QUALCOMM®

AR6400
HomePlug® AV Chipset

Qualcomm® AMP™

This old house has a few new tricks. With connectivity utilizing existing infrastructure, we've got performance wired-in.

Solution Highlights

- HomePlug AV MAC & PHY plus ADC and DAC in a 196-contact LFBGA, Pb-free package
- MII (Host & PHY) interface
- Supports 1024/256/64/16/8-QAM, QPSK, BPSK and ROBO Modulation Schemes
- 128-bit AES Link Encryption with key management for secure powerline communications
- Windowed OFDM with noise mitigation based on patented line synchronization techniques improves data integrity in noisy conditions
- Dynamic channel adaptation and channel estimation maximizes throughput in harsh channel conditions
- Advanced Turbo Code Forward Error Correction (France Telecom – TDF – Groupe des écoles des télécommunications Turbo codes patents license)

Combining Powerline with Qualcomm's rich portfolio of WLAN and Ethernet products, we are transforming networking in the digital home with unified Wi-Fi/PLC/Ethernet gateways, and with dynamic meshed networks employing the nimble combination of Wi-Fi and Powerline adapters throughout the home. The combination of these great connectivity technologies will enable a new class of networking for consumer electronics, computing as well as mobile devices in the home that benefit users with added capacity, flexibility, reliability and ease-of-deployment.

Technology Overview

Qualcomm is committed to addressing the dramatically expanding connectivity requirements of the digital home. The AR6400 is a third-generation HomePlug AV-based solution that delivers carrier-grade broadband communications over both power lines and coax.

For consumers and service providers using powerline, AR6400 technology enables fast, wired networking within a home using the home's existing electrical wiring. It can also be used over coax, providing last-mile broadband access in multi-dwelling units.
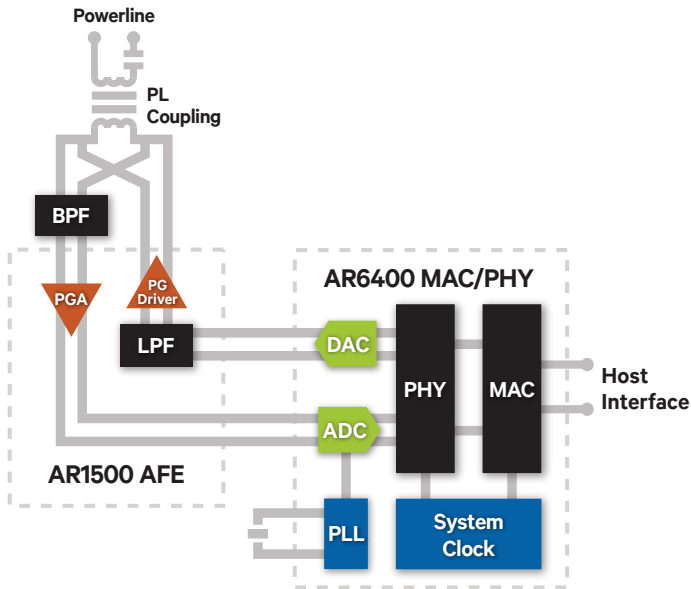
Product Overview

- Third-generation HomePlug AV-based powerline two-chip chipset
- High-performance cost-down solution

The Qualcomm AR6400/AR1500 HomePlug AV chipset solution is comprised of the AR6400 Medium Access Controller (MAC)/Physical layer (PHY) IC and the AR1500 AFE/Line Driver IC. The Qualcomm HomePlug AV transceiver is optimized for multi-media streaming applications and is fully compliant with the HomePlug AV standard to reliably deliver up to 200 Mbps PHY rate over powerline wiring.

In addition to the complete MAC and PHY, the AR6400 includes an Ethernet Media Independent Interface (MII) and an external Synchronous Dynamic Random Access Memory (SDRAM) interface. In addition, the AR6400 includes the Analog-to-Digital (A/D) and Digital-to-Analog (D/A) converters required for analog interface to the AR1500 AFE/Line Driver IC. The AR1500 AFE/Line Driver IC includes a Tx filter, a programmable-gain line driver and a programmable-gain Rx amplifier. The programmability of these amplifiers opens up new and important signal optimization functionality.

HOMEPLUG®
POWERLINE ALLIANCE

AR6400 System Architecture

PL25
Reference Design Highlights
- HomePlug AV Wall Adapter Reference Design
- Based on 3rd-generation HomePlug AV compliant AR6400/AR1500 Chipset
- 200 Mbps PHY rate

AR6400 MAC/PHY Transceiver
- Optimized for multi-media streaming applications
- HomePlug AV compliant
- Supports MII (Host & PHY) interfaces
- Supports SDRAM Memory
- Support EuP Low Power Directive

AR1500 AFE/Line Driver IC
- Companion to the AR6400 MAC/PHY IC
- Includes Tx Line Driver
- Tx amplifier offers programmable gain control
- Includes Rx Programmable Gain Amplifier

AR6400 Specifications

Frequency Band	2 – 30 MHz
Network Standard	HomePlug AV
Modulation Technology	Windowed OFDM
FEC Coding	Turbo Code
Hardware Encryption	AES 128-bit
Quality of Service	VLAN/TOS/Packet Classifier/Quasi Error Free Delivery for IPTV service
Communications Interface	MII (Ethernet)
Peripheral Interface	SPI/UART
Memory Interface	SDRAM
Supported Data Rates	200 Mbps PHY rate
Low Power Design	Support EuP Low Power Directive
Customization Functionality	LED and Programmable Switches
Security	Supports "Simple Connect" with Push Button Encryption and Network Management Key
Diagnostic and Management Interface	HomePlug AV generic and vendor specific Management Message Entries (MME) TR-069 Remote Management
Worldwide Regulatory Support	Programmable Power Amplitude adjustments
Tools	Atheros Powerline Toolkit that supports Linux/Windows/RTOS OS
	Complete Software Development Kit User Interface Utility

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