NXP-Wireless-Chipset-Release-Notes

SD-Wi-Fi-UART-BT-FP91-IW416
SD-Wi-Fi-UART-BT-FP91-88W8987
SD-Wi-Fi-FP91-88W8801
SD-Wi-Fi-UART-BT-FP99-IW612

Release Notes

Contents

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Revision History

Table 1: Revision History of the document

Revision	Date	Change details
Rev. 1	24-June-2022	Initial release with new Format

Rev. 2	15-Sept-2022	Modifications:
		• Deprecated reference of 88W8977 from the document
		• Table 2:
		  ○ Removed Shared Authentication from Wi-Fi Client
		  ○ Added FIPS in Wi-Fi Client General feature
		  ○ Removed TxPower Config V2 from Wi-Fi AP and Client General Features
		• Section 3.1.1 "Package Information": Updated SDK version
		• Section 3.1.2 "Version Information": Updated FW version
		• Section 3.1.4.1 "WFA Certifications": Mention 802.11ac and WPA3(SAE)
		• Section 3.1.5.1 "Throughput Test Setup": Added Murata module details
		• Section 3.1.5.2 "STA Throughput": Updated TP numbers
		• Section 3.1.5.3 "Mobile AP Throughput": Updated TP numbers
		• Section 3.1.7 "Bug Fixes/Feature Enhancements": Updated FW version and details for fixed issues
		• Section 3.2.1 "Package Information": Updated SDK version
		• Section 3.2.2 "Version Information": Updated FW version
		• Section 3.2.4.1 "WFA Certifications": Mention WPA3(SAE)
		• Section 3.2.5.1 "Throughput Test Setup": Added Murata module details
		• Section 3.2.5.2 "STA Throughput": Updated TP numbers
		• Section 3.2.5.3 "Mobile AP Throughput": Updated TP numbers
		• Section 3.2.7 "Bug Fixes/Feature Enhancements": Updated FW version and details for fixed issues
		• Section 3.3.1 "Package Information": Updated SDK version
		• Section 3.3.5.2 "STA Throughput": Updated TP numbers
		• Section 3.3.5.3 "Mobile AP Throughput": Updated TP numbers

Rev.3	03-Jan-2023	Modifications: • Section 3.1.1 "Package Information": Updated SDK version • Section 3.1.2 "Version Information": Updated FW version • Section 3.2.1 "Package Information": Updated SDK version • Section 3.2.2 "Version Information": Updated FW version

		• Section 3.3.1 "Package Information": Updated SDK version • Section 3.3.2 “Version Information”: Updated FW version • Section 3.3.5.2 "STA Throughput": Updated TP numbers • Section 3.3.5.3 "Mobile AP Throughput": Updated TP numbers

Rev.4	21-Mar-2023	Modifications:
		• Table 2:
		  ○ Removed Shared Authentication from Wi-Fi Client
		  ○ Added 11k, 11v, and 11r in Wi-Fi Client General feature
		  ○ Added TKIP and foot note for TKIP in Wi-Fi Client General feature
		  ○ Removed FIPS from Wi-Fi AP General feature
		• Section 3.1.1 "Package Information": Updated SDK version
		• Section 3.1.2 "Version Information": Updated FW version
		• Section 3.1.4.1 "WFA Certifications": Mentioned FFD, SVD and WPA3 SAE (R3) for STA
		• Section 3.1.5.1 "Throughput Test Setup": Updated External AP details
		• Section 3.1.5.2 "STA Throughput": Updated TP numbers
		• Section 3.1.5.3 "Mobile AP Throughput": Updated TP numbers
		• Section 3.1.7 "Bug Fixes/Feature Enhancements": Updated FW version and details for fixed issues
		• Section 3.2.1 "Package Information": Updated SDK version
		• Section 3.2.2 "Version Information": Updated FW version
		• Section 3.2.4.1 "WFA Certifications": Mentioned FFD, SVD and WPA3 SAE (R3) for STA
		• Section 3.2.5.1 "Throughput Test Setup": Updated External AP details
		• Section 3.2.5.2 "STA Throughput": Updated TP numbers
		• Section 3.2.5.3 "Mobile AP Throughput": Updated TP numbers
		• Section 3.2.7 "Bug Fixes/Feature Enhancements": Updated FW version and details for fixed issues
		• Section 3.3.1 "Package Information": Updated SDK version
		• Section 3.3.2 "Version Information": Updated FW version
		• Section 3.3.4.1 "WFA Certifications": Mentioned FFD, SVD and WPA3 SAE (R3) for STA.
		• Section 3.3.5.2 "STA Throughput": Updated TP numbers
		• Section 3.3.5.3 "Mobile AP Throughput": Updated TP numbers
		• Section 3.3.7 "Bug Fixes/Feature Enhancements": Updated FW version and details for fixed issues

Rev.5	27-July-2023	Modifications:
		• Updated SDK version to 2.14.0 and added IW612 with foot note that IW612 (only supported for i.MX RT1170 EVK for SDK 2.13.2)
		• Table 2:
		  ○ Added IW612 with foot note
		  ○ WiFi:Host based supplicant features: Enterprise security, wpa3 R3, WPA3 Suite B, WPS, OWE for AP and STA
		  ○ Wi-Fi: Added general features: RF Test mode, TPC, STBC RX
		  ○ Bluetooth: RF test mode, Deep Sleep using Out of Band, Low Energy Periodic Advertisement, Low Energy Power Control, Low Energy Long Range
		• Section 3.1: Updated SDK version, FW version, iPerf version, TP numbers, fixes and known issues
		• Section 3.2: Updated SDK version, FW version, iPerf version, TP numbers, fixes and known issues
		• Section 3.3: Added new
		• Section 3.4: Updated SDK version, FW version, iPerf version, TP numbers

1 About this document

This document contains important information about the supported features, release versions, fixed/known issues and performance of the Wi-Fi, Bluetooth and Co-ex.

This is a consolidated release that has been tested for wireless chipsets mentioned below in this document with SDK version 2.14.0.

