

# 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



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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	<p>Modifications:</p> <ul style="list-style-type: none"> <li>• Deprecated reference of 88W8977 from the document</li> <li>• <a href="#">Table 2:</a> <ul style="list-style-type: none"> <li>○ Removed Shared Authentication from Wi-Fi Client</li> <li>○ Added FIPS in Wi-Fi Client General feature</li> <li>○ Removed TxPower Config V2 from Wi-Fi AP and Client General Features</li> </ul> </li> <li>• <a href="#">Section 3.1.1 "Package Information"</a>: Updated SDK version</li> <li>• <a href="#">Section 3.1.2 "Version Information"</a>: Updated FW version</li> <li>• <a href="#">Section 3.1.4.1 "WFA Certifications"</a>: Mention 802.11ac and WPA3(SAE)</li> <li>• <a href="#">Section 3.1.5.1 "Throughput Test Setup"</a>: Added Murata module details</li> <li>• <a href="#">Section 3.1.5.2 "STA Throughput"</a>: Updated TP numbers</li> <li>• <a href="#">Section 3.1.5.3 "Mobile AP Throughput"</a>: Updated TP numbers</li> <li>• <a href="#">Section 3.1.7 "Bug Fixes/Feature Enhancements"</a>: Updated FW version and details for fixed issues</li> <li>• <a href="#">Section 3.2.1 "Package Information"</a>: Updated SDK version</li> <li>• <a href="#">Section 3.2.2 "Version Information"</a>: Updated FW version</li> <li>• <a href="#">Section 3.2.4.1 "WFA Certifications"</a>: Mention WPA3(SAE)</li> <li>• <a href="#">Section 3.2.5.1 "Throughput Test Setup"</a>: Added Murata module details</li> <li>• <a href="#">Section 3.2.5.2 "STA Throughput"</a>: Updated TP numbers</li> <li>• <a href="#">Section 3.2.5.3 "Mobile AP Throughput"</a>: Updated TP numbers</li> <li>• <a href="#">Section 3.2.7 "Bug Fixes/Feature Enhancements"</a>: Updated FW version and details for fixed issues</li> <li>• <a href="#">Section 3.3.1 "Package Information"</a>: Updated SDK version</li> <li>• <a href="#">Section 3.3.5.2 "STA Throughput"</a>: Updated TP numbers</li> <li>• <a href="#">Section 3.3.5.3 "Mobile AP Throughput"</a>: Updated TP numbers</li> </ul>
Rev.3	03-Jan-2023	<p>Modifications:</p> <ul style="list-style-type: none"> <li>• <a href="#">Section 3.1.1 "Package Information"</a>: Updated SDK version</li> <li>• <a href="#">Section 3.1.2 "Version Information"</a>: Updated FW version</li> <li>• <a href="#">Section 3.2.1 "Package Information"</a>: Updated SDK version</li> <li>• <a href="#">Section 3.2.2 "Version Information"</a>: Updated FW version</li> </ul>

