

# CC32xx Antenna Selection Application

## Overview

CC3200 Antenna Selection is method by which user can configure the WLAN RF Antenna on the CC3200 device from a Browser. The CC3200 device scans the Access Points with 2 different Antennas, stores the SSID and RSSI information in the memory and create an HTML page. User can open the HTML page and select the Antenna which he/she wants to configure. Also user can check the connection to the Access Point using the selected Antenna.

[Return to CC31xx & CC32xx Home Page](#)

[Return to CC31xx Sample Applications](#)

## Prerequisites

- CC3ANTENNABOOST (also known as CC31xx\_antenna\_diversity\_board)

## Usage

- Flash Example Content(html,image,js,Application binary)on serial flash by following below steps.
  1. If CC3200 SDK is installed at default location **C:\ti\CC3200SDK**
    - Open **C:\ti\CC3200SDK\cc3200-sdk\example\antenna\_selection\html\antenna\_selection.ucf** session file in Uniflash.
    - Flash the files to the device. Detailed instructions at Uniflash User Guide.
  2. If CC3200 SDK is not installed at default location **C:\ti\CC3200SDK**
    - Open **<cc3200-sdk>\examples\antenna\_selection\html\antenna\_selection.ucf** session file in Uniflash.
    - Modify **Url** for all the files in the list.
    - Flash the files to the device. Detailed instructions at Uniflash User Guide.
- Run the reference application
  1. Run From IDE (IAR/CCS)
    - Make the Board Modification as mentioned in the following section.
    - Open the Project as mentioned in the **<cc3200-sdk>\docs\CC3200-Getting Started Guide.pdf**
    - Build and download the application to the board
  2. Run Flashed Binary
    - Remove SOP-2 Jumper on Board and Press Reset. Refer **<cc3200-sdk>\docs\CC3200-Getting Started Guide.pdf** for detailed Information
    - Make the Board Modification as mentioned in the following section.
- CC3200 Device first comes up in STA mode, scans for visible access-points. Next, it restarts and comes up in AP mode (Default SSID: mysimplelink-<MacAddr>)
- User connects his/her WIFI enabled device PC/MAC/Smartphone to above AP
- Type "mysimplelink.net/main.html" in browser. it will Open CC3200 Main HTML Page
- Click/Press on Antenna Selection which will open the Antenna Selection page as shown in picture below
- Antenna Selection page displays the list of the Access Points SSID and RSSI with 2 different Antenna
- User select the AP by clicking on the Radio Button
- User also need to provide **Security Type**, **Security Key** and **Profile Priority** in the corresponding fields
- User clicks **Add** Button

mysimplelink

Status

Device Config

IP Config

Profiles

Tools

Antenna Selection

WiFi Connectivity Profiles Settings

Add Profile

Antenna 1:

Antenna 2:

Security Type:

Security Key:

Profile Priority:

☒ Antenna 1 ☐ Antenna 2

☒ oob

☐ TAG\_PF

☐ linksys

☐ StabilityTest1

☐ NETGEAR-24G

☐ TAG\_PF

☐ StabilityTest1

☐ TP-LINK-152

☐ net4guest

☐ TP-LINK-APK

☐ Open ☐ WEP ☒ WPA

Hexadecimal digits - any combination of 0-9, a-f and A-F

Enter a value 0-7 (0 = highest)

Add

Connection with the Access Point will be validated

The page at mysimplelink.net says:  
Connecting With Antenna 1 .. Wait for Status  
OK

- Device then switches to Station Mode and connects to the selected AP
- After the Connection is Successful or Failed, Alert Message is Displayed

mysimplelink

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Add Profile

Antenna 1:

Antenna 2:

Security Type:

Security Key:

Profile Priority:

☒ Antenna 1 ☐ Antenna 2

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☐ linksys

☐ StabilityTest1

☐ NETGEAR-24G

☐ TAG\_PF

☐ StabilityTest1

☐ TP-LINK-152

☐ net4guest

☐ TP-LINK-APK

☐ Open ☐ WEP ☒ WPA

Hexadecimal digits - any combination of 0-9, a-f and A-F

Enter a value 0-7 (0 = highest)

