



SD8897 Android Driver/Firmware

*Release Note*

Release Note

15.68.4.p41-15.28.4.p41-C3X15020\_B0-GPL

RC1 Software

# SD8897 Driver/Firmware Release Note



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## April 15, 2014

### 1. Package Information

- Version: **15.68.4.p41-15.28.4.p41-C3X15020\_B0-GPL-(FP68)**

Note: All features are not tested. Feature set listed is supported in SoC

### 2. Version info

- SOC Version 88W8897
- Combo Firmware
  - sd8897\_uapsta.bin ← For B0 15.68.4.p41
- Driver Package C3X15020
  - Wlan Driver (mlan.ko , sd8897.ko)
  - AP Driver
  - AP App
  - WPA supplicant v2.1-devel-4.4
  - BT Driver
    - ➔ mbt8897.ko ← Char driver for JB43/Bluedroid
    - ➔ bt8897.ko ← sdio driver with bluez support
  - NFC Driver
    - ➔ mbt8897.ko ← NFC Char driver for JB43/Bluedroid

#### Driver version:

- C : Indicated Marvell OS independent driver
- 3.X : indicated support for kernel version 3.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 (fourth 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.

#### Bluetooth Host Software version:

- BlueZ 4.93 on FC13
- Bluedroid on JB4.2

### 3. Host Platform

- SD-SD8897 on T50 Platform
- Interfaces used
  1. WLAN over SDIO
  2. BT/BLE over SDIO
  3. NFC over SDIO

### 4. Tested HW

- WLAN SOC/RF chipset: 88W8897

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## 5. Features

### 5.1 Wireless LAN Client

#### 5.1.1 WLAN Client Features

##### 1. 802.11 a/b/g/n/ac Features

- 2 Spatial Streams (2x2)
- 20, 40, 80 MHz Ch BW
- MCS 0 – 7
- MCS 8 – 9 (256 QAM)
- VHT AMPDU Delimiter
- AMPDU Tx/Rx
- CCA on Secondary
- CTS with BW Signaling
- Short GI
- STBC 2x1 Tx/Rx
- Rx AMSDU of AMPDU
- RTS with BW Signaling
- Tx Beamforming
- LDPC
- VHT Features in 2.4GHz (256QAM/LDPC)

##### 2. 802.11 n and Legacy Features

- 11n Data rates – Up to 300 Mbps is supported (MCS 0 to MCS 15).
- Support for Tx and Rx of AMPDU Packets.
- Green Field Operation.
- RIFS Rx
- 20/40 MHz channel Bandwidth operation.
- Embedded supplicant.

##### 3. Security

- WEP, TKIP, AES, WAPI, WPA-Personal/Enterprise
- Open and Shared key authentication
- WEP data encryption (64/128 bit)
- WPA-PSK and WPA2-PSK.
- Protected Management Frames

##### 4. Power Save Modes

- IEEE PS
- PPS
- uAPSD

##### 5. WMM

- WMM, WMM-AC
- Enterprise Voice (11k/r)

##### 6. WAPI

## 7. WPS 2.0 (PIN, PBC, NFC)

### 8. Feature list

- Auto Deep Sleep
- Support for Host Sleep
- Background Scan
- Auto Tx
- ARP Filter
- MEF
- Inactivity time out
- Set user Scan
- Subscriber Event
- FEM version 4
- Firmware Auto Reconnect
- DFS Master/Slave and Power Control (11h)

### 9. Passpoint

#### 5.1.2 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.

#### 5.1.3 Simultaneous AP-STA Operation:

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

## 5.2 Access Point Features

### 1. General:

- 802.11 a/b/g/n/ac
- MAC address Filter table configuration (allowed list/banned list)
- 10 STA supported
- Broadcast/Multicast
- STA Ageout feature

- Retry Limit support
  - RTS/CTS
  - Fragmentation/Defragmentation
- 2. 802.11bg Features:**
- Data rate Up to 54Mbps.
  - BG rate Adaptation.
  - ERP protection, Slot time, Preamble
- 3. 802.11n Features:**
- 20/40 MHz Channel Bandwidth Operation.
  - 11n Data rates – Up to 300 Mbps is supported (MCS0 to MCS15)
  - 2 Spatial stream (2x2)
  - Short and long Guard Interval Operation.
  - AMPDU Tx/Rx support
  - Green Field Operation.
  - HT Protection Mechanisms
  - MCS Rate Adaptation
  - RIFS Rx
- 4. 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
  - Passpoint (Hotspot 2.0/11u)

## 5.3 Bluetooth

### 5.3.1 Features

- 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
- Maximum of three SCO/eSCO links
- On chip SBC offload
- ACL (DM1, DH1, DM3, DH3, DM5, DH5, 2-DH1, 2-DH3, 2-DH5, 3-DH1, 3-DH3, 3-DH5)
- SCO (HV1, HV3)
- eSCO (EV3, EV4, EV5, 2EV3, 3EV3, 2EV5, 3EV5)
- Deep Sleep
- BT A2DP/PAN traffic distinction
- Wake on BT
- UCD
- WBS
- Time/Spatial Coexistence with Wi-Fi





## 5.4 NFC Features

- NCI 1.0 support according to NFC Forum specifications
- Full protocol support for NFC Forum, ISO 14443A/B, ISO 18092, ISO 15693, EMV contactless targets
- Reader/Writer, Card Emulation and Peer-to-peer modes
- Data rates 106, 212, 424 and 848 kbps
- SWP and DCLB secure element interfaces and firmware support (availability is package dependent)