		<ul style="list-style-type: none"> <li>• <a href="#">Section 3.3.1 "Package Information"</a>: Updated SDK version</li> <li>• <a href="#">Section 3.3.2 "Version Information"</a>: Updated FW version</li> <li>• <a href="#">Section 3.3.5.2 "STA Throughput"</a>: Updated TP numbers</li> <li>• <a href="#">Section 3.3.5.3 "Mobile AP Throughput"</a>: Updated TP numbers</li> </ul>
Rev.4	21-Mar-2023	<p>Modifications:</p> <ul style="list-style-type: none"> <li>• <a href="#">Table 2</a>:             <ul style="list-style-type: none"> <li>○ Removed Shared Authentication from Wi-Fi Client</li> <li>○ Added 11k, 11v, and 11r in Wi-Fi Client General feature</li> <li>○ Added TKIP and foot note for TKIP in Wi-Fi Client General feature</li> <li>○ Removed FIPS from Wi-Fi AP General feature</li> </ul> </li> <li>• <a href="#">Section 3.1.1 "Package Information"</a>: Updated SDK version</li> <li>• <a href="#">Section 3.1.2 "Version Information"</a>: Updated FW version</li> <li>• <a href="#">Section 3.1.4.1 "WFA Certifications"</a>: Mentioned FFD, SVD and WPA3 SAE (R3) for STA</li> <li>• <a href="#">Section 3.1.5.1 "Throughput Test Setup"</a>: Updated External AP details</li> <li>• <a href="#">Section 3.1.5.2 "STA Throughput"</a>: Updated TP numbers</li> <li>• <a href="#">Section 3.1.5.3 "Mobile AP Throughput"</a>: Updated TP numbers</li> <li>• <a href="#">Section 3.1.7 "Bug Fixes/Feature Enhancements"</a>: Updated FW version and details for fixed issues</li> <li>• <a href="#">Section 3.2.1 "Package Information"</a>: Updated SDK version</li> <li>• <a href="#">Section 3.2.2 "Version Information"</a>: Updated FW version</li> <li>• <a href="#">Section 3.2.4.1 "WFA Certifications"</a>: Mentioned FFD, SVD and WPA3 SAE (R3) for STA</li> <li>• <a href="#">Section 3.2.5.1 "Throughput Test Setup"</a>: Updated External AP details</li> <li>• <a href="#">Section 3.2.5.2 "STA Throughput"</a>: Updated TP numbers</li> <li>• <a href="#">Section 3.2.5.3 "Mobile AP Throughput"</a>: Updated TP numbers</li> <li>• <a href="#">Section 3.2.7 "Bug Fixes/Feature Enhancements"</a>: Updated FW version and details for fixed issues</li> <li>• <a href="#">Section 3.3.1 "Package Information"</a>: Updated SDK version</li> <li>• <a href="#">Section 3.3.2 "Version Information"</a>: Updated FW version</li> <li>• <a href="#">Section 3.3.4.1 "WFA Certifications"</a>: Mentioned FFD, SVD and WPA3 SAE (R3) for STA.</li> <li>• <a href="#">Section 3.3.5.2 "STA Throughput"</a>: Updated TP numbers</li> <li>• <a href="#">Section 3.3.5.3 "Mobile AP Throughput"</a>: Updated TP numbers</li> <li>• <a href="#">Section 3.3.7 "Bug Fixes/Feature Enhancements"</a>: Updated FW version and details for fixed issues</li> </ul>

<p>Rev.5</p>	<p>01-Aug-2023</p>	<p>Modifications:</p> <ul style="list-style-type: none"> <li>• Updated SDK version to 2.14.0 and added IW612 with foot note that IW612 only supported for i.MX RT1170 EVKB for SDK 2.13.2</li> <li>• <a href="#">Table 2:</a> <ul style="list-style-type: none"> <li>○ Added IW612 with foot note</li> <li>○ WiFi:Host based supplicant features: Enterprise security, wpa3 R3, WPA3 Suite B, WPS, OWE for AP and STA</li> <li>○ Wi-Fi: Added general features: RF Test mode, TPC, STBC RX</li> <li>○ Bluetooth: RF test mode, Deep Sleep using Out of Band, Low Energy Periodic Advertisement, Low Energy Power Control, Low Energy Long Range</li> </ul> </li> <li>• <a href="#">Section 3.1:</a> Updated SDK version, FW version, iPerf version, TP numbers, fixes and known issues</li> <li>• <a href="#">Section 3.2:</a> Updated SDK version, FW version, iPerf version, TP numbers, fixes and known issues</li> <li>• <a href="#">Section 3.3:</a> Added new</li> <li>• <a href="#">Section 3.4:</a> Updated SDK version, FW version, iPerf version, TP numbers</li> </ul>
<p>Rev.6</p>	<p>19-Oct-2023</p>	<p>Modifications:</p> <ul style="list-style-type: none"> <li>• Updated SDK version to 2.13.3 and foot note for IW612</li> <li>• <a href="#">Table 2:</a> <ul style="list-style-type: none"> <li>○ Added foot note for experimental features</li> <li>○ Wi-Fi: Added SU Beamforming, DPP, Embedded roaming for IW612</li> <li>○ Wi-Fi: Removed TPC</li> <li>○ Bluetooth: Added LE audio features</li> <li>○ Matter: Matter over Wi-Fi, Matter over thread</li> <li>○ Coex: BCA_TDM separate antenna[1] (lower and higher isolation) 1x1 WiFi, (BT+15.4 shared)</li> </ul> </li> <li>• <a href="#">Section 3.3:</a> <ul style="list-style-type: none"> <li>○ Updated SDK version, FW version, TP numbers, and known issues.</li> <li>○ Added note for LE audio</li> <li>○ Updated list of WFA certification cases</li> </ul> </li> </ul>
<p>Rev.7</p>	<p>10-Jan-2024</p>	<p>Modifications:</p> <ul style="list-style-type: none"> <li>• Updated SDK version to 2.15.0 and foot note for IW612</li> <li>• <a href="#">Table 2:</a> <ul style="list-style-type: none"> <li>○ Added foot note for by-default disabled features</li> <li>○ Wi-Fi: Updated Enterprise security methods</li> <li>○ Wi-Fi: Added new features Auto reconnect, CSI, Independent reset, Wi-Fi Agile Multiband, FW download</li> </ul> </li> <li>• <a href="#">Table 3:</a> Added new</li> <li>• <a href="#">Section 3.1:</a> Updated SDK version, FW version, TP numbers, fixes and known issues</li> </ul>