***Note**: The IW612 support is enabled in i.MX RT1170 EVKB for SDK 2.13.2 version only*

2 Feature List

Table 2: Feature List for available SoCs

Wireless Type	Type	Features List	Sub Features List	SD-UART			SD
				8987	IW416	IW612	8801
Wi-Fi	Client	802.11n - High Throughput	2.4 GHz band operation supported channel bandwidth: 20 MHz	Y	Y	Y	Y
			2.4 GHz band supported channel bandwidths : 40 MHz	Y	Y	Y	N
			5 GHz band supported channel bandwidths : 20 MHz	Y	Y	Y	N
			5 GHz band supported channel bandwidths : 40 MHz	Y	Y	Y	N
			Short/long guard interval (400 ns/800 ns)	Y	Y	Y	Y
			11n data rates – Up to 72 Mbit/s (MCS 0 to MCS 7)	Y	Y	Y	Y
			11n data rates – Up to 150 Mbit/s (MCS 0 to MCS 7)	Y	Y	Y	N
			1 spatial stream (1x1)	Y	Y	Y	Y
			HT protection mechanisms	Y	Y	Y	Y
			Aggregated MAC Protocol Data Unit(AMPDU) Rx support	Y	Y	Y	Y
			Aggregated MAC Service Data Unit(AMSDU) -4k Rx support	Y	Y	Y	Y
			Tx MCS rate adaptation (BGN)	Y	Y	Y	Y
			Rx Low Density Parity Check (LDPC)	Y	N	Y	N
		802.11 ac - Very High Throughput	2.4 GHz band supported channel bandwidths : 20MHz	Y	N	Y	N
			5 GHz band supported channel bandwidths: 20 MHz	Y	N	Y	N
			5 GHz band supported channel bandwidths: 40 MHz	Y	N	Y	N
			5 GHz band supported channel bandwidths: 80 MHz	Y	N	Y	N
			11ac data rates - Up to 433.3 Mbps (MCS 0 to MCS 9) - 1x1	Y	N	Y	N
			MU-MIMO Beamformee (Explicit and Implicit)	Y	N	Y	N
			RTS/CTS with BW Signaling	Y	N	N	N
			Operation Mode Notification	Y	N	Y	N
			Backward Compatibility with non-VHT devices	Y	N	Y	N
			Tx VHT MCS Rate Adaptation	Y	N	Y	N
		802.11ax - High efficiency	2.4 GHz band supported channel bandwidths : 20MHz	N	N	Y	N
			5 GHz band supported channel bandwidths: 20 MHz	N	N	Y	N
			5 GHz band supported channel bandwidths: 40 MHz	N	N	Y	N
			5 GHz band supported channel bandwidths: 80 MHz	N	N	Y	N
			OFDMA (UL/DL, 484 RU)	N	N	Y	N
			1024QAM	N	N	Y	N
			TWT	N	N	Y	N
			DCM	N	N	Y	N
			ER	N	N	Y	N

Wireless Type	Type	Features List	Sub Features List	SD-UART			SD
				8987	IW416	IW612	8801
Wi-Fi	Client	802.11 a/b/g Features	11 b/g data rates - Up to 54 Mbit/s	Y	Y	Y	Y
			11 a data rates - Up to 54 Mbit/s	Y	Y	Y	N
			Tx rate adaptation (BG)	Y	Y	Y	Y
			Fragmentation/defragmentation	Y	Y	Y	Y
			ERP protection, slot time, preamble	Y	Y	Y	Y
		802.11d	802.11d - Regulatory Domain/Operating Class/Country Info	Y	Y	Y	Y
		802.11e - QoS	EDCA [Enhanced Distributed Channel Access] / WMM (Wireless Multi-Media)	Y	N	Y	N
		802.11i - Security	Open security	Y	Y	Y	Y
			WPA2-PSK Security (AES-CCMP Encryption)	Y	Y	Y	Y
			WPA + WPA2 mixed mode	Y	Y	Y	Y
			WPA3 SAE (R3)	Y	Y	Y	Y
			WPA3 SAE (R3) (Host based)	Y	Y	Y	Y
			WPA2 Enterprise support (Host based - TLS, TTLS, PEAP v0, PEAP v1)	Y	Y	Y	N
			WPA3 Enterprise support (Host based - TLS, TTLS, PEAP v0, PEAP v1)	Y	Y	Y	N
			WPA3 Suite B (Host based)	Y	Y	Y	N
			WPS (Host based)	Y	Y	Y	N
			OWE (Host based)	Y	Y	Y	N
		Power Save Mode	Deep sleep	Y	Y	Y	Y
			IEEE power save	Y	Y	Y	Y
			Host Sleep/WoWLAN	Y	Y	Y	N
Wi-Fi	Client	802.11w - PMF (Protected Management Frames)	PMF require and capable	Y	Y	Y	Y
			Unicast management frames - Encryption/decryption - using CCMP	Y	Y	Y	Y
			Broadcast management frames - Encryption/decryption - using BIP	Y	Y	Y	Y
			SA query request/response	Y	Y	Y	Y
			PMF Support using Embedded supplicant	Y	Y	Y	Y
		General Features	Embedded Supplicant	Y	Y	Y	Y
			Host sleep packet filtering	N	N	Y	N
			Host based supplicant	Y	Y	Y	Y
			Embedded MLME	Y	Y	Y	Y
			EU adaptivity support (ETSI Cert)	Y	Y	Y	Y
			DFS Radar Detection in Slave Mode (Follow AP)	Y	Y	Y	N
			External Coex (Software interface)	N	N	N	Y
			IPv6	Y	Y	Y	Y
			FIPS	Y	Y	Y	N
			TKIP*	Y	Y	Y	Y
			11k	Y	Y	Y	N
			11v	Y	Y	Y	N
			11r	Y	Y	Y*	N
			Embedded roaming based on RSSI threshold beacon loss	N	N	Y	N
			ARP offload	N	N	Y	N

* As per Wi-Fi specification, connecting in TKIP security in non 802.11n mode is allowed.

