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Audio Streaming on Ethernet or Powerline Reference Design

Features

- Support 2-channel stereo audio without compression
- Data formats: left justified, 1^2S
- Optional S/PDIF transmit
- Audio resolution: 16/24 bits
- Sampling rate 44.1/ 48/ 96/ 192KHz
- High SNR and THD+N
- Short audio latency (TX to RX = 15ms~2S)
- Configurable delay time
- Support multicast or multiple unicast
- IR blaster
- Multiple pairs of TX to RX
- L-ch & R-ch synchronization control

Introduction

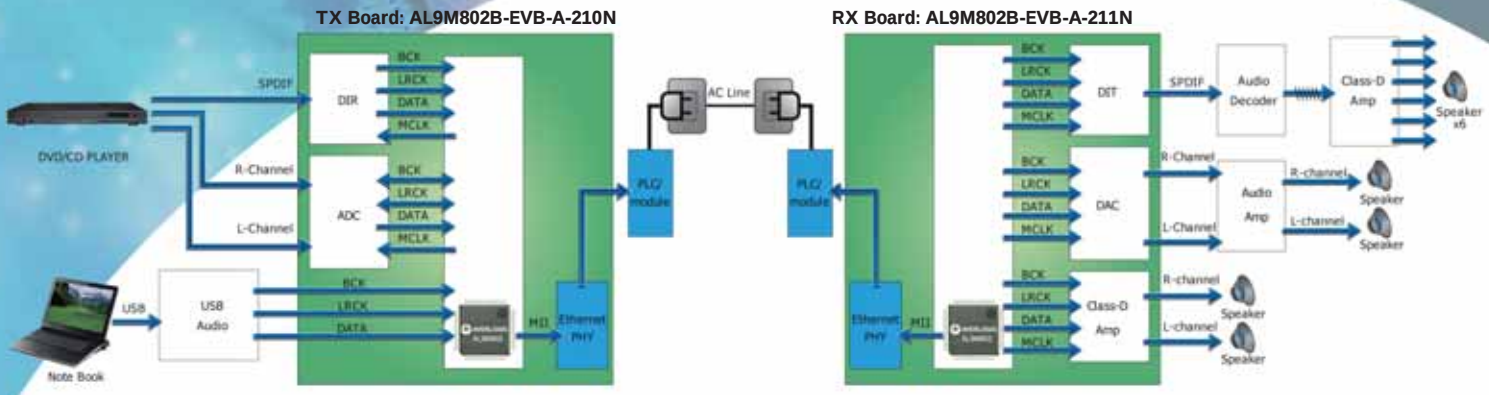
Averlogic audio board supports Ethernet interface, core chip uses AL9M80x solution for Ethernet or Power Line real-time streaming of no-compress stereo audio. The AL9M80x chip, supports 16/24 bits with 44.1K/ 48K/ 96K/ 192KHz sample rate, I^2S, and MII interface. Audio data formats support Left Justified, I^2S with external SDRM as data buffer. This demo board has Ethernet Port interface that enables audio transmission by direct Ethernet connection, by external PLC adapters (Ethernet interface), or by Home PNA. The EVB Kit includes a pair of external PLC adapters (Ethernet to Powerline), which users can optionally test audio quality through PLC.

