

# Next Generation IEEE 802.11 abgn/ac/ax Plus Bluetooth PCIe Combo Module

## SX-PCEAX



### Wi-Fi 6E: Turbocharged Wi-Fi for Medical & Industrial Applications

#### Product Overview

The Silex's SX-PCEAX is one of the industry's first Wi-Fi 6E modules. This Wi-Fi 6E module extends the benefits that Wi-Fi 6 already provides in the 2.4 and 5 GHz bands to 6 GHz and helps increase overall capacity and performance. SX-PCEAX is a tri-band IEEE 802.11 abgn/ac/ax WLAN module plus Bluetooth 5.2 BR/EDR/LE combo module based on Qualcomm's QCA2066 SoC. As the number of Wi-Fi devices in use worldwide continues to proliferate, making the available spectrum more congested, this Wi-Fi 6E module will be ideal for future-proofing your devices in these dense environments.

#### Benefits

##### Wi-Fi 6E

Adds the 6GHz spectrum. Devices can operate in the 6 GHz band providing:

- Six times more capacity than 2.5 and 5 GHz bands
- Seven superwide 160 MHz channels
- Lower latency, less congestion

Wi-Fi 6E brings Wi-Fi® into 6 GHz	
Features	Benefits
<ul style="list-style-type: none"> <li>More, contiguous spectrum</li> <li>Wider channels</li> <li>Less interference</li> </ul>	<ul style="list-style-type: none"> <li>Gigabit speeds</li> <li>Extremely low latency</li> <li>High capacity</li> </ul>

##### Multi-User Multiple Input Multiple Output (MU-MIMO)

Allows more downlink data to be transferred at once and enables an access point to concurrently transmit data to a larger number of devices.

##### 160 MHz channels

Increases bandwidth to deliver greater performance with low latency.

##### Target Wake Time (TWT)

Significantly improves battery life in Wi-Fi devices, such as Internet of Things (IoT) devices.

##### 1024 Quadrature Amplitude Modulation Mode

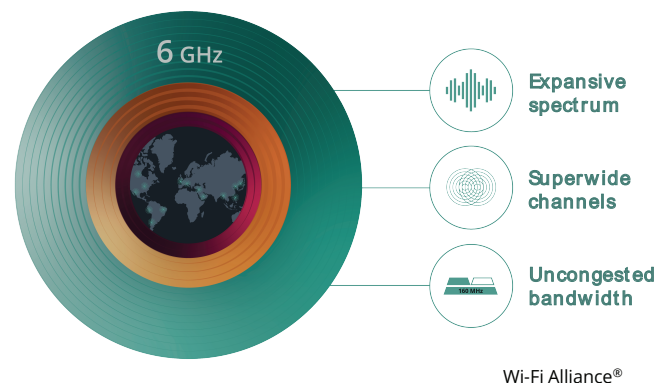
1024-QAM increases throughput in Wi-Fi devices by encoding more data in the same amount of spectrum.

##### Transmit Beamforming

Enables higher data rates at a given range resulting in greater network capacity.

##### Orthogonal Frequency Division Multiple Access

OFDMA effectively shares channels to increase network efficiency and lower latency for both uplink and downlink traffic in high demand and dense environments.