* Support available in host base supplicant

Wireless Type	Type	Features List	Sub Features List	SD-UART			SD
				8987	IW416	IW612	8801
Wi-Fi	Client	General Features	RF Test mode	Y	Y	Y	Y
			Cloud keep alive	N	N	Y	N
			TPC (Transmit Power Control)	Y	Y	N	N
			UNII-4 channel support	N	N	Y	N
			ClockSync using TSF	N	N	Y	N
	AP	802.11n - High Throughput	2.4 GHz band operation supported channel bandwidth: 20 MHz	Y	Y	Y	Y
			2.4 GHz band supported channel bandwidths : 40 MHz	Y	Y	Y	N
			5 GHz band supported channel bandwidths : 20 MHz	Y	Y	Y	N
			5 GHz band supported channel bandwidths : 40 MHz	Y	Y	Y	N
			Short/long guard interval (400 ns/800 ns)	Y	Y	Y	Y
			11n data rates – Up to 72 Mbit/s (MCS 0 to MCS 7)	Y	Y	Y	Y
			11n data rates – Up to 150 Mbit/s (MCS 0 to MCS 7)	Y	Y	Y	N
			1 spatial stream (1x1)	Y	Y	Y	Y
			HT protection mechanisms	Y	Y	Y	Y
			Aggregated MAC Protocol Data Unit(AMPDU) Rx support	Y	Y	Y	Y
			Aggregated MAC Service Data Unit(AMSDU) - 4k Rx support	Y	Y	Y	Y
			Max client support (up to 8 devices)	Y	Y	Y	Y
			Tx MCS rate adaptation (BGN)	Y	Y	Y	Y
			Rx Low Density Parity Check (LDPC)	Y	N	Y	N
		802.11ac – Very High Throughput	5 GHz band supported channel bandwidth: 20 MHz	Y	N	Y	N
			5 GHz band supported channel bandwidth: 40 MHz	Y	N	Y	N
			5 GHz band supported channel bandwidth: 80MHz	Y	N	Y	N
			Short/Long Guard Interval (400ns/800ns)	Y	N	Y	N
			11ac Data rates – Up to 433.3 Mbps (MCS 0 to MCS 9)	Y	N	Y	N
			11ac Data rates - Up to 866.7 Mbps (MCS 0 to MCS 9)	Y	N	Y	N
			Single User- Aggregated MAC Protocol Data Unit (SU-AMPDU) Aggregation	Y	N	Y	N
			RTS/CTS with BW Signaling	Y	N	N	N
			Backward Compatibility with non-VHT devices	Y	N	Y	N
			Tx VHT MCS Rate Adaptation	Y	N	N	N
			MU-MIMO Beamformee (Explicit and Implicit)	Y	N	Y	N
			Operation Mode Notification	Y	N	Y	N
		802.11ax – High efficiency	2.4 GHz band operation (20/40 MHz channel bandwidth)	N	N	Y	N
			5 GHz band operation (20/40/80 MHz channel bandwidth)	N	N	Y	N
		802.11d	802.11d - Regulatory Domain/Operating Class/Country Info	Y	Y	Y	Y
		802.11e -QoS	EDCA [Enhanced Distributed Channel Access] / WMM (Wireless Multi-Media)	Y	N	Y	N

Wireless Type	Type	Features List	Sub Features List	SD-UART			SD
				8987	IW416	IW612	8801
Wi-Fi	AP	802.11i - Security	Open security	Y	Y	Y	Y
			WPA2-PSK security (AES-CCMP encryption)	Y	Y	Y	Y
			WPA2 + WPA3 (SAE) mixed mode	Y	Y	Y	Y
			WPA3 SAE (R1)	Y	Y	Y	Y
			WPA3 SAE (R3)	Y	Y	Y	N
			WPA3 SAE (R3) (Host based)	Y	Y	Y	Y
			WPA2 Enterprise support (Host based - TLS, TTLS, PEAP v0, PEAP v1)	Y	Y	Y	Y
			WPA3 Enterprise support (Host based - TLS, TTLS, PEAP v0, PEAP v1)	Y	Y	Y	Y
			WPA3 Suite B (Host based)	Y	Y	Y	N
			WPS (Host based)	Y	Y	Y	N
			OWE (Host based)	Y	Y	Y	N
		802.11w - Protected Management Frames (PMF)	PMF require and capable	Y	Y	Y	Y
			Unicast management frames - Encryption/decryption - using CCMP	Y	Y	Y	Y
			Broadcast management frames - Encryption/decryption - using BIP	Y	Y	Y	Y
			SA query request/response	Y	Y	Y	Y
		General Features	Embedded Authenticator	Y	Y	Y	Y
			Embedded MLME	Y	Y	Y	Y
			EU adaptivity support	Y	Y	Y	Y
			Automatic channel selection (ACS)	Y	Y	Y	Y
			Extended channel switch announcement (ECSA)	Y	Y	Y	Y
			External Coex (Software interface)	N	N	N	Y
			STBC RX	Y	N	N	N
			TPC (Transmit Power Control)	Y	Y	N	Y
	AP-STA	Simultaneous AP-STA Operation (Same Channel)	AP-STA functionality	Y	Y	Y	Y

Wireless Type	Type	Features List	Sub Features List	SD-UART		
				8987	IW416	IW612
Bluetooth	Bluetooth Classic Features	General Features	BT Class 1.5 and Class 2 support	Y	Y	Y
			Scatternet support	Y	Y	Y
			Maximum of seven simultaneous ACL connections	Y	Y	Y
			Automatic Packet Type Selection	Y	Y	Y
			Bluetooth - 2.1 to 5.0 Specification Support	Y	Y	Y
			Low power sniff	Y	Y	Y
			Deep Sleep using Out of Band	Y	Y	N
			Wake on Bluetooth (Chip to Host)	Y	N	N
			RF Test mode	Y	Y	N
		Bluetooth Packet Type Supported	ACL (DM1, DH1, DM3, DH3, DM5, DH5, 2-DH1, 2-DH3, 2-DH5, 3-DH1, 3-DH3, 3-DH5)	Y	Y	Y
			SCO (HV1, HV3)	Y	Y	Y
			eSCO (EV3, EV4, EV5, 2EV3, 3EV3, 2EV5, 3EV5)	Y	Y	Y
		Bluetooth Profiles Supported	A2DP Source/Sink	Y	Y	Y
			AVRCP Target/Controller	Y	Y	Y
			HFP Dev/AG	Y	Y	Y
			OPP Server/Client	Y	Y	Y
			SPP Server/Client	Y	Y	Y
			HID Target/Device	Y	Y	Y
		Bluetooth Audio Features	PCM NBS Master / Slave	Y	Y	Y
			PCM WBS Master / Slave	Y	Y	Y
	Bluetooth LE Features	Generic Features	Maximum 16 Bluetooth LE connections (central role)	Y	Y	Y
			Deep Sleep using Out of Band	Y	Y	N
			Wake on BLE (Chip to Host)	Y	Y	Y
			RF Test mode	Y	Y	N
		Bluetooth Profile Support	Bluetooth LE GATT	Y	Y	Y
			Bluetooth LE HID over GATT	Y	Y	Y
			Bluetooth LE GAP	Y	Y	Y
		Bluetooth LE 4.0 Support	Low Energy Physical Layer	Y	Y	Y
			Low Energy Link Layer	Y	Y	Y
			Enhancements to HCI for Low Energy	Y	Y	Y
			Low Energy Direct Test Mode	Y	Y	Y
		Bluetooth 4.1 Support	Low duty Cycle Directed Advertising	Y	Y	Y
			Bluetooth LE Dual Mode Topology	Y	Y	Y
			Bluetooth LE Privacy v1.1	Y	Y	Y
			Bluetooth LE Link Layer Topology	Y	Y	Y
		Bluetooth 4.2 Support	Bluetooth LE secure connection	Y	Y	Y
			Bluetooth LE Link Layer Privacy v1.2	Y	Y	Y
			Bluetooth LE Data Length Extension	Y	Y	Y
			Link Layer Extended Scanner Filter Policies	Y	Y	Y
		Bluetooth 5.0 Support	Bluetooth LE 2 Mbps Support	Y	Y	Y
			High Duty Cycle Directed Advertising	Y	Y	Y
			Low Energy advertising extension	N	Y	Y
			Low Energy Long Range	N	Y	Y
			Low Energy Periodic Advertisement	N	Y	Y
		Bluetooth 5.2 Support	Low Energy Power Control	N	N	Y

