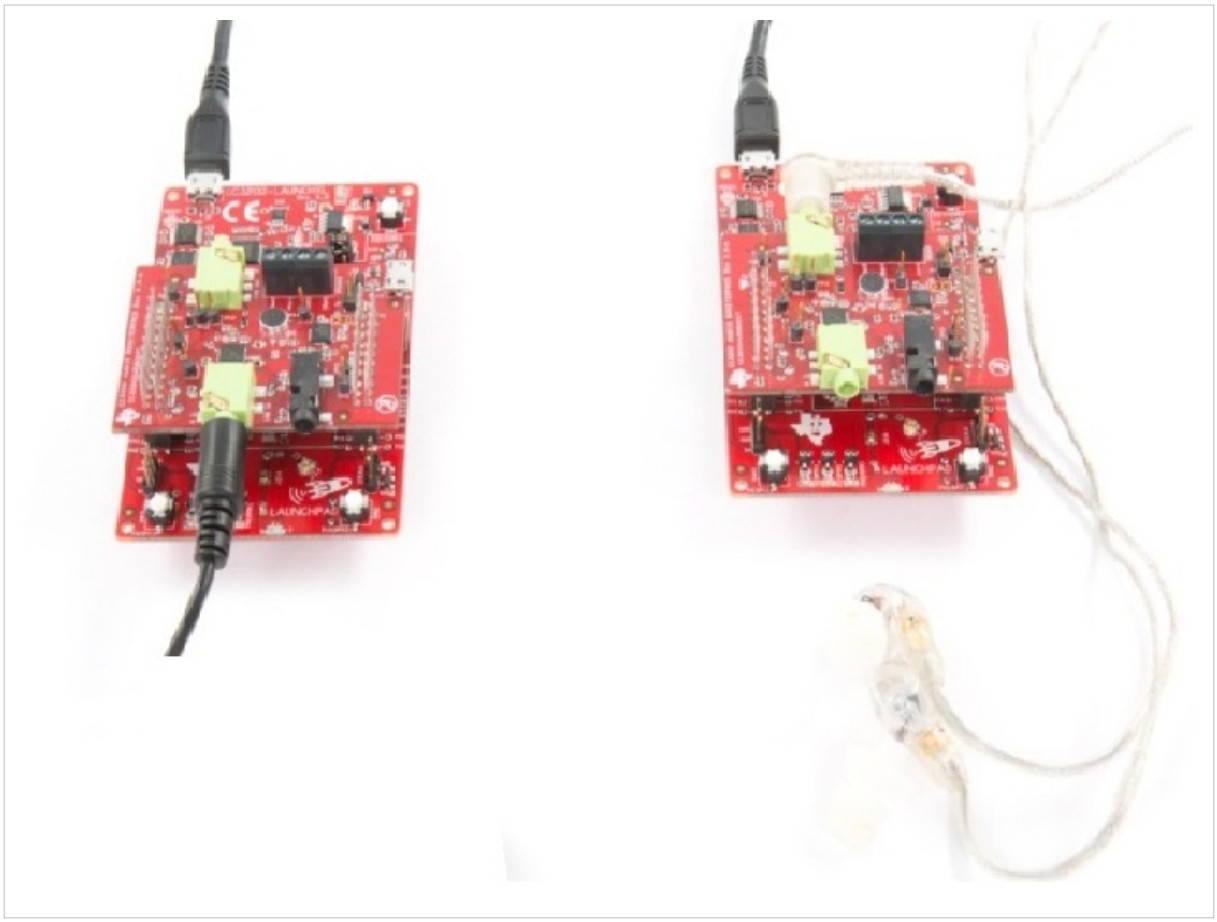
SW3 - Microphone

SW2 - Speaker

1. Ensure Line - IN and Line - OUT points are connected appropriately on both the launch pads.

2. Upon successful Smart Config connection, Press SW3 (on LP1) to start the streaming and SW2 (on LP2) to playback the audio. Similarly Press SW3 (on LP2) to start the streaming and SW2 (on LP1). The switch press can be used to handle MIC and Speaker ON/OFF actions. The below picture shows the bidirectional audio with appropriate connections.

- **Green LED** indicates Microphone task is running.
- **Orange LED** indicates Speaker task is running
- **Red LED** indicates audio is being played. The Red LED indicates successful connection of both the launchpads with each other.



## Known Issues

none.

## References

[1] http://processors.wiki.ti.com/index.php/Category:CCS_UniFlash
[2] http://www.ti.com/tool/wifistarter

# Article Sources and Contributors

**CC32xx Wifi Audio Application** *Source*: http://processors.wiki.ti.com/index.php?oldid=195046 *Contributors*: A0221015, Balaji, Beatrice, Codycooke, Jitgupta, Kaushal, Made4engineering, Malokykle, Malokyle

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