Specifications

I/O of TX Module	Input	Audio: two channels L/R-RCA; one channel S/PDIF
	Output	Ethernet: one port
I/O of RX module	Input	Ethernet: one port
	Output	Audio: two channels L/R-RCA; one channel S/PDIF
Analog Audio Mode System	Audio Input	L/R stereo input (RCA connector)
	Audio Channel	Two channels
	Sampling Rate	48KHz or 96KHz selectable
	Resolution	16-bit or 24-bit selectable
	Analog Signal Level	TX input maximum 3Vpp; RX output maximum 3Vpp
	Frequency Response	20Hz ~ 22KHz ±0.2dB(fs=48KHz); 20Hz ~ 40KHz±0.2dB (fs=96KHz)
	SNR	105dB (typical)*
	Dynamic Range	105dB (typical)*
	THD+N	96dB (typical)*
	Channel Separation	48KHz sampling 102dB at 1KHz, -1dB full scale*
	TX Analog Input Impedance	15KOhm (typical)*
	RX Analog Output Impedance	10KOhm (typical)*
		* Note: Reference data provided by AK5381 ADC and WM8728 DAC.
S/PDIF Audio Mode System	PCM Mode	Two channels
	Data Mode	AC3/ dts/ other compressed data
	Sampling Rate	32KHz, 44.1KHz, 48KHz, 96KHz or 192KHz
	Data Format	24-bit I^2S, 16-bit I^2S, 24-bit left justified or 16-bit left justified
	S/ PDIF Connector	TX: 75Ohm coaxial cable
		RX: 75Ohm coaxial cable
Network Transmission	Transmission Media	Ethernet (optional external PLC adapter)
	PLC-to-Ethernet Bridge	Compatible PLC bridge: HomePlug 1.0, Turbo, HomePlug AV, DS2, Panasonic-HD-PLC
	Video QoS	Hard-wired
	Latency Time	latency TX to RX =15ms~2S
	Multicast	Support one TX to (Max) 4 RX
Power	Power adapter	DC- 6 ~ 7.5V/ 1A
Power Consumption	TX module	DC- 7.5V ~ 6.0V/ 500mA (typical)
	RX module	DC- 7.5V ~ 6.0V/ 510mA (typical)
Environment	Temperature	Operating: 10~55(°C); storage : -20~ -70(°C)
Physical Dimensions	Transmitter	102(W) x 100(L) x 15(H) mm
	Receiver	102(W) x 100(L) x 15(H) mm

AL9M802B-EVB-A-2I0N, AL9M802B-EVB-A-2I IN, AL9M802B-SDK-A-2I

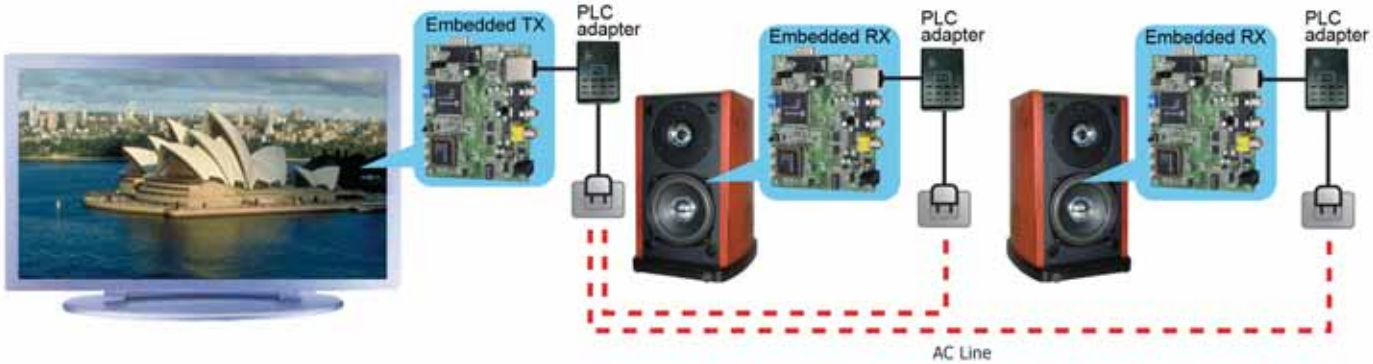
Block Diagram



Application Scenario

Scenario 1: One-to-One Transmission

Scenario 2: One-to-Two Embedded Transmission Application



Ordering Information

EVB: AL9M802B-EVB-A-210N (TX module) AL9M802B-EVB-A-211N (RX module) *A pair of Audio EVB(TX + RX modules)	• User manual • A pair of Ethernet to Powerline adapters
Design Kits: AL9M802B-SDK-A-21	• Free one pair of Audio TX + RX (including PLC adapters) • Application notes of SW and HW • Schematic (DSN), Layout guide, Gerber file • BOM list • Brief AL9M802 datasheets • Free sample 12pcs of AL9M802 chip