		<ul style="list-style-type: none"><li>• <a href="#">3.1.4.1</a>: Added QTT</li><li>• <a href="#">Section 3.2</a>: Updated SDK version, FW version, TP numbers, fixes and known issues</li><li>• <a href="#">3.2.4.1</a>: Added QTT</li><li>• <a href="#">Section 3.2.4.2</a>: Added note for QDID</li><li>• <a href="#">Section 3.3</a>: Updated SDK version, FW version, TP numbers, fixes and known issues</li><li>• <a href="#">3.3.4.1</a>: Added QTT</li><li>• <a href="#">Section 3.3.4.2</a>: Added note for QDID</li><li>• <a href="#">Section 3.4</a>: Updated SDK version, FW version, TP numbers</li></ul>
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## 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 2.15.0.

**Note:** *The IW612 support is enabled in i.MX RT1170 EVKB and i.MX RT1060 EVKC.*



## 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
		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 (Extended Range)		N	N	Y	N	
	SU Beamforming	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	Y	Y	Y
		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, SIM,AKA, AKA-Prime, and FAST) <sup>[1]</sup>	Y	Y	Y	Y
			WPA3 Enterprise support (Host based - TLS, TTLS, PEAP v0, PEAP v1, SIM,AKA, AKA-Prime, and FAST) with SUITE B and SUITE B 192 <sup>[1]</sup>	Y	Y	Y	N
			WPS (Host based)	Y	Y	Y	N
		Power Save Mode	OWE (Host based)	Y	Y	Y	N
			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
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
DPP Functionality	Wi-Fi Easy Connect <sup>[1]</sup>			N	N	Y	N
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
	EDMAC - EU adaptivity support (ETSI Cert)			Y	Y	Y	Y
	DFS Radar Detection in Slave Mode (Follow AP)			Y	Y	Y	N
	External Coex			N	N	N	Y
	IPv6 NS Offload			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.

[1] Features are not enabled by default in the SDK, Table 3 shows list of macros to enable those features and their memory impact after enabling it.

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	Y	Y	Y	N
			UNII-4 channel support	N	N	Y	N
			ClockSync using TSF	N	N	Y	N
			Auto reconnect	Y	Y	N	N
			CSI <sup>[1]</sup>	Y	N	N	N
			Independent Reset (in-band) <sup>[1]</sup>	Y	Y	N	N
			Wi-Fi Agile Multiband	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			

[1] Features are not enabled by default in the SDK, Table 3 shows list of macros to enable those features and their memory impact after enabling it.

