# CC31xx Antenna Selection

Overview

This is only a reference application demonstrating how 'antenna-selection' feature can be implemented on Host-MCU. Please note below points when implementing this feature on Host-MCU:

- CC3100, internally, doesn't support this feature.
- In case the application intends to put the Host-MCU in Lower Power Mode (LPM) while keeping CC3100 connected to the access-point, the state of the IOs that control the RF-Switch shall be retained

```
  Not retaining these IOs will break the RF path for CC3100.
```

- Few MCUs, like STM32 in STANDBY, don't retain the IO states while in LPM. For implementing antenna-selection feature on such MCUs, external bus-hold circuitry shall be added between IOs and RF Switch to keep the RF path intact for CC3100.

Routing of the GPIOs controlling the RF-Switch to Host-MCU should be as shown below:
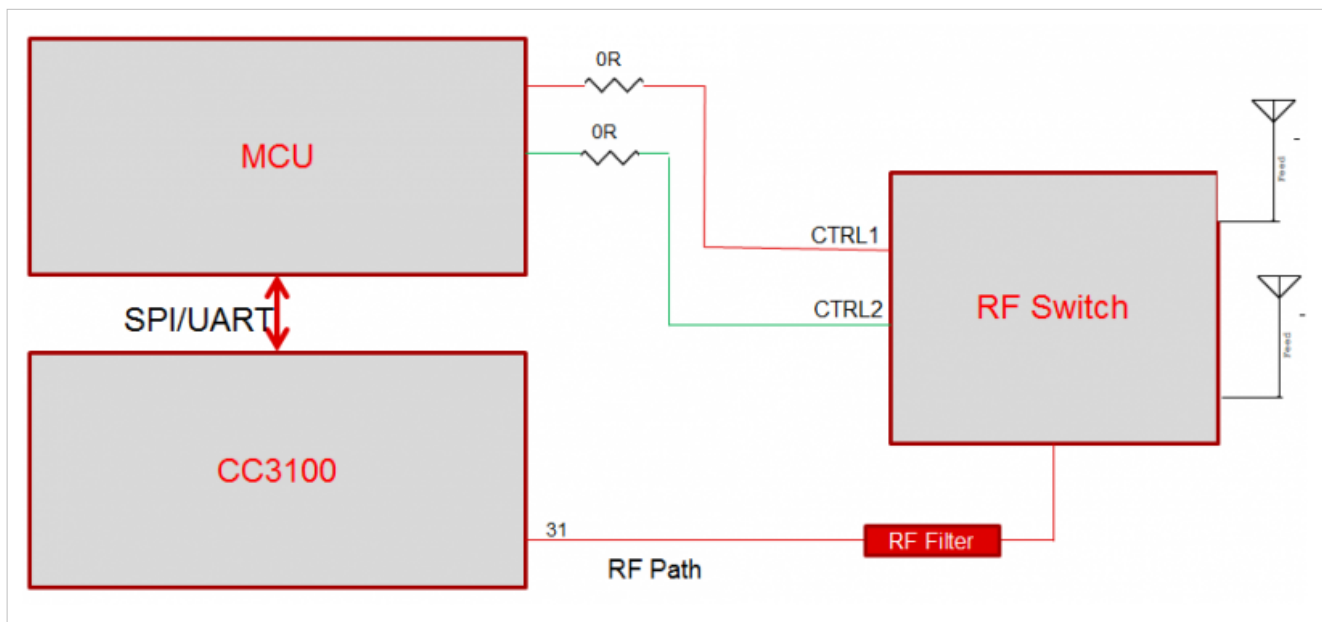
Application details

This sample application:

- uses the host-driver APIs to scan and retrive the signal strength of the configured access-points w/ both the antennas
- then, connects to the access-point using the antenna which delivered better signal strength. Either of the antennas is selected by driving the MCU's GPIO controlling the RF switch on the antenna-selection board
- on a 'disconnection' event, it checks for a better antenna again and uses it to establish connection w/ the access-point

Source Files briefly explained

i. main - Initializes the device, configures the antenna selection GPIOs, checks the signal strength of AP (SSID_NAME) w/ both antennas, switches to antenna with better signal strength and connects to the AP

Board Modifications

- Below modifications are to be done on CC3100-BP-2.0B for working w/ antenaa-selection examples

    1. Unmount R4 & R8.
    2. Unmount C2 and mount C4

```
Choose the GPIOs to connect on P1.1 and P2.1
```

Connections Details

Prerequisite: Antenna-selection board is required to test this sample application.

