

Accelerate[®] - SPB209A EVB- Quick Start Guide

Introduction

This guide will help you to set-up and use the SPB209A Evaluation Kit (EVB) for first time experience. It describes how to connect the device and operate it. For this first release Wi-Fi driver and Bluetooth is validated for operation. NFC will be added as soon as possible.

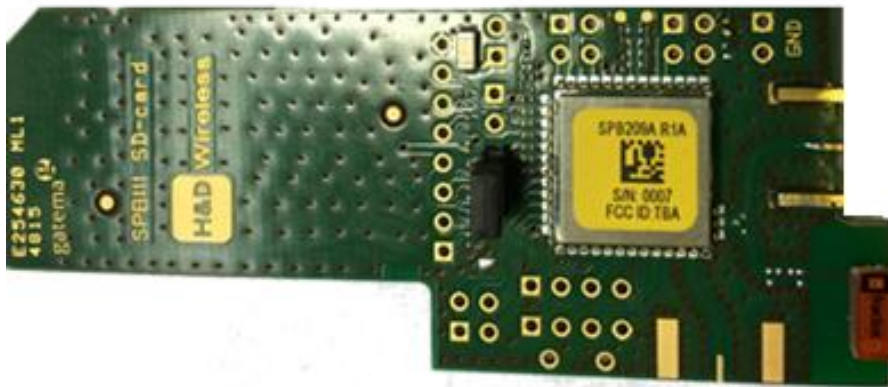
Scope of the Demonstration

The purpose of the demo is to illustrate

1. Wi-Fi connection and perform a first through-put test using a Linux computer with operational SDIO slot and the SBP209 mounted on a SD carrier board (SPB209A EVB).
2. BT connection using hcitool dev

Requirements

Things you need to have:



- The SPB209A EVB (SPB209A mounted on the SPB111 SD carrier card). Using the onboard dual antenna.

- A Linux computer or Linux development platform with an operational SDIO slot (SDIO operation verified on Lenovo T530, T430, X220, X230 type of computers and iMX6 Development Platform). It's not possible to use standard USB memory card readers as they most likely will not support the SD extension "SDIO". Further is the drivers not supporting load via USB device so it has to be direct host connected SD interface with SDIO support, see more details on http://www.thinkwiki.org/wiki/SD_Card_slot
- Linux kernel 3.19 or later and IPERF installed.
- Introduced kernel driver patch for mwifiex and btmrvl driver, see more details under <http://linux.hd-wireless.se/bin/view/Linux2/DownloadHDG209A>
- Replace the sd8887_uapsta.bin firmware under ~lib/firmware/mrvl/ to the full combo version (larger file) available under <http://linux.hd-wireless.se/bin/view/Linux2/DownloadHDG209A>
- An 802.11 ac AP connected with Ethernet to a Linux Host computer with IPERF installed.

Demonstration Example WiFi

In this example an IPERF client resides on the SPB209A Linux computer and a remote IPERF server running on a computer connected to the Ethernet port of an 802.11 ac AP.

Running the SPB209A EVB IPERF Client Side

- Power up the Linux Computer
- Start a Terminal Window
- Disable the Bluetooth driver by going to the following path: `/lib/modules/<kernel_version>/kernel/drivers/bluetooth/` and rename the modules `btmrvl.ko`, `btmrvl_sdio.ko` to `*.kox`.
- Insert the SPB209A EVB SD carrier card into the SDIO slot



- The SPB209A EVB uses drivers and firmware that is included in the standard Linux distribution from version 3.19
- Modules loaded at SPB209A EVB card insert are: `mwifiex`, `mwifiex_sdio`.
- This can be validated with the `lsmod` command. Also check that `btmrvl` and `btmrvl_sdio` isn't loaded (if loaded demount card from SDIO slot and enter command `sudo rmmod btmrvl_sdio` and then `sudo rmmod btmrvl`).
- Validate that the SPB209A EVB card have been installed by checking the sys log, enter `dmesg` command in Terminal Window. It should look like below

```
[128281.045202] mmc0: new high speed SDIO card at address 0001
[128281.045705] mwifiex: rx work enabled, cpus 8
[128281.046930] Bluetooth: vendor=0x2df, device=0x912e, class=255, fn=2
[128282.116764] Bluetooth: FW download over, size XXXXXX bytes
[128282.116796] mwifiex_sdio mmc0:0001:1: FW already running! Skip FW dnld
[128282.844663] mwifiex_sdio mmc0:0001:1: WLAN FW is active
[128282.924085] mwifiex_sdio mmc0:0001:1: info: MWIFIEX VERSION: mwifiex 1.0
(15.68.4.p112)
[128282.924089] mwifiex_sdio mmc0:0001:1: driver_version = mwifiex 1.0
(15.68.4.p112)
```

- Start the 802.11 AC AP and a IPERF Server as per [section "Running the IPERF Server Side via 802.11 ac AP"](#)

- Start a WLAN connection either by using the Network manager located up in the right hand corner or follow the manual set-up below:

```
sudo ifconfig wlan0 up
sudo iwconfig wlan0 essid NETWORK_NAME key WIRELESS_KEY
sudo dhclient wlan0
```

- Run command “ifconfig” to verify that IP-address has been successfully assigned for the SPB209A EVB interface.
- Then start a IPERF Client as per below:

```
iperf -c <ip-address> -u -i 1 -t 10
```

-c means you are running in client mode, connecting to a "host" which is the IP Address following the -c.
-u Set-up for UDP traffic or if TCP traffic is target then skip the -u parameter.
-i 1 means the seconds between periodic graphing and reporting the bandwidth.
-t 10 means the time in seconds to perform the IPerf test the default is set to 10 seconds.

- RX UDP through-put data speed is presented continuously in the Terminal window for given time “-t 10”

Running the IPERF Server Side via 802.11 ac AP

- Power up the 802.11 ac AP (follow AP installation and configuration guide)
- Power up the Linux Host Computer
- Start a Terminal Window
- Enter ifconfig command to get IP address to be used in the IPERF client session
- Start IPERF Server as per below (If TCP traffic is target skip the -u parameter).

```
iperf -s -u
```

Demonstration Example BT

- Power up the Linux Computer
- Start a Terminal Window
- Disable the WiFi driver by going to the following path: `/usr/lib/modules/<kernel_version>/kernel/drivers/net/wireless/mwifiex/` and rename the modules `mwifiex.ko`, `mwifiex_pcie.ko`, `mwifiex_sdio.ko`, `mwifiex_usb.ko` to `*.kox`.
- Insert the SPB209A EVB SD carrier card into the SDIO slot



- The SPB209A EVB uses drivers and firmware that is included in the standard Linux distribution from version 3.19
- Modules loaded at SPB209A EVB card insert are: `btmrvl`, `btmrvl_sdio`.
- This can be validated with the “lsmod” command. Also check that `mwifiex.ko`, `mwifiex_sdio.ko` isn’t loaded (if loaded demount card from SDIO slot and enter command “`sudo rmmod mwifiex_sdio` and then “`sudo rmmod mwifiex`”.
- Validate that the SPB209A EVB card has been installed by checking the sys log, entering “`dmesg`” command in Terminal Window.
- Install `hcitool` dev and check for any new hci device according to instruction at the following reference (<https://help.ubuntu.com/community/BluetoothSetup>)
- Use `hcitool dev` to test Bluetooth functionality

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