Coex	Bluetooth + Wi-Fi Coexistence	BCA TDM Co-ex Mode (Shared Antenna)	STA + Bluetooth Coex	Y	Y	Y
			STA + Bluetooth LE Coex	Y	Y	Y
			STA + Bluetooth + Bluetooth LE Coex	Y	Y	Y
			AP + Bluetooth Coex	Y	Y	Y
			AP + Bluetooth LE Coex	Y	Y	Y
			AP + Bluetooth + Bluetooth LE Coex	Y	Y	Y

Wireless Type	Type	Features List	Sub Features List	SD-UART
				IW612
802.15.4	802.15.4 features	General features	Spinel over SPI	Y
			OpenThread RCP Mode implementing Thread1.3	Y
			802.15.4-2015 MAC/PHY as required by Thread 1.3	Y
			Direct/Indirect transmission with/without ACK	Y
			15.4 CSL parent feature implementation	Y
			Enhanced Frame Pending	Y
			Enhanced keep alive	Y
			Router	Y
			Leader	Y
			Router Eligible End Device (REED)	Y
			End Device (FED, MED)	Y
	Bluetooth, Wi-Fi , and 802.15.4 Coexistence	Coex features	STA + Bluetooth	Y
			Mobile AP + Bluetooth	Y
			Bluetooth LE + Wi-Fi	Y
			Bluetooth + Bluetooth LE + Wi-Fi	Y
			OpenThread (OT) + BT	Y
			OT + Bluetooth LE	Y
			OT + BT + Bluetooth LE	Y
			OT + Wi-Fi	Y
			BT + OT + Wi-Fi	Y
			Bluetooth LE + OT + Wi-Fi	Y
			BT + Bluetooth LE + OT + Wi-Fi	Y
			Single antenna configuration	Y

***Note**: The IW612 support is enabled in i.MX RT1170 EVKB for SDK 2.13.2 version only*

3 Release Notes

3.1 SD-UART 8987

3.1.1 Package Information

- SDK Version: 2.14.0

3.1.2 Version Information

- Wireless SoC : 88W8987
- Wi-Fi and Bluetooth/Bluetooth LE Firmware Version : 16.91.21.p91.6
  - 16 - Major revision
  - 91 - Feature pack
  - 21 - Release version
  - p91.6- Patch number

3.1.3 Host Platform

- All i.MX RT Platform running FreeRTOS
- Interface used
  - Wi-Fi over SDIO (SDIO 2.0 Support, SDIO clock frequency : 50 MHz)
  - Bluetooth/Bluetooth LE over UART
- Test Tools
  - iPerf (version 2.1.9)

3.1.4 Wi-Fi and Bluetooth Certification

The Wi-Fi and Bluetooth certification is obtained with the following combinations.

3.1.4.1 WFA Certifications

- STA | 802.11n
- STA | 802.11ac
- STA | PMF
- STA | FFD
- STA | SVD
- STA | WPA3 SAE (R3)

Refer TN00066-WFA Derivative Certification Process document available in the SDK Package

NOTE: *This release Supports STAUT only certifications*

3.1.4.2 Bluetooth Controller Certification

QDID : https://launchstudio.bluetooth.com/ListingDetails/115533

3.1.5 Wi-Fi Throughput

3.1.5.1 Throughput Test Setup

- Environment: Shield Room - Over the Air
- External Access Point: ASUS AX88U
- DUT: W8987 Murata (Module : **1ZM M.2**) with EVK-MIMXRT1060 platform
- DUT Power Source: External power supply
- External Client: Apple MacBook Air
- Channel: 6 | 36
- Wi-Fi application: wifi_cli
- Compiler used to build application: armgcc
- Compiler Version: gcc-arm-none-eabi-9-2020-q2-update
- iPerf Commands used in test:

TCP TX	TCP RX	UDP TX	UDP RX
iperf -c <remote_ip> -t 60	iperf -s	iperf -c <remote_ip> -t 60 -u -B <local_ip> -b 120 **NOTE:** Defaults data rate is 100mbps	iperf -s -u -B <local_ip>

Refer to **Section-2.3** in *UM11442-NXP Wi-Fi and Bluetooth Demo Applications User Guide for i.MX RT Platforms* to read more about the throughput test setup and topology.

3.1.5.2 STA Throughput

External APs: ASUS AX88U

STA Mode Throughput - BGN Mode | 2.4 GHz Band | 20 MHz				
Protocol	**TCP (Mbit/s)**		**UDP (Mbit/s)**	
Direction	Tx	Rx	Tx	Rx
Open Security	32	42	35	49
WPA2-AES	33	38	35	50
WPA3-SAE	32	38	33	51

STA Mode Throughput - BGN Mode | 2.4 GHz Band | 40 MHz				
Protocol	**TCP (Mbit/s)**		**UDP (Mbit/s)**	
Direction	Tx	Rx	Tx	Rx
Open Security	34	39	36	49
WPA2-AES	33	37	34	48
WPA3-SAE	30	37	34	51

STA Mode Throughput - AN Mode | 5 GHz Band | 20 MHz				
Protocol	**TCP (Mbit/s)**		**UDP (Mbit/s)**	
Direction	Tx	Rx	Tx	Rx
Open Security	46	51	44	64
WPA2-AES	45	51	44	63
WPA3-SAE	45	51	44	63

STA Mode Throughput - AN Mode | 5 GHz Band | 40 MHz				
Protocol	**TCP (Mbit/s)**		**UDP (Mbit/s)**	
Direction	Tx	Rx	Tx	Rx
Open Security	70	81	71	73
WPA2-AES	69	82	71	73
WPA3-SAE	66	81	71	73

STA Mode Throughput - AC Mode | 5 GHz Band | 20 MHz (VHT)				
Protocol	**TCP (Mbit/s)**		**UDP (Mbit/s)**	
Direction	Tx	Rx	Tx	Rx
Open Security	51	58	47	73
WPA2-AES	51	58	48	73
WPA3-SAE	51	58	47	73

STA Mode Throughput - AC Mode | 5 GHz Band | 40 MHz (VHT)				
Protocol	**TCP (Mbit/s)**		**UDP (Mbit/s)**	
Direction	Tx	Rx	Tx	Rx
Open Security	73	86	71	73
WPA2-AES	75	85	71	73
WPA3-SAE	72	87	71	73