Wireless Type	Type	Features List	Sub Features List	SD-UART			SD
				8987	IW416	IW612	8801
Wi-Fi	AP	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	Y	Y	Y
		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) <sup>[1]</sup>	Y	Y	Y	Y
			WPA3 Enterprise support (Host based - TLS, TTLS, PEAP v0, PEAP v1 ) with SUITE B and SUITE B 192 <sup>[1]</sup>	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
		802.11y	Extended channel switch announcement (ECSA)	Y	Y	Y	Y
		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	
		External Coex (Software interface)	N	N	N	Y	
		STBC RX	Y	N	N	N	
	AP-STA	Simultaneous AP-STA Operation (Same Channel)		Y	Y	Y	Y
Generic		AP-STA functionality FW Download (Parallel) <sup>[1]</sup>	Y	Y	N	N	

[1] Features are not enabled by default in the SDK, Table 3 shows list of macros to enable those features and their memory impact after enabling it.

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	Y	
		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
		Bluetooth Audio Features	HID Target/Device	Y	Y	Y
			PCM NBS Master / Slave	Y	Y	Y
				PCM WBS Master / Slave	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	Y
		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		
Bluetooth 5.2 Support	Low Energy Periodic Advertisement	N	Y	Y		
	Low Energy Power Control	N	N	Y		

Wireless Type	Type	Features List	Sub Features List	SD-UART		
				8987	IW416	IW612
Bluetooth	Bluetooth LE Features	BLE audio Support* <sup>[1]</sup>	Isochronous Channel	N	N	Y
			2 BIS & CIS streams – 96kbps (bit rate), 8kHz,16kHz,24kHz, 32kHz and 48kHz (sampling rates) and 16 Bits (Sample bits)	N	N	Y
			Bi-directional CIS	N	N	Y
			2M and 1M Phy	N	N	Y
			Framed and Unframed mode	N	N	Y
			Volume control, Play and Pause	N	N	Y
			Sequential Packing	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

<sup>[1]</sup> Experimental Feature - Quality level of feature is experimental. Intended for evaluation/early development only and not mass-production. All mandatory certification are not complete.

\* LE audio feature is supported for standalone scenarios only and not supported for BR/EDR and Wi-Fi coexistence scenarios, for example (LE audio + BR/EDR link), (LE audio + Wi-Fi link), etc.

\* From the perspective of NXP Edgefast Bluetooth host stack, LE audio feature can be disabled by the CONFIG\_BT\_AUDIO macro without impact on any other features. LE audio feature can be tested by the user, using their own supported host stack as, from the IW612 firmware side this feature is always enabled.

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	Matter features		Matter over Wi-Fi	Y
				Matter over Thread	Y
		BCA_TDM separate antenna <sup>[1]</sup> (lower and higher isolation)  1x1 WiFi, (BT+15.4 shared)		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
Wi-Fi + BT				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 and i.MX RT1060 EVKC.

<sup>[1]</sup> Experimental Feature - Quality level of feature is experimental. Intended for evaluation/early development only and not mass-production. All mandatory certification are not complete.

Table 3: Feature enablement and memory impact

Features	Macros to enable the feature	Memory Impact
CSI	CONFIG_CSI	Flash - 60K, RAM - 4K
DPP	CONFIG_WPA_SUPP_DPP	Flash - 240K, RAM - 12K
Independent Reset	CONFIG_WIFI_IND_DNLD, CONFIG_WIFI_IND_RESET	Minimum
Parallel FW download	CONFIG_WIFI_IND_DNLD	Minimum
WPA3 Enterprise	CONFIG_WPA_SUPP_CRYPTTO_ENTERPRISE	Flash - 165K, RAM - 18K
WPA2 Enterprise	[Macros specific to EAP-Methods included]	
	CONFIG_EAP_TLS	
	CONFIG_EAP_PEAP	
	CONFIG_EAP_TTLS	
	CONFIG_EAP_FAST	
	CONFIG_EAP_SIM	
	CONFIG_EAP_AKA	
	CONFIG_EAP_AKA_PRIME	
host sleep	CONFIG_HOST_SLEEP	Minimum
WMM	CONFIG_WMM	Flash - 10K, RAM - 57K

