



SD-UAPSTA-BT-FM-8777-  
KK44\_LINUX\_3\_10\_33\_M-PXA1088-  
14.75.33.p104-C3X14086\_AX-MGPL Software

*Release Note*

## SD8777 Driver/Firmware Release Note



## ***Table of Contents***

1. Package Information.....	3
2. Version info: .....	3
3. Host Platform .....	3
4. Tested HW .....	4
5. Software features:.....	4
6. WLAN Throughput.....	8
6.1 STA Throughput.....	8
6.2 MMH Throughput .....	8
7. Bug Fixes & Changes .....	9



---

## Feb. 26, 2015

### 1. Package Information

- Version: **SD-UAPSTA-BT-FM-8777-KK44\_LINUX\_3\_10\_33\_M-PXA1088-14.75.33.p104-C3X14086\_AX-MGPL**

### 2. Version info:

- **SOC Version: 8777**
- **Firmware: 14.75.33.p104**
  - sd8777\_uapsta.bin (AX)
- **Driver Package: C3X14086**
- **Driver version:**
  - Following is an explanation of each digit in the versioning scheme designed for the Driver:
    - **C** : Indicated Marvell OS independent combo driver
    - **3X** : indicated support for kernel version 3.x.x
    - **Release Number**: this number tracks the incremental changes in the consequent driver releases given to QA or customers.
    - **Patch Number**: Customers may want to receive a driver build based on a previous release plus specific bug fixes, or patches. It is not unusual for customers to request this when they are close to production. The patch number starts at zero (no patch), and increments as we release subsequent builds with more bug fixes.
- **Firmware version:**
  - Following is an explanation of each digit in the versioning scheme designed for the Firmware:
    - **Major Revision** (first number from the left): Tracks the main FW version.
    - **Minor Revision** (second number from the left): Tracks the chip family, firmware branch, custom projects. etc.
    - **Release Number** (third number from the left): this number tracks the incremental changes in the consequent firmware releases given to QA or customers.
    - **Patch Number** (forth number from the left): Customers may want to receive a firmware build based on a previous release plus specific bug fixes, or patches. It is not unusual for customers to request this when they are close to production. The patch number starts at zero (no patch), and increments as we release subsequent builds with more bug fixes.

### 3. Host Platform

- PXA 1088 running KitKat 4.4.4
- Interfaces used
  - WLAN over SDIO
  - BT over SDIO
  - FM over SDIO (shared with BT through vendor-specific HCI packets)



## 4. Tested HW

- WLAN SOC/RF chipset: W8777

## 5. Software features:

### Access Point Features:

#### 802.11bg Feature:

- Data rate Up to 54Mbps.
- BG rate Adaptation.
- ERP protection, Slot time, Preamble

#### 802.11i Security:

- Open and Shared key authentication
- WEP Data Encryption (64/128 bit)
- TKIP and AES-CCMP Encryption.
- WPA-PSK, WPA2-PSK, WPA/WPA2 Mixed Mode Security Methods.
- Group Key Refresh

#### WAPI Encryption Method

#### 802.11n Features:

- 20 MHz Channel Bandwidth Operation.
- 2.4GHz Support.
- 11n Data rates – Up to 72 Mbps is supported (MCS 0 to MCS 7)
- 1 Spatial stream (1x1)
- Short and long Guard Interval Operation.
- AMPDU Tx/Rx support
- AMSDU Rx (only AMSDU 4k) is supported. No AMSDU Tx support.
- Green Field Operation.
- HT Protection Mechanisms.
- RIFS Rx
- 20/40 Coexistence Support.

#### WMM Support

#### WMM PS (UAPSD)

#### WiFi Protected Setup (WPS)

- Micro AP act as internal Registrar.
- PIN and PBC configuration methods.
- Micro AP act as Enrollee – configured using Wireless External Registrar.

#### Multi-BSS Support

- MAX MMH BSS = 2
- All Security Methods (Independent security configurations on different interfaces).