STA Mode Throughput - AC Mode | 5 GHz Band | 80 MHz (VHT)				
Protocol	**TCP (Mbit/s)**		**UDP (Mbit/s)**	
Direction	Tx	Rx	Tx	Rx
Open Security	72	96	71	73
WPA2-AES	80	91	71	73
WPA3-SAE	76	91	71	73

3.1.5.3 Mobile AP Throughput

External client: Apple Macbook Air

Mobile AP Mode Throughput - BGN Mode | 2.4 GHz Band | 20MHz				
Protocol	**TCP (Mbit/s)**		**UDP (Mbit/s)**	
Direction	Tx	Rx	Tx	Rx
Open Security	46	44	44	63
WPA2-AES	45	42	44	63
WPA3-SAE	41	41	44	62

Mobile AP Mode Throughput - BGN Mode | 2.4 GHz Band | 40MHz				
Protocol	**TCP (Mbit/s)**		**UDP (Mbit/s)**	
Direction	Tx	Rx	Tx	Rx
Open Security	62	68	81	78
WPA2-AES	60	67	81	77
WPA3-SAE	60	67	81	77

Mobile AP Mode Throughput - AN Mode | 5 GHz Band | 20 MHz				
Protocol	**TCP (Mbit/s)**		**UDP (Mbit/s)**	
Direction	Tx	Rx	Tx	Rx
Open Security	47	53	44	63
WPA2-AES	47	52	44	63
WPA3-SAE	46	53	44	63

Mobile AP Mode Throughput - AN Mode | 5 GHz Band | 40 MHz				
Protocol	**TCP (Mbit/s)**		**UDP (Mbit/s)**	
Direction	Tx	Rx	Tx	Rx
Open Security	71	90	94	103
WPA2-AES	71	88	94	103
WPA3-SAE	71	88	94	103

Mobile AP Mode Throughput - AC Mode | 5 GHz Band | 20 MHz				
Protocol	**TCP (Mbit/s)**		**UDP (Mbit/s)**	
Direction	Tx	Rx	Tx	Rx
Open Security	53	60	47	77
WPA2-AES	52	58	47	75
WPA3-SAE	52	60	47	77

Mobile AP Mode Throughput - AC Mode | 5 GHz Band | 40 MHz				
Protocol	**TCP (Mbit/s)**		**UDP (Mbit/s)**	
Direction	Tx	Rx	Tx	Rx
Open Security	80	103	94	101
WPA2-AES	79	103	94	102
WPA3-SAE	79	103	94	103

Mobile AP Mode Throughput - AC Mode | 5 GHz Band | 80 MHz				
Protocol	**TCP (Mbit/s)**		**UDP (Mbit/s)**	
Direction	Tx	Rx	Tx	Rx
Open Security	35	45	94	53
WPA2-AES	34	44	94	52
WPA3-SAE	32	43	94	51

3.1.6 EU Conformance Tests

- EU Adaptivity test - EN 300 328 v2.1.1 (for 2.4 GHz)
- EU Adaptivity test - EN 301 893 v2.1.1 (for 5 GHz)

3.1.7 Bug Fixes/Feature Enhancements

3.1.7.1 FW Version : From 16.91.21.p64.1 to 16.91.21.p82

Component	Description
Wi-Fi	• WPA3-R3 enabled APUT beacons does not have RSNXE when configured in H2E mode • Associated event is received even when connecting using wrong password • WFA APUT Low iperf TCP/UDP Tx throughput with Realtek station

3.1.7.2 FW Version : From 16.91.21.p82 to 16.91.21.p91.6

Component	Description
Wi-Fi	• In wrong password scenario, After updating new password the phone is not able to connect with DUTAP

3.1.8 Known Issues

Component	Description
Wi-Fi	• Cloud keep alive packets not seen after DUT enters host sleep. DUT is sending QOS null packets even in host sleep

3.2 SD-UART IW416

3.2.1 Package Information

- SDK version : 2.14.0

3.2.2 Version Information

- Wireless SoC: IW416
- Wi-Fi and Bluetooth/Bluetooth LE Firmware Version : 16.91.21.p91.6
    - 16 - Major revision
    - 91 - Feature pack
    - 21 - Release version
    - p91.6- Patch number

3.2.3 Host Platform

- All i.MX RT Platform running FreeRTOS
- Interface used
    - Wi-Fi over SDIO (SDIO 2.0 Support, SDIO clock frequency : 50 MHz)
    - Bluetooth/Bluetooth LE over UART
- Test Tools
    - iPerf (version 2.1.9)

3.2.4 Wi-Fi and Bluetooth Certification

The Wi-Fi and Bluetooth certification is obtained with the following combinations.

3.2.4.1 WFA Certifications

- STA | 802.11n
- STA | PMF
- STA | FFD
- STA | SVD
- STA | WPA3 SAE (R3)

Refer TN00066-WFA Derivative Certification Process document available in the SDK Package

NOTE: *This release Supports STAUT only certifications*

3.2.4.2 Bluetooth Controller Certification

QDID : https://launchstudio.bluetooth.com/ListingDetails/108035

3.2.5 Wi-Fi Throughput

3.2.5.1 Throughput Test Setup

- Environment: Shield Room - Over the Air
- Access Point: Asus AX88u
- DUT: IW416 Murata (Module : 1XK M.2) with EVK-MIMXRT1060 platform
- DUT Power Source: External power supply
- Client: Apple MacBook Air
- Channel: 6 | 36
- Wi-Fi application: wifi_cli
- Compiler used to build application: armgcc
- Compiler Version: gcc-arm-none-eabi-9-2020-q2-update
- iPerf Commands used in test:

TCP TX	TCP RX	UDP TX	UDP RX
iperf -c <remote_ip> -t 60	iperf -s	iperf -c <remote_ip> -t 60 -u -B <local_ip> -b 120 **NOTE:** Defaults data rate is 100mbps	iperf -s -u -B <local_ip>

Refer to **Section-2.3** in UM11442-NXP Wi-Fi and Bluetooth Demo Applications User Guide for i.MX RT Platforms to read more about the throughput test setup and topology.