**Note:** Macros should be define in wifi\_config.h for wifi\_wpa\_supplicant sample application

## 3 Release Notes

### 3.1 SD-UART 8987

#### 3.1.1 Package Information

- SDK Version: 2.15.0

#### 3.1.2 Version Information

- Wireless SoC : 88W8987
- Wi-Fi and Bluetooth/Bluetooth LE Firmware Version : 16.91.21.p124
  - 16 - Major revision
  - 91 - Feature pack
  - 21 - Release version
  - p124- 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)
- STA | QTT

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 <b>NOTE:</b> 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)	
	Tx	Rx	Tx	Rx
Open Security	35	44	48	52
WPA2-AES	35	42	48	53
WPA3-SAE	35	44	51	53

STA Mode Throughput - BGN Mode   2.4 GHz Band   40 MHz				
Protocol	TCP (Mbit/s)		UDP (Mbit/s)	
	Tx	Rx	Tx	Rx
Open Security	57	71	93	119
WPA2-AES	58	69	94	127
WPA3-SAE	59	73	100	116

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	61	64
WPA2-AES		45	51	61	62
WPA3-SAE		45	51	61	64

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	124	134
WPA2-AES		69	82	122	133
WPA3-SAE		65	82	122	133

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	71	73
WPA2-AES		51	58	71	73
WPA3-SAE		51	57	71	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		74	86	95	100
WPA2-AES		76	88	95	100
WPA3-SAE		76	88	95	100

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		80	98	125	185
WPA2-AES		82	94	125	185
WPA3-SAE		83	94	125	185

### 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)	
	Tx	Rx	Tx	Rx
Open Security	45	51	58	56
WPA2-AES	44	51	59	56
WPA3-SAE	44	51	59	56

Mobile AP Mode Throughput - BGN Mode   2.4 GHz Band   40MHz				
Protocol	TCP (Mbit/s)		UDP (Mbit/s)	
	Tx	Rx	Tx	Rx
Open Security	70	92	116	127
WPA2-AES	69	90	115	125
WPA3-SAE	69	90	115	125

Mobile AP Mode Throughput - AN Mode   5 GHz Band   20 MHz				
Protocol	TCP (Mbit/s)		UDP (Mbit/s)	
	Tx	Rx	Tx	Rx
Open Security	41	53	60	62
WPA2-AES	42	53	61	63
WPA3-SAE	40	53	60	64

Mobile AP Mode Throughput - AN Mode   5 GHz Band   40 MHz				
Protocol	TCP (Mbit/s)		UDP (Mbit/s)	
	Tx	Rx	Tx	Rx
Open Security	67	73	118	103
WPA2-AES	69	72	118	104
WPA3-SAE	64	71	115	103

Mobile AP Mode Throughput - AC Mode   5 GHz Band   20 MHz				
Protocol	TCP (Mbit/s)		UDP (Mbit/s)	
	Tx	Rx	Tx	Rx
Open Security	52	62	74	73
WPA2-AES	51	61	71	73
WPA3-SAE	51	61	73	75

Mobile AP Mode Throughput - AC Mode   5 GHz Band   40 MHz				
Protocol	TCP (Mbit/s)		UDP (Mbit/s)	
	Tx	Rx	Tx	Rx
Open Security	80	99	94	104
WPA2-AES	79	98	98	104
WPA3-SAE	77	98	95	104

Mobile AP Mode Throughput - AC Mode   5 GHz Band   80 MHz				
Protocol	TCP (Mbit/s)		UDP (Mbit/s)	
	Tx	Rx	Tx	Rx
Open Security	89	115	94	104
WPA2-AES	89	109	94	103
WPA3-SAE	89	109	95	104