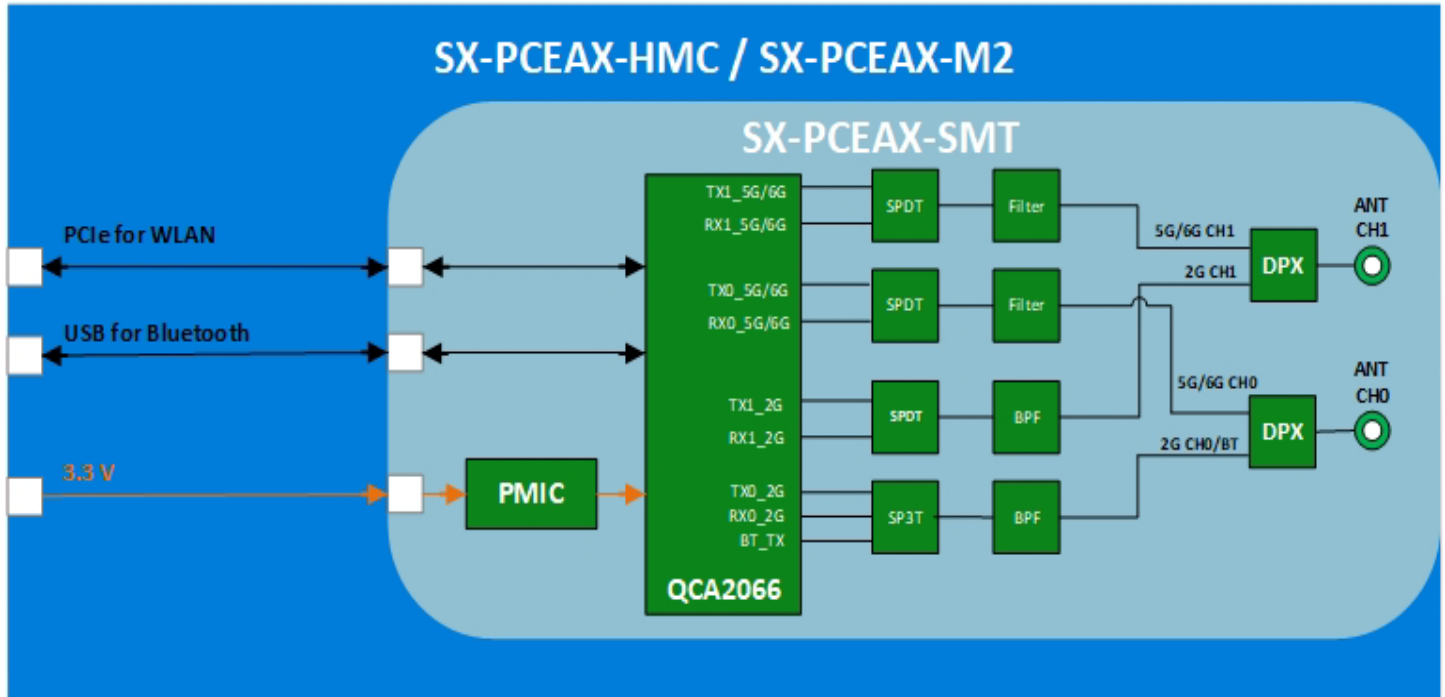
#### The Appeal of Wi-Fi in 6 GHz

- Better capacity, coverage, and performance
- Optimized for congested environments: robust performance even with high numbers of devices
- Power consumption tailored for IoT devices
- Wi-Fi 6E devices extend into 6 GHz

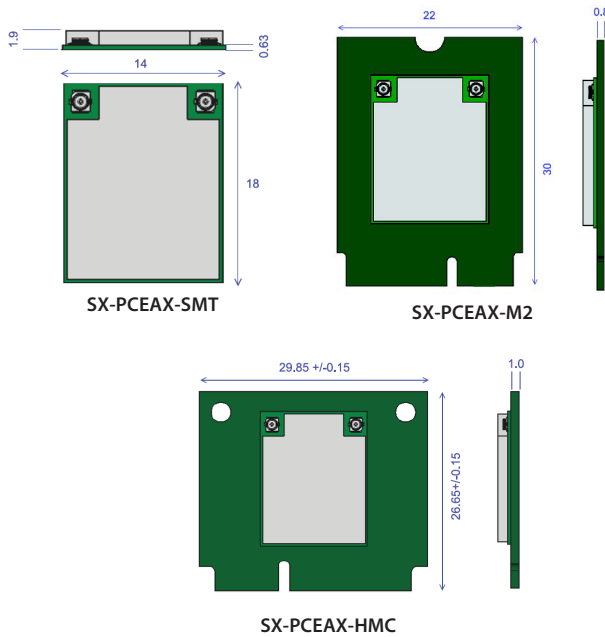
#### SX-PCEAX Key Features

- Complies with IEEE 802.11ax
- **5 GHz, 6GHz:** Support 20/40/80/160 MHz bandwidth mode  
**2.4 GHz:** Support 20/40 MHz bandwidth mode
- 2 spatial data stream system (2T2R)
- Bluetooth 5.2 BR/EDR/LE compatible (Backward compatible)
- Security: OPEN, WPA2-PSK(AES), WPA3-OWE, WPA3-SAE
- Manufacturing tools for configuration test
- Diagnostic and DUT test tools for indoor and outdoor test
- Modular Certifications for North America

## Block Diagram



## Mechanical Specifications



## Product Specifications

Model	SX-PCEAX-SMT (M.2 LGA Type 1418) SX-PCEAX-HMC (Mini PCIe Card Half Size) SX-PCEAX-M2 (M.2 Card Type 2230-S3-A-E)
Chipset	QCA2066
Host Interface	WLAN : PCIe 3.0 Bluetooth: USB1.1
WLAN Specification	IEEE 802.11a/b/g/n/ac/ax (2x2)
BT Specifications	Bluetooth v5.2 (BR/EDR/HS/LE Compliant)
Antenna Connector	MHF4 connector x 2
Operating Voltage	Main Power : 3.3 V ± 5%
Power Consumption (WLAN)	[2.4 GHz]: Tx 680 mA, Rx 200mA [5 GHz]: Tx 530mA, Rx 270mA [6 GHz]: Tx 1090mA, Rx 280 mA
Operating Environment	Temperature: -20 ~ 65 °C Humidity : +5 ~ 85% RH (No Condensation)
Storage Environment	Temperature: -40 ~ 125 °C Humidity : +5 ~ 60% RH (No Condensation)
Dimensions	SX-PCEAX-SMT: 14.0mm x 18.0mm x 1.9mm SX-PCEAX-HMC: 29.85mm x 26.65mm x 2.9mm SX-PCEAX-M2: 22.0mm x 30.0mm x 2.7mm
Driver Support	Linux, Windows 10/11/IoT
Modular Certifications	TELEC/FCC/IC/CE

## Evaluation Kit

SX-PCEAX-HMC is a mini PCIe half mini card designed to allow easy evaluation of the radio using Boundary Device's Nitrogen8M based on NXP's i.MX8M processor. We provide a Linux OS evaluation image which includes Silex's reference radio driver, supplicant and tools to test the radio.

Contact Silex Sales to discuss early access and enablement.

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