QUALCOMM®

QCA4531

A low-power Linux connectivity
hub for the Internet of Everything

QCA4531 is a product of Qualcomm Atheros, Inc.

QCA4531

A low-power Linux connectivity hub
for the Internet of Everything

Qualcomm® Wi-Fi Solutions for the IoE

Delivering a low-cost, high performance connectivity hub for devices of the IoE in a user programmable Linux/Open WRT environment

The QCA4531 is a low-cost turnkey solution that brings high-performance connectivity capabilities in a user-programmable Linux/ OpenWRT environment. OpenWRT offers a built-in package manager that allows packages to be installed directly from a software repository, greatly simplifying development. Benefiting from the extended range based on 2x2 11n, it is designed to serve as a feature-rich IoE node and as a hub to bridge between multiple protocols and ecosystems. The QCA4531 can function as an Access Point supporting up to 16 simultaneous devices, and is also power-optimized to enable appliances to meet international standards for energy efficiency.
It supports the AllJoyn connectivity software framework and services, allowing devices to discover, connect and communicate directly with one another.
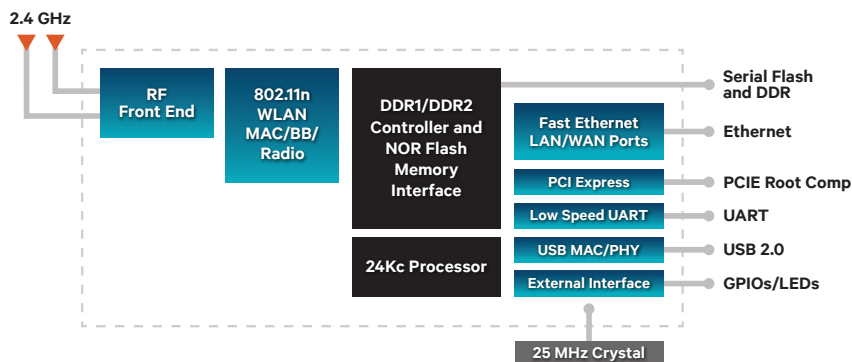
Solution Highlights

The QCA4531 is a two stream (2x2) IEEE 802.11b/g/n programmable Linux OS access point/router single-band system-on-a-chip (SoC) for the Internet of Everything

- Provides a complete AllJoyn integration client and services implementation
- Uses Qualcomm's industry-leading 802.11b/g/n single-band 2.4GHz Wi-Fi technology and advanced LAN and WLAN security features
- Integrates a 650MHz MIPs CPU for embedded applications plus a 1 + 4 port fast ethernet switch and other expansive hardware interfaces
- Embeds OpenWRT Linux OS and open source Wi-Fi drivers to simplify software development
- Includes a versitile DDR and SPI flash memory controller
- Integrated communications protocols
  – AllJoyn from the AllSeen Alliance

QCA4531 System Architecture

Qualcomm Wi-Fi solutions are products of Qualcomm Atheros, Inc. AllJoyn is a collaborative open source project of the AllSeen Alliance.

IoE Applications

Remote Control   Appliances   Home Automation   Energy Management   Residential Lighting   Security   Wearables

Key Features

- Full AllJoyn integration client and services implementation
- 802.11n 2x2 improves range and quality of service
- MIPS 24Kc CPU with 650MHz clock
- OpenWRT QSDK and open source ATH9K drivers
- USB 2.0 host interface
- DDR2 NAND SPI flash memory manager
- High speed UART
- 1 + 4 fast ethernet switch
- I²C enables MFI option
- Low cost system BOM
    - Integrated LNA and +20 dBm PA
    - QFN package and 4 Layer PCB design
    - 3.3V external power source
- Advanced power management
    - Client-mode optimized power save Wi-Fi functionality
    - Supports dynamic clocking and CPU off mode
- Commercial and Industrial temperature options
- 12 customizable GPIOs

Typical Applications

- Smart appliance connectivity modules
- IoE gateway/hubs
- Home automation and energy management "Smart Plug"
- AllJoyn always on router nodes
- Wi-Fi repeater/range extenders

Software Features

- Supports the AllJoyn connectivity frameworks and services, allowing devices to discover, connect and communicate directly with one another across multiple smart home ecosystems.
    - Control Panel Service Framework
    - Onboarding Service Framework
    - Notification Framework
    - Config Service
    - Security

Certified development kits, reference design platforms and production modules available at developer.qualcomm.com

QCA4531 Specifications

WLAN Technology	802.11b/g/n
Interfaces	1-DDR, 1-PCIE, 1-USB 2.0 Host, JTAG, 12-GPIO, 1-UART, 1-I²C, 1 + 4 Fast Ethernet Ports
Antennas	2-2.4GHz outputs
Frequency Band	2.4GHz
Channel Bandwidth	20 or 40MHz
Package Type	12 x 12mm dual row 156 pin halogen-free QFN
Module Size	44.3 x 33.5 x 6.2mm, 4 layer PCB (including PCB antenna and 2 - I-PEX connectors)
Operating Temperature	Commercial -20˚ to +70° C Industrial -20˚ to +85° C
Power Source	3.3V nominal
Throughput	2x2 802.11n - 190Mbps (TCP/IP)
MIPs 24Kc CPU Clock	650MHz
Default Memory	64MB DDR; 1GB NAND SPI flash; 1 x 4MB NOR flash
Operating System	OpenWRT Embedded Linux

QUALCOMM®