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	<ul style="list-style-type: none"> <li>• WPA3-R3 enabled APUT beacons does not have RSNXE when configured in H2E mode</li> <li>• Associated event is received even when connecting using wrong password</li> <li>• WFA APUT Low iperf TCP/UDP Tx throughput with Realtek station</li> </ul>

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

Component	Description
Wi-Fi	<ul style="list-style-type: none"> <li>• In wrong password scenario, After updating new password the phone is not able to connect with DUTAP</li> </ul>

3.1.7.3 FW Version : From 16.91.21.p91.6 to 16.91.21.p124

Component	Description
Wi-Fi	<ul style="list-style-type: none"> <li>• Cloud keep alive packets not seen after DUT enters host sleep. DUT is sending QOS null packets even in host sleep</li> </ul>

3.1.8 Known Issues

Component	Description
-	NA

## 3.2 SD-UART IW416

### 3.2.1 Package Information

- SDK version : 2.15.0

### 3.2.2 Version Information

- Wireless SoC: IW416
- Wi-Fi and Bluetooth/Bluetooth LE Firmware Version : 16.91.21.p124
  - 16 - Major revision
  - 91 - Feature pack
  - 21 - Release version
  - p124- 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)
- STA | QTT

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>

**Note:** QDID upgradation to Bluetooth Core Specification Version 5.4 is in progress.

### 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 <b>NOTE:</b> 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)	
	Tx	Rx	Tx	Rx
Open Security	41	39	60	62
WPA2-AES	38	38	60	61
WPA3-SAE	38	38	61	62

STA Mode Throughput - BGN Mode   2.4 GHz Band   40 MHz				
Protocol	TCP (Mbit/s)		UDP (Mbit/s)	
	Tx	Rx	Tx	Rx
Open Security	63	79	114	121
WPA2-AES	58	78	111	101
WPA3-SAE	58	81	112	99

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	41	50	56	64
WPA2-AES	38	49	48	63
WPA3-SAE	40	44	56	56

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	62	76	119	127
WPA2-AES	59	78	117	117
WPA3-SAE	59	79	117	119

### 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	51	60	62
WPA2-AES	43	51	60	62
WPA3-SAE	42	51	60	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	43	72	119	118
WPA2-AES	42	71	117	118
WPA3-SAE	42	69	121	117

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	49	61	61
WPA2-AES	43	48	61	60
WPA3-SAE	43	49	61	62

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	79	118	100
WPA2-AES	67	65	115	100
WPA3-SAE	67	53	115	88

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	<ul style="list-style-type: none"> <li>• WPA3-R3 enabled APUT beacons does not have RSNXE when configured in H2E mode</li> </ul>

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

Component	Description
Wi-Fi	NA

3.2.7.3 FW Version : From 16.91.21.p91.6 to 16.91.21.p124

Component	Description
Wi-Fi	<ul style="list-style-type: none"> <li>• Cloud keep alive packets not seen after DUT enters host sleep. DUT is sending QOS null packets even in host sleep</li> </ul>

3.2.8 Known Issues

Component	Description
-	NA



### 3.3 SD-UART-SPI IW612

**Note:** The IW612 support is enabled in i.MX RT1170 EVKB and i.MX RT1060 EVKC.

#### 3.3.1 Package Information

- SDK version : 2.15.0

#### 3.3.2 Version Information

- Wireless SoC: IW612
- Wi-Fi and Bluetooth/Bluetooth LE Firmware Version : 18.99.2.p66.155
  - 18 - Major revision
  - 99 - Feature pack
  - 2 - Release version
  - p66.155 - 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)
- STA | 802.11ac
- STA | 802.11ax
- STA | QTT

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>

**Note:** QDID upgradation to Bluetooth Core Specification Version 5.4 is in progress.

### 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 <b>NOTE:</b> 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)	
	Tx	Rx	Tx	Rx
Open Security	41	48	63	62
WPA2-AES	46	48	63	61
WPA3-SAE	41	48	63	62

