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Product Catalog 2021



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About Us

SparkLAN is dedicated to design-in, marketing and sales of a top-quality wireless solution. Our product range includes commercial grade and Industrial grade wireless modules solution. We provide technical support, consultation, and module, from customer initial development phase right through to production and beyond. Short communication channels within our organization guarantee rapid and highly competent care and attention.

Working closely with our customers, SparkLAN is able to advise customers on the latest trends in technology as well as sharing product roadmaps. In addition to offering technical solutions, SparkLAN also keeps a close eye on prices and lead-times, ensuring the right modules are delivered to the right place at the right time. Our ability to include flexible customer-specific logistics is also a key strength of SparkLAN.

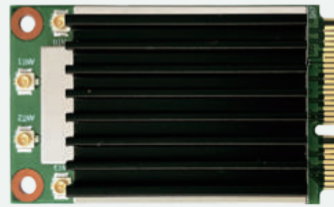


The background of the slide features a close-up, blurred image of several hands holding a smartphone. Overlaid on this image is a network diagram consisting of numerous small, light-colored circular nodes connected by thin, white lines, creating a web-like pattern across the entire frame. A semi-transparent white rectangular box is centered on the slide, containing the main text.

**Unleash the power
of your application**

**Meet our
Wi-Fi 6 Squad**

WiFi 6 Series | Mini PCIe



WPEQ-405AX

802.11ax/ac/a/b/g/n 4x4 MU-MIMO
WiFi 6 module for the 5GHz band,
Mini PCIe Module (WiFi 6), 4T4R

- Chipset: Qualcomm Atheros QCN9074
- Antenna: 4 x IPEX connectors, 4T4R
- Form Factor: Mini PCIe
- Interface: PCIe
- Support: Linux (Open Source)

For 2.4G Version : WPEQ-402AX

For 6G(E) Version : WPEQ-406AX



WPEB-265AXI(BT) [B33/R33]

WPEB-265AXI(BT) [B18/R18]

802.11ax/ac/a/b/g/n Industrial Grade,
WiFi+Bluetooth 5.0 Combo, Half mini PCIe
Module (WiFi 6), 2T2R

- Chipset: Broadcom
- Antenna: 2 x IPEX MHF1 connectors, 2T2R
- Interface: WLAN: PCIe; Bluetooth: USB or UART
- Output Power up to 18.5dBm
- Support: Linux, Android



WiFi 6 Series | M.2



WNFQ-268AXI(BT)

802.11ax/ac/a/b/g/n Industrial-Grade
Tri-band WiFi+Bluetooth 5.2 Combo,
M.2 2230 (E KEY) Module(WiFi 6), 2T2R

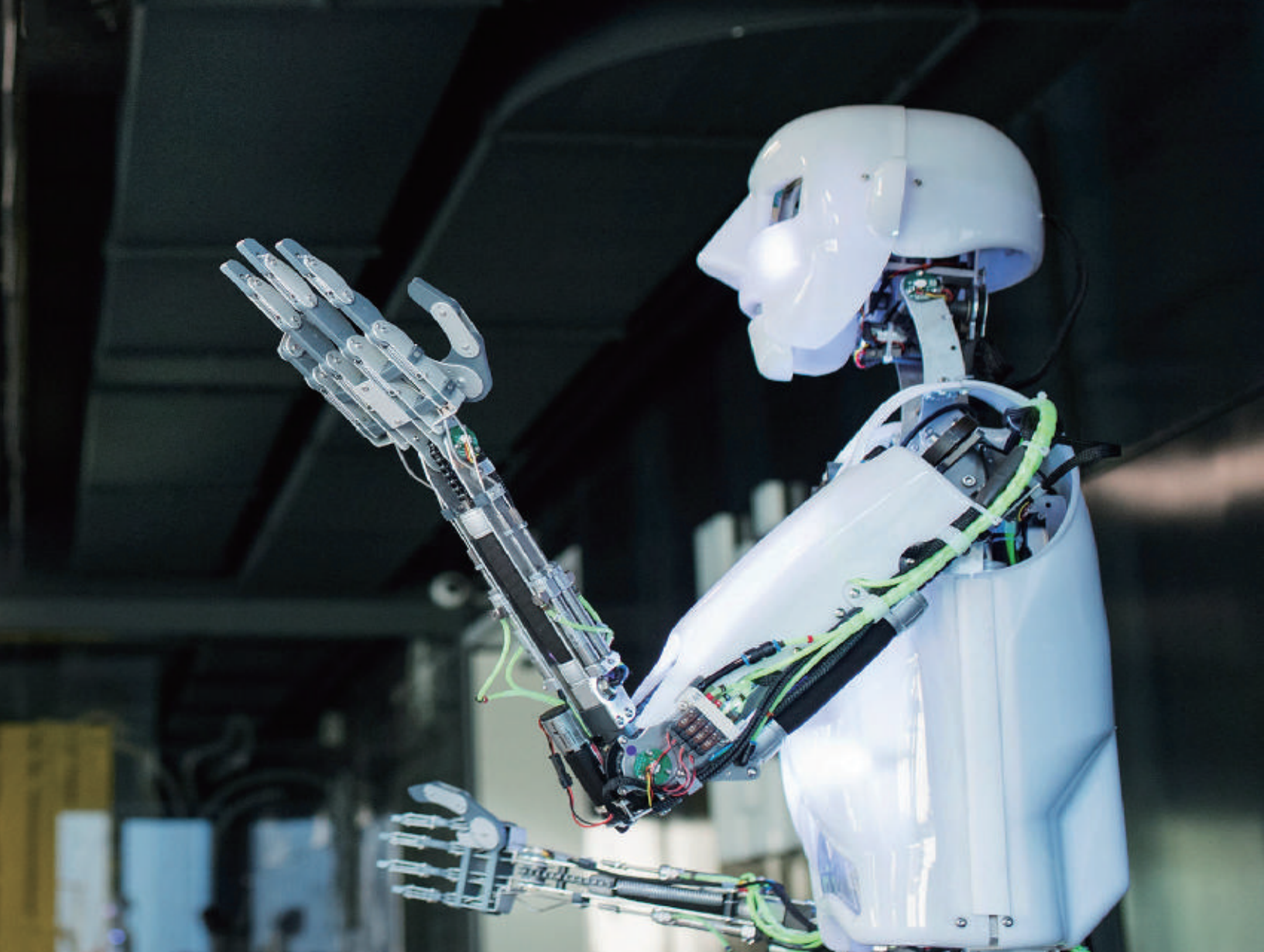
- Chipset: Qualcomm Atheros WCNXXXX
- Antenna: 2 x IPEX MHF4 connectors, 2T2R
- Interface: PCI: WLAN; USB: Bluetooth
- Supports Dual Band Dual Concurrent Design
- Support: Windows, Linux (Open Source) TBD



WNFT-238AX(BT)

802.11ax/ac/a/b/g/n Wave 2 Compliant
with MU-MIMO, WiFi +Bluetooth 5.2 Combo,
M.2 2230 (A-E KEY) Module(WiFi 6), 2T2R

- Chipset: Realtek RTL8852AE
- Antenna: 2 x IPEX MHF4 connectors, 2T2R
- Interface: PCI: WLAN; USB: Bluetooth
- Output Power up to 19dBm
- Support: Windows



WNFB-266AXI(BT)

802.11ax/ac/a/b/g/n Industrial Grade, WiFi
SDIO+Bluetooth 5.0 Combo, M.2 2230 (KEY E)
Module(WiFi 6), 2T2R

-
- Chipset: Broadcom
 - Antenna: 2 x IPEX MHF4 connectors, 2T2R
 - Interface: SDIO: WLAN; UART: Bluetooth
 - Output Power up to 18.5dBm
 - Support: Linux, Android



WNFB-265AXI(BT)

802.11ax/ac/a/b/g/n Industrial Grade,
WiFi+Bluetooth 5.0 Combo, M.2 2230 (KEY E)
Module(WiFi 6), 2T2R

-
- Chipset: Broadcom
 - Antenna: 2 x IPEX MHF1 connectors, 2T2R
 - Interface: PCIe: WLAN; USB or UART: Bluetooth
 - Output Power up to 18.5dBm
 - Support: Linux, Android

WiFi 6 Series | SiP

AP6275HH3



802.11ax/ac/a/b/g/n WiFi+Bluetooth 5.0
Combo SiP Module (WiFi 6), 2T2R

- Chipset: Broadcom
- Antenna: External
- Interface: WLAN: PCIe ; Bluetooth: UART/ PCM
- Support: Linux, Android

AP6275S



802.11ax/ac/a/b/g/n WiFi+Bluetooth 5.0
Combo SiP Module (WiFi 6), 2T2R

- Chipset: Broadcom
- Antenna: External
- Interface: WLAN: SDIO 3.0/2.0; Bluetooth: UART / PCM
- Support: Linux, Android

AP6275P



802.11ax/ac/a/b/g/n WiFi+Bluetooth 5.0
Combo SiP Module (WiFi 6), 2T2R

- Chipset: Broadcom
- Antenna: External
- Interface: WLAN: PCIe ; Bluetooth: UART/ PCM
- Support: Linux, Android

SparkLAN WiFi 6 Series

Product		WNFQ-268AXI(BT)	WNFT-238AX(BT)	WNFB-266AXI(BT)	WNFB-265AXI(BT)
Picture					
STANDARD					
WI-FI		IEEE 802.11ax/ac/a/b/g/n	IEEE 802.11ax/ac/a/b/g/n	IEEE 802.11ax/ac/a/b/g/n	IEEE 802.11ax/ac/a/b/g/n
Bluetooth		Bluetooth V5.2, V4.2, V4.1, V4.0LE, V3.0, V2.1+EDR	Bluetooth V5.2, V4.2, V4.1, V4.0LE, V3.0, V2.1+EDR	Bluetooth V5.0, V4.2, V4.1, V4.0 LE, V3.0+HS, V2.1+EDR	Bluetooth V5.0, V4.2, V4.1, V4.0 LE, V3.0+HS, V2.1+EDR
Chipset		Qualcomm Atheros WCNXXXX	Realtek RTLXXXXX	Broadcom	Broadcom
Host Interface		WLAN : PCIe Bluetooth : USB	WLAN : PCIe Bluetooth : USB	WLAN : SDIO Bluetooth : UART	WLAN : PCIe Bluetooth : UART
RADIO					
Antenna		2 x IPEX MHF4 connectors	2 x IPEX MHF4 connectors	2 x IPEX MHF4 connectors	2 x IPEX MHF4 connectors (ANT1 for WLAN/BT, ANT2 for WLAN)
Operating Frequency		802.11ax/ac/a/b/g/n ISM Band 2.412GHz~2.484GHz 5.150GHz~5.850GHz 5.925GHz~7.125GHz *Subject to local regulations	802.11ax/ac/a/b/g/n ISM Band 2.412GHz~2.484GHz 5.150GHz~5.850GHz *Subject to local regulations	802.11ax/ac/a/b/g/n ISM Band 2.400GHz~2.4835GHz 5.150GHz~5.350GHz 5.470GHz~5.725GHz 5.725GHz~5.850GHz *Subject to local regulations	802.11ax/ac/a/b/g/n ISM Band 2.400GHz~2.4835GHz 5.150GHz~5.350GHz 5.470GHz~5.720GHz 5.725GHz~5.845GHz *Subject to local regulations
POWER & SENSITIVITY					
WiFi Power – TX (± 2dBm)	11b @ 11Mbps	TBD	19dBm	18.5dBm	18.5dBm
	11g @ 54Mbps	TBD	18dBm	12dBm	12dBm
	11gn HT20 @ MCS 7	TBD	17dBm	11dBm	11dBm
	11gn HT40 @ MCS 7	TBD	17dBm		
	11a @ 54Mbps		18dBm	14.5dBm	14.5dBm
	11an HT20 @ MCS 7		17dBm	13.5dBm	13.5dBm
	11an HT40 @ MCS 7		17dBm	11dBm	11dBm
	11ac VHT80 @ MCS 9	TBD	15dBm	9dBm	9dBm
	11ax HE20 @ HE 7			13.5dBm	13.5dBm
	11ax HE40 @ HE 7			13.5dBm	13.5dBm
	11ax HE40 @ HE 11	TBD			
	11ax HE40 @ MCS 11		13dBm		
	11ax HE80 @ HE 9			9dBm	9dBm
	11ax HE80 @ HE 11	TBD		9dBm	
	11ax HE80 @ MCS 11		13dBm		
Bluetooth Power – TX (± 2dBm)	1Mbps			0 ≤ Output Power ≤ 8dBm	0 ≤ Output Power ≤ 8dBm
	2Mbps			0 ≤ Output Power ≤ 7dBm	0 ≤ Output Power ≤ 7dBm
	3Mbps	0 ≤ Output Power ≤ 6dBm(TBD)	0 ≤ Output Power ≤ 6dBm		
Sensitivity – RX (± 2dBm)	11b @ 11Mbps	TBD	≤ -76dBm	≤ -88dBm	≤ -88dBm
	11g @ 54Mbps	TBD	≤ -65dBm	≤ -77dBm	≤ -77dBm
	11gn HT20 @ MCS 7	TBD	≤ -61dBm	≤ -73dBm	≤ -73dBm
	11gn HT40 @ MCS 7	TBD	≤ -61dBm		
	11a @ 54Mbps		≤ -65dBm	≤ -76dBm	≤ -76dBm
	11an HT20 @ MCS 7		≤ -61dBm		
	11an HT40 @ MCS 7		≤ -61dBm		
	11ac VHT80 @ MCS 9	TBD	≤ -51dBm	≤ -57dBm	≤ -57dBm
	11ax HE20 @ HE 7			≤ -69dBm	≤ -69dBm
	11ax HE40 @ HE 7			≤ -68dBm	≤ -68dBm
	11ax HE40 @ HE 11	TBD			
	11ax HE40 @ MCS 11		≤ -49dBm		
	11ax HE80 @ HE 9			≤ -60dBm	≤ -60dBm
	11ax HE80 @ HE 11	TBD			
	11ax HE80 @ MCS 11		≤ -46dBm		
Bluetooth Sensitivity – RX (± 2dBm)	1Mbps			<0.01% BER at -90dBm	<0.01% BER at -90dBm
	2Mbps			<0.01% BER at -91dBm	<0.01% BER at -91dBm
	3Mbps	<0.1% BER at -70dBm(TBD)	<0.1% BER at -70dBm		
POWER CONSUMPTION					
Continue TX		TBD	TBD	TBD	660mA
Continue RX		TBD	TBD	TBD	201mA
ENVIRONMENTAL					
Operating Voltage		DC 3.3V	DC 3.3V	DC 3.3V	DC 3.3V
Temperature Range	Operating	-40~85°C (Operating)	0 ~ 70°C (Operating)	-30 ~ 85°C (Operating)	-40 ~ 85°C (Operating)
	Storing	-45 ~ 90°C (Storing)	-40 ~ 85°C (Storing)	-40 ~ 105°C (Storing)	-40 ~ 105°C (Storing)
SIZE					
Dimension (MM)		30mm x 22mm x TBDmm	30mm x 22mm x 2.15mm	22mm x 30mm x 2.4mm	30mm x 22mm x 3.0mm
SOFTWARE					
Driver		Win, Linux (Open Source) TBD	Microsoft Windows	Linux, Android	Linux, Android
Security		64/128-bits WEP, WPA, WPA2, WPA3, 802.1x	64/128-bits WEP, WPA, WPA2, WPA3, 802.1x	64/128-bits WEP, WPA, WPA2, WPA3, 802.1x	64/128-bits WEP, WPA, WPA2, WPA3, 802.1x

