

Operation Principles:

LSI L80225/B: Ethernet PHY

Single Chip 100Base-TX /10Base-T Physical Layer Solution
MII Interface To Ethernet Controller

ATMEL AT76C510: A RISC CPU with IEEE802.11b MAC layer.

An ARM7TDMI RISC CPU core.

MAC layer compliant with IEEE802.11 and IEEE802.11b.

Supports data rate of 1Mbps, 2Mbps, 5.5Mbps and 11Mbps, with automatic fallback.

Supports Wire Equivalence Privacy(WEP) as in IEEE802.11.

Digital interface with HFA3861B, the DSSS baseband processor.

Built in USB interface, for connection to a desktop or notebook PC, with 12Mbps data rate.

Data flow is bidirectional from PC, through USB interface, through CPU and MAC, to HFA3861B.

A 32Mhz oscillator is used to provide main clock of the RISC CPU.

The external 12MHz crystal provides clock of USB interface.

Flash ROM and SRAM: Memory resources of CPU.

Flash ROM is nonvolatile memory. Firmware program is stored in flash ROM.

SRAM is volatile memory resource for CPU operation.

HFA3861B: DSSS baseband processor.

Direct Sequence Spread Spectrum(DSSS) baseband modulator/demodulator.

Supports Differential Binary Phase Shift Keying(DBPSK),

Differential Quadrature Phase Shift Keying(DQPSK),

and Complementary Code Keying(CCK),

as PHY layer in IEEE802.11 and IEEE802.11b.

Data Rate(Mbps)	1	2	5.5	11
Modulation	DBPSK	DQPSK	CCK	CCK

FCC compliant processing gain.

Digital data from MAC layer is modulated to produce analog I/Q baseband signal for transmission.

Received analog I/Q baseband signal is demodulated into digital data and sent to MAC layer.

Baseband spectrum occupies 0~11MHz, for any of the above modulation or data rate.

On chip analog to digital and digital to analog circuit for analog I and Q inputs and outputs.

Main analog signals are TXI+, TXI-, TXQ+, TXQ-, RXI+,RXI-, RXQ+, and RXQ-.

Operating clock is provided by a 44MHz oscillator.

HFA3783: I/Q modulator/demodulator.

Baseband I/Q signals are combined and converted to IF(Intermediate Frequency).

IF center frequency is 374MHz. Bandwidth is 22MHz.

IF signals are IF_TX+, IF_TX-, IF_RX+ and IF_RX-.

IF signals are sent to or from the SAWTEK bandpass filter, and then converted to RF by HFA3683.

Baseband I/Q signals are TXI+, TXI-, TXQ+, TXQ-, RXI+,RXI-, RXQ+, and RXQ-.

Baseband I/Q signals are fed from or to the baseband processor, HFA3861B.

An on chip frequency synthesizer is used to generate the 374MHz Local Oscillator frequency required by the mixer.

An external VCO of 748MHz center frequency is used in the frequency synthesizer loop.

The 44MHz oscillator provides the reference frequency required by the frequency synthesizer.

HFA3683: RF to IF converter.

IF signals are converted to or from RF(Radio Frequency) signals.

RF signals lie in the ISM(Industrial Scientific Medical) band, 2.4~2.5GHz, as in IEEE802.11 and IEEE802.11b.

An on chip frequency synthesizer is used to generate the Local Oscillator frequency, 2.038~2.110GHz, required by the mixer.

An external VCO of 2.074GHz center frequency is used in the frequency synthesizer loop.

The 44MHz oscillator provides the reference frequency required by the frequency synthesizer.

HFA3983: Power amplifier for transmission.

TX/RX switch: Transmission or reception multiplexing switch.

Transmission/reception are half duplex.