3.2.5.2 STA Throughput

External AP: Asus AX88u

STA Mode Throughput - BGN Mode | 2.4 GHz Band | 20 MHz				
Protocol	**TCP (Mbit/s)**		**UDP (Mbit/s)**	
Direction	Tx	Rx	Tx	Rx
Open Security	46	50	44	63
WPA2-AES	46	49	44	61
WPA3-SAE	46	49	44	63

STA Mode Throughput - BGN Mode | 2.4 GHz Band | 40 MHz				
Protocol	**TCP (Mbit/s)**		**UDP (Mbit/s)**	
Direction	Tx	Rx	Tx	Rx
Open Security	46	73	44	104
WPA2-AES	46	64	44	101
WPA3-SAE	46	63	44	101

STA Mode Throughput - AN Mode | 5 GHz Band | 20 MHz (HT)				
Protocol	**TCP (Mbit/s)**		**UDP (Mbit/s)**	
Direction	Tx	Rx	Tx	Rx
Open Security	45	50	45	64
WPA2-AES	45	50	44	63
WPA3-SAE	45	50	44	64

STA Mode Throughput - AN Mode | 5 GHz Band | 40 MHz (HT)				
Protocol	**TCP (Mbit/s)**		**UDP (Mbit/s)**	
Direction	Tx	Rx	Tx	Rx
Open Security	67	72	89	125
WPA2-AES	67	65	88	106
WPA3-SAE	66	66	89	106

3.2.5.3 Mobile AP Throughput

External client: Apple MacBook Air

Mobile AP Mode Throughput - BGN Mode | 2.4 GHz Band | 20MHz				
Protocol	**TCP (Mbit/s)**		**UDP (Mbit/s)**	
Direction	Tx	Rx	Tx	Rx
Open Security	43	52	44	62
WPA2-AES	42	51	44	62
WPA3-SAE	42	51	44	62

Mobile AP Mode Throughput - BGN Mode | 2.4 GHz Band | 40MHz				
Protocol	**TCP (Mbit/s)**		**UDP (Mbit/s)**	
Direction	Tx	Rx	Tx	Rx
Open Security	66	72	79	130
WPA2-AES	65	67	79	97
WPA3-SAE	65	67	79	97

Mobile AP Mode Throughput - AN Mode | 5 GHz Band | 20 MHz				
Protocol	**TCP (Mbit/s)**		**UDP (Mbit/s)**	
Direction	Tx	Rx	Tx	Rx
Open Security	44	52	44	63
WPA2-AES	43	52	44	63
WPA3-SAE	42	52	45	63

Mobile AP Mode Throughput - AN Mode | 5 GHz Band | 40 MHz				
Protocol	**TCP (Mbit/s)**		**UDP (Mbit/s)**	
Direction	Tx	Rx	Tx	Rx
Open Security	68	85	84	102
WPA2-AES	67	70	85	103
WPA3-SAE	67	70	84	103

3.2.6 EU Conformance Tests

- EU Adaptivity test - EN 300 328 v2.1.1 (for 2.4 GHz)
- EU Adaptivity test - EN 301 893 v2.1.1 (for 5 GHz)

3.2.7 Bug Fixes/Feature Enhancements

3.2.7.1 FW Version : From 16.91.21.p64.1 to 16.91.21.p82

Component	Description
Wi-Fi	• WPA3-R3 enabled APUT beacons does not have RSNXE when configured in H2E mode

3.2.7.2 FW Version : From 16.91.21.p82 to 16.91.21.p91.6

Component	Description
Wi-Fi	NA

3.2.8 Known Issues

Component	Description
Wi-Fi	• Cloud keep alive packets not seen after DUT enters host sleep. DUT is sending QOS null packets even in host sleep

3.3 SD-UART-SPI IW612

Note: *The IW612 support is enabled in i.MX RT1170 for SDK 2.13.2 version only*

3.3.1 Package Information

- SDK version : 2.13.2

3.3.2 Version Information

- Wireless SoC: IW612
- Wi-Fi and Bluetooth/Bluetooth LE Firmware Version : 18.99.2.p7.19
    - 18 - Major revision
    - 99 - Feature pack
    - 2 - Release version
    - p7.19 - Patch number

3.3.3 Host Platform

- All i.MX RT Platform running FreeRTOS
- Interface used
    - Wi-Fi over SDIO (SDIO 2.0 Support, SDIO clock frequency : 50 MHz)
    - Bluetooth/Bluetooth LE over UART

- Test Tools
    - iPerf (version 2.1.9)

3.3.4 Wi-Fi and Bluetooth Certification

The Wi-Fi and Bluetooth certification is obtained with the following combinations.

3.3.4.1 WFA Certifications

- STA | 802.11n
- STA | PMF
- STA | FFD
- STA | SVD
- STA | WPA3 SAE (R3)

Refer TN00066-WFA Derivative Certification Process document available in the SDK Package

NOTE: *This release Supports STAUT only certifications*

3.3.4.2 Bluetooth Controller Certification

QDID : https://launchstudio.bluetooth.com/ListingDetails/155070

3.3.5 Wi-Fi Throughput

3.3.5.1 Throughput Test Setup

- Environment: Shield Room - Over the Air
- Access Point: Asus AX88u
- DUT: IW612 Murata (Module : 2EL M.2) with EVK-MIMXRT1170 EVKB platform
- DUT Power Source: External power supply
- Client: Apple MacBook Air
- Channel: 6 | 36
- Wi-Fi application: wifi_cli
- Compiler used to build application: armgcc
- Compiler Version: gcc-arm-none-eabi-9-2020-q2-update
- iPerf Commands used in test:

TCP TX	TCP RX	UDP TX	UDP RX
iperf -c <remote_ip> -t 60	iperf -s	iperf -c <remote_ip> -t 60 -u -B <local_ip> -b 120 **NOTE:** Defaults data rate is 100mbps	iperf -s -u -B <local_ip>

Refer to **Section-2.3** in UM11442-NXP Wi-Fi and Bluetooth Demo Applications User Guide for i.MX RT Platforms to read more about the throughput test setup and topology.

3.3.5.2 STA Throughput

External AP: Asus AX88u

STA Mode Throughput - BGN Mode | 2.4 GHz Band | 20 MHz				
Protocol	**TCP (Mbit/s)**		**UDP (Mbit/s)**	
Direction	Tx	Rx	Tx	Rx
Open Security	39	48	63	63
WPA2-AES	38	48	63	62
WPA3-SAE	38	48	63	62

STA Mode Throughput - BGN Mode | 2.4 GHz Band | 40 MHz				
Protocol	**TCP (Mbit/s)**		**UDP (Mbit/s)**	
Direction	Tx	Rx	Tx	Rx
Open Security	55	74	131	132
WPA2-AES	54	72	130	130
WPA3-SAE	54	72	130	130

STA Mode Throughput - AN Mode | 5 GHz Band | 20 MHz (HT)				
Protocol	**TCP (Mbit/s)**		**UDP (Mbit/s)**	
Direction	Tx	Rx	Tx	Rx
Open Security	36	50	63	64
WPA2-AES	37	48	62	64
WPA3-SAE	33	48	62	64

