CC31xx Antenna Selection

Overview

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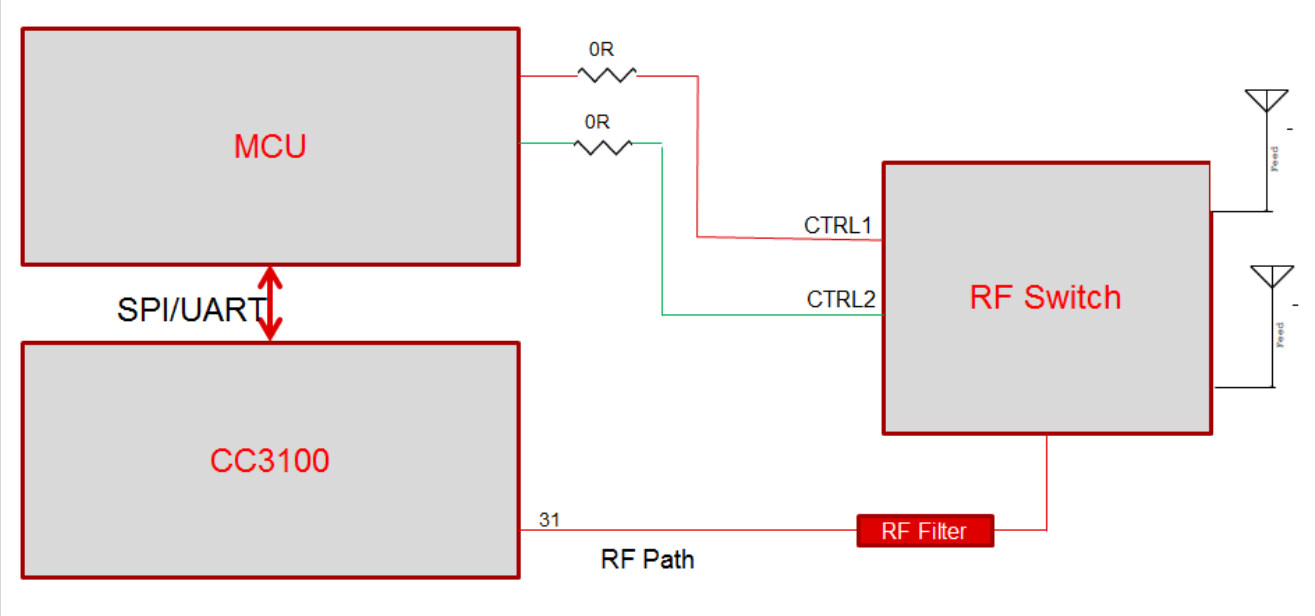
This is only a sample application demonstrating how 'antenna-selection' feature can be implemented on Host-MCU. Please note below points when implementing this feature on Host-MCU:

- 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 retrieve 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

Note: This wiki page is only applicable for **CC3100-SDK v1.0.0** and upward releases. For documentation on older SDKs' examples, refer corresponding file in **<cc3100-sdk-installation-location>\cc3100-sdk\docs\examples**