## 5.5 TDLS

## 5.6 Miracast

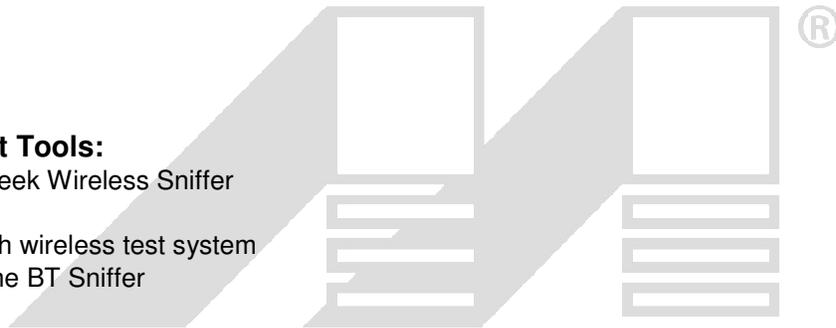
## 5.7 DRCS

## 5.8 DFS Repeater mode

## 6. Testing

### 6.1 Test Tools:

- OmniPeek Wireless Sniffer
- iperf
- Azimuth wireless test system
- Frontline BT Sniffer



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## 7. WLAN Throughput

### 7.1 STA Throughput

<b>Ref. AP</b>	Netgear 6300   Firmware V1.0.2.68_1.0.49
<b>Environment</b>	Over the Air in Shield Box
<b>Default Channel</b>	6 for 2.4GHz   36 for 5Ghz

STA Infra Throughput - BGN Mode   2.4GHz Band								
AMPDU Throughput								
Guard Interval: Short GI								
Security	20MHz				40MHz			
	TCP		UDP		TCP		UDP	
	Tx	Rx	Tx	Rx	Tx	Rx	Tx	Rx
<b>OPEN</b>	85.60	104.00	116.00	124.00	130.00	155.00	200.00	204.00
<b>WPA2</b>	84.50	103.00	109.00	122.00	113.00	129.00	180.00	165.00

STA Infra Throughput - A/N/AC Mode   5GHz Band												
AMPDU Throughput												
Guard Interval: Short GI												
Security	20MHz				40MHz				80MHz- VHT			
	TCP		UDP		TCP		UDP		TCP		UDP	
	Tx	Rx	Tx	Rx	Tx	Rx	Tx	Rx	Tx	Rx	Tx	Rx
<b>OPEN</b>	101.00	115.00	138.00	144.00	145.00	148.00	210.00	208.00	144.00	136.00	222.00	208.00
<b>WPA2</b>	98.60	110.00	135.00	134.00	123.00	118.00	184.00	169.00	120.00	117.00	187.00	169.00



## 8. Known issues

Component	Description
STA	
TDLS	TDLS link exit after starting UDP or TCP iperf traffic.
MMH	
DRCS MMH+STA	
P2P	
Simultaneous- P2P	
Miracast	

## 9. Bug Fixes

Component	Description
STA	In-STA does not connect back to saved AP after reboot in both case Open AP and secure AP
TDLS	
MMH	
DRCS MMH+STA	
P2P	
Simultaneous- P2P	
Miracast	Miracast Fails, T5T display does not switch to sink device after successful P2P connection

M A R V



## 10. Simultaneous Mode use cases

				Simultaneous Mode Use Cases	
m lan0	uap0	uap1	wfd0	Use case	DRCS Supported
				Standalone Modes - Single State	
Active				STA only Mode	NA
	Active			MMH(Single -BSS) only Mode	NA
			Active	P2P only mode - P2P_GO   P2P_Client	NA
				Simultaneous Modes - Dual State involving MMH and STA	
	Active	Active		MMH (Multiple-BSS - max_uAP_BSS =2) Mode	Yes
Active	Active			Simultaneous STA + MMH(Single -BSS) Mode	Yes
Active	Active	Active		Simultaneous STA + MMH (Multiple-BSS - max_uAP_BSS =2) Mode	NA
				Simultaneous Modes - Dual State involving P2P and STA	
Active			Active	Simultaneous STA + P2P-GO Mode	Yes
Active			Active	Simultaneous STA + P2P-Client Mode	NA
				Simultaneous Modes - Dual State involving P2P and MMH	
	Active		Active	Simultaneous MMH (Single-BSS) + P2P-GO Mode	Yes
	Active		Active	Simultaneous MMH (Single-BSS) + P2P-Client Mode	Yes
	Active	Active	Active	Simultaneous MMH (Multiple-BSS - max_uAP_BSS =2) + P2P-GO Mode	NA
	Active	Active	Active	Simultaneous MMH (Multiple-BSS - max_uAP_BSS =2) + P2P-Client Mode	NA
				Simultaneous Modes - Multi-State involving P2P + MMH + STA	
Active	Active		Active	Simultaneous STA + MMH (Single-BSS) + P2P-GO Mode	NA
Active	Active		Active	Simultaneous STA + MMH (Single-BSS) + P2P-Client Mode	NA
Active	Active	Active	Active	Simultaneous STA + MMH (Multiple-BSS - max_uAP_BSS =2) + P2P-GO Mode	NA
Active	Active	Active	Active	Simultaneous STA + MMH (Multiple-BSS - max_uAP_BSS =2) + P2P-Client Mode	NA

## 11. Notes

	Description
1	BT and NFC share common HCI Interface
2	All Radios have been standalone functionally tested in Alpha Release
3	Low 40Mhz-Rx numbers are seen

