

SD-Wi-Fi-FP91-88W8977

Wi-Fi Software Features for FreeRTOS



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Revision History

Table 1: Document revision history

Revision	Date	Change details
Rev. 1	17-Jul-2020	Initial release
Rev. 2	30-Nov-2020	Removed Wi-Fi Certification and EU Conformance details and moved them to Release note document
Rev. 3	11-Jan-2021	Added Section for Wi-Fi Test mode

1. Wi-Fi Features

1.1. Wireless Client Features

1.1.1. 802.11n - High Throughput

- 2.4 GHz and 5 GHz band operation
- 2.4 GHz band supported channel bandwidths : 20MHz
- 5 GHz band supported channel bandwidths : 20MHz, 40MHz
- Short/long guard interval (400 ns/800 ns)
- 1 spatial stream (1x1)
- 11n data rates - Up to 150 Mbit/s (MCS 0 to MCS 7)
- Aggregated MAC Protocol Data Unit(AMPDU) Rx support
- Aggregated MAC Service Data Unit(AMSDU)-4k Rx support
- HT protection mechanisms
- Tx MCS rate adaptation (BGN)

1.1.2. 802.11 a/b/g Features

- 11 a/b/g data rates - Up to 54 Mbit/s
- Tx rate adaptation (BG)
- Fragmentation/defragmentation
- ERP protection, slot time, preamble

1.1.3. 802.11d

- 802.11d - Regulatory domain/operating class/country info

1.1.4. 802.11i - Security

- Embedded supplicant support
 - Open security
 - WPA-PSK, WPA2-PSK security (AES-CCMP encryption)
 - WPA + WPA2 mixed mode
 - WPA2 + WPA3 (SAE) mixed mode
 - WPA3 (SAE)

1.1.5. 802.11w - Protected Management Frames(PMF)

- PMF require and capable
- Unicast management frames - Encryption/decryption - using CCMP
- Broadcast management frames - Encryption/decryption - using BIP
- SA query request/response
- PMF support (embedded supplicant)

1.1.6. Power Save Mode

- Deep sleep
- IEEE power save

1.1.7. General Features

- Embedded MLME
- EU adaptivity support (ETSI cert)
- DFS radar detection in slave mode (Follow AP)

1.2. Mobile AP Features

1.2.1. 802.11n - High Throughput

- 2.4 GHz and 5 GHz band operation
- 2.4 GHz band supported channel bandwidths: 20 MHz
- 5 GHz band supported channel bandwidths: 20 MHz, 40 MHz
- Short/long guard interval (400 ns/800 ns)
- 1 spatial stream (1x1)
- 11n data rates – Up to 150 Mbit/s (MCS0 to MCS7)
- Tx MCS rate adaptation (BGN)
- Aggregated MAC Protocol Data Unit(AMPDU) Rx support
- Aggregated MAC Service Data Unit(AMSDU) - 4k Rx support
- Max client support (up to 8 devices)
- HT protection mechanisms

1.2.2. 802.11 b/g Features

- 11 b/g data rates – Up to 54 Mbit/s
- Tx rate adaptation (BG)
- ERP protection, slot time, preamble
- Handling of associated STAs with IEEE PS - PS-poll and null data

1.2.3. 802.11d

- 802.11d - Regulatory domain/operating class/country info

1.2.4. 802.11i - Security

- Embedded authenticator support
 - Open security
 - WPA2-PSK security (AES-CCMP encryption)
 - WPA3 (SAE)

1.2.5. 802.11w - Protected Management Frames(PMF)

- PMF require and capable
- Unicast management frames - Encryption/decryption - using CCMP
- Broadcast management frames - Encryption/decryption - using BIP
- SA query request/response

1.2.6. General Features

- Deep sleep
- Embedded MLME
- EU adaptivity support (ETSI Cert)
- Automatic channel selection (ACS)
- Extended channel switch announcement (ECSA)

2. Simultaneous AP-STA Operation (Same Channel)

- AP-STA functionality

3. Test Mode

3.1.1. Wi-Fi

- Transmit Continuous Wave (CW) mode
- Transmit standard 802.11 packets
- Receive mode

Refer to **Section: wifi_test_mode sample application** in the document: *UM11442-NXP Wi-Fi and Bluetooth Demo Applications for i.MX RT platforms User Guide* for more details.

4. Notes

None.

5. Acronyms & Abbreviations

Acronyms	Definitions
AP	Access Point
WPA	Wi-Fi protected access
MLME	Mac Layer Management Entity
STA	Station
HT	High Throughput
MCS	Modulation and Coding Scheme
ERP	Extended Rate Physical
SAE	Simultaneous Authentication of Equals
CCMP	Counter Mode CBC-MAC Protocol

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