SparkLAN WiFi 6 Series

Product		WPEQ-405AX	WPEB-265AXI(BT) [B33/R33]	WPEB-265AXI(BT) [B18/R18]
Picture				
STANDARD				
WI-FI		IEEE 802.11ax/ac/a/n	IEEE 802.11ax/ac/a/b/g/n	IEEE 802.11ax/ac/a/b/g/n
Bluetooth			Bluetooth V5.0, V4.2, V4.1, V4.0 LE, V3.0+HS, V2.1+EDR	Bluetooth V5.0, V4.2, V4.1, V4.0 LE, V3.0+HS, V2.1+EDR
Chipset		Qualcomm Atheros QCN9074	Broadcom	Broadcom
Host Interface		WLAN : PCIe	WLAN: PCIe Bluetooth: USB or UART	WLAN : PCIe Bluetooth : USB or UART
RADIO				
Antenna		4 x IPEX MHF1 connectors	2 x IPEX MHF1 connectors (ANT1 for WLAN/BT, ANT2 for WLAN)	2 x IPEX MHF1 connectors (ANT1 for WLAN/BT, ANT2 for WLAN)
Operating Frequency		802.11ax/ac/a/n ISM Band 5.150GHz~5.850GHz *Subject to local regulations	802.11ax/ac/a/b/g/n ISM Band 2.412GHz~2.4835GHz 5.15GHz~5.35GHz 5.47GHz~5.725GHz 5.725GHz~5.85GHz *Subject to local regulations	802.11ax/ac/a/b/g/n ISM Band 2.412GHz~2.4835GHz 5.15GHz~5.35GHz 5.47GHz~5.725GHz 5.725GHz~5.85GHz *Subject to local regulations
POWER & SENSITIVITY				
WiFi Power – TX (± 2dBm)	11b @ 11Mbps		18.5dBm	18.5dBm
	11g @ 54Mbps		12dBm	12dBm
	11gn HT20 @ MCS 7		12dBm	12dBm
	11a @ 54Mbps	17dBm	14.5dBm	14.5dBm
	11n HT20 @ MCS 7	17dBm		
	11an HT20 @ MCS 7	17dBm		
	11an HT40 @ MCS 7	17dBm		
	11ac VHT20 @ MCS 7	16dBm		
	11ac VHT80 @ MCS 9	16dBm	9dBm	9dBm
	11ax HT20 @ HE 7		12dBm	12dBm
	11ax HE20 @ HE 7		13.5dBm	13.5dBm
	11ax HE20 @ MCS 7	15dBm		
	11ax HE20 @ MCS 11	15dBm		
	11ax HE40 @ HE 7		13.5dBm	13.5dBm
	11ax HE40 @ MCS 7	15dBm		
	11ax HE40 @ MCS 11	15dBm		
	11ax HE80 @ HE 9		9dBm	9dBm
	11ax HE80 @ MCS 9	15dBm		
	11ax HE80 @ MCS 11	15dBm		
	11ax HE160 @ MCS 11	15dBm		
Bluetooth Power – TX (± 2dBm)	1Mbps		0 ≤ Output Power ≤ 8dBm	0 ≤ Output Power ≤ 8dBm
	2Mbps			
	3Mbps		0 ≤ Output Power ≤ 7dBm	0 ≤ Output Power ≤ 7dBm
Sensitivity – RX (± 2dBm)	11b @ 11Mbps		≤ -88dBm	≤ -88dBm
	11g @ 54Mbps		≤ -77dBm	≤ -77dBm
	11gn HT20 @ MCS 7		≤ -75dBm	≤ -75dBm
	11a @ 54Mbps	≤ -76dBm		
	11n HT20 @ MCS 7	≤ -70dBm		
	11an HT20 @ MCS 7	≤ -70dBm		
	11an HT40 @ MCS 7	≤ -68dBm		
	11ac VHT20 @ MCS 7	≤ -74dBm		
	11ac VHT80 @ MCS 9	≤ -66dBm	≤ -62dBm	≤ -62dBm
	11ax HT20 @ HE 7		≤ -75dBm	≤ -75dBm
	11ax HE20 @ HE 7		≤ -69dBm	≤ -69dBm
	11ax HE20 @ MCS 11	≤ -64dBm		
	11ax HE40 @ HE 7		≤ -68dBm	≤ -69dBm
	11ax HE40 @ MCS 7	≤ -71dBm		
	11ax HE40 @ MCS 11	≤ -62dBm		
	11ax HE80 @ HE 9		≤ -60dBm	≤ -60dBm
	11ax HE80 @ MCS 9	≤ -64dBm		
	11ax HE80 @ MCS 11	≤ -57dBm		
	11ax HE160 @ MCS 11	≤ -55dBm		
Bluetooth Sensitivity – RX (± 2dBm)	1Mbps		<0.1% BR, BER at -88dBm	<0.1% BR, BER at -88dBm
	2Mbps			
	3Mbps		<0.1% BER at -83dBm	<0.1% BER at -85dBm
POWER CONSUMPTION				
Continue TX		1954 mA	937mA	937mA
Continue RX		819 mA	94mA	94mA
ENVIRONMENTAL				
Operating Voltage		DC 3.3V	DC 3.3V	DC 3.3V Note (Function GPIO & UART VIO: 1.8V)
Temperature Range	Operating	-20~ 70°C	-40 ~ 85°C	-40 ~ 85°C
	Storing	-20 ~ 90°C	-40 ~ 105°C	-40 ~ 105°C
SIZE				
Dimension (MM)		50.80mm x 29.85mm x 9.3mm (TBD)	29.85mm x 26.65mm x 2.8mm	29.85mm x 26.65mm x 2.8mm
SOFTWARE				
Driver		Linux (Open Source)	Linux, Android	Linux, Android
Security		64/128-bits WEP, WPA, WPA2, 802.1x	64/128-bits WEP, WPA, WPA2, WPA3, 802.1x	64/128-bits WEP, WPA, WPA2, WPA3, 802.1x

SparkLAN WiFi 6 Series

Product		AP6275HH3	AP6275S	AP6275P
Picture				
STANDARD				
WI-FI		IEEE 802.11ax/ac/a/b/g/n 2T2R WiFi+BT5.0	IEEE 802.11ax/ac/a/b/g/n 2T2R WiFi+BT5.0	IEEE 802.11ax/ac/a/b/g/n 2T2R WiFi+BT5.0
Bluetooth		Bluetooth V5.0, V4.2, V4.1, V4.0 LE, V3.0+HS, V2.1+EDR	Bluetooth V5.0, V4.2, V4.1, V4.0 LE, V3.0+HS, V2.1+EDR	Bluetooth V5.0, V4.2, V4.1, V4.0 LE, V3.0+HS, V2.1+EDR
Chipset		Broadcom	Broadcom	Broadcom
Host Interface		WLAN: PCIe v3.0 compliant and runs at Gen2 speeds. Bluetooth: UART/ PCM	WLAN: SDIO 3.0/2.0 Bluetooth: UART/PCM	WLAN: PCIe Bluetooth: UART/ PCM
RADIO				
Antenna		External	External	External
Operating Frequency		2.4GHz ISM Band: 2.400GHz~2.4835GHz 5GHz UNII Band: 5.15~5.35GHz 5.47~5.725GHz 5.725~5.85GHz Bluetooth: 2.402GHz ~2.480GHz *Subject to local regulations*	2.4GHz ISM Band: 2.400GHz~2.4835GHz 5GHz UNII Band: 5.15GHz~5.35GHz 5.47GHz~5.725GHz 5.725GHz~5.85GHz Bluetooth: 2402GHz~2480GHz *Subject to local regulations*	2.4GHz ISM Band: 2.400GHz~2.835GHz 5GHz UNII Band: 5.15GHz~5.35GHz 5.47GHz~5.725GHz 5.725GHz~5.85GHz Bluetooth: 2.402GHz~2.480GHz *Subject to local regulations*
ENVIRONMENTAL				
Temperature Range	Operating	-30~ 85°C (Operating)	-30~ 85°C (Operating)	-30~ 85°C (Operating)
	Storing	-40 ~ 85°C (Storing)	-40 ~ 105°C (Storing)	-40 ~ 105°C (Storing)
SIZE				
Dimension (MM)		24mm x 24 mm x 2.1 mm	15mm x 13x mm x 1.55mm	15mm x 13 mm x 1.55 mm
SOFTWARE				
Driver		Linux, Android	Linux, Android	Linux, Android

SparkLAN Industrial Grade Series

Product		WNFQ-268AXI(BT)	WNFB-266AXI(BT)	WNFB-265AXI(BT)	WPB-265AXI(BT)[B33/R33]
Picture					
STANDARD					
WI-FI		IEEE 802.11ax/ac/a/b/g/n	IEEE 802.11ax/ac/a/b/g/n	IEEE 802.11ax/ac/a/b/g/n	IEEE 802.11ax/ac/a/b/g/n
Bluetooth		Bluetooth V5.2,V4.2, V4.1, V4.0LE, V3.0, V2.1+EDR	Bluetooth V5.0, V4.2, V4.1, V4.0 LE, V3.0+HS, V2.1+EDR	Bluetooth V5.0, V4.2, V4.1, V4.0 LE, V3.0+HS, V2.1+EDR	Bluetooth V5.0, V4.2, V4.1, V4.0 LE, V3.0+HS, V2.1+EDR
Chipset		Qualcomm Atheros WCNXXXX	Broadcom	Broadcom	Broadcom
Host Interface		WLAN : PCIe Bluetooth : USB	WLAN : SDIO Bluetooth : UART	WLAN : PCIe Bluetooth : UART	WLAN: PCIe Bluetooth: USB or UART
RADIO					
Antenna		2 x IPEX MHF4 connectors	2 x IPEX MHF4 connectors	2 x IPEX MHF4 connectors (ANT1 for WLAN/BT,ANT2 for WLAN)	2 x IPEX MHF1 connectors (ANT1 for WLAN/BT,ANT2 for WLAN)
Operating Frequency		802.11ax/ac/a/b/g/n ISM Band 2.412GHz~2.484GHz 5.5150GHz~5.850GHz 5.925GHz~7.125GHz *Subject to local regulations	802.11ax/ac/a/b/g/n ISM Band 2.400GHz~2.4835GHz 5.150GHz~5.350GHz 5.470GHz~5.725GHz 5.725GHz~5.850GHz *Subject to local regulations	802.11ax/ac/a/b/g/n ISM Band 2.400GHz~2.4835GHz 5.150GHz~5.350GHz 5.470GHz~5.720GHz 5.725GHz~5.845GHz *Subject to local regulations	802.11ax/ac/a/b/g/n ISM Band 2.412GHz~2.4835GHz 5.15GHz~5.35GHz 5.47GHz~5.725GHz 5.725GHz~5.85GHz *Subject to local regulations
POWER & SENSITIVITY					
WiFi Power – TX (± 2dBm)	11b @ 11Mbps	TBD	18.5dBm	18.5dBm	18.5dBm
	11g @ 54Mbps	TBD	12dBm	12dBm	12dBm
	11gn HT20 @ MCS 7	TBD	11dBm	11dBm	12dBm
	11gn HT40 @ MCS 7	TBD			
	11a @ 54Mbps		14.5dBm	14.5dBm	14.5dBm
	11an HT20 @ MCS 7		13.5dBm	13.5dBm	
	11an HT40 @ MCS 7		11dBm	11dBm	
	11ac VHT80 @ MCS 9	TBD	9dBm	9dBm	9dBm
	11ax HT20 @ HE 7				12dBm
	11ax HE20 @ HE 7		13.5dBm	13.5dBm	13.5dBm
	11ax HE40 @ HE 7		11dBm	11dBm	13.5dBm
	11ax HE40 @ HE 11	TBD			
Bluetooth Power – TX (± 2dBm)	1Mbps		0 ≤Output Power ≤8dBm	0 ≤Output Power ≤8dBm	0 ≤Output Power ≤8dBm
	2Mbps		0 ≤Output Power ≤7dBm	0 ≤Output Power ≤7dBm	
	3Mbps	0 ≤Output Power ≤6dBm(TBD)			0 ≤Output Power ≤7dBm
Sensitivity – RX (± 2dBm)	11b @ 11Mbps	TBD	≤ -88dBm	≤ -88dBm	≤ -88dBm
	11g @ 54Mbps	TBD	≤ -77dBm	≤ -77dBm	≤ -77dBm
	11gn HT20 @ MCS 7	TBD	≤ -73dBm	≤ -73dBm	≤ -75dBm
	11gn HT40 @ MCS 7	TBD			
	11a @ 54Mbps		≤ -76dBm	≤ -76dBm	
	11ac VHT80 @ MCS 9	TBD	≤ -57dBm	≤ -57dBm	≤ -62dBm
	11ax HT20 @ HE 7				≤ -75dBm
	11ax HE20 @ HE 7		≤ -69dBm	≤ -69dBm	≤ -69dBm
	11ax HE40 @ HE 7		≤ -68dBm	≤ -68dBm	≤ -68dBm
	11ax HE40 @ HE 11	TBD			
Bluetooth Sensitivity – RX (± 2dBm)	1Mbps		<0.01% BER at -88dBm	<0.01% BER at -88dBm	<0.1% BR, BER at -88dBm
	2Mbps		<0.01% BER at -91dBm	<0.01% BER at -91dBm	
	3Mbps	<0.1% BER at -70dBm (TBD)			<0.1% BER at -83dBm
POWER CONSUMPTION					
Continue TX		TBD	TBD	660mA	937mA
Continue RX		TBD	TBD	201mA	94mA
ENVIRONMENTAL					
Operating Voltage		DC 3.3V	DC 3.3V	DC 3.3V	DC 3.3V
Temperature Range	Operating	-40~85°C (Operating)	-30 ~ 85°C (Operating)	-40 ~ 85°C (Operating)	-40 ~ 85°C (Operating)
	Storing	-45 ~ 90°C (Storing)	-40 ~ 105°C (Storing)	-40 ~ 105°C (Storing)	-40 ~ 105°C (Storing)
SIZE					
Dimension (MM)		30mm x 22mm x TBDmm	22mm x 30mm x 2.4mm	30mm x 22mm x 3.0mm	29.85mm x 26.65mm x 2.8mm
SOFTWARE					
Driver		Win, Linux (Open Source) TBD	Linux, Android	Linux, Android	Linux, Android
Security		64/128-bits WEP, WPA, WPA2, WPA3, 802.1x	64/128-bits WEP, WPA, WPA2, WPA3, 802.1x	64/128-bits WEP, WPA, WPA2, WPA3, 802.1x	64/128-bits WEP, WPA, WPA2, WPA3, 802.1x