STA Mode Throughput - BGN Mode   2.4 GHz Band   40 MHz				
Protocol	TCP (Mbit/s)		UDP (Mbit/s)	
	Tx	Rx	Tx	Rx
Open Security	71	80	130	131
WPA2-AES	70	80	130	130
WPA3-SAE	71	79	130	129

STA Mode Throughput - AN Mode   5 GHz Band   20 MHz ( HT)				
Protocol	TCP (Mbit/s)		UDP (Mbit/s)	
	Tx	Rx	Tx	Rx
Open Security	41	50	64	64
WPA2-AES	40	50	64	64
WPA3-SAE	44	50	64	64

STA Mode Throughput - AN Mode   5 GHz Band   40 MHz (HT)				
Protocol	TCP (Mbit/s)		UDP (Mbit/s)	
	Tx	Rx	Tx	Rx
Open Security	63	81	129	134
WPA2-AES	64	81	129	133
WPA3-SAE	63	81	129	133

STA Mode Throughput - VHT Mode   2.4 GHz Band   20 MHz (HT)				
Protocol	TCP (Mbit/s)		UDP (Mbit/s)	
	Tx	Rx	Tx	Rx
Open Security	51	55	76	74
WPA2-AES	45	54	73	73
WPA3-SAE	51	54	73	73

STA Mode Throughput - VHT Mode   2.4 GHz Band   40 MHz (HT)				
Protocol	TCP (Mbit/s)		UDP (Mbit/s)	
	Tx	Rx	Tx	Rx
Open Security	72	90	172	173
WPA2-AES	70	88	170	170
WPA3-SAE	71	90	170	171

STA Mode Throughput - VHT Mode   5 GHz Band   20 MHz (HT)				
Protocol	TCP (Mbit/s)		UDP (Mbit/s)	
	Tx	Rx	Tx	Rx
Open Security	44	57	77	75
WPA2-AES	44	57	74	75
WPA3-SAE	44	57	74	75

STA Mode Throughput - VHT Mode   5 GHz Band   40 MHz (HT)				
Protocol	TCP (Mbit/s)		UDP (Mbit/s)	
	Tx	Rx	Tx	Rx
Open Security	70	87	175	173
WPA2-AES	71	89	173	171
WPA3-SAE	71	88	173	168

STA Mode Throughput - VHT Mode   5 GHz Band   80 MHz (HT)				
Protocol	TCP (Mbit/s)		UDP (Mbit/s)	
	Tx	Rx	Tx	Rx
Open Security	82	89	214	199
WPA2-AES	81	90	213	197
WPA3-SAE	81	89	215	198

STA Mode Throughput - HE Mode   2.4 GHz Band   20 MHz (HT)				
Protocol	TCP (Mbit/s)		UDP (Mbit/s)	
	Tx	Rx	Tx	Rx
Open Security	64	65	122	125
WPA2-AES	64	67	121	124
WPA3-SAE	64	66	119	122

STA Mode Throughput - HE Mode   2.4 GHz Band   40 MHz (HT)				
Protocol	TCP (Mbit/s)		UDP (Mbit/s)	
	Tx	Rx	Tx	Rx
Open Security	69	70	205	192
WPA2-AES	68	70	207	192
WPA3-SAE	68	70	206	192

STA Mode Throughput - HE Mode   5 GHz Band   20 MHz (HT)				
Protocol	TCP (Mbit/s)		UDP (Mbit/s)	
	Tx	Rx	Tx	Rx
Open Security	55	61	107	123
WPA2-AES	55	61	105	124
WPA3-SAE	54	61	106	124

STA Mode Throughput - HE Mode   5 GHz Band   40 MHz (HT)				
Protocol	TCP (Mbit/s)		UDP (Mbit/s)	
	Tx	Rx	Tx	Rx
Open Security	74	65	208	198
WPA2-AES	75	65	208	197
WPA3-SAE	74	64	207	196

STA Mode Throughput - HE Mode   5 GHz Band   80 MHz (HT)				
Protocol	TCP (Mbit/s)		UDP (Mbit/s)	
	Tx	Rx	Tx	Rx
Open Security	83	71	210	198
WPA2-AES	82	71	211	196
WPA3-SAE	83	71	210	197

