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Introduction

After a long hiatus, I've started working on updating these pages again. Currently I'm concentrating on checking the vendor info and URLs, and then I'll get more into the product data and other stuff. I've dropped the color coding to highlight changes, as it was too much of a headache to maintain. Instead, I'm keeping a in which I'll record the changes as I make them.

This is a survey of currently available wireless RF modem products suitable for wireless LAN and MAN applications. At the moment, this survey includes only those products which are suitable for unlicenced operation in the ISM bands: 900 MHz (902-928 MHz), 2.4 GHz (2400-2483.5 MHz) and 5.8 GHz (5725-5850 MHz). Some of these products are intended for very short range wireless applications, while others are designed to be used as longer-haul point-to-point wireless bridges, and some can be used in either role. No attempt has been made to differentiate between these usages in this survey. Also, I don't necessarily list every product in each vendor's wireless product line. Some product lines have many different variants, and the tables would get too unwieldy if I tried to list them all, but I try to include some representative products from each manufacturer. I tend to omit the "access point" products, and products in which the WLAN modem is integrated into something else, such as a portable computer. The vast majority of the products listed use spread spectrum modulation techniques, since that is where my main

interest lies.

Most of the information presented here was taken from manufacturers' literature, so the figures concerning data rates and ranges are subject to specmanship. Caveat emptor! Accurate pricing information is also hard to come by, and subject to inaccuracies, so don't take what you see here as gospel. It's also entirely possible that some of the products listed are actually "vaporhardware". If you have any information along these lines, please let me know.

This survey covers only complete wireless modem products (i.e., plug-in cards or standalone units). It does not cover chip sets, amplifiers, etc. Many of these other products can be found in Lee Fry's Spread Spectrum Device Compendium (unfortunately, now getting woefully out of date).

Infrared wireless technology is a viable alternative for some WLAN applications. This is beyond the scope of this survey, but Alexey Vladimirov has created an IR WLAN Product Directory which is in the same format as this one. Go take a look!

Due to a number of requests, I have started a page listing sources of antennas for WLAN/MAN applications. As with the modem listings, I cover only the manufacturers, not resellers. Most of the WLAN manufacturers can supply a variety of antennas, of course, but this list will provide some alternate (and quite possibly less expensive) sources. The antenna listing contains only a brief overview of WLAN-related product lines, not details on individual products.

I've added a new page for links to WLAN-related resources which don't fall into the other categories in this directory, and a change log to track the changes made to this website.

Lastly, I try to respond to all of the email I get, but please note that I also have a fulltime day job, and I maintain this stuff in my "spare" time. I may provide some advice, but if you expect me to provide free consulting engineering, you are likely to get what you paid for. :-)

Accesses to this page since 7 June 96: 

Last Updated: 28 Nov 99

Product Listings: 915 MHz

Key to modem type:
DS: Direct Sequence Spread Spectrum
FH: Frequency Hopping Spread Spectrum
NB: Narrowband (non-spread FSK, MSK, PSK, etc.)

915 MHz Wireless LAN/MAN Modem Products

Vendor	Product	Type	Data Rate	Power	Maximum Range Indoor/Outdoor		Configuration	Price ($US)	Miscellaneous
Aerotron	NLR-900T	DS	19.2 Kbps	725 mW	450 m	2.4 km	standalone (RS232)	995	Other versions available
Aironet	IC1200	DS	Up to 860 Kbps	450 mW	300 m	600 m	ISA card (1/2 size)	-	-
Aironet	PC1200	DS	Up to 860 Kbps	250 mW	300 m	600 m	ISA card PCMCIA Type II	-	-
Aironet	BR1000-E	DS	Up to 860 Kbps	450 mW	-	10 km	Standalone (ethernet)	-	12 channels. Several antenna options.
Apex Wireless	SS-200	FH	166 Kbps*	50 mW, 1 W	150-450 m	>3 km	Serial (RS-232)	-	*Channel bit rate. Serial port is 115.2 Kbps half-duplex or 57.6 Kbps simulated full-duplex. Has repeater & multipoint capability.
C-SPEC	WaveLAN PC-AT Wireless Adapter	DS	2 Mbps	250 mW	240 m	-	ISA card	695	-
C-SPEC	WaveLAN PCMCIA Wireless Adapter	DS	2 Mbps	250 mW	240 m	-	PCMCIA Type II	695	-
C-SPEC	OverLAN Wireless Bridge/Router	DS	2 Mbps	250 mW	240 m	16 km	standalone (ethernet)	3995	WaveLAN compatible, with roaming. Includes high gain antenna.
Cylink	AirLink 19MPE	DS	1.2 - 19.2 Kbps	800 mW	-	-	standalone (RS232/422, V.35)	2795	BPSK, 1.5 MHz bandwidth.
Cylink	AirLink 64MP	DS	1.2 - 64 Kbps	800 mW	-	48 km	standalone (RS232/422, V.35)	2995	BPSK, 5.1 MHz bandwidth.
Cylink	AirLink 128	DS	128 Kbps	800 mW	-	-	standalone (RS232/422, V.35)	3295	BPSK, 10.2 MHz bandwidth.
DATA-LINC	SRM6000	FH	Up to 115.2 Kbps	0.1-1 W	450 m	30-48 km	standalone (RS232/422/485)	1775	Several antenna options available. Has repeater capability.