SparkLAN Industrial Grade Series

Product		WPEB-265AXI(BT) [B18/R18]	WPEA-251ACNI(BT)	WPEQ-262ACNI(BT)	WNFQ-262ACNI(BT)
Picture					
STANDARD					
Wi-Fi		IEEE 802.11ax/ac/a/b/g/n	IEEE 802.11ac/a/b/g/n	IEEE 802.11ac/a/b/g/n	IEEE 802.11ac/a/b/g/n
Bluetooth		Bluetooth V5.0, V4.2, V4.1, V4.0 LE, V3.0+HS, V2.1+EDR	Bluetooth V5.0, V4.2, V4.1, V4.0 LE, V3.0+HS, V2.1+EDR	Bluetooth V5.0, V4.2, V4.1, V4.0 LE, V3.0+HS, V2.1+EDR	Bluetooth V5.0, V4.2, V4.1, V4.0 LE, V3.0+HS, V2.1+EDR
Chipset		Broadcom	Qualcomm Atheros QCA6174A-5	Qualcomm Atheros QCA6174A-5	Qualcomm Atheros QCA6174A-5
Host Interface		WLAN : PCIe Bluetooth : USB or UART	WLAN : PCIe Bluetooth : USB	WLAN : PCIe Bluetooth : USB	WLAN : PCIe Bluetooth : USB
RADIO					
Antenna		2 x IPEX MHF1 connectors (ANT1 for WLAN/BT, ANT2 for WLAN)	2 x IPEX MHF1 connectors	2 x IPEX MHF1 connectors	2 x IPEX MHF1 connectors (Ant 1 for WLAN, Ant 2 for WLAN/BT)
Operating Frequency		802.11ax/ac/a/b/g/n ISM Band 2.412GHz~2.4835GHz 5.15GHz~5.35GHz 5.47GHz~5.725GHz 5.725GHz~5.85GHz *Subject to local regulations	802.11ac/a/b/g/n ISM Band 2.412GHz~2.484GHz 5.150GHz~5.850GHz *Subject to local regulations	802.11 ac/a/b/g/n ISM Band 2.412GHz~2.484GHz 5.150GHz~5.850GHz *Subject to local regulations	802.11ac/a/b/g/n ISM Band 2.412GHz~2.484GHz 5.150GHz~5.850GHz *Subject to local regulations
POWER & SENSITIVITY					
WiFi Power – TX (± 2dBm)	11b @ 11Mbps	18.5dBm	18dBm	18dBm	18dBm
	11g @ 54Mbps	12dBm	14.5dBm	14.5dBm	14.5dBm
	11gn HT20 @ MCS 7	12dBm	14dBm	14dBm	14dBm
	11gn HT40 @ MCS 7		13.5dBm	13.5dBm	13.5dBm
	11a @ 54Mbps	14.5dBm	11.5dBm	14dBm	14dBm
	11an HT20 @ MCS 7		11dBm	13.5dBm	13dBm
	11an HT40 @ MCS 7		10dBm	13.5dBm	13dBm
	11ac VHT80 @ MCS 9	9dBm	6.5dBm	11.5dBm	11dBm
	11ax HT20 @ HE 7	12dBm			
	11ax HE20 @ HE 7	13.5dBm			
	11ax HE40 @ HE 7	13.5dBm			
	11ax HE80 @ HE 9	9dBm			
Bluetooth Power – TX (± 2dBm)	1Mbps	0 ≤ Output Power ≤ 8dBm			
	2Mbps				
	3Mbps	0 ≤ Output Power ≤ 7dBm	0 ≤ Output Power ≤ 10dBm	0 ≤ Output Power ≤ 10dBm	0 ≤ Output Power ≤ 10dBm
Sensitivity – RX (± 2dBm)	11b @ 11Mbps	≤ -88dBm	≤ -86dBm	≤ -86dBm	≤ -85dBm
	11g @ 54Mbps	≤ -77dBm	≤ -72dBm	≤ -72dBm	≤ -71dBm
	11gn HT20 @ MCS 7	≤ -75dBm	≤ -68dBm	≤ -69dBm	≤ -67dBm
	11gn HT40 @ MCS 7		≤ -66dBm	≤ -67dBm	≤ -65dBm
	11a @ 54Mbps		≤ -71dBm	≤ -73dBm	≤ -75dBm
	11an HT20 @ MCS 7		≤ -68dBm	≤ -71dBm	≤ -71dBm
	11an HT40 @ MCS 7		≤ -67dBm	≤ -67dBm	≤ -67dBm
	11ac VHT80 @ MCS 9	≤ -62dBm	≤ -57dBm	≤ -57dBm	≤ -57dBm
	11ax HT20 @ HE 7	≤ -75dBm			
	11ax HE20 @ HE 7	≤ -69dBm			
	11ax HE40 @ HE 7	≤ -69dBm			
	11ax HE80 @ HE 9	≤ -60dBm			
Bluetooth Sensitivity – RX (± 2dBm)	1Mbps	<0.1% BR, BER at -88dBm			
	2Mbps				
	3Mbps	<0.1% BER at -85dBm	<0.1% BR, BER at -70dBm	<0.1% BER at -70dBm	<0.1% BR, BER at -70dBm
POWER CONSUMPTION					
Continue TX		937mA	626mA	610mA	610mA
Continue RX		94mA	286mA	298mA	298mA
ENVIRONMENTAL					
Operating Voltage		DC 3.3V Note (Function GPIO & UART VIO: 1.8V)	DC 3.3V	DC 3.3V	DC 3.3V
Temperature Range	Operating	-40 ~ 85°C (Operating)	-40 ~ 85°C (Operating)	-40 ~ 85°C (Operating)	-40 ~ 85°C (Operating)
	Storing	-40 ~ 105°C (Storing)	-45 ~ 90°C (Storing)	-45 ~ 90°C (Storing)	-45 ~ 90°C (Storing)
SIZE					
Dimension (MM)		29.85mm x 26.65mm x 2.8mm	29.85mm x 26.65mm x 3.2mm	50.8mm x 29.85mm x 3.4mm	42mm x 22mm x 2.78mm
SOFTWARE					
Driver		Linux, Android	Win7/8.1/10, Linux (Open Source), Recommend Kernel v4.0+	Win7/8.1/10, Linux (Open Source), Recommend Kernel v4.0+	Win7/8.1/10, Linux (Open Source), Recommend Kernel v4.0+
Security		64/128-bits WEP, WPA, WPA2, WPA3, 802.1x	64/128-bits WEP, WPA, WPA2, WPA3, 802.1x	64/128-bits WEP, WPA, WPA2, WPA3, 802.1x	64/128-bits WEP, WPA, WPA2, WPA3, 802.1x

SparkLAN Industrial Grade Series

Product		WNFQ-261ACNI(BT)	WPEQ-261ACNI(BT)	WPEA-352ACNRBI	WPEQ-256ACNRBI
Picture					
STANDARD					
WI-FI		IEEE 802.11ac/a/b/g/n	IEEE 802.11ac/a/b/g/n	IEEE 802.11ac/a/b/g/n	IEEE 802.11ac/a/b/g/n
Bluetooth		Bluetooth V5.0, V4.2, V4.1, V4.0 LE, V3.0+HS, V2.1+EDR	Bluetooth V5.0, V4.2, V4.1, V4.0 LE, V3.0+HS, V2.1+EDR		
Chipset		Qualcomm Atheros QCA6174A	Qualcomm Atheros QCA6174A-5	Qualcomm Atheros QCA9890-BR4B	Qualcomm Atheros QCA9892-BR4B
Host Interface		WLAN : PCIe Bluetooth :USB	WLAN : PCIe Bluetooth : USB	WLAN : PCIe	WLAN : PCIe
RADIO					
Antenna		2 x IPEX MHF4 connectors (ANT1 for WLAN/BT, ANT2 for WLAN)	2 x IPEX MHF1 connectors (ANT1 for WLAN/BT, ANT2 for WLAN)	3 x IPEX MHF1 connectors	2 x IPEX MHF1 connectors
Operating Frequency		802.11ac/a/b/g/n ISM Band 2.400GHz~2.497GHz 5.150GHz~5.845GHz *Subject to local regulations	802.11ac/a/b/g/n ISM Band 2.400GHz~2.497GHz 5.150GHz~5.845GHz *Subject to local regulations	802.11ac/a/b/g/n ISM Band 2.412GHz~2.484GHz 5.150GHz~5.850GHz *subject to local regulations	802.11 ac/a/b/g/n ISM Band 2.412GHz~2.472GHz 5.150GHz~5.825GHz *Subject to local regulations
POWER & SENSITIVITY					
WiFi Power – TX (± 2dBm)	11b @ 11Mbps	15dBm	15dBm	20dBm	20dBm
	11g @ 54Mbps	15dBm	15dBm	16dBm	16dBm
	11gn HT20 @ MCS 7	13dBm	13dBm	15dBm	15dBm
	11gn HT40 @ MCS 7	13dBm	13dBm	15dBm	15dBm
	11a @ 54Mbps	13dBm	13dBm	14dBm	14dBm
	11an HT20 @ MCS 7	10dBm	12.5dBm	13dBm	13dBm
	11an HT40 @ MCS 7	10dBm	12.5dBm	13dBm	13dBm
	11ac VHT80 @ MCS 9	10dBm	10dBm	10dBm	10dBm
Bluetooth Power – TX (± 2dBm)		3Mbps	2 ≤Output Power ≤6dBm	3 ≤Output Power ≤7dBm	
Sensitivity – RX (± 2dBm)	11b @ 11Mbps	≤ -91dBm	≤ -91dBm	≤ -86dBm	≤ -87dBm
	11g @ 54Mbps	≤ -75dBm	≤ -75dBm	≤ -73dBm	≤ -74dBm
	11gn HT20 @ MCS 7	≤ -71dBm	≤ -71dBm	≤ -70dBm	≤ -70dBm
	11gn HT40 @ MCS 7	≤ -69dBm	≤ -69dBm	≤ -67dBm	≤ -68dBm
	11a @ 54Mbps	≤ -65dBm	≤ -65dBm	≤ -73dBm	≤ -74dBm
	11an HT20 @ MCS 7	≤ -74dBm	≤ -74dBm	≤ -71dBm	≤ -71dBm
	11an HT40 @ MCS 7	≤ -71dBm	≤ -71dBm	≤ -68dBm	≤ -68dBm
	11ac VHT80 @ MCS 9	≤ -63dBm	≤ -63dBm	≤ -58dBm	≤ -59dBm
Bluetooth Power – TX (± 2dBm)		3Mbps	<0.1% BR, BER at -83dBm		
POWER CONSUMPTION					
Continue TX		610mA	610mA	1360mA	1050mA
Continue RX		285mA	285mA	720mA	480mA
ENVIRONMENTAL					
Operating Voltage		DC 3.3V	DC 3.3V	DC 3.3V	DC 3.3V
Temperature Range	Operating	-40~ 85°C (Operating)	-40~ 85°C (Operating)	-40~ 85°C (Operating)	-40 ~ 85°C (Operating)
	Storing	-40~ 85°C (Storing)	-40~ 85°C (Storing)	-40~ 85°C (Storing)	-40 ~ 85°C (Storing)
SIZE					
Dimension (MM)		30mm x 22mm x 1.95mm	29.85mm x 26.65mm x 2.65mm	50.8mm x 29.85mm x 4.1mm	50.8mm x 29.85mm x 4.1m
SOFTWARE					
Driver		Win7/8.1/10, Linux (Open Source), Recommend Kernel v4.0+	Win7/8.1/10, Linux (Open Source), Recommend Kernel v4.0+	Linux	Linux
Security		64/128-bits WEP, WPA, WPA2, WPA3, 802.1x	64/128-bits WEP, WPA, WPA2, WPA3, 802.1x	64/128-bits WEP, WPA, WPA2, WPS, 802.1x	64/128-bits WEP, WPA, WPA2, 802.1X

