NEWRATEK
NRC7292

NRC7292

IEEE 802.11ah Wi-Fi Solution + MCU SoC

Overview

As an optimized Wi-Fi solution for internet of things (IoT) devices, NRC7292 is industry's first system on a chip (SoC) that is compliant with the IEEE 802.11ah standard. Operating in the Sub 1GHz license-exempt band, it offers a much greater range over 2.4GHz and 5GHz technologies. 1/2/4MHz channel widths with optional short guard interval (SGI) yield 150 Kbps to 15 Mbps PHY throughput which can support low-rate sensor to high-rate surveillance camera application. The protocol's power-saving mechanisms like a longer sleep time greatly reduces power consumption and hence increase battery life.
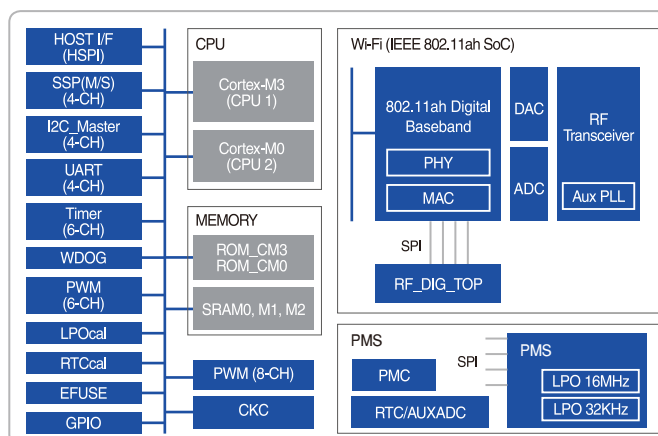
The self-contained IEEE 802.11ah Wi-Fi networking capabilities with fully integrated radio transceiver of NRC7292 offers the ideal solution to add Wi-Fi connectivity to IoT products. It minimizes the PCB size, requires minimal external circuitries, and enables fast time-to-market.
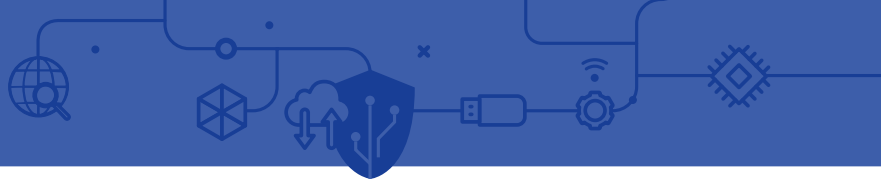
The RF transceiver is a complete radio front-end optimized for Sub 1GHz band and it has fully integrated pre-power amplifiers as well as the capability to support various commercial external FEM device. With the dual embedded ARM Cortex-M0 and Cortex-M3 processor, NRC7292 can be used either as a standalone device or a slave to a host processor via serial peripheral interface (SPI) or universal asynchronous receiver transmitter (UART) interface. In addition, it can support both AP and STA roles.

Target Applications

- IoT applications
- Wearables
- Home automation
- Healthcare
- Industrial automation
- Safety and security
- Smart grid
- Multimedia streaming

Specification

CPU

- ARM Cortex-M3 for Application
- ARM Cortex-M0 for WLAN
- Mailbox for communication

Memory

- 32KB Boot ROM for M0
- 32KB Boot ROM for M3
- 752KB System SRAM
- XIP with cache (2 ways, 32KB)

Communication Peripherals

- GPIO X 54
- SPI X 4
- UART X 4
- I2C X 4
- 9-bit ADC X 4

RF Transceiver

- Single-ended RF ports
- Frequency band: 750 to 950MHz
- Linear TX output power: 0dBm
- TX gain range: 30dB
- RX noise figure: <4dB
- Max. input level: -10dBm
- 10bits ADC and DAC

Key Features

- Complies with IEEE 802.11ah^{TM}-2016
- Fully Integrated on-chip 11ah modem, RF transceiver, processor, and memory
- Support 1/2/4 MHz bandwidth
- Up to 15 Mbps data rate
- Low power mode operation
  - Legacy
  - WMM-PS
  - TWT
- AES-CCMP security
- Dedicated SPI and UART interface for host
- Various peripheral interfaces for sensor device
- Manufacturing tools for configuration and test
- Diagnostic and DUT test tools for indoor and outdoor test