DEC	Roamabout 915 DS/ISA	DS	2 Mbps	250 mW	240 m	-	PCMCIA Type II	695	-
Digital Wireless	WIT915	-	38.4 Kbps	1 W	-	-	OEM module (RS232)	-	Range up to "several miles"
FreeWave	DGR-115	FH	2.4 - 115.2 Kbps	1 W	-	32 km	standalone (RS232)	1250	3" whip antenna, SMA connector for external antenna.
GRE	GINA 6000NVK	DS	64 Kbps	725 mW	240 m	19 km	standalone (RS232/449, V.35)	1679	Other versions available.
Inficom	Infilink T1	-	1.544 Mbps	100 mW	-	16 km	standalone (V.35)	2995	E1 (2.048 Mbps) version also available ($3995).
Inficom	Infilink ATM	-	25.6 Mbps	100 mW	-	16 km	standalone (ATM)	9995	-
KarlNet	WaveLAN PC-AT Wireless Adapter	DS	2 Mbps	250 mW	240 m	-	ISA card	695	-
KarlNet	WaveLAN PCMCIA Wireless Adapter	DS	2 Mbps	250 mW	240 m	-	PCMCIA Type II	695	-
KarlNet	Wireless KarlBridge	DS	2 Mbps	250 mW	-	16 km	standalone (ethernet)	2895	WaveLAN compatible - bridging, multipoint and roaming.
KarlNet	Wireless KarlBridge/Router	DS	2 Mbps	250 mW	-	16 km	standalone (ethernet)	3295	WaveLAN compatible - bridging, multipoint, IP routing and roaming.
Lucent	WaveLAN PC-AT Wireless Adapter	DS	2 Mbps	250 mW	240 m	-	ISA card	545	-
Lucent	WaveLAN PCMCIA Wireless Adapter	DS	2 Mbps	250 mW	240 m	-	PCMCIA Type II	495	-
Metricom	Ricochet Wireless Modem	FH	100 Kbps*	-	-	500 m	standalone (RS232)	599	Modem $299 with 1 year network service. *Raw data rate - typ. user rate "9.8-28.8 kbps"
Microhard	MRX-900	FH	2.4-115.2 Kbps	1 W	-	>30 km	standalone (RS232)	995	20 user selectable hop patterns. OEM version (MHX-915) available for $495
Norand	RB4020 Wireless Network Radio Base	DS	192 Kbps	1 W	-	-	standalone (RS485)	-	LAN interface 460 kbps. Also has sync/async host ports up to 64 kbps.
Norand	RCB4000 Wireless Network Integrated Controller/Base	DS	192 Kbps*	1 W	-	-	standalone (RS232)	-	*User throughput 38.4 kbps
O'Neill	LawnII-232	DS	38.4 Kbps	40 mW	90 m	915 m	standalone (RS232)	275	Other versions available, e.g., LawnII-BAT battery-powered version ($395)