SparkLAN Industrial Grade Series

Product		WPEA-252NIRB	WPEA-127NI	WSDB-104GNI(BT)
Picture				
STANDARD				
Wi-Fi		IEEE 802.11a/b/g/n	IEEE 802.11a/b/g/n	802.11b/g/n
Bluetooth				Bluetooth V4.2, V4.1, V3.0+HS, V2.1+EDR
Chipset		Qualcomm Atheros AR9592-AR1B	Atheros AR9390-AL1B	Broadcom BCM43438
Host Interface		WLAN : PCIe	WLAN : PCIe	WLAN: SDIO 2.0 Bluetooth: High Speed UART
RADIO				
Antenna		2 x IPEX MHF1 connectors	3 x IPEX MHF1 connectors	1 x IPEX MHF1 connector or Printed Ant.
Operating Frequency		802.11a/b/g/n ISM Band 2.400GHz~2.4835GHz 5.1500GHz~5.825GHz *subject to local regulations	802.11 a/b/g/n ISM Band 2.400GHz~2.4835GHz 5.180GHz~5.825GHz *subject to local regulations	2.400GHz~2.4835GHz *Subject to local regulations*
POWER & SENSITIVITY				
WiFi Power – TX (± 2dBm)	11b @ 11Mbps	19dBm	19dBm	17dBm
	11g @ 54Mbps	16dBm	16dBm	15dBm
	11n HT20 @ MCS 7			13dBm
	11gn HT20 @ MCS 7	15dBm	15dBm	
	11gn HT40 @ MCS 7	14dBm	15dBm	
	11a @ 54Mbps	14dBm	11dBm	
	11an HT20 @ MCS 7	12dBm	11dBm	
	11an HT40 @ MCS 7	11dBm	11dBm	
Bluetooth Power – TX (± 2dBm)		3Mbps		0≤ Output Power ≤10dBm
Sensitivity – RX (± 2dBm)	11b @ 11Mbps	≤ -85dBm	≤ -95dBm	≤ -76dBm
	11g @ 54Mbps	≤ -77dBm	≤ -79dBm	≤ -65dBm
	11n HT20 @ MCS 7			≤ -64dBm
	11gn HT20 @ MCS 7	≤ -74dBm	≤ -76dBm	
	11gn HT40 @ MCS 7	≤ -71dBm	≤ -74dBm	
	11a @ 54Mbps	≤ -77dBm	≤ -78dBm	
	11an HT20 @ MCS 7	≤ -73dBm	≤ -75dBm	
	11an HT40 @ MCS 7	≤ -70dBm	≤ -72dBm	
Bluetooth Sensitivity – RX (± 2dBm)		3Mbps		≤ -83dBm
POWER CONSUMPTION				
Continue TX		700mA	970mA	280mA
Continue RX		300mA	300mA	60mA
ENVIRONMENTAL				
Operating Voltage		DC 3.3V	DC 3.3V	DC 1.8V or 3.3V
Temperature Range	Operating	-40~ 85°C (Operating)	-40~ 80°C (Operating)	-40~ 85°C (Operating)
	Storing	-50 ~ 90°C (Storing)	-50 ~ 95°C (Storing)	-50 ~ 90°C (Storing)
SIZE				
Dimension (MM)		50.80mm x 29.85mm x 2.86mm	51mm x 30.0mm x 3.8mm	19mm x 12mm x 2mm
SOFTWARE				
Driver		Linux	WinXP/Vista/7, Linux, Android by request	Linux
Security		64/128-bits WEP , WPA , WPA2, 802.1x	64/128-bits WEP, WPA, WPA2	64/128-bits WEP, WPA, WPA2

SparkLAN Mini PCIe Module Family

Product		WPEQ-405AX	WPEB-265AXI(BT) [B33/R33]	WPEB-265AXI(BT) [B18/R18]
Picture				
STANDARD				
WI-FI		IEEE 802.11ax/ac/a/n	IEEE 802.11ax/ac/a/b/g/n	IEEE 802.11ax/ac/a/b/g/n
Bluetooth			Bluetooth V5.0, V4.2, V4.1, V4.0 LE, V3.0+HS, V2.1+EDR	Bluetooth V5.0, V4.2, V4.1, V4.0 LE, V3.0+HS, V2.1+EDR
Chipset		Qualcomm Atheros QCN9074	Broadcom	Broadcom
Host Interface		WLAN : PCIe	WLAN: PCIe Bluetooth: USB or UART	WLAN : PCIe Bluetooth : USB or UART
RADIO				
Antenna		4 x IPEX MHF1 connectors	2 x IPEX MHF1 connectors (ANT1 for WLAN/BT, ANT2 for WLAN)	2 x IPEX MHF1 connectors (ANT1 for WLAN/BT, ANT2 for WLAN)
Operating Frequency		802.11ax/ac/a/n ISM Band 5.150GHz~5.850GHz *Subject to local regulations	802.11ax/ac/a/b/g/n ISM Band 2.412GHz~2.4835GHz 5.15GHz~5.35GHz 5.47GHz~5.725GHz 5.725GHz~5.85GHz *Subject to local regulations	802.11ax/ac/a/b/g/n ISM Band 2.412GHz~2.4835GHz 5.15GHz~5.35GHz 5.47GHz~5.725GHz 5.725GHz~5.85GHz *Subject to local regulations
POWER & SENSITIVITY				
WiFi Power – TX (± 2dBm)	11b @ 11Mbps		18.5dBm	18.5dBm
	11g @ 54Mbps		12dBm	12dBm
	11gn HT20 @ MCS 7		12dBm	12dBm
	11a @ 54Mbps	17dBm	14.5dBm	14.5dBm
	11n HT20 @ MCS 7	17dBm		
	11an HT20 @ MCS 7	17dBm		
	11an HT40 @ MCS 7	17dBm		
	11ac VHT20 @ MCS 7	16dBm		
	11ac VHT80 @ MCS 9	16dBm	9dBm	9dBm
	11ax HT20 @ HE 7		12dBm	12dBm
	11ax HE20 @ HE 7		13.5dBm	13.5dBm
	11ax HE20 @ MCS 7	15dBm		
	11ax HE20 @ MCS 11	15dBm		
	11ax HE40 @ HE 7		13.5dBm	13.5dBm
	11ax HE40 @ MCS 7	15dBm		
	11ax HE40 @ MCS 11	15dBm		
	11ax HE80 @ HE 9		9dBm	9dBm
	11ax HE80 @ MCS 9	15dBm		
	11ax HE80 @ MCS 11	15dBm		
	11ax HE160 @ MCS 11	15dBm		
Bluetooth Power – TX (± 2dBm)	1Mbps		0 ≤Output Power ≤8dBm	0 ≤Output Power ≤8dBm
	2Mbps			
	3Mbps		0 ≤Output Power ≤7dBm	0 ≤Output Power ≤7dBm
Sensitivity – RX (± 2dBm)	11b @ 11Mbps		≤ -88dBm	≤ -88dBm
	11g @ 54Mbps		≤ -77dBm	≤ -77dBm
	11gn HT20 @ MCS 7		≤ -75dBm	≤ -75dBm
	11a @ 54Mbps	≤ -76dBm		
	11n HT20 @ MCS 7	≤ -70dBm		
	11an HT20 @ MCS 7	≤ -70dBm		
	11an HT40 @ MCS 7	≤ -68dBm		
	11ac VHT20 @ MCS 7	≤ -74dBm		
	11ac VHT80 @ MCS 9	≤ -66dBm	≤ -62dBm	≤ -62dBm
	11ax HT20 @ HE 7		≤ -75dBm	≤ -75dBm
	11ax HE20 @ HE 7		≤ -69dBm	≤ -69dBm
	11ax HE20 @ MCS 11	≤ -64dBm		
	11ax HE40 @ HE 7		≤ -68dBm	≤ -69dBm
	11ax HE40 @ MCS 7	≤ -71dBm		
	11ax HE40 @ MCS 11	≤ -62dBm		
	11ax HE80 @ HE 9		≤ -60dBm	≤ -60dBm
	11ax HE80 @ MCS 9	≤ -64dBm		
	11ax HE80 @ MCS 11	≤ -57dBm		
	11ax HE160 @ MCS 11	≤ -55dBm		
Bluetooth Sensitivity – RX (± 2dBm)	1Mbps		<0.1% BR, BER at -88dBm	<0.1% BR, BER at -88dBm
	2Mbps			
	3Mbps		<0.1% BER at -83dBm	<0.1% BER at -85dBm
POWER CONSUMPTION				
Continue TX		1954 mA	937mA	937mA
Continue RX		819 mA	94mA	94mA
ENVIRONMENTAL				
Operating Voltage		DC 3.3V	DC 3.3V	DC 3.3V Note (Function GPIO & UART VIO: 1.8V)
Temperature Range	Operating	-20~ 70°C	-40 ~ 85°C	-40 ~ 85°C
	Storing	-20 ~ 90°C	-40 ~ 105°C	-40 ~ 105°C
SIZE				
Dimension (MM)		50.80mm x 29.85mm x 9.3mm (TBD)	29.85mmx 26.65mm x 2.8mm	29.85mm x 26.65mm x 2.8mm
SOFTWARE				
Driver		Linux (Open Source)	Linux, Android	Linux, Android
Security		64/128-bits WEP, WPA, WPA2, 802.1x	64/128-bits WEP, WPA, WPA2, WPA3, 802.1x	64/128-bits WEP, WPA, WPA2, WPA3, 802.1x

SparkLAN Mini PCIe Module Family

Product		WPEQ-450AC	WPEA-251ACNI(BT)	WPEQ-262ACNI(BT)	WPEQ-261ACNI(BT)
Picture					
STANDARD					
Wi-Fi		IEEE 802.11ac/a/n	IEEE 802.11ac/a/b/g/n	IEEE 802.11ac/a/b/g/n	IEEE 802.11ac/a/b/g/n
Bluetooth			Bluetooth V5.0, V4.2, V4.1, V4.0 LE, V3.0+HS, V2.1+EDR	Bluetooth V5.0, V4.2, V4.1, V4.0 LE, V3.0+HS, V2.1+EDR	Bluetooth V5.0, V4.2, V4.1, V4.0 LE, V3.0+HS, V2.1+EDR
Chipset		Qualcomm Atheros QCA9984	Qualcomm Atheros QCA6174A-5	Qualcomm Atheros QCA6174A-5	Qualcomm Atheros QCA6174A-5
Host Interface		WLAN : PCIe	WLAN : PCIe Bluetooth : USB	WLAN : PCIe Bluetooth : USB	WLAN : PCIe Bluetooth : USB
RADIO					
Antenna		4 x IPEX MHF1 connectors	2 x IPEX MHF1 connectors	2 x IPEX MHF1 connectors	2 x IPEX MHF1 connectors (ANT1 for WLAN/BT, ANT2 for WLAN)
Operating Frequency		802.11ac/a/n ISM Band 5.150GHz~5.850GHz *Subject to local regulations	802.11ac/a/b/g/n ISM Band 2.412GHz~2.484GHz 5.150GHz~5.850GHz *Subject to local regulations	802.11 ac/a/b/g/n ISM Band 2.412GHz~2.484GHz 5.150GHz~5.850GHz *Subject to local regulations	802.11ac/a/b/g/n ISM Band 2.400GHz~2.497GHz 5.150GHz~5.845GHz *Subject to local regulations
POWER & SENSITIVITY					
WiFi Power – TX (± 2dBm)	11b @ 11Mbps		18dBm	18dBm	15dBm
	11g @ 54Mbps		14.5dBm	14.5dBm	15dBm
	11gn HT20 @ MCS 7		14dBm	14dBm	13dBm
	11gn HT40 @ MCS 7		13.5dBm	13.5dBm	13dBm
	11a @ 54Mbps	17dBm	11.5dBm	14dBm	13dBm
	11an HT20 @ MCS 7	16dBm	11dBm	13.5dBm	12.5dBm
	11an HT40 @ MCS 7	15dBm	10dBm	13.5dBm	12.5dBm
	11ac VHT80 @ MCS 9	14dBm	6.5dBm	11.5dBm	10dBm
	11ac VHT80+80 @ MCS 9	14dBm			
Bluetooth Power – TX (± 2dBm)			0≤ Output Power ≤ 10dBm	0≤ Output Power ≤ 10dBm	3 ≤Output Power ≤7dBm
Sensitivity – RX (± 2dBm)	11b @ 11Mbps		≤ -86dBm	≤ -86dBm	≤ -91dBm
	11g @ 54Mbps		≤ -72dBm	≤ -72dBm	≤ -75dBm
	11gn HT20 @ MCS 7		≤ -68dBm	≤ -69dBm	≤ -71dBm
	11gn HT40 @ MCS 7		≤ -66dBm	≤ -67dBm	≤ -69dBm
	11a @ 54Mbps	≤ -72dBm	≤ -71dBm	≤ -73dBm	≤ -65dBm
	11an HT20 @ MCS 7	≤ -68dBm	≤ -68dBm	≤ -71dBm	≤ -74dBm
	11an HT40 @ MCS 7	≤ -66dBm	≤ -67dBm	≤ -67dBm	≤ -71dBm
	11ac VHT80 @ MCS 9	≤ -56dBm	≤ -57dBm	≤ -57dBm	≤ -63dBm
	11ac VHT80+80 @ MCS 9	≤ -56dBm			
Bluetooth Sensitivity – RX (± 2dBm)			<0.1% BR, BER at -70dBm	< 0.1% BER at -70dBm	<0.1% BR, BER at -83dBm
POWER CONSUMPTION					
Continue TX		2250mA	626mA	610mA	610mA
Continue RX		750mA	286mA	298mA	285mA
ENVIRONMENTAL					
Operating Voltage		DC 3.3V	DC 3.3V	DC 3.3V	DC 3.3V
Temperature Range	Operating	-20 ~ 70°C (Operating)	-40 ~ 85°C (Operating)	-40 ~ 85°C (Operating)	-40~ 85°C (Operating)
	Storing	-20 ~ 90°C (Storing)	-45 ~ 90°C (Storing)	-45 ~ 90°C (Storing)	-40 ~ 85°C (Storing)
SIZE					
Dimension (MM)		50.80mm x 29.85mm x 7.8mm	29.85mm x 26.65mm x 3.2mm	50.8mm x 29.85mm x 3.4mm	29.85mm x 26.65mm x 2.65mm
SOFTWARE					
Driver		Linux	Win7/8.1/10, Linux (Open Source), Recommend Kernel v4.0+	Win7/8.1/10, Linux (Open Source), Recommend Kernel v4.0+	Win7/8.1/10, Linux (Open Source), Recommend Kernel v4.0+
Security		64/128-bits WEP, WPA, WPA2, WPA3, 802.1x	64/128-bits WEP, WPA, WPA2, WPA3, 802.1x	64/128-bits WEP, WPA, WPA2, WPA3, 802.1x	64/128-bits WEP, WPA, WPA2, WPA3, 802.1x