- The antenna-selection board can directly be connected with CC3100_BP using the 2X20 pin connector
- The stacked setup is as shown below. Ensure that the connectors are oriented correctly before powering up the board
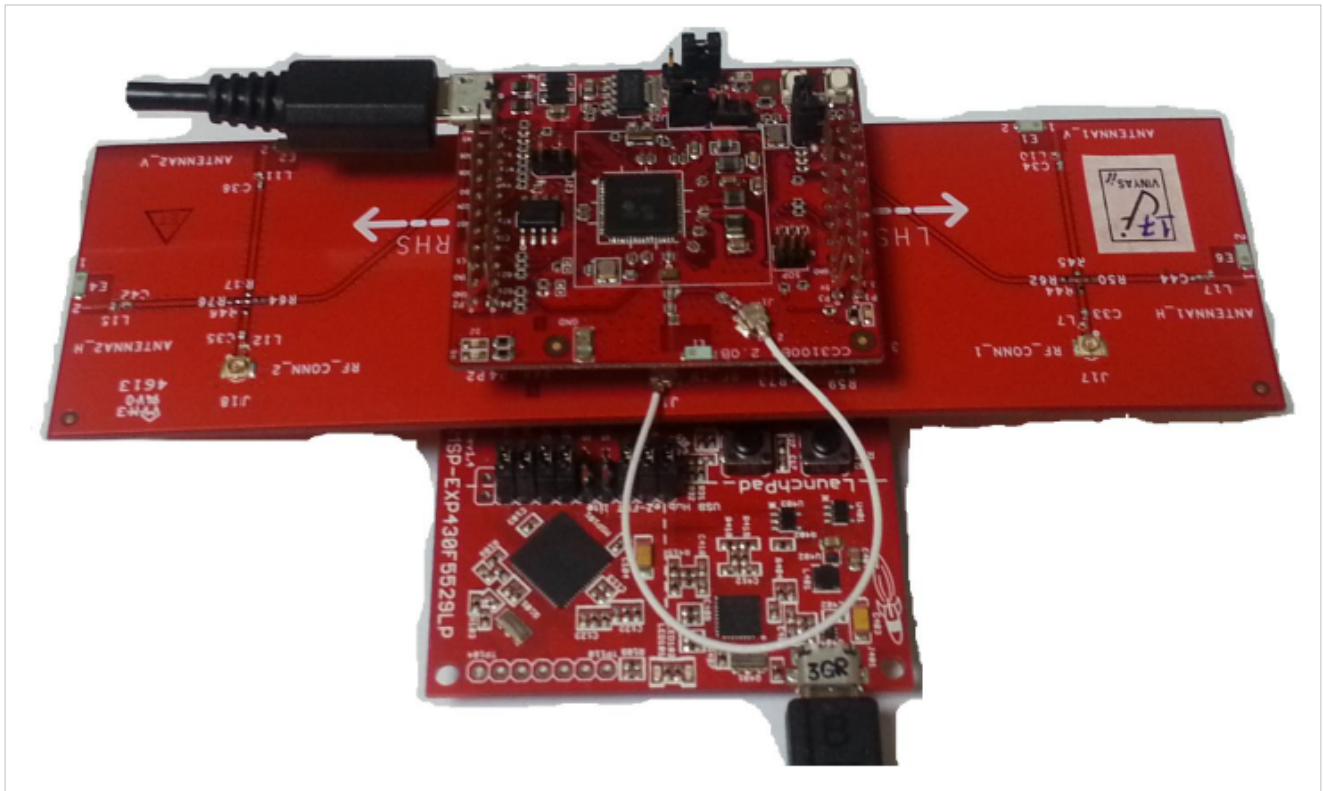
Usage

- Open 'main.c' and change 'SSID_NAME', 'PASSKEY' and 'SEC_TYPE' per your access-point's properties.
- Connect antenna-selection board with CC3100-BP and Host-MCU as shown in section: Connections Details
- Build and run the application
- For enabling the logs, configure the terminal program with baudrate of 9600 - The prints are self explanatory and describe the application's flow.

Limitations/Known Issues

None

Article Sources and Contributors

CC31xx Antenna Selection *Source*: http://ap-fpdsp-swapps.dal.design.ti.com/index.php?oldid=189407 *Contributors*: A0131814, A0132173, Giansway

Image Sources, Licenses and Contributors

Image:AntennaSelection_3.png *Source*: http://ap-fpdsp-swapps.dal.design.ti.com/index.php?title=File:AntennaSelection_3.png *License*: unknown *Contributors*: A0131814

Image:AntennaSelection_1.png *Source*: http://ap-fpdsp-swapps.dal.design.ti.com/index.php?title=File:AntennaSelection_1.png *License*: unknown *Contributors*: A0131814