OTC Telecom	AirEZY 900	DS	1 Mbps	100 mW	150 m	240 m	standalone (ethernet: BNC or RJ-45)	-	-
Pinnacle	PinnacleLink	DS	2 Mbps	4 W ERP	-	26 km*	standalone (ethernet)	2195	*With optional amplifiers. Point-to-point and multipoint capability.
Solectek	AIRLAN Bridge Plus	DS	2 Mbps	up to 4 W ERP	-	5 km	standalone	2495	-
Solectek	AIRLAN/Bridge 203	DS	2 Mbps	-	-	5 km	standalone	2495	-
UNICOM	RF 915	DS	Up to 38.4 Kbps	1 mW - 1 W	-	5 km	standalone (sync/async serial)	-	Half or Full-duplex. 21 channels, 1 MHz bandwidth.
Utilicom	LongRanger 2020/ISM900-4TS256	DS	Up to 256 Kbps	0.25 - 4 W ERP	-	50 km*	standalone (RS232/RS422/EIA530/V.35)	2550*	*Depends on version. Directional antennas extra. Full-duplex.
Wave Wireless	SPEEDLAN Plus	DS	2 Mbps	0.25 W	-	16 km	standalone (ethernet)	3900	Bridge/router, includes antenna & cable
Webgear	Aviator Wireless	NB	150 Kbps	0.7 mW	25 m	-	standalone (parallel port)	129	Approx. transfer rate 75 Kbps
Wi-LAN	Hopper DS Wireless Modem	DS	19.2 Kbps	0.5 W	-	10 km	standalone (RS232)	1100	2.5 Mchips/s, 3 MHz bandwidth
Wi-LAN	Hopper FD Wireless Modem	DS/FH	19.2 Kbps*	0.5 W	-	9.5 km	standalone (RS232)	1495	*Full duplex (38.4 kbps max in half duplex)
Wi-LAN	Hopper Plus Wireless Ethernet Bridge	DS	1.45 Mbps	0.5 W	-	9.5 km	standalone (ethernet)	2895	8 Mchips/s
Xetron	Hummingbird 902	FH	19.2 Kbps	1 W	240 m	32 km	OEM card (RS232/485 or CMOS)	-	440 channels. Lower-power versions available.
Young Design	RM910-INT	DS	78.4 Kbps	20 mW	100 m	200 m	standalone(RS232)	535	Internal antenna version, 38.4 Kbps. Pt-to-pt or pt-to-multipoint.
Young Design	RM910-EXT	DS	78.4 Kbps	20 mW	200 m	1 Km (with Yagi Ant.)	standalone(RS232)	610	Same as above except connector for external antenna.

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Product Listings: 2.4 GHz

Key to modem type:
DS: Direct Sequence Spread Spectrum
FH: Frequency Hopping Spread Spectrum
NB: Narrowband (non-spread FSK, MSK, PSK, etc.)

2.4 GHz Wireless LAN/MAN Modem Products

Vendor	Product	Type	Data Rate	Power	Maximum Range Indoor/Outdoor		Configuration	Price ($US)	Miscellaneous
Aerotron	NLR-2.4T	DS	19.2 Kbps	500 mW	450 m	2.4 km	standalone (RS232)	1695	Other versions available
ACT Networks	SkyWave Wireless Modem	FH	64 Kbps - 2.048 Mbps*	50 mW	-	32 km	standalone (RS422/530/V.35)	-	*Half-duplex. Full-duplex up to 1.024 Mbps. Adaptive Equalization.
ADTRAN	Tracer	DS	2xT1 or 1xE1	100 mW	-	48 km	standalone - DS1/DSX-1 (T1), G.703 (E1)	-	Separate RF deck, mast mountable
Aironet	IC2200	DS	Up to 2 Mbps	50/100 mW	150 m	300 m	ISA card (1/2 size)	-	5 channels
Aironet	PC2200	DS	Up to 2 Mbps	50/100 mW	150 m	300 m	PCMCIA Type II	-	5 channels
Aironet	UC2200-E UC2200-S	DS	Up to 2 Mbps	100 mW	150 m	300 m	Standalone: ethernet (-E) or RS-232 (-S)	-	5 channels
Aironet	PC3500	FH	Up to 2 Mbps	100 mW	150 m	600 m	PCMCIA Type II	-	IEEE 802.11 compliant
Aironet	UC3500-E UC3500-S	FH	Up to 2 Mbps	50/100/200 mW	150 m	300 m	Standalone: ethernet (-E) or RS-232 (-S)	-	
Aironet	PC4500	DS	1 or 2 Mbps	50/100 mW	75 m (2 Mbps) 100 m (1 Mbps)	300 m (2 Mbps) 500 m (1 Mbps)	PCMCIA Type II	-	IEEE 802.11 compliant
Aironet	BR2000	DS	1 or 2 Mbps	100 mW	-	19 km (2 Mbps) 40 km (1 Mbps)	Standalone (ethernet)	-	Various antenna options
Aironet	BR2040	DS	1,2 or 4 Mbps	100 mW	-	13 km (4 Mbps) 40 km (1 Mbps)	Standalone (ethernet)	-	Various antenna options