SparkLAN Mini PCIe Module Family

Product		WPEQ-261ACN(BT)	WPET-236ACN(BT)	WPEQ-160ACN(BT)	WPEQ-257ACN
Picture					
STANDARD					
Wi-Fi		IEEE 802.11ac/a/b/g/n	IEEE 802.11ac/a/b/g/n	IEEE 802.11ac/a/b/g/n	IEEE 802.11ac/a/b/g/n
Bluetooth		Bluetooth V5.0, V4.2, V4.1, V4.0 LE, V3.0+HS, V2.1+EDR	Bluetooth V4.2, V4.1, V4.0 LE, V3.0+HS, V2.1+EDR	Bluetooth V5.0, V4.2, V4.1, V4.0 LE, V3.0+HS, V2.1+EDR	
Chipset		Qualcomm Atheros QCA6174A-5	Realtek RTL8822BU-CG	Qualcomm Atheros QCA9377-7	Qualcomm Atheros QCA9882-BR4A
Host Interface		WLAN : PCIe Bluetooth :USB	WLAN : USB Bluetooth :USB	WLAN : PCIe Bluetooth :USB	WLAN : PCIe
RADIO					
Antenna		2 x IPEX MHF4 connectors	2 x IPEX MHF1 connectors (ANT0 for WLAN only, ANT1 for WLAN/BT)	2 x IPEX MHF1 connectors	2 x IPEX MHF1 connectors
Operating Frequency		802.11ac/a/b/g/n ISM Band 2.412GHz~2.484GHz 5.150GHz~5.850GHz *Subject to local regulations	802.11ac/a/b/g/n ISM Band 2.412GHz~2.484GHz 5.150GHz~5.850GHz *Subject to local regulations	802.11 ac/a/b/g/n ISM Band 2.412GHz~2.472GHz 5.180GHz~5.825GHz *Subject to local regulations	802.11ac/a/b/g/n ISM Band 2.412GHz~2.472GHz 5.180GHz~5.825GHz *subject to local regulations
POWER & SENSITIVITY					
WiFi Power – TX (± 2dBm)	11b @ 11Mbps	18dBm	15dBm	19dBm	15dBm
	11g @ 54Mbps	16dBm	14dBm	16dBm	13dBm
	11gn HT20 @ MCS 7	16dBm	13dBm	16dBm	12dBm
	11gn HT40 @ MCS 7	16dBm	13dBm	16dBm	11dBm
	11a @ 54Mbps	10.5dBm	13dBm	13dBm	12dBm
	11an HT20 @ MCS 7	10dBm	12dBm	13dBm	11dBm
	11an HT40 @ MCS 7	10dBm	12dBm	13dBm	10dBm
	11ac VHT80 @ MCS 9	6dBm	9dBm	10dBm	4dBm
Bluetooth Power – TX (± 2dBm)		3Mbps	0≤Output Power ≤10dBm	0≤Output Powers10dBm	
Sensitivity – RX (± 2dBm)	11b @ 11Mbps	≤ -76dBm	≤ -80dBm	≤ -76dBm	≤ -76dBm
	11g @ 54Mbps	≤ -65dBm	≤ -70dBm	≤ -74dBm	≤ -65dBm
	11gn HT20 @ MCS 7	≤ -64dBm	≤ -61dBm	≤ -70dBm	≤ -64dBm
	11gn HT40 @ MCS 7	≤ -61dBm	≤ -61dBm	≤ -68dBm	≤ -61dBm
	11a @ 54Mbps	≤ -65dBm	≤ -70dBm	≤ -73dBm	≤ -65dBm
	11an HT20 @ MCS 7	≤ -64dBm	≤ -60dBm	≤ -67dBm	≤ -64dBm
	11an HT40 @ MCS 7	≤ -61dBm	≤ -60dBm	≤ -63dBm	≤ -61dBm
	11ac VHT80 @ MCS 9	≤ -51dBm	≤ -51dBm	≤ -55dBm	≤ -51dBm
Bluetooth Sensitivity – RX (± 2dBm)		3Mbps	< 0.1% BR,BER at -70dBm	< 0.1% BER at -70dBm	
POWER CONSUMPTION					
Continue TX		610mA	600mA	400mA	700mA
Continue RX		285mA	350mA	200mA	300mA
ENVIRONMENTAL					
Operating Voltage		DC 3.3V	DC 3.3V	DC 3.3V	DC 3.3V
Temperature Range	Operating	-40~ 70°C (Operating)	-20 ~ 70°C (Operating)	-20~ 70°C (Operating)	-20~ 60°C (Operating)
	Storing	-40 ~ 85°C (Storing)	-40 ~ 80°C (Storing)	-30 ~ 85°C (Storing)	-30 ~ 75°C (Storing)
SIZE					
Dimension (MM)		30mm x 26.8mm x 2.5mm	29.9mm x 26.65mm x 2.8mm	29.85mm x 26.65mm x 3.73mm	29.85mm x 26.8mm x 3.05mm
SOFTWARE					
Driver		Win7/8.1/10, Linux (Open Source), Recommend Kernel v4.0+	Win7/8.1/10, Linux , Android	Win7/8.1/10	Linux
Security		64/128-bits WEP, WPA, WPA2, WPA3, 802.1x	64/128-bits WEP, WPA, WPA2, 802.1x	64/128-bits WEP, WPA, WPA2, 802.1x	64/128-bits WEP, WPA, WPA2, WPA3, 802.1x

SparkLAN Mini PCIe Module Family

Product		WPEA-352ACNRBI	WPEQ-256ACNRBI	WPEA-352ACNRB	WPEQ-256ACN
Picture					
STANDARD					
Wi-Fi		IEEE 802.11ac/a/b/g/n	IEEE 802.11ac/a/b/g/n	IEEE 802.11ac/a/b/g/n	IEEE 802.11ac/a/b/g/n
Bluetooth					
Chipset		Qualcomm Atheros QCA9890-BR4B	Qualcomm Atheros QCA9892-BR4B	Qualcomm Atheros QCA9880-BR4A	Qualcomm Atheros QCA9882-BR4A
Host Interface		WLAN : PCIe	WLAN : PCIe	WLAN : PCIe	WLAN : PCIe
RADIO					
Antenna		3 x IPEX MHF1 connectors	2 x IPEX MHF1 connectors	3 x IPEX MHF1 connectors	2 x IPEX MHF1 connectors
Operating Frequency		802.11ac/a/b/g/n ISM Band 2.412GHz~2.484GHz 5.150GHz~5.850GHz *subject to local regulations	802.11 ac/a/b/g/n ISM Band 2.412GHz~2.472GHz 5.150GHz~5.825GHz *Subject to local regulations	802.11 ac/a/b/g/n ISM Band 2.412GHz~2.484GHz 5.150GHz~5.850GHz *subject to local regulations	802.11ac/a/b/g/n ISM Band 2.412GHz~2.484GHz 5.150GHz~5.850GHz *subject to local regulations
POWER & SENSITIVITY					
WiFi Power – TX (± 2dBm)	11b @ 11Mbps	20dBm	20dBm	20dBm	20dBm
	11g @ 54Mbps	16dBm	16dBm	16dBm	16dBm
	11gn HT20 @ MCS 7	15dBm	15dBm	15dBm	15dBm
	11gn HT40 @ MCS 7	15dBm	15dBm	15dBm	15dBm
	11a @ 54Mbps	14dBm	14dBm	14dBm	14dBm
	11an HT20 @ MCS 7	13dBm	13dBm	13dBm	13dBm
	11an HT40 @ MCS 7	13dBm	13dBm	13dBm	13dBm
	11ac HT80 @ MCS 9				
	11ac VHT80 @ MCS 9	10dBm	10dBm	10dBm	10dBm
Sensitivity – RX (± 2dBm)	11b @ 11Mbps	≤ -86dBm	≤ -87dBm	≤ -86dBm	≤ -87dBm
	11g @ 54Mbps	≤ -73dBm	≤ -74dBm	≤ -73dBm	≤ -74dBm
	11gn HT20 @ MCS 7	≤ -70dBm	≤ -70dBm	≤ -70dBm	≤ -70dBm
	11gn HT40 @ MCS 7	≤ -67dBm	≤ -68dBm	≤ -67dBm	≤ -68dBm
	11a @ 54Mbps	≤ -73dBm	≤ -74dBm	≤ -73dBm	≤ -74dBm
	11an HT20 @ MCS 7	≤ -71dBm	≤ -71dBm	≤ -71dBm	≤ -71dBm
	11an HT40 @ MCS 7	≤ -68dBm	≤ -68dBm	≤ -68dBm	≤ -68dBm
	11ac HT80 @ MCS 9				
	11ac VHT80 @ MCS 9	≤ -58dBm	≤ -59dBm	≤ -58dBm	≤ -59dBm
POWER CONSUMPTION					
Continue TX		1360mA	1050mA	1360mA	1050mA
Continue RX		720mA	480mA	720mA	480mA
ENVIRONMENTAL					
Operating Voltage		DC 3.3V	DC 3.3V	DC 3.3V	DC 3.3V
Temperature Range	Operating	-40~ 85°C (Operating)	-40~ 85°C (Operating)	-20~ 65°C (Operating)	-20~ 60°C (Operating)
	Storing	-40 ~ 85°C (Storing)	-40 ~ 85°C (Storing)	-30 ~ 75°C (Storing)	-30 ~ 75°C (Storing)
SIZE					
Dimension (MM)		50.8mm x 29.85mm x 4.1mm	50.8mm x 29.85mm x 4.1m	50.8mm x 29.85mm x 4.1mm	50.8mm x 29.85mm x 4.1mm
SOFTWARE					
Driver		Linux	Linux	Linux	Linux
Security		64/128-bits WEP, WPA, WPA2, WPS, 802.1x	64/128-bits WEP, WPA, WPA2, 802.1X	64/128-bits WEP, WPA, WPA2, 802.1x	64/128-bits WEP, WPA, WPA2, 802.1x

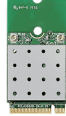
SparkLAN Mini PCIe Module Family

Product		WPEA-252NIRB	WPEA-127NI	WPEA-121N	WPEA-128N
Picture					
STANDARD					
Wi-Fi		IEEE 802.11a/b/g/n	IEEE 802.11a/b/g/n	IEEE 802.11a/b/g/n	IEEE 802.11a/b/g/n
Bluetooth					
Chipset		Qualcomm Atheros AR9592-AR1B	Atheros AR9390-AL1B	Atheros QCA9382	Atheros AR9380-AL1A
Host Interface		WLAN : PCIe	WLAN: PCIe	WLAN : PCIe	WLAN: PCIe
RADIO					
Antenna		2 x IPEX MHF1 connectors	3 x IPEX MHF1 connectors	2 x IPEX MHF1 connectors	3 x IPEX MHF1 connectors
Operating Frequency		802.11a/b/g/n ISM Band 2.400GHz~2.4835GHz 5.150GHz~5.825GHz *subject to local regulations	802.11a/b/g/n ISM Band 2.400GHz~2.4835GHz 5.180GHz~5.825GHz *subject to local regulations	802.11a/b/g/n ISM Band 2.412GHz~2.4835GHz 5.150GHz~5.850GHz *subject to local regulations	802.11a/b/g/n ISM Band 2.400GHz~2.4835GHz 5.180GHz~5.825GHz *subject to local regulations
POWER & SENSITIVITY					
WiFi Power – TX (± 2dBm)	11b @ 11Mbps	19dBm	19dBm	17dBm	17dBm
	11g @ 54Mbps	16dBm	16dBm	16dBm	16dBm
	11gn HT20 @ MCS 7	15dBm	15dBm	15dBm	15dBm
	11gn HT40 @ MCS 7	14dBm	15dBm	14dBm	14dBm
	11a @ 54Mbps	14dBm	11dBm	12dBm	12dBm
	11an HT20 @ MCS 7	12dBm	11dBm	12dBm	12dBm
	11an HT40 @ MCS 7	11dBm	11dBm	11dBm	11dBm
Sensitivity – RX (± 2dBm)	11b @ 11Mbps	≤ -85dBm	≤ -95dBm	≤ -85dBm	≤ -92dBm
	11g @ 54Mbps	≤ -77dBm	≤ -79dBm	≤ -76dBm	≤ -82dBm
	11gn HT20 @ MCS 7	≤ -74dBm	≤ -76dBm	≤ -75dBm	≤ -79dBm
	11gn HT40 @ MCS 7	≤ -71dBm	≤ -74dBm	≤ -72dBm	≤ -76dBm
	11a @ 54Mbps	≤ -77dBm	≤ -78dBm	≤ -76dBm	≤ -81dBm
	11an HT20 @ MCS 7	≤ -73dBm	≤ -75dBm	≤ -74dBm	≤ -78dBm
	11an HT40 @ MCS 7	≤ -70dBm	≤ -72dBm	≤ -71dBm	≤ -74dBm
POWER CONSUMPTION					
Continue TX		700mA	970mA	600mA	760mA
Continue RX		300mA	300mA	237mA	220mA
ENVIRONMENTAL					
Operating Voltage		DC 3.3V	DC 3.3V	DC 3.3V	DC 3.3V
Temperature Range	Operating	-40~ 85°C (Operating)	-40~ 80°C (Operating)	-0~ 75°C (Operating)	0~ 60°C (Operating)
	Storing	-50 ~ 90°C (Storing)	-50 ~ 95°C (Storing)	-40 ~ 85°C (Storing)	-20 ~ 70°C (Storing)
SIZE					
Dimension (MM)		50.80mm x 29.85mm x 2.86mm	51mm x 30.0mm x 3.8mm	30mm x 26.8mm x 4.5mm	29.8mm x 26.8mm x 4.25mm
SOFTWARE					
Driver		Linux	WinXP/Vista/7, Linux, Android by request	Windows XP/7/8.1/10, Linux, Android by request	WinXP/Vista/7, Linux
Security		64/128-bits WEP, WPA, WPA2, 802.1x	64/128-bits WEP, WPA, WPA2	64/128-bits WEP, WPA, WPA2, 802.1x	64/128-bits WEP, WPA, WPA2