STA Mode Throughput - AN Mode | 5 GHz Band | 40 MHz (HT)				
Protocol	**TCP (Mbit/s)**		**UDP (Mbit/s)**	
Direction	Tx	Rx	Tx	Rx
Open Security	58	73	130	134
WPA2-AES	57	72	132	132
WPA3-SAE	57	72	130	133

STA Mode Throughput - VHT Mode | 2.4 GHz Band | 20 MHz (HT)				
Protocol	**TCP (Mbit/s)**		**UDP (Mbit/s)**	
Direction	Tx	Rx	Tx	Rx
Open Security	43	52	75	75
WPA2-AES	41	49	74	68
WPA3-SAE	41	49	74	68

STA Mode Throughput - VHT Mode | 2.4 GHz Band | 40 MHz (HT)				
Protocol	**TCP (Mbit/s)**		**UDP (Mbit/s)**	
Direction	Tx	Rx	Tx	Rx
Open Security	56	79	171	162
WPA2-AES	55	74	170	137
WPA3-SAE	56	75	172	136

STA Mode Throughput - VHT Mode | 5 GHz Band | 20 MHz (HT)				
Protocol	**TCP (Mbit/s)**		**UDP (Mbit/s)**	
Direction	Tx	Rx	Tx	Rx
Open Security	32	53	78	76
WPA2-AES	32	49	76	70
WPA3-SAE	32	49	76	69

STA Mode Throughput - VHT Mode | 5 GHz Band | 40 MHz (HT)				
Protocol	**TCP (Mbit/s)**		**UDP (Mbit/s)**	
Direction	Tx	Rx	Tx	Rx
Open Security	62	80	176	177
WPA2-AES	62	79	172	166
WPA3-SAE	60	79	172	166

STA Mode Throughput - VHT Mode | 5 GHz Band | 80 MHz (HT)				
Protocol	**TCP (Mbit/s)**		**UDP (Mbit/s)**	
Direction	Tx	Rx	Tx	Rx
Open Security	74	85	206	186
WPA2-AES	73	84	206	187
WPA3-SAE	74	84	204	184

STA Mode Throughput - HE Mode | 2.4 GHz Band | 20 MHz (HT)				
Protocol	**TCP (Mbit/s)**		**UDP (Mbit/s)**	
Direction	Tx	Rx	Tx	Rx
Open Security	50	53	107	73
WPA2-AES	49	49	105	66
WPA3-SAE	48	48	94	66

STA Mode Throughput - HE Mode | 2.4 GHz Band | 40 MHz (HT)				
Protocol	**TCP (Mbit/s)**		**UDP (Mbit/s)**	
Direction	Tx	Rx	Tx	Rx
Open Security	58	78	185	157
WPA2-AES	56	76	182	139
WPA3-SAE	55	76	180	139

STA Mode Throughput - HE Mode | 5 GHz Band | 20 MHz (HT)				
Protocol	**TCP (Mbit/s)**		**UDP (Mbit/s)**	
Direction	Tx	Rx	Tx	Rx
Open Security	52	53	106	75
WPA2-AES	50	49	104	70
WPA3-SAE	50	49	103	69

STA Mode Throughput - HE Mode | 5 GHz Band | 40 MHz (HT)				
Protocol	**TCP (Mbit/s)**		**UDP (Mbit/s)**	
Direction	Tx	Rx	Tx	Rx
Open Security	66	83	201	181
WPA2-AES	69	80	203	161
WPA3-SAE	70	80	204	161

STA Mode Throughput - HE Mode | 5 GHz Band | 80 MHz (HT)				
Protocol	**TCP (Mbit/s)**		**UDP (Mbit/s)**	
Direction	Tx	Rx	Tx	Rx
Open Security	74	85	207	186
WPA2-AES	73	86	207	184
WPA3-SAE	77	87	207	186

3.3.5.3 Mobile AP Throughput

External client: Apple MacBook Air

Mobile AP Mode Throughput - BGN Mode | 2.4 GHz Band | 20MHz				
Protocol	**TCP (Mbit/s)**		**UDP (Mbit/s)**	
Direction	Tx	Rx	Tx	Rx
Open Security	41	51	64	63
WPA2-AES	41	47	64	63
WPA3-SAE	40	47	63	63

Mobile AP Mode Throughput - BGN Mode | 2.4 GHz Band | 40MHz				
Protocol	**TCP (Mbit/s)**		**UDP (Mbit/s)**	
Direction	Tx	Rx	Tx	Rx
Open Security	67	84	130	133
WPA2-AES	66	81	131	118
WPA3-SAE	66	80	131	118

Mobile AP Mode Throughput - AN Mode | 5 GHz Band | 20 MHz				
Protocol	**TCP (Mbit/s)**		**UDP (Mbit/s)**	
Direction	Tx	Rx	Tx	Rx
Open Security	40	51	65	63
WPA2-AES	41	47	65	61
WPA3-SAE	41	47	64	63

Mobile AP Mode Throughput - AN Mode | 5 GHz Band | 40 MHz				
Protocol	**TCP (Mbit/s)**		**UDP (Mbit/s)**	
Direction	Tx	Rx	Tx	Rx
Open Security	70	88	133	136
WPA2-AES	68	87	133	135
WPA3-SAE	69	86	130	135

Mobile AP Mode Throughput - VHT Mode | 2.4 GHz Band | 20 MHz				
Protocol	**TCP (Mbit/s)**		**UDP (Mbit/s)**	
Direction	Tx	Rx	Tx	Rx
Open Security	45	52	77	75
WPA2-AES	45	50	77	69
WPA3-SAE	43	49	77	69

Mobile AP Mode Throughput - VHT Mode | 2.4 GHz Band | 40 MHz				
Protocol	**TCP (Mbit/s)**		**UDP (Mbit/s)**	
Direction	Tx	Rx	Tx	Rx
Open Security	72	83	173	131
WPA2-AES	71	84	174	118
WPA3-SAE	71	83	172	119

Mobile AP Mode Throughput - VHT Mode | 5 GHz Band | 20 MHz				
Protocol	**TCP (Mbit/s)**		**UDP (Mbit/s)**	
Direction	Tx	Rx	Tx	Rx
Open Security	46	52	77	75
WPA2-AES	45	50	78	69
WPA3-SAE	45	50	77	76

Mobile AP Mode Throughput - VHT Mode | 5 GHz Band | 40 MHz				
Protocol	**TCP (Mbit/s)**		**UDP (Mbit/s)**	
Direction	Tx	Rx	Tx	Rx
Open Security	75	88	179	159
WPA2-AES	75	85	177	138
WPA3-SAE	75	75	173	139