Aironet	PC4800	DS	1-11 Mbps	50 mW (US/Can: 100 mW)	30 m*	150 m*	PCMCIA Type II	-	*110 m / 550 m @ 1 Mbps. IEEE 802.11 @ 1/2 Mbps. Other products available (access point, ISA/PCI, etc)
Altvater	WIMANline	FH	625 Kbps*	100 mW (US: 1W)	-	5 km (US: 30 km)	standalone (RS232, X.21/V.11)	-	*User data rate up to 115.2 Kbps async, 128 Kbps sync.
Apex Wireless	SS-300	FH	166 Kbps*	50 mW, 1 W	150-450 m	>16 km	Serial (RS-232)	-	*Channel bit rate. Serial port is 115.2 Kbps half-duplex or 57.6 Kbps simulated full-duplex. Has repeater & multipoint capability.
Breezecom	AP-10 Access Point	FH	1-3 Mbps	10/100 mW	100 m	500 m	standalone (10BaseT)	1295	-
Breezecom	AP-10 PRO Access Point	FH	1-3 Mbps	10/100 mW	150 m	1 km	standalone (10BaseT)	1495	Up to 30% higher throughput than standard version.
Breezecom	SA-10 Station Adapter	FH	1-3 Mbps	10/100 mW	100 m	500 m	standalone (10BaseT)	695	-
Breezecom	SA-10 PRO Station Adapter	FH	1-3 Mbps	10/100 mW	150 m	1 km	standalone (10BaseT)	695	Up to 30% higher throughput than standard version.
Breezecom	SA-40 Station Adapter	FH	1-3 Mbps	10/100 mW	100 m	500 m	standalone (4X 10BaseT)	1195	Three antenna options
Breezecom	SA-40 PRO Station Adapter	FH	1-3 Mbps	10/100 mW	150 m	1 km	standalone (4X 10BaseT)	1195	Up to 30% higher throughput than standard version.
Breezecom	SA-PX PCMCIA Adapter	FH	1 Mbps	50 mW	70 m	300 m	PCMCIA	395	Licensed from Xircom.
Breezecom	SA-PC PRO PC Card	FH	1-3 Mbps	10/100 mW	-	600 m	PCMCIA	565	Up to 30% higher throughput than standard version.
Breezecom	WB-10 Wireless Bridge	FH	1-3 Mbps	0.1-4 W ERP	200 m	1-10 km	standalone (10BaseT)	1995	Full Duplex. Many antenna options.
Breezecom	BreezeLINK-121 Wireless E1/T1	FH	56 Kbps - 2.048 Mbps	50 mW	-	1-32 km	standalone (T1/E1, V.35, RS-530, X.21)	-	Range depends on data rate, model.
Clarion	M10	DS	10 Mbps	-	100 m	8 km*	standalone (ethernet AUI)	-	*With optional high gain antennas.
CRL	DS16-24/ISA	DS	1 Mbps	60 mW	50 m	1 km	ISA card*	-	*Radio/modem unit is external (RS485 interface).
C-SPEC	WaveLAN PC-AT Wireless Adapter	DS	2 Mbps	88 mW	240 m	-	ISA card	695	-
C-SPEC	WaveLAN PCMCIA Wireless Adapter	DS	2 Mbps	88 mW	240 m	-	PCMCIA Type II	-	-
C-SPEC	OverLAN Wireless Bridge/Router	DS	2 Mbps	88 mW	150 m	8 km	standalone (ethernet)	3995	WaveLAN compatible - IP routing, roaming. Includes high gain antenna.
C-SPEC	OverLAN RF-10 Wireless Bridge/Router	DS	10 Mbps	-	-	24 km*	standalone (ethernet)	9495	*With optional amplifiers. Standard range 5 km.