SparkLAN M.2 Module Family

Product		WNFQ-268AXI(BT)	WNFT-238AX(BT)	WNFB-266AXI(BT)	WNFB-265AXI(BT)
Picture					
STANDARD					
Wi-Fi		IEEE 802.11ax/ac/a/b/g/n	IEEE 802.11ax/ac/a/b/g/n	IEEE 802.11ax/ac/a/b/g/n	IEEE 802.11ax/ac/a/b/g/n
Bluetooth		Bluetooth V5.2, V4.2, V4.1, V4.0LE, V3.0, V2.1+EDR	Bluetooth V5.2, V4.2, V4.1, V4.0LE, V3.0, V2.1+EDR	Bluetooth V5.0, V4.2, V4.1, V4.0 LE, V3.0+HS, V2.1+EDR	Bluetooth V5.0, V4.2, V4.1, V4.0 LE, V3.0+HS, V2.1+EDR
Chipset		Qualcomm Atheros WCNXXXX	Realtek RTLXXXXXX	Broadcom	Broadcom
Host Interface		WLAN : PCIe Bluetooth : USB	WLAN : PCIe Bluetooth : USB	WLAN : SDIO Bluetooth : UART	WLAN : PCIe Bluetooth : UART
RADIO					
Antenna		2 x IPEX MHF4 connectors	2 x IPEX MHF4 connectors	2 x IPEX MHF4 connectors	2 x IPEX MHF4 connectors (ANT1 for WLAN/BT, ANT2 for WLAN)
Operating Frequency		802.11ax/ac/a/b/g/n ISM Band 2.412GHz~2.484GHz 5.150GHz~5.850GHz 5.925GHz~7.125GHz *Subject to local regulations	802.11ax/ac/a/b/g/n ISM Band 2.412GHz~2.484GHz 5.150GHz~5.850GHz *Subject to local regulations	802.11ax/ac/a/b/g/n ISM Band 2.400GHz~2.4835GHz 5.150GHz~5.350GHz 5.470GHz~5.725GHz 5.725GHz~5.850GHz *Subject to local regulations	802.11ax/ac/a/b/g/n ISM Band 2.400GHz~2.4835GHz 5.150GHz~5.350GHz 5.470GHz~5.720GHz 5.725GHz~5.845GHz *Subject to local regulations
POWER & SENSITIVITY					
WiFi Power – TX (± 2dBm)	11b @ 11Mbps	TBD	19dBm	18.5dBm	18.5dBm
	11g @ 54Mbps	TBD	18dBm	12dBm	12dBm
	11gn HT20 @ MCS 7	TBD	17dBm	11dBm	11dBm
	11gn HT40 @ MCS 7	TBD	17dBm		
	11a @ 54Mbps		18dBm	14.5dBm	14.5dBm
	11an HT20 @ MCS 7		17dBm	13.5dBm	13.5dBm
	11an HT40 @ MCS 7		17dBm	11dBm	11dBm
	11ac VHT80 @ MCS 9	TBD	15dBm	9dBm	9dBm
	11ax HE20 @ HE 7			13.5dBm	13.5dBm
	11ax HE40 @ HE 7			11dBm	11dBm
	11ax HE40 @ HE 11	TBD			
	11ax HE40 @ MCS 11		13dBm		
	11ax HE80 @ HE 9			9dBm	9dBm
	11ax HE80 @ HE 11	TBD		9dBm	
	11ax HE80 @ MCS 11		13dBm		
Bluetooth Power – TX (± 2dBm)	1Mbps			0 ≤ Output Power ≤ 8dBm	0 ≤ Output Power ≤ 8dBm
	2Mbps			0 ≤ Output Power ≤ 7dBm	0 ≤ Output Power ≤ 7dBm
	3Mbps	0 ≤ Output Power ≤ 6dBm(TBD)	0 ≤ Output Power ≤ 6dBm		
Sensitivity – RX (± 2dBm)	11b @ 11Mbps	TBD	≤ -76dBm	≤ -88dBm	≤ -88dBm
	11g @ 54Mbps	TBD	≤ -65dBm	≤ -77dBm	≤ -77dBm
	11gn HT20 @ MCS 7	TBD	≤ -61dBm	≤ -73dBm	≤ -73dBm
	11gn HT40 @ MCS 7	TBD	≤ -61dBm		
	11a @ 54Mbps		≤ -65dBm	≤ -76dBm	≤ -76dBm
	11an HT20 @ MCS 7		≤ -61dBm		
	11an HT40 @ MCS 7		≤ -61dBm		
	11ac VHT80 @ MCS 9	TBD	≤ -51dBm	≤ -57dBm	≤ -57dBm
	11ax HE20 @ HE 7			≤ -69dBm	≤ -69dBm
	11ax HE40 @ HE 7			≤ -68dBm	≤ -68dBm
	11ax HE40 @ HE 11	TBD			
	11ax HE40 @ MCS 11		≤ -49dBm		
	11ax HE80 @ HE 9			≤ -60dBm	≤ -60dBm
	11ax HE80 @ HE 11	TBD			
	11ax HE80 @ MCS 11		≤ -46dBm		
Bluetooth Sensitivity – RX (± 2dBm)	1Mbps			<0.01% BER at -88dBm	<0.01% BER at -88dBm
	2Mbps			<0.01% BER at -91dBm	<0.01% BER at -91dBm
	3Mbps	<0.1% BER at -70dBm(TBD)	<0.1% BER at -70dBm		
POWER CONSUMPTION					
Continue TX		TBD	860mA	TBD	660mA
Continue RX		TBD	450mA	TBD	201mA
ENVIRONMENTAL					
Operating Voltage		DC 3.3V	DC 3.3V	DC 3.3V	DC 3.3V
Temperature Range	Operating	-40~85°C (Operating)	0 ~ 70°C (Operating)	-30 ~ 85°C (Operating)	-40 ~ 85°C (Operating)
	Storing	-45 ~ 90°C (Storing)	-40 ~ 85°C (Storing)	-40 ~ 105°C (Storing)	-40 ~ 105°C (Storing)
SIZE					
Dimension (MM)		30mm x 22mm x TBDmm	30mm x 22mm x 2.15mm	22mm x 30mm x 2.4mm	30mm x 22mm x 3.0mm
SOFTWARE					
Driver		Win, Linux (Open Source) TBD	Microsoft Windows	Linux, Android	Linux, Android
Security		64/128-bits WEP, WPA, WPA2, WPA3, 802.1x	64/128-bits WEP, WPA, WPA2, WPA3, 802.1x	64/128-bits WEP, WPA, WPA2, WPA3, 802.1x	64/128-bits WEP, WPA, WPA2, WPA3, 802.1x

SparkLAN M.2 Module Family

Product		WNFQ-262ACNI(BT)	WNFT-237ACN(BT)	WNFQ-261ACNI(BT)	WNFT-234ACN(BT)
Picture					
STANDARD					
WI-FI		IEEE 802.11ac/a/b/g/n	IEEE 802.11ac/a/b/g/n	IEEE 802.11ac/a/b/g/n	IEEE 802.11ac/a/b/g/n
Bluetooth		Bluetooth V5.0, V4.2, V4.1, V4.0 LE, V3.0+HS, V2.1+EDR	Bluetooth V5.0, V4.2, V4.1, V4.0 LE, V3.0+HS, V2.1+EDR	Bluetooth V5.0, V4.2, V4.1, V4.0 LE, V3.0+HS, V2.1+EDR	Bluetooth V4.2, V4.1, V4.0 LE, V3.0+HS, V2.1+EDR
Chipset		Qualcomm Atheros QCA6174A-5	Realtek RTL8822CE	Qualcomm Atheros QCA6174A	Realtek RTL8822BE
Host Interface		WLAN : PCIe Bluetooth : USB	WLAN : PCIe Bluetooth : USB	WLAN : PCIe Bluetooth : USB	WLAN : PCIe Bluetooth : USB
RADIO					
Antenna		2 x IPEX MHF1 connectors (Ant 1 for WLAN,Ant 2 for WLAN/BT)	2 x IPEX MHF4 connectors	2 x IPEX MHF4 connectors (ANT1 for WLAN/BT,ANT2 for WLAN)	2 x IPEX MHF4 connectors
Operating Frequency		802.11ac/a/b/g/n ISM Band 2.412GHz~2.484GHz 5.150GHz~5.850GHz *Subject to local regulations	802.11ac/a/b/g/n ISM Band 2.412GHz~2.484GHz 5.150GHz~5.850GHz *Subject to local regulations	802.11ac/a/b/g/n ISM Band 2.400GHz~2.497GHz 5.150GHz~5.845GHz *Subject to local regulations	802.11 ac/a/b/g/n ISM Band 2.412GHz~2.484GHz 5.150GHz~5.850GHz *Subject to local regulations
POWER & SENSITIVITY					
WiFi Power – TX (± 2dBm)	11b @ 11Mbps	18dBm	18dBm	15dBm	16dBm
	11g @ 54Mbps	14.5dBm	17dBm	15dBm	14dBm
	11gn HT20 @ MCS 7	14dBm	16dBm	13dBm	13dBm
	11gn HT40 @ MCS 7	13.5dBm	16dBm	13dBm	13dBm
	11a @ 54Mbps	14dBm	17dBm	13dBm	12dBm
	11an HT20 @ MCS 7	13dBm	16dBm	10dBm	11dBm
	11an HT40 @ MCS 7	13dBm	16dBm	10dBm	11dBm
	11ac VHT80 @ MCS 9	11dBm	14dBm	10dBm	9dBm
Bluetooth Power – TX (± 2dBm)		3Mbps	0 ≤Output Power ≤10dBm	2 ≤Output Power ≤6dBm	0 ≤Output Power ≤6.5dBm
Sensitivity – RX (± 2dBm)	11b @ 11Mbps	≤ -85dBm	≤ -85dBm	≤ -91dBm	≤ -81dBm
	11g @ 54Mbps	≤ -71dBm	≤ -74dBm	≤ -75dBm	≤ -66dBm
	11gn HT20 @ MCS 7	≤ -67dBm	≤ -70dBm	≤ -71dBm	≤ -65dBm
	11gn HT40 @ MCS 7	≤ -65dBm	≤ -67dBm	≤ -69dBm	≤ -61dBm
	11a @ 54Mbps	≤ -75dBm	≤ -68dBm	≤ -65dBm	≤ -66dBm
	11an HT20 @ MCS 7	≤ -71dBm	≤ -67dBm	≤ -74dBm	≤ -65dBm
	11an HT40 @ MCS 7	≤ -67dBm	≤ -64dBm	≤ -71dBm	≤ -61dBm
	11ac VHT80 @ MCS 9	≤ -57dBm	≤ -54dBm	≤ -63dBm	≤ -54dBm
Bluetooth Sensitivity – RX (± 2dBm)		3Mbps	<0.1% BR,BER at -70dBm	<0.1% BR, BER at -83dBm	<0.1% BR, BER at -70dBm
POWER CONSUMPTION					
Continue TX		610mA	606mA	610mA	517mA
Continue RX		298mA	302mA	285mA	247mA
ENVIRONMENTAL					
Operating Voltage		DC 3.3V	DC 3.3V	DC 3.3V	DC 3.3V
Temperature Range	Operating	-40~ 85°C (Operating)	0~ 70°C (Operating)	-40~ 85°C (Operating)	0~ 70°C (Operating)
	Storing	-45 ~ 90°C (Storing)	-40 ~ 80°C (Storing)	-40 ~ 85°C (Storing)	-40 ~ 80°C (Storing)
SIZE					
Dimension (MM)		42mm x 22xmm x 2.78mm	30mm x 22mm x 2.0mm	30mm x 22mm x 1.95mm	30mm x 22mm x 2.0mm
SOFTWARE					
Driver		Win7/8.1/10, Linux (Open Source), Recommend Kernel v4.0+	Windows 10, Linux , Android	Win7/8.1/10, Linux (Open Source), Recommend Kernel v4.0+	Win7/8.1/10, Linux, Android
Security		64/128-bits WEP, WPA, WPA2, WPA3, 802.1x	64/128-bits WEP, WPA, WPA2, WPA3, 802.1x	64/128-bits WEP, WPA, WPA2, WPA3, 802.1x	64/128-bits WEP , WPA , WPA2, WPA3, 802.1x