Mobile AP Mode Throughput - VHT Mode | 5 GHz Band | 80 MHz				
Protocol	**TCP (Mbit/s)**		**UDP (Mbit/s)**	
Direction	Tx	Rx	Tx	Rx
Open Security	86	117	197	220
WPA2-AES	86	116	190	218
WPA3-SAE	84	115	200	218

Mobile AP Mode Throughput - HE Mode | 2.4 GHz Band | 20 MHz				
Protocol	**TCP (Mbit/s)**		**UDP (Mbit/s)**	
Direction	Tx	Rx	Tx	Rx
Open Security	56	53	109	71
WPA2-AES	55	52	104	66
WPA3-SAE	55	50	107	67

Mobile AP Mode Throughput - HE Mode | 2.4 GHz Band | 40 MHz				
Protocol	**TCP (Mbit/s)**		**UDP (Mbit/s)**	
Direction	Tx	Rx	Tx	Rx
Open Security	71	85	183	128
WPA2-AES	74	84	180	115
WPA3-SAE	71	84	179	115

Mobile AP Mode Throughput - HE Mode | 5 GHz Band | 20 MHz				
Protocol	**TCP (Mbit/s)**		**UDP (Mbit/s)**	
Direction	Tx	Rx	Tx	Rx
Open Security	57	53	109	70
WPA2-AES	56	50	107	66
WPA3-SAE	56	50	107	65

Mobile AP Mode Throughput - HE Mode | 5 GHz Band | 40 MHz				
Protocol	**TCP (Mbit/s)**		**UDP (Mbit/s)**	
Direction	Tx	Rx	Tx	Rx
Open Security	73	86	197	153
WPA2-AES	76	86	195	134
WPA3-SAE	76	84	194	133

Mobile AP Mode Throughput - HE Mode | 5 GHz Band | 80 MHz				
Protocol	**TCP (Mbit/s)**		**UDP (Mbit/s)**	
Direction	Tx	Rx	Tx	Rx
Open Security	83	115	200	218
WPA2-AES	82	114	197	218
WPA3-SAE	82	114	200	216

3.3.6 EU Conformance Tests

- EU Adaptivity test - EN 300 328 v2.1.1 (for 2.4 GHz)
- EU Adaptivity test - EN 301 893 v2.1.1 (for 5 GHz)

3.3.7 Bug Fixes/Feature Enhancements

3.3.7.1 FW Version : 18.99.2.p7.19

Component	Description
Wi-Fi	

3.3.8 Known Issues

Component	Description
-	NA

3.4 SD 8801

3.4.1 Package Information

- SDK Version: 2.14.0

3.4.2 Version Information

- Wireless SoC : 88W8801
- Wi-Fi Firmware Version : 14.91.36.p185
  - 14 - Major revision
  - 91 - Feature pack
  - 36 - Release version
  - p185 - Patch number

3.4.3 Host Platform

- All i.MX RT Platform running FreeRTOS
- Interface used
  - Wi-Fi over SDIO (SDIO 2.0 Support, SDIO clock frequency : 50 MHz)
- Test Tools
  - iPerf (version 2.1.9)

3.4.4 Wi-Fi Certification

The Wi-Fi certification is obtained with the following combinations.

3.4.4.1 WFA Certifications

- STA | 802.11n
- STA | PMF
- STA | FFD
- STA | SVD
- STA | WPA3 SAE (R3)

Refer TN00066-WFA Derivative Certification Process document available in the SDK Package
NOTE: : *This release Supports STAUT only certifications*

3.4.5 Wi-Fi Throughput

3.4.5.1 Throughput Test Setup

- Environment: Shield Room - Over the Air
- External Access Point: Asus-AX88U
- DUT : W8801 Murata (Module: 2DS M.2) with EVK-MIMXRT1060 platform
- DUT Power Source: External power supply
- External Client: IW620-Kestrel
- Channel: 6
- Wi-Fi application: wifi_cli
- Compiler used to build application: armgcc
- Compiler Version: gcc-arm-none-eabi-9-2020-q2-update
- iPerf Commands used in test:

TCP TX	TCP RX	UDP TX	UDP RX
iperf -c <remote_ip> -t 60	iperf -s	iperf -c <remote_ip> -t 60 -u -B <local_ip> -b 120 **NOTE:** Defaults data rate is 100mbps	iperf -s -u -B <local_ip>

Refer to **Section-2.3** in *UM11442-NXP Wi-Fi and Bluetooth Demo Applications User Guide for i.MX RT Platforms* to read more about the throughput test setup and topology.

3.4.5.2 STA Throughput

External AP: Asus-AX88U (Open/WPA2/WPA3-SAE)

STA Mode Throughput - BGN Mode | 2.4 GHz Band | 20 MHz				
Protocol	**TCP (Mbit/s)**		**UDP (Mbit/s)**	
Direction	Tx	Rx	Tx	Rx
Open Security	33	45	44	62
WPA2-AES	32	44	42	61
WPA3-SAE	32	43	42	61

3.4.5.3 Mobile AP Throughput

External client: IW620-Kestrel

Mobile AP Mode Throughput - BGN Mode | 2.4 GHz Band | 20MHz				
Protocol	**TCP (Mbit/s)**		**UDP (Mbit/s)**	
Direction	Tx	Rx	Tx	Rx
Open Security	32	42	43	62
WPA2-AES	32	42	44	61
WPA3-SAE	32	43	42	61

3.4.6 EU Conformance Tests

- EU Adaptivity test - EN 300 328 v2.1.1 (for 2.4 GHz)

3.4.7 Bug Fixes/Feature Enhancements

3.4.7.1 FW Version : From 14.91.36.p178 to 14.91.36.p180

Component	Description
--	NA

3.4.7.2 FW Version : From 14.91.36.p180 to 14.91.36.p185

Component	Description
--	NA

3.4.8 Known Issues

Component	Description
--	NA

4 Acronyms & Abbreviations

Table 3: List of Acronyms & Abbreviations

Acronyms	Definitions
A2DP	Advanced audio distribution profile
AP	Access Point
BW	Bandwidth
CCMP	Counter Mode CBC-MAC Protocol
CTS	Clear To Send
ERP	Extended Rate Physical
GATT	Generic attribute profile
HFP	Hands free profile
HID	Human interface device
HT	High Throughput
MCS	Modulation and Coding Scheme
MLME	Mac Layer Management Entity
RTS	Request To Send
SAE	Simultaneous Authentication of Equals
STA	Station
VHT	Very High Throughput
WEP	Wired Equivalent Private
WFD	Wi-Fi Direct
WPA	Wi-Fi protected access
WPS	Wi-Fi Protected Setup
WSC	Wi-Fi Simple Configuration

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