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

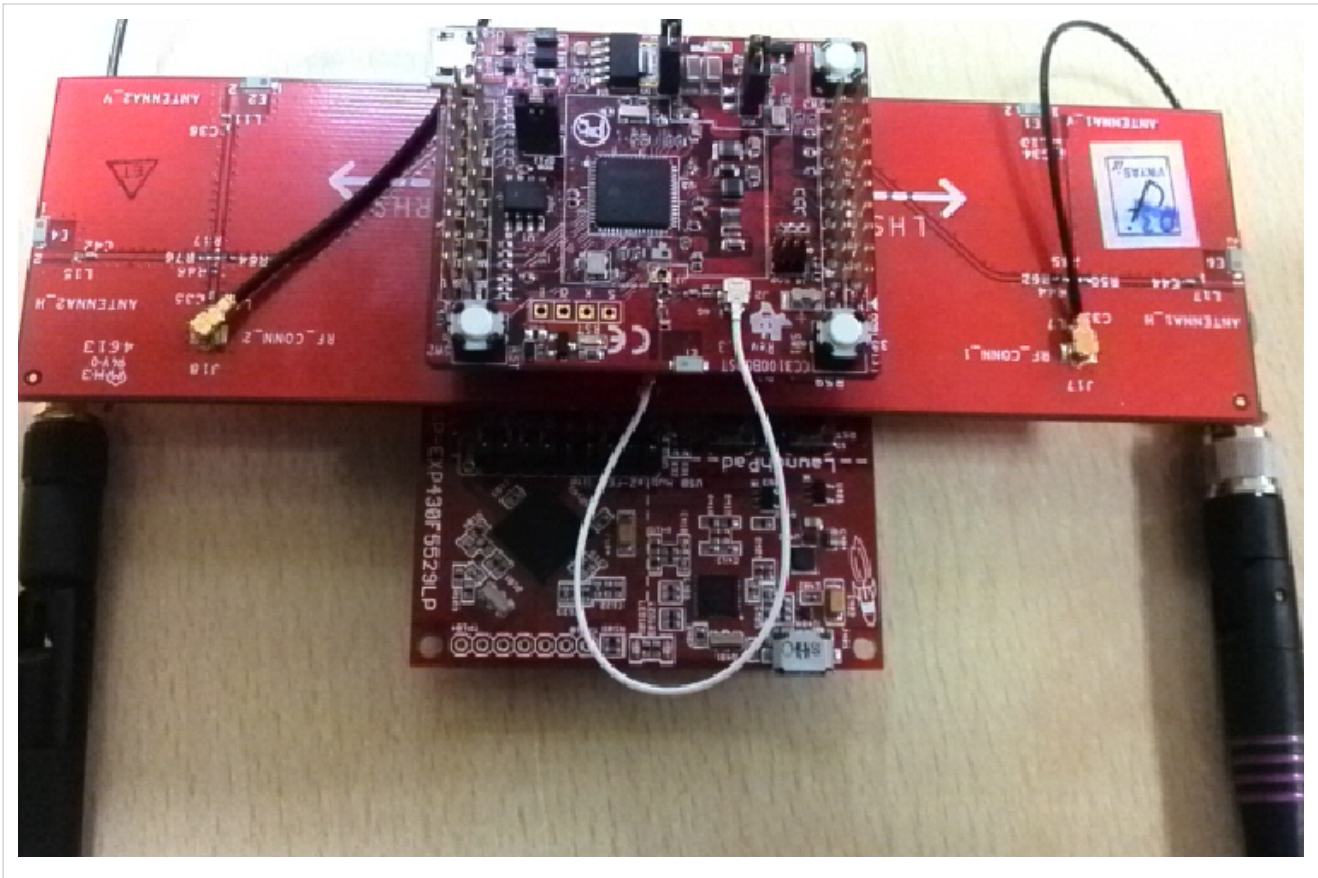
Board Modifications

- Below modifications are to be done on CC3100BOOST-Rev3.3A for working w/ **Antenna-Selection** sample application
  1. Unmount R6
  2. Mount R7

Connections Details

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

- The antenna-selection board can directly be connected with CC3100BOOST 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

- Connect the board to PC and configure the terminal program for seeing the logs - Detailed instructions are available at | CC31xx_&_CC32xx_Terminal_Setting_Wiki [1]
- Open **sl_common.h** and change **SSID_NAME**, **PASSKEY** and **SEC_TYPE** per your access-point's properties.
- Connect antenna-selection board with CC3100BOOST and Host-MCU as shown in section: Connections Details
- Build and run the application
- See the self explanatory logs on the terminal-program's console. On success, below message will be displayed on the terminal

Limitations/Known Issues

- 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. Refer **Overview** section for more details

References

[1] http://processors.wiki.ti.com/index.php/CC31xx_&_CC32xx_Terminal_Setting

Article Sources and Contributors

CC31xx Antenna Selection *Source*: http://processors.wiki.ti.com/index.php?oldid=184823 *Contributors*: A0131814, A0132173, A0221015, Codycooke, Malokyle

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