**General:**

- MAC address Filter table configuration (allowed list/banned list).
- Hidden SSID/Broadcast SSID Enable-Disable.
- IEEE Power Save for associated STA's
- Association support up to 10 Stations.
- Retry Limit support.
- ACS (Automatic Channel Selection).
- MMH Power Save. (Inactivity Based Powermode)
- Custom IE or Vendor Specific IE.
- RTS/CTS.
- Fragmentation/Defragmentation.
- Broadcast/Multicast.
- STA Ageout feature.
- Host Sleep Feature.
- Auto Deep Sleep.
- Host based Authenticator (Hostapd) Support.
- Configuring MAC Address during Driver load

**Wlan Client Features:**

**802.11 n Features**

- 802.11 b/g/n
- 1 Spatial stream (1x1)
- 11n Data rates – Up to 72 Mbps is supported (MCS 0 to MCS 7)
- Support for Tx and Rx of AMPDU and AMSDU-4k Packets
- Support for Only Tx of AMSDU-8k Packets
- Green Field Operation
- STBC Rx
- RIFS Rx
- 20 MHz channel Bandwidth operation
- Short Guard Interval (400ns / 800ns is supported)

**Security**

- Open and Shared key authentication
- WEP data encryption (64/128 bit)
- WPA-PSK and WPA2-PSK
- 802.1x Authentication methods
- Embedded Supplicant

**Power Save Modes**

- IEEE PS
- PPS
- UAPSD

**WMM**

**WAPI**

**WPS (PIN and PBC methods)**

**802.11d**

**General**



- Auto Deep Sleep
- Host Sleep
- Background Scan
- Auto Tx
- ARP Filter
- MEF
- WoW
- Inactivity time out
- Set user Scan
- Subscriber Event
- Vendor specific IE
- Extended Scan

**Simultaneous AP-STA Operation:**

- AP-STA functionality.
- Independent security configurations on different interfaces.
- Enhanced Power Save (AP-STA simultaneous power save)

**WiFi Direct/P2P Features:**

- Autonomous Group Owner (GO) Mode.
- P2P Client Mode.
- Non P2P Client Association with GO.
- P2P client association with WLAN AP.
- P2P Client Powersave.
- P2P Client WMM PS (UAPSD).
- GO WMM PS for associated P2P Clients.
- GO IEEE PS for associated P2P Clients.
- 8 Client Support.
- Provision Discovery

**FM Features:**

- Worldwide FM band—76–108 MHz
- Full RX operation with reference clock, as well as 32.768 kHz external sleep clock
- Configurable Channel spacing/frequency step size (50 kHz steps)
- Dynamic switching between FM audio and Bluetooth audio
- Fully customizable RDS/RBDS receiver
- Automatic Frequency Control (AFC)
- Automatic full band scan and channel seek
- Channel up/down and preset functionality
- Full Alternate Frequency (AF) support
- Volume control
- Soft mute, Mono/Stereo blending (signal dependent)
- Programmable de-emphasis (50/75 us)
- Advanced sleep-mode FM listening (no CPU required)

**Bluetooth**

- BT 4.0
- BT Class 1.5 and Class 2 support
- Automatic Packet Type Selection
- 2.5 scatternet support
- Maximum of seven simultaneous ACL connections

- On chip SBC offload
- Adaptive Frequency Hopping (AFH)
- Channel Quality Driven Data Rate (CQDDR)
- Enhanced Bluetooth Transmit Power Control
- Support for class 1.5 operation
- BT over SDIO
- Multi slot ACL with eSCO
- Low Power Page/Inquiry Scan
- UCD

**Tested Bluetooth Profiles**

- Advanced Audio Distribution Profile (A2DP)
- AVRCP
- HID
- FTP
- PAN
- HSP
- HFP
- OBEX
- OPP
- SPP

**Wlan + BT/BLE Coexistence**

- Supported



## 6. WLAN Throughput

### 6.1 STA Throughput

STA Throughput - 2.4GHz Band (linksys4200)				
CBW	20MHz			
	TCP		UDP	
	Tx	Rx	Tx	Rx
OPEN	55	47.2	62.5	54.9
WPA2	54.1	45.9	61.5	56.5

### 6.2 MMH Throughput

MMH-AP-STA Throughput - 2.4GHz Band				
CBW	20MHz			
	TCP		UDP	
	Tx	Rx	Tx	Rx
OPEN	51.2	47	59.4	59.6
WPA2	50.8	47.1	57.6	56



## 7. Bug Fixes & Changes

Component	Area	Description
WLAN	Driver	<ul style="list-style-type: none"><li>None</li></ul>
	Firmware	<ul style="list-style-type: none"><li>Fix P2P file transfer failure issue (Bug# 1298)</li><li>- Improved P2P GC throughput when GO enabled NoA</li></ul>
BT	Firmware	<ul style="list-style-type: none"><li>Improve OPP throughput issue when headset and mouse is connected.</li></ul>
FM		<ul style="list-style-type: none"><li>None</li></ul>
System		<ul style="list-style-type: none"><li>None</li></ul>

### [Xcover3] OPP Throughput is very slowly when headset and mouse is connected:

- Solution:**  
Bluetooth link scheduler was optimized to meet the multi-link handling efficiently to use the available bandwidth amongst multiple links.

M A R V E L L<sup>®</sup>