Cylink	AirLink 64SMP	DS	64 Kbps	650 mW	300 m	48 km	standalone (RS232/422, V.35)	3395	BPSK, 8 PN codes. 5.1 MHz bandwidth.
Cylink	AirLink 128S	DS	128 Kbps	650 mW	300 m	48 km	standalone (RS232/422, V.35)	3595	BPSK, 8 PN codes. 10.2 MHz bandwidth.
Cylink	AirLink 256S	DS	256 Kbps	650 mW	300 m	48 km	standalone (RS232/422, V.35)	3995	BPSK, 8 PN codes. 20.5 MHz bandwidth.
Cylink	AirLink 384S	DS	384 Kbps	650 mW	300 m	48 km	standalone (RS232/422, V.35)	4495	BPSK, 8 PN codes. 30.7 MHz bandwidth.
Cylink	AirLink 512S	DS	512 Kbps	650 mW	300 m	48 km	standalone (RS232/422, V.35)	4995	BPSK, 8 PN codes. 41 MHz bandwidth.
DATA-LINC	SRM6000H	FH	Up to 115.2 Kbps	-	450 m	30-50 km	standalone (RS232/422/485)	$1975	Several antenna options available. Has repeater capability.
DCT	VL128	DS	128 Kbps*	18 dBm	-	48 km	standalone (RS232/422/V.35)	-	*115.2 Kbps async. AT-command set. Full duplex..
DCT	VL256	DS	256 Kbps*	18 dBm	-	48 km	standalone (RS232/422/V.35)	-	*115.2 Kbps async. AT-command set. Full duplex..
DCT	VirtualNet PCMCIA Adapter	DS	1-4 Mbps	18 dBm	125 m	1.1 km	PCMCIA Type II	-	IEEE 802.11. Harris PRISM chip set..
DCT	VirtualNet ISA PC Adapter	DS	1-4 Mbps	18 dBm	125 m	1.1 km	ISA card	-	IEEE 802.11. Harris PRISM chip set..
DCT	VirtualNet Access Point	DS	1-4 Mbps	18 dBm	125 m	1.1 km	standalone (ethernet)	-	IEEE 802.11. Harris PRISM chip set..
DEC	Roamabout 2400 FH/ISA NIC	FH	1.6 Mbps	100 mW	150 m	300 m	ISA card	595	Same as Proxim RangeLAN2.
DEC	Roamabout 2400 FH/PC Card	FH	1.6 Mbps	100 mW	150 m	300 m	PCMCIA Type II	695	Same as Proxim RangeLAN2.
DEC	Roamabout 2400 DS/ISA NIC	DS	2 Mbps	88 mW	240 m	-	ISA card	695	Same as WaveLAN.
DEC	Roamabout 2400 DS/PC Card	DS	2 Mbps	88 mW	240 m	-	PCMCIA Type II	695	Same as WaveLAN.
Digital Wireless	WIT2400M	FH	115.2 Kbps	-	300 m	1 km	OEM module (RS232)	~400	Ranges are with unity gain dipole antenna.
Direct Network Services	FreePort	DS	5.7 Mbps	1 W ERP	80 m	-	standalone (ethernet)	-	Also uses 5.8 GHz. Trellis-coded 16PSK, 32 chips/baud
Direct Network Services	AirPort II	DS	5.7 Mbps	1 W ERP	-	2.9 km	standalone (ethernet)	-	Also uses 5.8 GHz. Trellis-coded 16PSK, 32 chips/baud
DTS	Skyplex I	DS	1.2 - 512 Kbps*	-	-	100 km*	standalone (RS232/RS422/EIA530/V.35)	-	*Depends on model. Appears to be based on the Cylink modems.
DTS	Skyplex II	DS	1.544 Mbps*	8 or 28 dBm	-	-	standalone (DSX-1)*	-	*E1 (2.048 Mbps) w/G.703 and fractional T1 w/V.35 also available.
EMTAC	A2422-2A/3A	DS	1 Mbps	20 dBm	-	180 m	PCMCIA Type II	-	2A has ext antenna, 3A has built-in bendable antenna. IEEE 802.11 compliant.