SparkLAN M.2 Module Family

Product		WNFQ-258ACN(BT)	WNFQ-255ACN(BT)	WNFQ-158ACN(BT)
Picture				
STANDARD				
Wi-Fi		IEEE 802.11ac/a/b/g/n	IEEE 802.11ac/a/b/g/n	IEEE 802.11ac/a/b/g/n
Bluetooth		Bluetooth V5.0, V4.2, V4.1, V4.0 LE, V3.0+HS, V2.1+EDR	Bluetooth V4.1, V4.0 LE, V3.0+HS, V2.1+EDR	Bluetooth V5.0, V4.2, V4.1, V4.0 LE, V3.0+HS, V2.1+EDR
Chipset		Qualcomm Atheros QCA6174A-5	Qualcomm Atheros QCA6174	Qualcomm Atheros QCA9377A
Host Interface		WLAN : PCIe Bluetooth : USB	WLAN : PCIe Bluetooth: USB	WLAN : PCIe Bluetooth: USB
RADIO				
Antenna		2 x IPEX MHF4 connectors	2 x IPEX MHF4 connectors	2 x IPEX MHF4 connectors for 1T1R with RX diversity
Operating Frequency		802.11ac/a/b/g/n ISM Band 2.412GHz~2.484GHz 5.150GHz~5.850GHz *Subject to local regulations	802.11ac/a/b/g/n ISM Band 2.412GHz~2.4835GHz 5.150GHz~5.850GHz *Subject to local regulations	802.11ac/a/b/g/n ISM Band 2.412GHz~2.472GHz 5.150GHz~5.850GHz *subject to local regulations
POWER & SENSITIVITY				
WiFi Power – TX (± 2dBm)	11b @ 11Mbps	19dBm	19dBm	19dBm
	11g @ 54Mbps	16dBm	16dBm	16.5dBm
	11gn HT20 @ MCS 7	16dBm	16dBm	16dBm
	11gn HT40 @ MCS 7	15dBm	16dBm	15dBm
	11a @ 54Mbps	11dBm	11dBm	12dBm
	11an HT20 @ MCS 7	9dBm	10dBm	11dBm
	11an HT40 @ MCS 7	9dBm	10dBm	11dBm
	11ac VHT80 @ MCS 9	7dBm	6dBm	8dBm
Bluetooth Power – TX (± 2dBm)	3Mbps	0 ≤Output Power ≤10dBm	0 ≤Output Power ≤10dBm	0 ≤Output Power ≤10dBm
Sensitivity – RX (± 2dBm)	11b @ 11Mbps	≤ -81dBm	≤ -76dBm	≤ -76dBm
	11g @ 54Mbps	≤ -66dBm	≤ -65dBm	≤ -65dBm
	11gn HT20 @ MCS 7	≤ -65dBm	≤ -64dBm	≤ -64dBm
	11gn HT40 @ MCS 7	≤ -61dBm	≤ -61dBm	≤ -61dBm
	11a @ 54Mbps	≤ -66dBm	≤ -65dBm	≤ -65dBm
	11an HT20 @ MCS 7	≤ -65dBm	≤ -64dBm	≤ -64dBm
	11an HT40 @ MCS 7	≤ -61dBm	≤ -61dBm	≤ -61dBm
	11ac VHT80 @ MCS 9	≤ -56dBm	≤ -51dBm	≤ -51dBm
Bluetooth Sensitivity – RX (± 2dBm)	3Mbps	<0.1% BR, BER at -70dBm	<0.1% BR, BER at -70dBm	<0.1% BR, BER at -70dBm
POWER CONSUMPTION				
Continue TX		405mA	605mA	538mA
Continue RX		200mA	214mA	155mA
ENVIRONMENTAL				
Operating Voltage		DC 3.3V	DC 3.3V	DC 3.3V
Temperature Range	Operating	-10~ 70°C (Operating)	0~ 70°C (Operating)	-0~ 70°C (Operating)
	Storing	-40 ~ 85°C (Storing)	-40 ~ 80°C (Storing)	-40 ~ 80°C (Storing)
SIZE				
Dimension (MM)		30mm x 22mm x 2.0mm	30mm x 16.5mm x 2.0mm	30mm x 16.5mm x 2.0mm
SOFTWARE				
Driver		Win7/8.1/10, Linux (Open Source), Recommend Kernel v4.0+	Win7/8.1/10	Win7/8.1/10
Security		64/128-bits WEP, WPA, WPA2, WPA3, WPS, 802.1X	64/128-bits WEP, WPA, WPA2, 802.1x	64/128-bits WEP, WPA, WPA2 , 802.1X

SparkLAN USB Module Family

Product		WUBT-236ACN(BT) Series	WUBQ-159ACN	WUBQ-159ACN(BT)	WUBM-273ACN Series
Picture					
STANDARD					
WI-FI		IEEE 802.11ac/a/b/g/n	IEEE 802.11ac/a/b/g/n	IEEE 802.11ac/a/b/g/n	IEEE 802.11ac/a/b/g/n
Bluetooth		Bluetooth V4.2, V4.1, V4.0 LE, V3.0+HS, V2.1+EDR		Bluetooth V5.0, V4.2, V4.1, V4.0 LE, V3.0+HS, V2.1+EDR	
Chipset		Realtek RTL8822BU-CG	Qualcomm Atheros QCA9377-7	Qualcomm Atheros QCA9377-7	MediaTek MT7612U
Host Interface		WLAN: USB Bluetooth: USB	WLAN: USB	WLAN: USB Bluetooth: USB	WLAN: USB
RADIO					
Antenna		2 x IPEX MHF1 connectors or Printed Ant.	1 x IPEX MHF1 connector or PCB Printed Ant., Support WLAN	1 x IPEX MHF1 connector or PCB Printed Ant.	2 x IPEX MHF1 connectors or Printed Ant.
Operating Frequency		802.11ac/a/b/g/n ISM Band 2.412GHz~2.484GHz 5.150GHz~5.850GHz *Subject to local regulations	802.11ac/a/b/g/n ISM Band 2.400GHz~2.4385GHz 5.150GHz~5.825GHz *Subject to local regulations	802.11ac/a/b/g/n ISM Band 2.400GHz~2.4835GHz 5.150GHz~5.825GHz *Subject to local regulations	802.11ac/a/b/g/n ISM Band 2.400GHz~2.4835GHz 5.150GHz~5.825GHz *Subject to local regulations
POWER & SENSITIVITY					
WiFi Power – TX (± 2dBm)	11b @ 11Mbps	15dBm	19dBm	19dBm	15dBm
	11g @ 54Mbps	14dBm	16dBm	16dBm	13dBm
	11gn HT20 @ MCS 7	13dBm	16dBm	16dBm	12dBm
	11gn HT40 @ MCS 7	13dBm	16dBm	16dBm	12dBm
	11a @ 54Mbps	13dBm	13dBm	13dBm	12dBm
	11an HT20 @ MCS 7	12dBm	13dBm	13dBm	11dBm
	11an HT40 @ MCS 7	12dBm	13dBm	13dBm	11dBm
	11ac VHT80 @ MCS 9	9dBm	10dBm	10dBm	10dBm
Bluetooth Power – TX (± 2dBm)	3Mbps	0 ≤ Output Power ≤ 4dBm		0 ≤ Output Power ≤ 10dBm	
Sensitivity – RX (± 2dBm)	11b @ 11Mbps	≤ -80dBm	≤ -76dBm	≤ -76dBm	≤ -76dBm
	11g @ 54Mbps	≤ -70dBm	≤ -74dBm	≤ -74dBm	≤ -65dBm
	11gn HT20 @ MCS 7	≤ -61dBm	≤ -70dBm	≤ -70dBm	≤ -64dBm
	11gn HT40 @ MCS 7	≤ -61dBm	≤ -68dBm	≤ -68dBm	≤ -61dBm
	11a @ 54Mbps	≤ -70dBm	≤ -73dBm	≤ -73dBm	≤ -65dBm
	11an HT20 @ MCS 7	≤ -60dBm	≤ -67dBm	≤ -67dBm	≤ -64dBm
	11an HT40 @ MCS 7	≤ -60dBm	≤ -63dBm	≤ -63dBm	≤ -61dBm
	11ac VHT80 @ MCS 9	≤ -51dBm	≤ -55dBm	≤ -55dBm	≤ -51dBm
Bluetooth Sensitivity – RX (± 2dBm)	3Mbps	<0.1% BER at -70dBm		<0.1% BR, BER at -70dBm	
POWER CONSUMPTION					
Continue TX		450mA	220mA	220mA	460mA
Continue RX		250mA	150mA	150mA	390mA
ENVIRONMENTAL					
Operating Voltage		DC 5V	DC 5V	DC 5V	DC 5V
Temperature Range	Operating	20~ 70°C (Operating)	-40~ 70°C (Operating)	-40~ 70°C (Operating)	0~ 50°C (Operating)
	Storing	-40 ~ 80°C (Storing)	-40 ~ 85°C (Storing)	-40 ~ 85°C (Storing)	-20 ~ 70°C (Storing)
SIZE					
Dimension (MM)		[M4W]/[P4W]: 44.5mm x 20mm x 7mm [MU]/[PU]: 54.7mm x 20mm x 4.5mm	[MU]/[PU]: 55mm x 20.2mm x 4.5mm	[M7]/[P7]: 40mm x 20.2mm x 11.54mm	[M12W]/[P12W]: 55mm x 25mm x 4.2mm [P]/[MU]: 70mm x 25mm x 5.55mm
SOFTWARE					
Driver		Win7/8.1/10, Linux, Android	Win7/8.1/10, Linux 4.4 (other version by project request)	Win7/8.1/10, Linux 4.4 (other version by project request)	WinXP/7/8.1/10, Linux
Security		64/128-bits WEP, WPA, WPA2, 802.1x	64/128-bits WEP, WPA, WPA2, 802.1x	64/128-bits WEP, WPA, WPA2, 802.1x	64/128-bits WEP, WPA, WPA2, 802.1x

SparkLAN USB Module Family

SDIO Module

Product		WPET-236ACN(BT)	WPEQ-160ACN(BT)	WSDB-104GNI(BT)
Picture				
STANDARD				
Wi-Fi		IEEE 802.11ac/a/b/g/n	IEEE 802.11ac/a/b/g/n	802.11b/g/n
Bluetooth		Bluetooth V4.2, V4.1, V4.0 LE, V3.0+HS, V2.1+EDR	Bluetooth V5.0, V4.2, V4.1, V4.0 LE, V3.0+HS, V2.1+EDR	Bluetooth V4.2, V4.1, V3.0+HS, V2.1+EDR
Chipset		Realtek RTL8822BU-CG	Qualcomm Atheros QCA9377-7	Broadcom BCM43438
Host Interface		WLAN : USB Bluetooth : USB	WLAN : USB Bluetooth : USB	WLAN: SDIO 2.0 Bluetooth: High Speed UART
RADIO				
Antenna		2 x IPEX MHF1 connectors (ANT0 for WLAN only; ANT1 for WLAN/BT)	2 x IPEX MHF1 connectors	1 x IPEX MHF1 connector or Printed Ant.
Operating Frequency		802.11ac/a/b/g/n ISM Band 2.412GHz~2.484GHz 5.150GHz~5.850GHz *Subject to local regulations	802.11 ac/a/b/g/n ISM Band 2.412GHz~2.472GHz 5.180GHz~5.825GHz *Subject to local regulations	2.400GHz~2.4835GHz *Subject to local regulations*
POWER & SENSITIVITY				
WiFi Power – TX (± 2dBm)	11b @ 11Mbps	15dBm	19dBm	17dBm
	11g @ 54Mbps	14dBm	16dBm	15dBm
	11n HT20 @ MCS 7			13dBm
	11gn HT20 @ MCS 7	13dBm	16dBm	
	11gn HT40 @ MCS 7	13dBm	16dBm	
	11a @ 54Mbps	13dBm	13dBm	
	11an HT20 @ MCS 7	12dBm	13dBm	
	11an HT40 @ MCS 7	12dBm	13dBm	
	11ac VHT80 @ MCS 9	9dBm	10dBm	
Bluetooth Power – TX (± 2dBm)		3Mbps	0≤Output Power≤4dBm	0≤ Output Power ≤10dBm
Sensitivity – RX (± 2dBm)	11b @ 11Mbps	≤ -80dBm	≤ -76dBm	≤ -76dBm
	11g @ 54Mbps	≤ -70dBm	≤ -74dBm	≤ -65dBm
	11n HT20 @ MCS 7			≤ -64dBm
	11gn HT20 @ MCS 7	≤ -61dBm	≤ -70dBm	
	11gn HT40 @ MCS 7	≤ -61dBm	≤ -68dBm	
	11a @ 54Mbps	≤ -70dBm	≤ -73dBm	
	11an HT20 @ MCS 7	≤ -60dBm	≤ -67dBm	
	11an HT40 @ MCS 7	≤ -60dBm	≤ -63dBm	
	11ac VHT80 @ MCS 9	≤ -51dBm	≤ -55dBm	
Bluetooth Sensitivity – RX (± 2dBm)		3Mbps	<0.1% BER at -70dBm	< 0.1% BER at -70dBm
POWER CONSUMPTION				
Continue TX		600mA	400mA	280mA
Continue RX		350mA	200mA	60mA
ENVIRONMENTAL				
Operating Voltage		DC 3.3V	DC 3.3V	DC 1.8V or 3.3V
Temperature Range	Operating	-20 ~ 70°C (Operating)	-20~ 70°C (Operating)	-40~ 85°C (Operating)
	Storing	-40 ~ 80°C (Storing)	-30 ~ 85°C (Storing)	-50 ~ 90°C (Storing)
SIZE				
Dimension (MM)		29.9mm x 26.65mm x 2.8mm	29.85mm x 26.65mm x 3.73mm	19mm x 12mm x 2mm
SOFTWARE				
Driver		Win7/8.1/10, Linux , Android	Win7/8.1/10	Linux
Security		64/128-bits WEP, WPA, WPA2, 802.1x	64/128-bits WEP, WPA, WPA2, 802.1x	64/128-bits WEP, WPA, WPA2

SparkLAN SiP Series

Product		AP6275HH3	AP6275S	AP6275P
Picture				
STANDARD				
Wi-Fi		IEEE 802.11ax/ac/a/b/g/n 2T2R WiFi+BT5.0	IEEE 802.11ax/ac/a/b/g/n 2T2R WiFi+BT5.0	IEEE 802.11ax/ac/a/b/g/n 2T2R WiFi+BT5.0
Bluetooth		Bluetooth V5.0, V4.2, V4.1, V4.0 LE, V3.0+HS, V2.1+EDR	Bluetooth V5.0, V4.2, V4.1, V4.0 LE, V3.0+HS, V2.1+EDR	Bluetooth V5.0, V4.2, V4.1, V4.0 LE, V3.0+HS, V2.1+EDR
Chipset		Broadcom	Broadcom	Broadcom
Host Interface		WLAN: PCIe v3.0 compliant and runs at Gen2 speeds Bluetooth: UART/ PCM	WLAN: SDIO 3.0/2.0 Bluetooth: UART/PCM	WLAN: PCIe Bluetooth: UART/ PCM
RADIO				
Antenna		External	External	External
Operating Frequency		2.4GHz ISM Band: 2.400GHz~2.4835GHz 5GHz UNII Band: 5.15~5.35GHz 5.47~5.725GHz 5.725~5.85GHz Bluetooth: 2.402GHz~2.480GHz *Subject to local regulations*	2.4GHz ISM Band: 2.400GHz~2.4835GHz 5GHz UNII Band: 5.15GHz~5.35GHz 5.47GHz~5.725GHz 5.725GHz~5.85GHz Bluetooth: 2.402GHz~2.480GHz *Subject to local regulations*	2.4GHz ISM Band: 2.400GHz~2.835GHz 5GHz UNII Band: 5.15GHz~5.35GHz 5.47GHz~5.725GHz 5.725GHz~5.85GHz Bluetooth: 2.402GHz~2.480GHz *Subject to local regulations*
ENVIRONMENTAL				
Temperature Range	Operating	-30~ 85°C (Operating)	-30~ 85°C (Operating)	-30~ 85°C (Operating)
	Storing	-40 ~ 85°C (Storing)	-40 ~ 105°C (Storing)	-40 ~ 105°C (Storing)
SIZE				
Dimension (MM)		24mm x 24mm x 2.1mm	15mm x 13mm x 1.55mm	15mm x 13mm x 1.55mm
SOFTWARE				
Driver		Linux, Android	Linux, Android	Linux, Android

