SX-SP242
Hostless 802.11a/b/g/n Dual Band Wi-Fi Internet-of-Things Platform

SX-SP242 is a low power, cost effective 802.11a/b/g/n Dual-Band Internet-of-Things (IoT) platform based on the Qualcomm QCA4012 System-on-Chip (SoC). SX-SP242 is a feature-rich intelligent Wi-Fi solution for IoT that integrates a full Wi-Fi stack, full networking/security stack, and embedded CPU and memory for on-chip application development. It includes an integrated RF front end and an internal PCB antenna.

This module is ideally suited for embedded wireless IoT products including medical devices, remote control, appliances, home & factory automation, energy management, residential lighting, security, sensors, wearables, etc.

In order to expedite your product development process, Silex can provide both hardware and software engineering services including custom application development, as well as turnkey product design and manufacturing.

Key Features

- Single stream (1x1) IEEE 802.11a/b/g/n conformity (2.4GHz, 5GHz)
- Data rate up to 72.2 Mbps MCS7 HT20
- Tensilica Xtensa® 7 130 MHz CPU
- Up to 800 Kbytes of RAM available for application code
- Network and security: TCP/IP, IPv4/IPv6, HTTP, SSL/TLS
- UART, SPI, I2C, I2S, PWM, ADC, JTAG, and GPIO interfaces
- Internal 1.2V and 1.8V regulator and power management unit
- IEEE sleep, fast wake-up, low power Rx listen
- AllJoyn®, Apple HomeKit, Google Weave, and Amazon AWS IoT Support (Coming Soon)
- Embedded ThreadX® Real-Time-Operating-System (RTOS)
Hostless IoT System Use Case

**Cost Effective Solution by Eliminating External Host**

The SX-SP242’s internal CPU can act as a host with the application running from the internal memory. Peripherals and sensors connect to the CPU using any of the available interfaces: UART, SPI, I2C, I2S, ADC, PWM, GPIO.

**UART AT Command Use Case**

**Simplified Implementation by Using MCU UART AT Command Interface**

SX-SP242 can also provide Wi-Fi connectivity to an external host via the UART interface. It can offload the host MCU by performing network, security, and authentication.

**Ordering Information**

- SX-SP242: Bulk SKU
- SX-SP242-SP: Sample Pack
- SX-SP242-EVK: Evaluation Kit

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**Specifications:**

- **Product Name:** SX-SP242 / QCA4012
- **Interfaces:** SPI Master x 1, Debug UART x 1, High Speed UART x 2, I2C master x 1, I2C Slave x 1, I2S x 1, PWM x 6, ADC x 4, JTAG x 1, GPIOs
- **Operating Voltage:** 3.3V +/- 10% I/O Supply Voltage
- **Frequency Range:** 802.11a/b/g/n: 2.412–2.472GHz, 5.18–5.825GHz
- **Baseband Specification:** CSMA/CA with ACK
- **Data Rates:**
  - 802.11b: 11, 5.5, 2, 1 Mbps
  - 802.11a/g: 54, 48, 36, 24, 18, 12, 9, 6 Mbps
  - 802.11n: MCS 0 to 7 HT20 and HT40
- **Modulation Techniques:**
  - 802.11b: CCK, DQPSK, DBPSK
  - 802.11a/g: 64QAM, 16QAM, QPSK, BPSK
  - 802.11n: BPSK, QPSK, 64QAM
- **Network Operating Modes:**
  - Station, AP, Concurrent (MCC), Wi-Fi Direct
- **Operating Channels:**
  - Channels 1-11 (2.4GHz)
  - Channels 36-165 (5GHz)
- **Transmit Output Power (Tolerance +/- 1.5 dBm):**
  - 802.11b: 17 dBm (2.4GHz) (1 Mbps)
  - 802.11b: 12 dBm (2.4GHz) (6 Mbps)
  - 802.11n: 12 dBm (2.4GHz) (MCS0, HT20)
  - 802.11n: 14 dBm (2.4GHz) (MCS7, HT20)
  - 802.11a: 7 dBm (5GHz) (6 Mbps)
  - 802.11a: 7 dBm (5GHz) (MCS0, HT20)
  - 802.11n: 6 dBm (5GHz) (MCS7, HT20)
- **Typical Receive Sensitivity:**
  - 802.11b: -96 dBm (1Mbps)
  - 802.11n: -92 dBm (6 Mbps)
  - 802.11n: -72 dBm (MCS7, HT20) (2.4GHz)
  - 802.11n: -90 dBm (6Mbps) (5GHz)
  - 802.11n: -90 dBm (MCS0, HT20) (5GHz)
  - 802.11n: -70 dBm (MCS7, HT20) (5GHz)
- **Current Consumption (Typical, 11ng, HT20) 3.3V:**
  - RX: 80 mA (TCP downlink)
  - TX: 147 mA (TCP uplink)
  - Standby: 13 uA (Suspend), 504 uA (DTIM3)
- **Security:** WPA, WPA2, WPS, WEP 64/128
- **OS Supported:** ThreadX® & Qualcomm AllJoyn® Platform
- **Temperature:** Operating: 0 – +70 Degrees C (Ambient) Storage: -40 – +85 Degrees C (Ambient)
- **Relative Humidity:** Operating: 5 – 90% (Non-condensing) Storage: 5 – 95% (Non-condensing)
- **Package:** 46 Pin Solder Down “stamp” Format