CC31xx Antenna Selection

Overview

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.

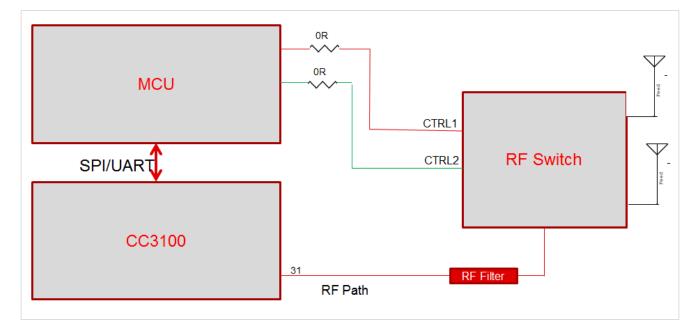


In case the application intends to put the Host-MCU in Lower Power Mode (LPM) while keeping CC3100 connected to the access-point, the state of the IOs that control the RF-Switch shall be retained

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 v0.5.2 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

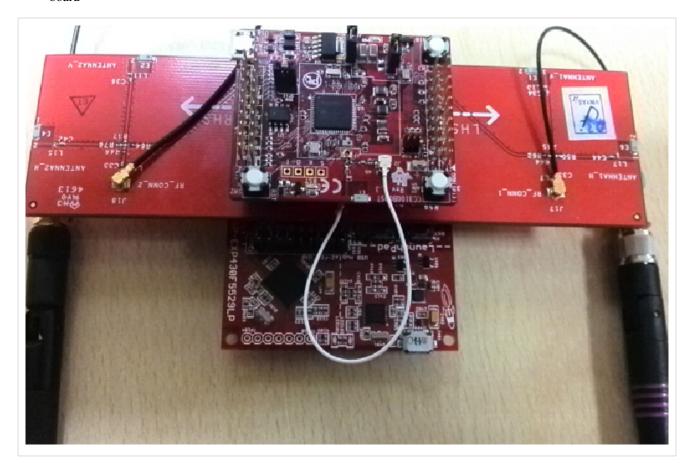
Board Modifications

- 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 main.c 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

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