Industry’s first 802.11ah Wi-Fi Solution for Internet of things (IoT) devices

SX-NEWAH

Securely connect smart devices over long distances using minimal power

**Product Overview**

Powered by NRC7292 System-on-Chip from Newracom, SX-NEWAH is industry’s first IEEE 802.11ah Wi-Fi module that operates in the Sub 1GHz license-exempt band. It provides a much greater range over 2.4GHz and 5GHz Wi-Fi technologies and a much higher data rate than propriety Low-Power Wide-Area (LPWA) technologies such as LoRa and Sigfox. Unlike these proprietary technologies, the SX-NEWAH is built upon 802.11ah technology designed to operate in IEEE standards. This unique solution enables streamlined data transfer interoperability with existing Wi-Fi networks while meeting upto 1Km long range data transfer with low power consumption requirements.

SX-NEWAH opens up unlimited possibilities for various remote monitoring applications such as industrial sensors, elderly monitoring, security surveillance, building automation and agricultural IoT.

**Benefits**

- **Improved Range**
  Long range (up to 1 km) connectivity (in-outdoor Wi-Fi). It offers at least a 10 dB advantage over 2.4 GHz.

- **Low Power Consumption**
  Low power consumption for a multi-year battery operation. Whole home sensor coverage with 4dBm output power & no external power amplifier. Supports enhanced power save MAC modes.

- **Rich Data Rates**
  Moderate data rates (up to 15 Mbps) with enough throughput to support TCP/IP, Internet discovery protocols and diverse applications such as voice, low/medium resolution video.

- **Scalable**
  Can support large number of connected devices per access point, no need for repeaters and gateways. Supports over 100 nodes.

- **IP Connectivity**
  It is the same as Wi-Fi. You can easily integrate SX-NEWAH in an existing IP network.

- **Robust Wi-Fi Security**
  Supports latest generation Wi-Fi® security - WPA3™

- **Outdoor Coverage**
  Support for larger delay spreads. Robust connections with superior penetration through walls and other industrial environments.

- **Wi-Fi Ecosystem**
  WFA interoperability and user experience.

**Key Features**

- Complies with IEEE 802.11ah draft
- Supports 1/2/4 MHz bandwidth
- Upto 15 Mbps data rate
- Access point and station mode
- Security: OPEN, WPA2-PSK(AES), WPA3-OWE, WPA3-SAE
- Dedicated SPI interface for host
- Manufacturing tools for configuration test
- Diagnostic and DUT test tools for indoor and outdoor test
- Modular Certifications for North America
IoT Wireless Module
IEEE 802.11ah Wi-Fi Module
SX-NEWAH

Mechanical Specifications
SX-NEWAH

Evaluation Kit
SX-NEWAH-EVK consists of the 802.11ag module (SX-NEWAH) with an interface board which helps to connect the evaluation kit with Raspberry-Pi development board to easily evaluate the SX-NEWAH module and other 802.11ah technology benefits.

- Linux Tools
  - WLAN management command
    - iw
  - Throughput test
    - iperf
  - Station / Access Point function
    - WPA_supplicant, hostapd
  - DHCP
    - udhcpd, udhcpc

Begin evaluation by following the 3 steps below.

1. Purchase the required hardware
   - SX-NEWAH-EVK / Raspberry-Pi
2. Download the OS image for evaluation
   - Available via silex website
3. Setup environment and begin evaluation
   - Instructions in User Guide (available on website)

Product Specifications

<table>
<thead>
<tr>
<th>Product</th>
<th>SX-NEWAH</th>
</tr>
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<tbody>
<tr>
<td>Chipset</td>
<td>NRC7292</td>
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<tr>
<td>Host Interface</td>
<td>SPI</td>
</tr>
<tr>
<td>WLAN Specification</td>
<td>IEEE 802.11ah (1x1)</td>
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<tr>
<td>Antenna Connector</td>
<td>MHF-1 connector x 1</td>
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<tr>
<td>Operating Frequency</td>
<td>902.0 – 928.0 MHz</td>
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<tr>
<td>Transmit Power</td>
<td>30 dBm</td>
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<tr>
<td>Rx Min Sensitivity</td>
<td>-86 ~ -106 dBm</td>
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<tr>
<td>Operating Voltage</td>
<td>Main Power Supply: 3.3 V ± 5%</td>
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<tr>
<td>Operating Environment</td>
<td>Temperature: -40 ~ 85 °C, Humidity: 15 ~ 95% RH (No Condensation)</td>
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<tr>
<td>Storage Environment</td>
<td>Temperature: -40 ~ 85 °C, Humidity: 15 ~ 95% RH (No Condensation)</td>
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<tr>
<td>Dimensions</td>
<td>20.5mm x 27.0mm x 3.1mm</td>
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<tr>
<td>Package Type</td>
<td>68 pins Direct Solder Pads (Surface Mount)</td>
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<td>Modular Certifications</td>
<td>TELEC/FCC/IC/CE (Planned)</td>
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Product SKU’s

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<tr>
<th>Part Number</th>
<th>Type</th>
<th>MOQ</th>
<th>Packaging</th>
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<tbody>
<tr>
<td>SX-NEWAH</td>
<td>SMT</td>
<td>500 units</td>
<td>Reel</td>
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<tr>
<td>SX-NEWAH-SP</td>
<td>SMT</td>
<td>1 unit</td>
<td>Reel</td>
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<td>SX-NEWAH-EVK</td>
<td>Shield Connector</td>
<td>1 unit</td>
<td>Individual Box Includes 1 antennas (TBD)</td>
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</tbody>
</table>

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