Product		AP6398S	AP6256	AP6181
Picture				
STANDARD				
Wi-Fi		IEEE 802.11ac/a/b/g/n 2T2R WiFi+BT5.0	IEEE 802.11ac/a/b/g/n 1T1R WiFi+BT5.0	IEEE 802.11 b/g/n 1T1R WiFi
Bluetooth		Bluetooth V5.0, GFSK, DQPSK, 8DPSK, LE(1Mbps), 2LE(2Mbps)	Bluetooth V5.0, GFSK, DQPSK, 8DPSK, LE(1Mbps) , 2LE(2Mbps)	
Chipset		Broadcom	Broadcom	Broadcom
Host Interface		WiFi: SDIO 3.0/2.0 Bluetooth: UART/PCM	WiFi: SDIO 3.0/2.0 Bluetooth: UART/PCM	WLAN: SDIO 2.0
RADIO				
Antenna		External	External	External
Operating Frequency		2.4GHz ISM Band: 2.400GHz~2.4835GHz 5GHz UNII Band: 5.15GHz~5.35GHz 5.47GHz~5.725GHz 5.725GHz~5.85GHz Bluetooth : 2.402GHz~2.480GHz *Subject to local regulations*	2.4GHz ISM Band: 2.400GHz~2.835GHz 5GHz UNII Band: 5.15GHz~5.35GHz 5.47GHz~5.725GHz 5.725GHz~5.85GHz *Subject to local regulations*	2.4 GHz ISM Band: 2.412GHz~2.835GHz *Subject to local regulations*
ENVIRONMENTAL				
Temperature Range	Operating	-30~ 75°C (Operating)	-30~ 85°C (Operating)	-30~ 65°C (Operating)
	Storing	-40 ~ 85°C (Storing)	-40 ~ 125°C (Storing)	-40 ~ 85°C (Storing)
SIZE				
Dimension (MM)		15mm x 13mm x 1.85mm	12mm x 12mm x 1.65mm (with shielding cover) 12mm x 12mm x 1.37mm (without shielding cover)	12mm x 12mm x 1.75mm
SOFTWARE				
Driver		Linux, Android	Linux, Android	Linux, Android

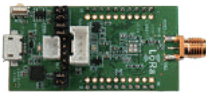
SparkLAN SiP Series

Product		AP6356SDPB	AP6345SD	AP6738SD	AP6212SD
Picture					
STANDARD					
Wi-Fi		802.11ac/a/b/g/n WiFi+BT4.1	802.11ac/a/b/g/n WiFi+BT5.0	802.11b/g/n WiFi+BT4.1	802.11b/g/n WiFi+BT4.1
Bluetooth		Bluetooth GFSK, DQPSK, 8DPSK, LE(1Mbps)	Bluetooth GFSK, $\pi/4$ -DQPSK, 8DPSK, LE(1Mbps), 2LE(2Mbps)	Bluetooth V4.1 of 1, 2 and 3Mbps	Bluetooth V4.1 of 1, 2 and 3Mbps
Chipset		Broadcom	Broadcom	Broadcom	Broadcom
Host Interface		WiFi: PCIe Bluetooth: USB	WiFi: SDIO V3.0/2.0 Bluetooth: UART/PCM	WiFi: SDIO 2.0 Bluetooth: UART/PCM	WiFi: SDIO 2.0 Bluetooth: UART/PCM
RADIO					
Antenna		2 x MHF4 connector	1 x MHF4 connector	1 x IPEX MHF4 connector	1 x IPEX MHF4 connector
Operating Frequency		2.4GHz ISM Band: 2.400GHz~2.4835GHz 5GHz UNII Band: 5.15GHz~5.35GHz 5.47GHz~5.725GHz 5.725GHz~5.85GHz Bluetooth: 2.402GHz~2.480GHz *Subject to local regulations*	2.4GHz ISM Band: 2.400GHz~2.4835GHz 5GHz UNII Band: 5.15GHz~5.35GHz 5.47GHz~5.725GHz 5.725GHz~5.85GHz Bluetooth: 2.402GHz~2.480GHz *Subject to local regulations*	2.4GHz ISM Band: 2.400GHz~2.4835GHz Bluetooth: 2.402GHz~2.480GHz *Subject to local regulations*	2.4GHz ISM Band: 2.400GHz~2.4835GHz Bluetooth: 2.402GHz~2.480GHz *Subject to local regulations*
ENVIRONMENTAL					
Temperature Range	Operating	-10~ 65°C (Operating)	-30~ 85°C (Operating)	-30~ 85°C (Operating)	-10~ 65°C (Operating)
	Storing	-40 ~ 85°C (Storing)	-40 ~ 85°C (Storing)	-40 ~ 85°C (Storing)	-40 ~ 85°C (Storing)
SIZE					
Dimension (MM)		12mm x 16mm x 1.6mm	12mm x 16mm x 1.85mm	12mm x 16mm x 1.52mm	12mm x 16mm x 1.52mm
SOFTWARE					
Driver		Linux, Android	Linux, Android	Linux, Android	Linux, Android

SparkLAN SiP Series

Product		WNSQ-261ACN(BT)
Picture		
STANDARD		
WI-FI		IEEE 802.11ac/a/b/g/n
Bluetooth		Bluetooth V5.0, V4.2, V4.1, V4.0 LE, V3.0+HS, V2.1+EDR
Chipset		Qualcomm Atheros QCA6174A-5
Host Interface		WLAN: PCIe Bluetooth: USB
RADIO		
Antenna		2xIPEX MHF4 connectors
Operating Frequency		802.11 ac/a/b/g/n ISM Band 2.412GHz~2.484GHz 5.150GHz~5.850GHz *Subject to local regulations
POWER & SENSITIVITY		
WiFi Power – TX (± 2dBm)	11b @ 11Mbps	18dBm
	11g @ 54Mbps	16dBm
	11gn HT20 @ MCS 7	16dBm
	11gn HT40 @ MCS 7	16dBm
	11a @ 54Mbps	10.5dBm
	11an HT20 @ MCS 7	10dBm
	11an HT40 @ MCS 7	10dBm
	11ac VHT80 @ MCS 9	6dBm
Bluetooth Power – TX (± 2dBm)	3Mbps	0 ≤Output Power ≤10dBm
Sensitivity – RX (± 2dBm)	11b @ 11Mbps	≤ -76dBm
	11g @ 54Mbps	≤ -65dBm
	11gn HT20 @ MCS 7	≤ -64dBm
	11gn HT40 @ MCS 7	≤ -61dBm
	11a @ 54Mbps	≤ -65dBm
	11an HT20 @ MCS 7	≤ -64dBm
	11an HT40 @ MCS 7	≤ -61dBm
	11ac VHT80 @ MCS 9	≤ -51dBm
Bluetooth Sensitivity – RX (± 2dBm)	3Mbps	<0.1% BR, BER at -70dBm
POWER CONSUMPTION		
Continue TX		610mA
Continue RX		285mA
ENVIRONMENTAL		
Operating Voltage		DC 3.3V
Temperature Range	Operating	-40~ 70°C (Operating)
	Storing	-40 ~ 85°C (Storing)
SIZE		
Dimension (MM)		16mm x 12mm x 1.5mm
SOFTWARE		
Driver		Win7/8.1/10, Linux (Open Source), Recommend Kernel v4.0+
Security		64/128-bits WEP, WPA, WPA2, WPA3, 802.1X

SparkLAN LoRa Series

Product		WLRS-590 Series	WLRS-591 EVB Series	WLRS-592 Series	WLRS-592 EVB Series
Picture					
STANDARD					
MCU		STM32L073xZ ARM Cortex-M0+32-bit	STM32L073xZ ARM Cortex-M0+32-bit	STM32L073xZ ARM Cortex-M0+32-bit	STM32L073xZ ARM Cortex-M0+32-bit
Chipset		Semtech SX1276	Semtech SX1276	Semtech SX1278	Semtech SX1278
Frequency		863~928 MHz ISM Band	863~928 MHz ISM Band	CN 470MHz	CN 470MHz
Flash Memory/RAM		192k bytes/20k bytes	192k bytes / 20k bytes	192k bytes/20k bytes	192k bytes / 20k bytes
Form Factor		SiP		SiP	
Interface		UART, SPI, I2C, USB,ADC	1 x micro USB 1 x SMA Female 1xRest Button	UART, SPI, I2C, USB,ADC	1 x micro USB 1 x SMA Female 1 x Rest Button
Antenna		External	SMA Female	External	SMA Female Connector
Transmitter Power		20dBm	20dBm	20dBm	20dBm
Receive Sensitivity		-137dBm	-137dBm	-138dBm	-138dBm
Temperature Range	Operating	-40°C~85°C (Operating)	-40°C~85°C (Operating)	-40°C~85°C (Operating)	-40°C~85°C (Operating)
	Storing	-50°C~105°C (Storage)	-50°C~105°C (Storage)	-50°C~105°C (Storage)	-50°C~105°C (Storage)
Input Voltage		3.3V	3.3V	3.3V	3.3V
Package		Molding type with LGA landing		Molding type with LGA landing	
Dimension (mm)		13mm x 11mm x 1.1mm	48mm x 25mm	13mm x 11mm x 1.1mm	48mm x 25mm

SparkLAN LoRa Gateway

Product		WLRGM-100 Series
Picture		
STANDARD		
CPU		Network SOC with 580MHz MIPS CPU Core
RF Transceiver		SX1301 with SX1257 SX1301 with SX1255 for CN-470 SKU
LoRa		SX-1301 with SX-1257
Number of Channels		8 concurrent channels
Wireless		802.11b/g/n 2.4GHz 2T2R
WAN Port		One RJ-45 10/100Base-T/TX, Auto-sensing, Auto-MDIX
Frequency Band		The following configuration is supported by different SKU: – EU 862~870MHz – US 902~928MHz – AS 923MHz – CN 470~510MHz
Modulation		Base on LoRaWAN
Transmit Power		0.5W
Receive Sensitivity		142dBm
Antenna		Built-in Wi-Fi antenna and one (1) external SMA LoRa antenna
Security		AES 128
Power Voltage		5V DC/2A via mini-USB port
Temperature	Operating	-10°C to + 55°C (Operating)
	Storage	-10°C to + 60°C (Storage)
I/O interface		1 x WAN 10/100Mbps, 1 x USB2.0, 4 LED indicators
Dimension (mm)		116 x 91 x 27 mm
Weight		160g

SparkLAN Accessory Series

Antenna

Product	AD-305N	AD-303N	AD-302N	AD-103AG	WSS038
Picture					
DESCRIPTION					
Color	Black	Black	Black	Black	Black
Antenna Type Material	Dual-Band Dipole	Dual-Band Dipole	Dual-Band Dipole	Dual-Band Dipole	PCB
ELECTRICAL CHARACTERISTICS					
Operating Frequency Range	2400 to 2500 MHz 5150 to 5825 MHz	2400 to 2500 MHz 5150 to 5825 MHz	2400 to 2500 MHz 5150 to 5825 MHz	2400 to 2500 MHz 5150 to 5850 MHz	862 to 928 MHz
Polarization Type	Liner ; Vertical	Linear ; Vertical	Linear ; Vertical	Linear	Linear
Type of Radiation	Toroidal	Toroidal	Toroidal	Toroidal	Toroidal
Peak Gain	2.4-2.5GHz@5dBi 5.15-5.825GHz@5dBi	2.4-2.5GHz@3dBi 5.15-5.825GHz@3dBi	2.4-2.5GHz@3dBi 5.15-5.825GHz@2dBi	2 dBi	1.3 dBi
Impedance	50 Ohms	50 Ohms	50 Ohms	50 Ohms	50 Ohms
V.S.W.R.	≤2.0	≤2.0	≤2.0	2:1 (Max.)	2:1 (Max.)
MECHANICAL CHARACTERISTICS					
Connector Type	RP-SMA (M)	RP-SMA (M)	RP-SMA (M)	RP-SMA (M)	SMA (M)
RAW MATERIAL					
Coaxial Cable	RG-178	RG-178	RG-178	RG-178	RG-178
Housing	TPU	TPU	TPU	TPU	
Hinge	PC+ALLOY	PC+ALLOY	PC+ALLOY	PC+ALLOY	

Cable

	CBIRF-NE250	CBIRF-NE150	CBIRF-ME250	CBIRF-ME150
Picture				
DESCRIPTION				
Connector Type	RP-SMA Female (Jack), MHF4	RP-SMA Female (Jack), MHF4	RP-SMA Female (Jack), MHF1	RP-SMA Female (Jack), MHF1
Connector Material	Gold Plated	Gold Plated	Gold Plated	Gold Plated
Cable Type	Coaxial 0.81 Black Jacket	Coaxial 0.81mm Black Jacket	Coaxial 1.37 Black Jacket	Coaxial 1.37mm Black Jacket
Cable Length	250mm±3	150mm±3	250mm±3	150mm±3
Jacket Material	FEP	FEP	FEP	FEP
Jacket Color	Black	Black	Black	Black