

Hyperlink Extended Range Wireless LAN Kit

FCC ID: MYF-WL2401

Product Description

Introduction

The Hyperlink Extended Range Wireless LAN Kit is a direct sequence spread spectrum wireless transceiver providing 11 Mbit/sec data rate to support wireless connections in an IEEE 802.3 LAN. Equipped with a Hyperlink Extended Range Amplified Antenna System, this product offers a high-performance long-range building-to-building wireless networking solution.

This kit incorporates Lucent Technologies WaveLAN technology. WaveLAN uses a state-of-the-art direct sequence spread spectrum technology to implement robust 11 Mbps transmission, and offers true "Plug and Play" installation.

System Features:

This system has the following features:

- IEEE 802.11 Compatibility.
- Wireless 11 Mbps data rate.
- State-of-the-art spread spectrum technology provides reliable, secure, long range, radio link operation.
- True "Plug and Play" installation for compatibility with all 802.3 and Ethernet II LAN devices, all operating systems and all protocol stacks.
- PCMCIA Form Factor
- Seven (7) user-selectable channels of operation.
- Remote mounted bi-directional amplifier to optimize transmit power and eliminate the effects of system cable losses.

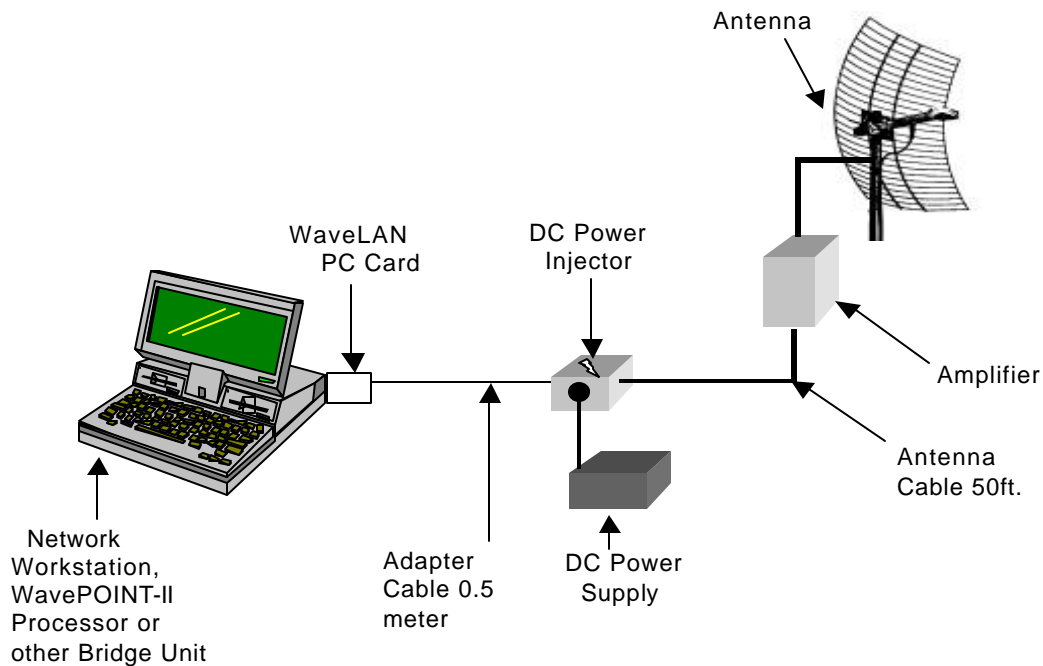
System Contents:

Each system contains the following items:

- WaveLAN/Orinoco Turbo 11 Mbit IEEE 802.11 PC Card
- HyperAmp Remote Mounted Amplifier
- HyperGain Antenna (Omni, Yagi, Panel or Grid)
- HyperGain DC Power Injector/Lightning Protector
- 50 ft. Antenna Cable
- 0.5 meter Jumper Cable
- Mounting Hardware
- Manual

Overall System Configuration

The overall system configuration is shown below.



Antennas

The system is available with one of eight possible antennas:

Antenna Type	Specified Antenna Gain (dBi)	Antenna Description	Antenna Type
HG2408P	7.5	Panel (patch)	Directional
HG2408U	8.0	Co-linear Omni	Omni-directional
HG2412P	12.0	Panel (patch array)	Directional
HG2415Y	14.5	Radome Yagi	Directional
HG2415U	15.0	Co-linear Omni	Omni-directional
HG2415G	15.0	Grid	Directional
HG2419G	19.0	Grid	Directional
HG2424G	23.5	Grid	Directional

Amplifier and DC Power Injector

The amplifier included with the system is a linear, high-speed half-duplex bi-directional amplifier which provides final-stage transmit power amplification as well as a low-noise receive LNA which compensates for feed-cable attenuation.

