

QHS600 USB Reference Design

World's First 4x4 802.11a/n USB Device

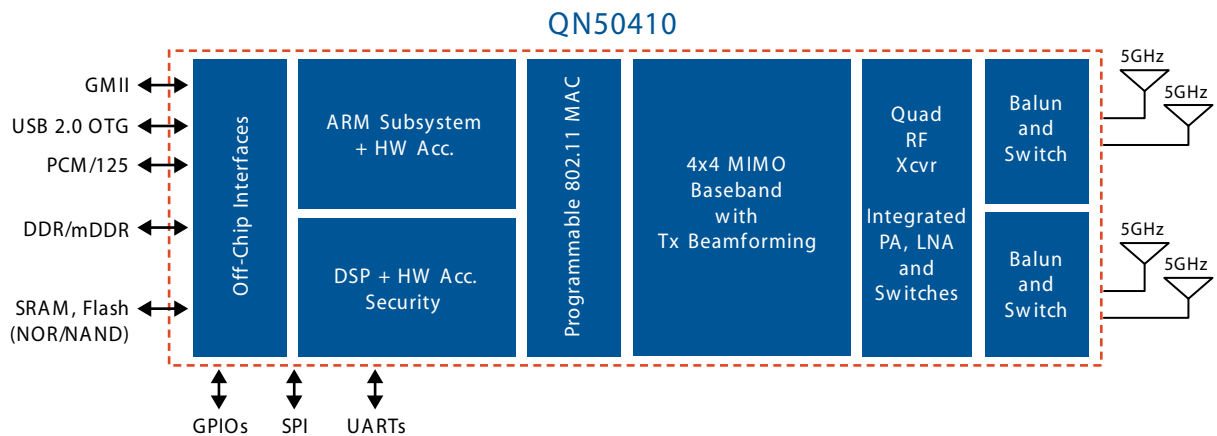
QHS600 Overview

The QHS600 is an 802.11a/n 4x4 MIMO chip that is integrated into wireless home and enterprise networking equipment, as well as consumer electronics devices, for an unprecedented level of reliability and performance. It is the world's most integrated solution to combine integrated mesh networking, transmit (Tx) beamforming, and a 4x4 radio transceiver/antenna to deliver guaranteed high-speed bandwidth for total coverage of any size home or office, anywhere. The QHS600 is based on the QN50410 device, which is outlined below.

The QHS600 USB 2.0 OTG reference design dongle incorporates a fully integrated 802.11a/n system, including 4x 5GHz antennas, 32 MB of mDDR memory, 256 KB E²PROM, and power supply and management circuitry.

The compact size and ease of integration in combination with the superior 4x4 MIMO performance, makes the QHS600 USB 2.0 OTG reference design dongle ideal for high performance client applications.

QHS600 4x4 MIMO 802.11a/n Block Diagram



Features

- Advanced MIMO techniques including transmit beamforming, STBC and channel state aware link management using real time spectrum analysis for sustained link robustness.
- 4x4 MIMO operation.
- Integrated ARM-based network processor with hardware assist to manage multiple simultaneous 802.11a/n connections and to optimize throughput using channel state aware routing and fast relay.
- Integrated DSP engine for VoIP processing and higher layer security acceleration.
- Four 5GHz 802.11n RF transceivers with integrated high-efficiency PAs, LNAs and switches.
- On-chip diplexer, baluns and switches to reduce system size and BOM.
- Advanced vector mesh networking.

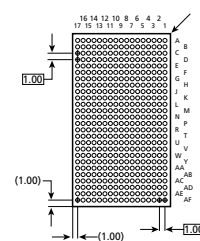
Applications

High Performance and Multimedia Clients.

Benefits

- Configurable 4x4 MIMO 802.11a/n solution using 4x4 5GHz RF subsystems with integrated baseband and MAC.
- Integrated ARM CPUs and associated hardware assist, including higher layer security functions such as IPSec and VPN.
- Onboard 4-channel VoIP termination using SIP v2.
- Lowest BOM for AP/router and vector mesh router.
- Mesh networking with 4x4 and Tx beamforming ensures guaranteed high-speed wireless bandwidth.