Add

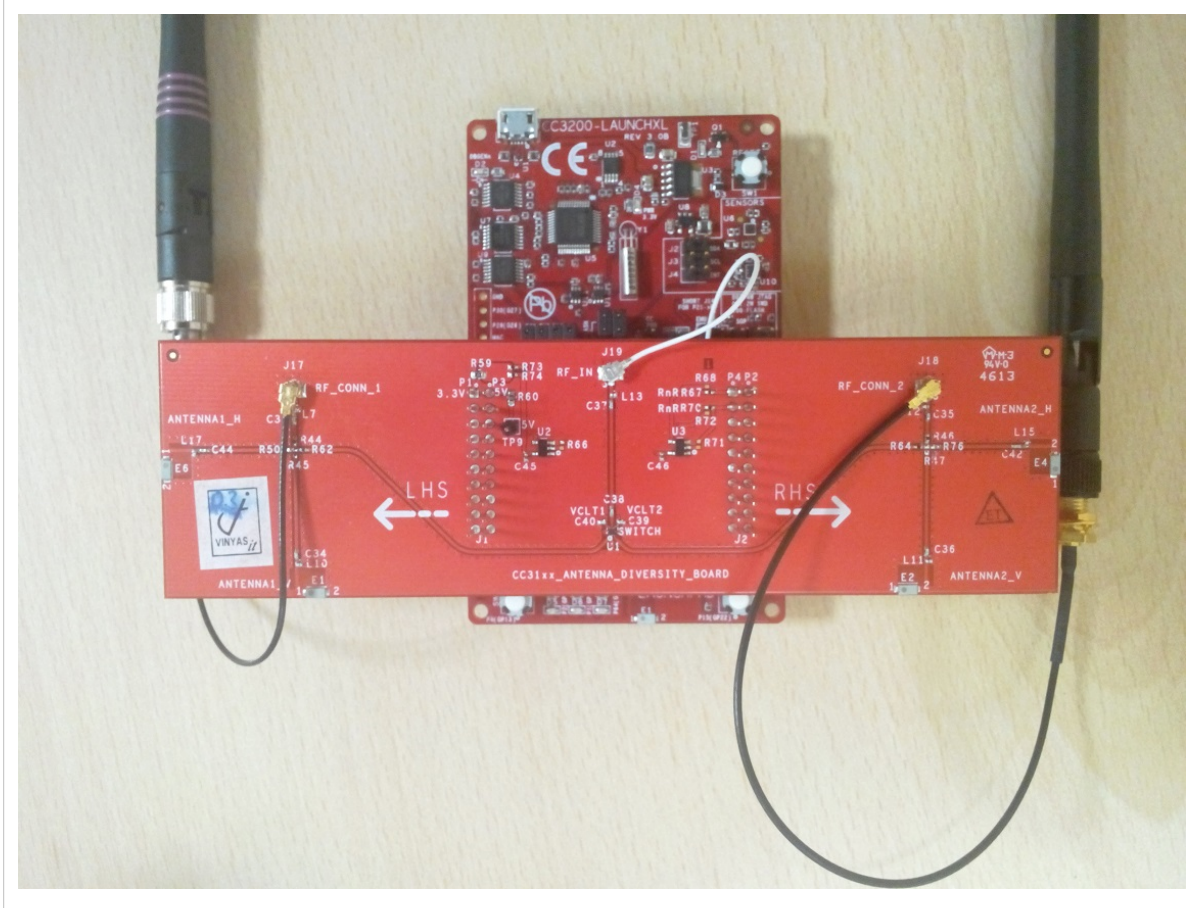
Connection with the Access Point will be validated

The page at mysimplelink.net says:  
Successfully Connected to AP!!  
OK

## Board Modifications

Below modifications are required on CC3200-LP for working with CC3ANTENNABOOST

1. Unmount R111 & Mount R110
2. Connect the U.FL connectors, J18 on Launch Pad to J19 on Antenna Board with U.FL-U.FL connector cable.
3. Stack the Launch Pad and Antenna Board as shown in the picture below



## Source Files briefly explained

- main.c
  1. Select Antenna 1
  2. Scans and Stores AP information
  3. Select Antenna 2
  4. Scans and Stores AP information
  5. Handles HTTP GET request to provide AP List
  6. Handles HTTP POST request to receive command to connect to AP with Selected Antenna
  7. Connection to the selected AP
- startup\_ewarm.c
  1. Implements interrupt vector table when using IAR ewarm tool chain

**Note:** This example can be used either on TI-RTOS or FreeRTOS. For the application to work with TI-RTOS, ti\_rtos\_config project need to be imported into the application workspace. These projects can be found in CC3200-SDK under ti\_rtos folder. Please follow this link for CC3200 TI-RTOS usage CC3200 TI-RTOS

## **Limitations/Known Issues**

- Only 5 APs are displayed
  - Duplicate SSIDs are displayed when the SSID has multiple BSSIDs
  - During Connection Status Check, User Device PC/MAC/Smartphone might connect to different AP, User need to reconnect to the SimpleLink AP Again
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# Article Sources and Contributors

**CC32xx Antenna Selection Application** *Source:* <http://processors.wiki.ti.com/index.php?oldid=194886> *Contributors:* A0221015, Beatrice, Codycooke, Jitgupta, Kaushal, Malokyle

## Image Sources, Licenses and Contributors

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