QHS600x Wireless Video Bridge Reference Design Kit

World’s First Full-11.n 4x4 MIMO Solution

Overview

The Quantenna QHS600x Reference Design Kit (RDK) is a high-performance evaluation kit implementing Quantenna’s QHS600 IEEE 802.11n Wireless LAN chipset solution. The QHS600x RDK enables wireless LAN applications evaluation. The QHS600x Reference Design includes radio and host adapter boards. Applications include wireless video bridge for video delivery throughout the home and ultra-reliability over Wi-Fi.

Operating in the IEEE 802.11a/n 5GHz frequency band, the QHS600x supports high PHY/data link speed with superior wireless data throughput with maximum range. The RDK boards use Quantenna’s QHS600 802.11n wireless LAN chipset solution with baseband/MAC and RF ICs. Using advanced 4x4 MIMO technique and Dynamic Digital Beamforming, the QHS600x delivers ultra-reliable HD-quality video to multiple rooms and devices simultaneously.

The QHS600x consists of a radio GMII module connected via a mPCI connector to a host adapter board. The RDK enables straightforward board boot, bringup, and program execution. The Reference Design board has integrated functions for various I/O interfaces, including Gigabit Ethernet, DDR SDRAM, Flash, USB 2.0 OTG, ARM JTAG debug port, GPIOs, Serial port and four antenna ports.

Features

- 4x4 MIMO, Explicit Dynamic and Implicit Digital Tx Beamforming
- Integrated ARM-based network CPUs with hardware assist to manage multiple simultaneous 802.11a/n connections
- Gigabit Ethernet interface, connected to the standard mPCI connector through the defined UTP interface
- Integrated DSP engine for higher layer content and privacy security acceleration
- HTTP-based GUI management, automatically brings up web-based GUI control from on-board flash
- Ultra-simplified setup, including auto detection of access point and bridge mode, and security preconfiguration with single-touch Wi-Fi Protected Setup (WPS) when new devices are added to the network
- IGMP Snooping, Multicast-to-Unicast conversion
- TR-069 standard remote management
- Security support for WEP, WPA, WPA2, TKIP
- Channel state aware link management using real time spectrum analysis for sustained link robustness
- Space Time Block Coding (STBC)

Benefits

Wireless video delivery to every corner throughout the home:
- Ultra-reliable video delivery over Wi-Fi throughout the home, no more dead spots
- Builds a carrier-class residential gateway, delivering 5GHz broadband video distribution
- Point to Multipoint solution supporting more than 10 concurrent HD streams
- At least 200 feet coverage

Fast and reliable high quality wireless video delivery:
- Up to 300 Mbps PHY/Data link speed with digital beamforming enabled
- Near-zero Packet Error Rate
- Up to 25 dB performance improvement over existing WLAN configurations
- Uses four standard omni-directional antennas

Easy installation, centralized management and automatic configuration:
- Simple self-installation
- Auto detection of AP and Bridge mode
- Full Linux stack centralized real-time status, PHY statistics and management
- WPS for automatic secure configuration, User GUI for custom configurations
- Advanced web GUI for RF test and verification
**Applications**

- 5 GHz Wireless HD Video Bridge
- Wireless HDTV Tx/Rx
- GMII/MI modules for:
  - STB
  - HDTV with integrated video decoder
  - Residential Gateways (cable, PON, xDSL etc.)
  - Video Surveillance
  - Home NAS with AP

**QHS600x-802.11n Specifications**

- Frequency Band: 4.900-5.850 GHz
- I/O Interfaces: GMII, MII, Ethernet, USB 2.0 OTG
- Memory Interface: DDR1 SDRAM, parallel Flash
- Peripheral Interfaces: GPIOs, UART, SPI, I2C
- Wireless Standards: 802.11a/n, 802.11i (WEP, WPA, WPA2, RADIUS), 802.11d, 802.11e (WMM, WMM-PS), 802.11j, 802.11h, 802.11k, draft 802.11s
- 40 MHz crystal oscillator, +/- 20 ppm (XOSC)
- LED status: Ethernet, Wireless LAN, Wireless Link Quality
- Power requirement for adapter card: 12V DC
- Four 50 ohm, 5GHz u.FL antennas connectors
- External PA and LNA for optimal range & performance

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