The DC Power Injector (also known as a "Bias-T") is an in-line device which couples DC power onto a coaxial cable, enabling the cable to carry both RF (radio frequency) signals and DC power.

The amplifier is mounted outdoors at the antenna's feed-point. It is powered remotely through the coaxial antenna feed cable by the way of the DC Power Injector. The DC Power Injector included with the kit also provides integral lightning protection.

Amplifier Power Levels and System EIRP

The amplifier peak power level is factory configured as follows:

Antenna Type	Specified Antenna Gain (dBi)	Maximum Output Power at Antenna Terminal (dBm)	Total EIRP (dBm)
HG2408P	7.5	24	31.5
HG2408U	8.0	24	32.0
HG2412P	12.0	20	32.2
HG2415Y	14.5	20	34.7
HG2415U	15.0	20	35.2
HG2415G	15.0	20	35.2
HG2419G	19.0	17	36.0
HG2424G	23.5	11	35.1

Operating Frequency / Channel Settings

The Hyperlink Extended Range WaveLAN System operates in seven (7) different operating frequency channels. These seven channels are a sub-set of the eleven standard IEEE 802.11 channels.

NOTE: This equipment is not authorized for and may not be operated on IEEE channels 1, 2, 10, and 11. If the user wishes to interoperate with other IEEE 802.11 WaveLAN-compatible equipment he must set that equipment to one of the seven channels (A-G) shown in the table below:

Channel	Corresponding IEEE 802.11 Channel	Channel Center Frequency
NOT USED	1	2412
NOT USED	2	2417
A	3	2422
B	4	2427
C	5	2432
D	6	2437
E	7	2442
F	8	2447
G	9	2452
NOT USED	10	2457
NOT USED	11	2462

This WAVELAN IEEE PC Card product provides a WaveLAN compatible wireless connection for portable and mobile computers in accordance with IEEE standard 802.11 DSSS. It can work at 11, 5.5 2 or 1 Mbps. The operation is in accordance with IEEE 802.11.

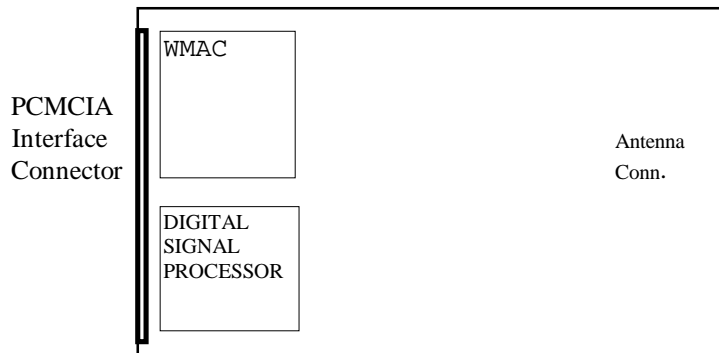
The product contains the following blocks:

- PCMCIA interface
- Wireless Medium Access Control (WMAC); this chip is used for handshaking with the PCMCIA bus and for handling the IEEE protocol; it also does frequency management and interfaces to FlashROM for parameters on frequencies and Call codes. Here also selection for 11, 5.5, 2 or 1 Mbps is handled.
- Digital signal processor takes care of all modulation/demodulation for DSSS for all above rates and can do selection out of 2 receiving antennae
- Antenna function, provides connection to external antenna.

Optionally it can be equipped with:

- a factory installable data encryption feature (WEP), and
- a BootROM for diskless workstation.

Block Diagram



The technical specification is as follows on the next page.

Hyperlink 11 Mbit/sec Outdoor Wireless LAN Kit 2.4 GHz

Data Signalling Rate:	11, 5.5, 2 or 1 Mbit/s
Media Access Protocol:	According to IEEE 802.11 DSSS, CSMA/CA (Collision Avoidance)
Bit Error Rate:	Better than 10^{-8}
Base-Band Modulation: (before spreading)	- 2 Mbps: Differential Quadrature Phase Shift Keying (DQPSK) 2 bits/symbol - 11 and 5.5 Mbps: Complementary Code Keying Differential Quadrature Phase Shift Keying (DQPSK CCK)
Spread Spectrum:	Direct Sequence with 11 chips/symbol interval. Pseudo random Barker code sequence: { 1 -1 1 1 -1 1 1 1 -1 -1 -1 } Chipping Rate: 11 Mchips/s
Carrier Frequency	Selectable from factory pre-programmed set which is a sub-set of the channels specified by IEEE 802.11: 2422, 2427, 2432, 2437, 2442, 2447, 2452
Peak Output Power	250 mW rms power (24 dBm)
Antenna (indoor):	e.g. Range Extender AIN24-OD-0202: - Gain 0 dBi - Polarization diversity Hor/Vert.
Spurious Emissions etc:	Satisfies the USA Federal Comm. Commission (FCC) rules Part 15.247