### 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	52	63	62
WPA2-AES	41	51	63	61
WPA3-SAE	41	51	62	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	88	127	132
WPA2-AES	65	86	127	130
WPA3-SAE	65	87	127	131

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	41	52	64	63
WPA2-AES	40	52	63	63
WPA3-SAE	40	52	63	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	89	129	135
WPA2-AES	67	88	129	135
WPA3-SAE	67	88	129	134

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	60	75	75
WPA2-AES	44	59	75	75
WPA3-SAE	44	59	75	75

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	98	150	170
WPA2-AES	71	98	147	168
WPA3-SAE	71	97	147	168

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	45	59	76	74
WPA2-AES	46	50	76	75
WPA3-SAE	45	60	77	74

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	73	97	167	178
WPA2-AES	73	98	166	177
WPA3-SAE	73	97	166	176

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	122	181	222
WPA2-AES	87	121	191	223
WPA3-SAE	86	120	183	221

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	54	66	91	122
WPA2-AES	54	67	91	123
WPA3-SAE	54	66	91	122

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	75	100	150	217
WPA2-AES	74	98	148	218
WPA3-SAE	74	99	148	217

Mobile AP Mode Throughput - HE Mode   5 GHz Band   20 MHz				
Protocol	TCP (Mbit/s)		UDP (Mbit/s)	
	Tx	Rx	Tx	Rx
Open Security	55	67	92	126
WPA2-AES	55	68	92	125
WPA3-SAE	55	68	91	124

Mobile AP Mode Throughput - HE Mode   5 GHz Band   40 MHz				
Protocol	TCP (Mbit/s)		UDP (Mbit/s)	
	Tx	Rx	Tx	Rx
Open Security	77	100	165	221
WPA2-AES	77	100	166	220
WPA3-SAE	77	100	164	220

Mobile AP Mode Throughput - HE Mode   5 GHz Band   80 MHz				
Protocol	TCP (Mbit/s)		UDP (Mbit/s)	
	Tx	Rx	Tx	Rx
Open Security	87	120	197	220
WPA2-AES	87	120	197	221
WPA3-SAE	86	119	190	220

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
-	NA

3.3.7.2 FW Version : 18.99.2.p7.19 to 18.99.2.p49.9

Component	Description
-	NA

3.3.7.3 FW Version : 18.99.2.p49.9 to 18.99.2.p155

Component	Description
Bluetooth	<ul style="list-style-type: none"> <li>• Audio lost occurs due to periodic adv sync lost, during 2 BIS 44.1kHz unencrypted streams with 1M PHY configurations.</li> <li>• Sometimes BIS sync loss occurs in long audio streaming.</li> </ul>

## 3.3.8 Known Issues

<b>Component</b>	<b>Description</b>
Wi-Fi	<ul style="list-style-type: none"><li>• 802.11R Fast BSS roaming works only with hostapd and does not work with standard APs (supporting 11R)</li></ul>
Bluetooth	<ul style="list-style-type: none"><li>• DUT not able to sustain a connection with the remote device which does the extended advertisement with coded PHY configuration.</li><li>• When 2 CIS streams are ongoing, after the first device disconnection followed by the second device disconnection, the second peripheral device got hang.</li><li>• Audio Play/Pause would not work in BIS case.</li><li>• Packet lost would be observed in CIS case which would cause audio noise.</li></ul>



## 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 <b>NOTE:</b> 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	43	43	61
WPA2-AES	33	43	42	62
WPA3-SAE	32	43	43	62

### 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	33	49	36	61
WPA2-AES	32	48	36	61
WPA3-SAE	32	48	35	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

#### 3.4.7.3 FW Version : From 14.91.36.p185 to 14.91.36.p188

Component	Description
--	NA



## 3.4.8 Known Issues

<b>Component</b>	<b>Description</b>
--	NA

## 4 Acronyms & Abbreviations

Table 4: 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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