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

SX-PCEAX

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Wi Fi 6E

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
More, contiguous spectrum (6 GHz)	Gigabit speeds
Wider channels	Extremely low latency
Less interference	High capacity

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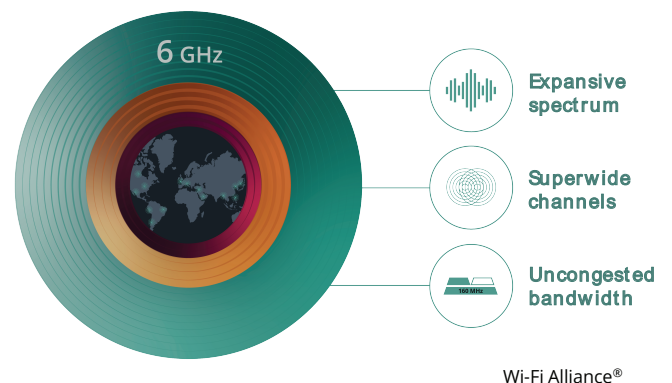
1024 Quadrature Amplitude Modulation Mode
1024 -QAM increases throughput in Wi-Fi devices by encoding more data in the same amount of spectrum.

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.

6 GHz

Expansive spectrum

Superwide channels
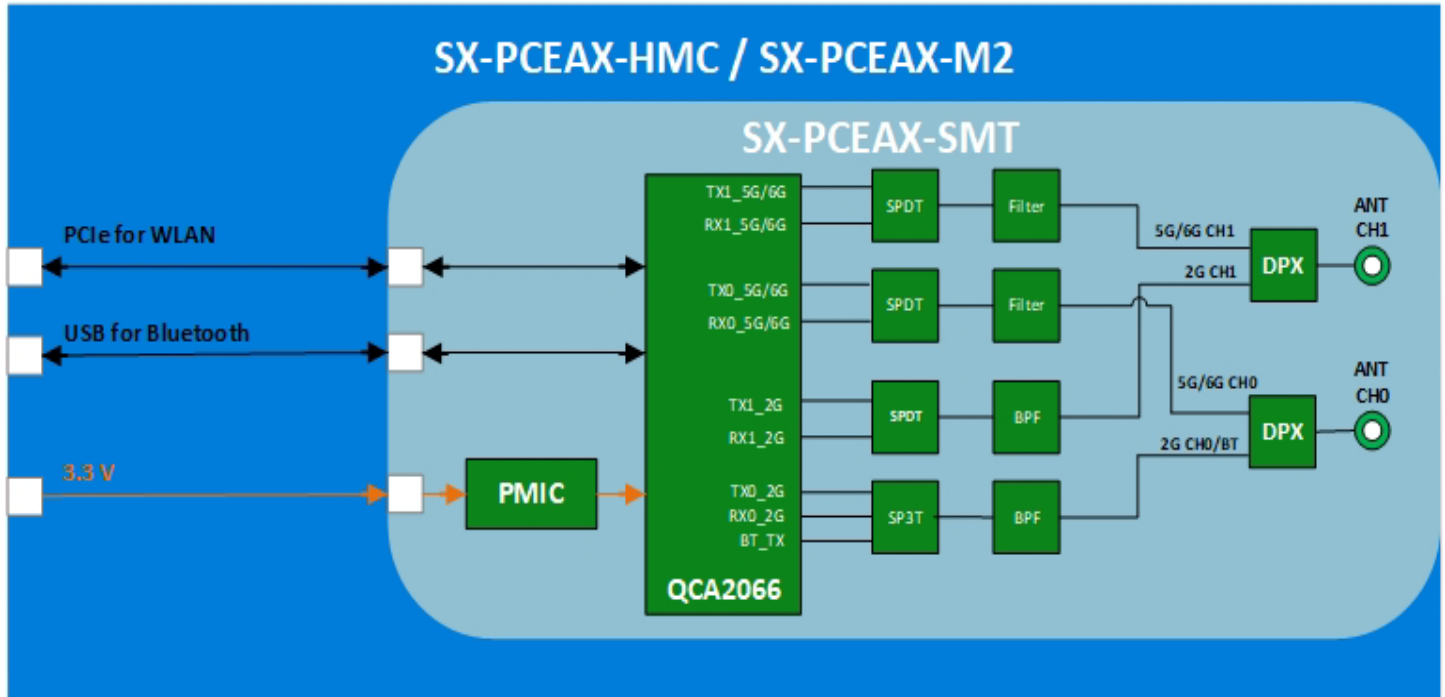
Uncongested bandwidth

Wi-Fi Alliance®

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
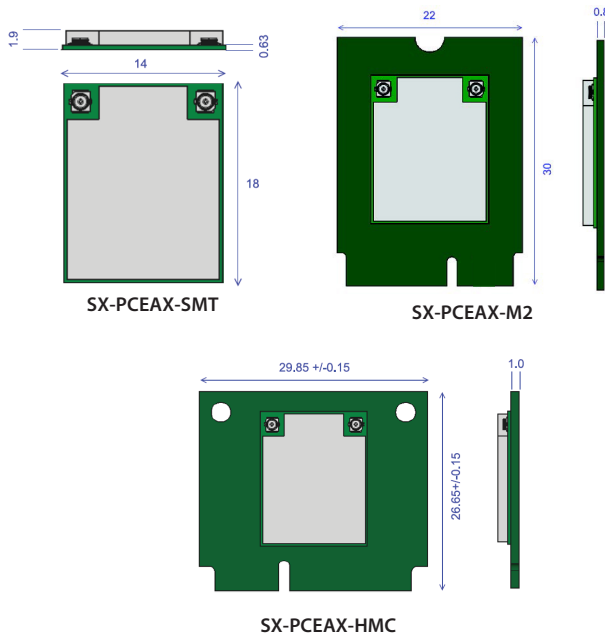- Wi-Fi 6E devices extend into 6 GHz

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

PCIe Wi-Fi6 Module
Next Generation IEEE 802.11ax + BT Combo Module   SX-PCEAX

Block Diagram

Mechanical Specifications

SX-PCEAX-SMT

SX-PCEAX-M2

SX-PCEAX-HMC

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]**: TBD **[5 GHz]**: TBD **[6 GHz]**: TBD
Operating Environment	Temperature: -20 ~ 65 ℃ Humidity : +5 ~ 85% RH (No Condensation)
Storage Environment	Temperature: -40 ~ 125 ℃ 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
Weight	TBD
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.

ISO 9001
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ISO 14001
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