Package Information



QHS600 USB Specifications

Wireless Interfaces

4x4 MIMO using 5GHz RF subsystems with integrated Wi-Fi 802.11a/n baseband and MAC and support for up to two spatial streams (MCS15) 4x4 antenna combination.

Standards: 802.11n, 802.11a, 802.11i (WEP, WPA/WPA2, RADIUS), 802.11d, 802.11e (WMM, WMM-PS), 802.11j, 802.11h, 802.11k, 802.11s (Draft).

Operating Frequencies: 2.4-2.5GHz, 4.9-5.85GHz.

Aggregate Data Rate: 600Mbps Dual 40MHz.

Data Rates per Spatial Stream:

40MHz: 300, 270, 243, 216, 162, 108, 81, 54, 27.

20MHz: 144, 130, 117, 104, 78, 52, 39, 26, 13.

Legacy: 1, 2, 5.5, 11; 6, 9, 12, 18, 24, 36, 48, 54.

Power Output (at PA Output):

Adaptive 18 dBm.

Communications Interfaces

GMII (WAN, and LAN Switch) for GigE Ethernet USB 2.0 OTG with integrated USB PHY. PCM to external Audio DAC/ADCs.

Memory Interfaces: DDR, Flash and Serial EEPROM.

Peripheral Interfaces: GPIO, UARTS, SPI.

Software Support

Quantenna OS: Quantenna OS running on the integrated network processor enables equipment vendors to develop and port their own features and enhancements for value-add and additional BOM cost reduction.

Software Package: Complete software package for standard Access Point/Router and Vector Mesh Router in Linux with standard APIs to allow for easy porting. Support for reference VoIP stack.

Certifications: Worldwide Regulatory, Wi-Fi 802.11a/b/g/n (WPA, WPA2 Personal/Enterprise, WMM, WMM-PS), WHQL, CCX.

Reference Design: Complete vector mesh router reference design including PCB layout and external BOM.

Input Supply Requirements

1.2v, 2.5v and 3.3v.

Physical Specifications

QM50410

17mm x 27mm (459mm²)

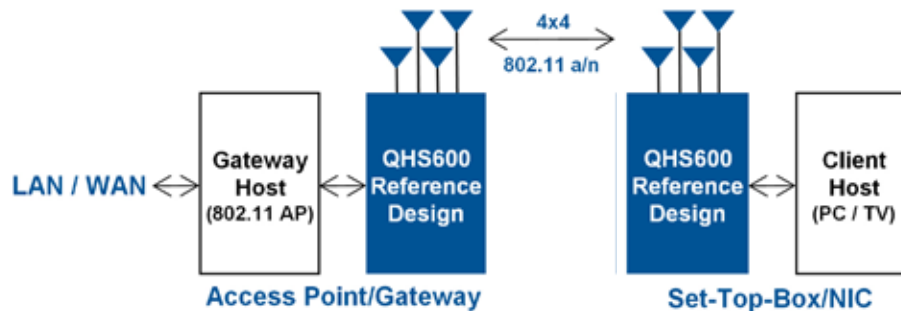
QHS600 4x4 MIMO 802.11a/n USB Reference Design



Features

- 1" x 2" USB dongle form factor
- QHS600 802.11a/n 4x4 chip
- 32 Mbyte mobile DDR SDRAM
- 256 Kbyte E²PROM
- Gigabit Ethernet PHY
- On board switching regulators
- Integrated 4x 5GHz antennas

QHS600 4x4 MIMO 802.11a/n USB Applications



Quantenna Communications, Inc.

219 Moffett Park Drive
Sunnyvale, CA 94089
Web: www.quantenna.com
Email: info@quantenna.com
Phone: +1 (408) 331-9289