

# 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 atleast 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

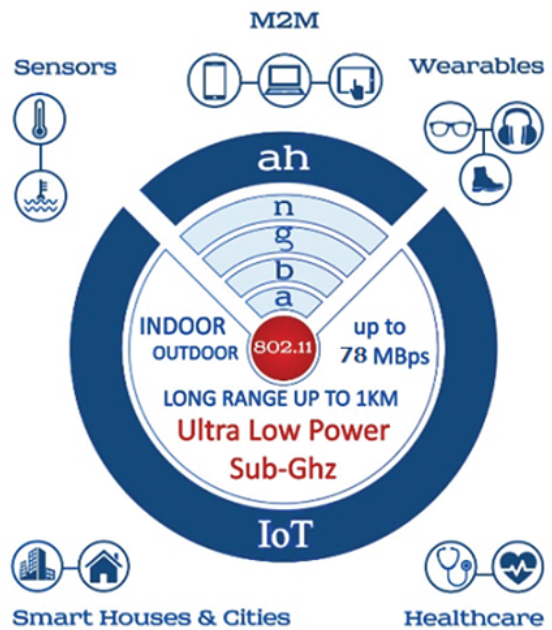
supports latest generation Wi-Fi® security - WPA3™

#### Outdoor Coverage

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

#### Wi-Fi Ecosystem

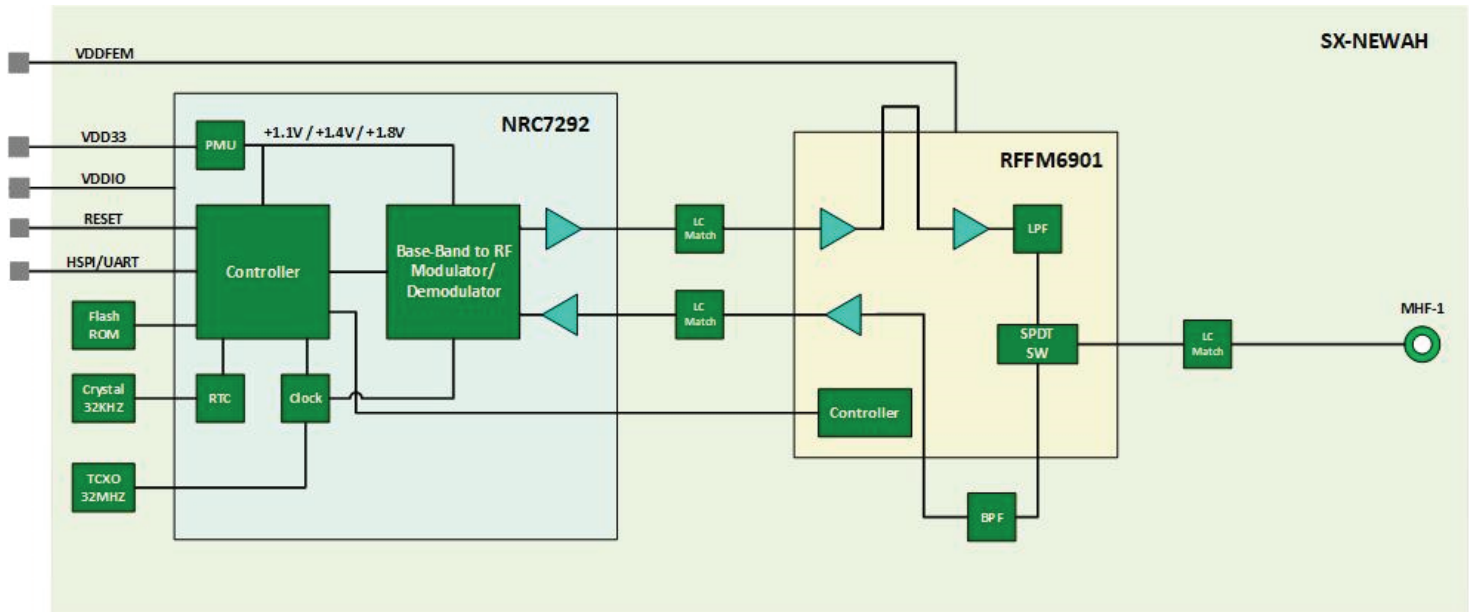
WFA interoperability and user experience.



### Key Features

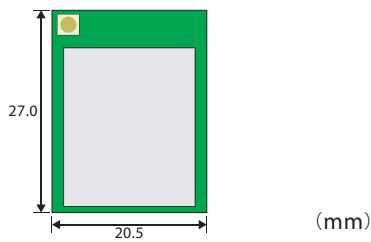
- Complies with IEEE 802.11ah draft
- Supports 1/2/4 MHz bandwidth
- Upto 15 Mbps data rate
- Access point and station mode
- Security: OPEN, WPA2-PSK(AES), WPA3-OWE, WPA3-SAE
- Dedicated SPI interface for host
- Manufacturing tools for configuration test
- Diagnostic and DUT test tools for indoor and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

### Block Diagram



### Mechanical Specifications

#### SX-NEWAH



### Evaluation Kit

SX-NEWAH-EVK consists of the 802.11ah module (SX-NEWAH) with an interface board which helps to connect the evaluation kit with Raspberry-Pi development board to easily evaluate the 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, udhcp



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 silix website
- 3 Setup environment and begin evaluation
  - Instructions in User Guide (available on website)

### Product Specifications

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

### Product SKU's

Part Number	Type	MOQ	Packaging
SX-NEWAH	SMT	500 units	Reel
SX-NEWAH-SP	SMT	1 unit	Reel
SX-NEWAH-EVK	Shield Connector	1 unit	Individual Box

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