EMTAC	A2432-2A/4A	DS	1 Mbps	20 dBm	-	180 m	ISA card (PnP)	-	Two antenna options. IEEE 802.11 compliant.
Glenayre	Lynx cp2	DS	1.544 Mbps	Up to 1 W	-	48 km	standalone (DSX-1)	9950	Full duplex, 43 MHz separation. DSU/CSU option.
GRE	GINA 8000NVK	DS	64 Kbps	725 mW	240 m	19 km	standalone (RS232/449, V.35)	1979	Other versions available.
IBM	2480 Wireless LAN ISA	DS	2 Mbps	-	-	-	ISA card	-	PCMCIA cards, access points, bridges, etc, but few details on IBM website
KarlNet	WaveLAN PC-AT Wireless Adapter	DS	2 Mbps	88 mW	240 m	-	ISA card	695	-
KarlNet	WaveLAN PCMCIA Wireless Adapter	DS	2 Mbps	88 mW	240 m	-	PCMCIA Type II	-	-
KarlNet	Wireless KarlBridge	DS	2 Mbps	88 mW	150 m	8 km	standalone (ethernet)	2895	WaveLAN compatible - bridging, multipoint, roaming. Includes high gain antenna.
KarlNet	Wireless KarlBridge Bridge/Router	DS	2 Mbps	88 mW	150 m	8 km	standalone (ethernet)	3195	WaveLAN compatible - bridging, multipoint, IP routing, roaming. Includes high gain antenna.
Lucent	WaveLAN IEEE 802.11 ISA Card	DS	2 Mbps	15 dBm	90 m*	400 m*	ISA card	395	* 115/540 m @ 1 Mbps. IEEE 802.11.
Lucent	WaveLAN IEEE 802.11 PC Card	DS	2 Mbps	15 dBm	90 m*	400 m*	PCMCIA Type II	295	* 115/540 m @ 1 Mbps. IEEE 802.11.
Lucent	WaveLAN IEEE Turbo ISA Card	DS	1-11 Mbps	12 dBm	40 m*	120 m*	ISA card		*@11 Mbps - same as 802.11 product @1-2 Mbps
Lucent	WaveLAN IEEE Turbo PC Card	DS	1-11 Mbps	12 dBm	40 m*	120 m*	PCMCIA Type II Extended	495	*@11 Mbps - same as 802.11 product @1-2 Mbps
MaxTech	XWL-420 Wireless Ethernet LAN ISA NIC	DS	2 Mbps	50 mW		240 m	ISA card		
MaxTech	XWL-420 Wireless Ethernet LAN PC Card	DS	2 Mbps	50 mW		240 m	PCMCIA Type II		IEEE 802.11
MaxTech	XWL-420 Wireless Ethernet LAN Access Point	DS	2 Mbps	50 mW		240 m	standalone (ethernet)		IEEE 802.11. Range can be extended with optional antennas.
MikroTik	MicroTik Wireless Router Package	-	2 Mbps	100 mW	-	-	standalone (ethernet)	1499	PC-based, includes parabolic antenna & cable
Multicap	Serial~Wave	FH	1.6 Mbps*	100 mW	150 m	18 km	standalone (RS232)	1200	RangeLAN2 compatible. *User data rate up to 115 kbps. Includes TCP/IP stack.
Multipoint Networks	RAN64ss	DS	64 Kbps	18 dBm	-	-	standalone (RS232/EIA530/V.35)	-	Remote RF head eliminates 2.4 GHz feedline losses
Multipoint Networks	RAN128ss	DS	128 Kbps	18 dBm	-	-	standalone (RS232/EIA530/V.35)	-	Remote RF head eliminates 2.4 GHz feedline losses

Multipoint Networks	RAN2048ss	FH	2.048 Mbps	18 dBm	-	Up to 30 km	standalone (G.703)*	-	T1 (DSX-1) and multirate 64-2048 Kbps (RS530/V.35/X.21) versions available.
Netwave	AirSurfer Wireless PC Card	FH	1 Mbps	25 mW ERP	45 m	200 m	PCMCIA Type II	399	Former Xircom product.
Netwave	AirSurfer Access Point	FH	1 Mbps	25 mW ERP	45 m	200 m	standalone (10BaseT, 10Base2)	1499	-
Nokia	C020 C021	DS	2 Mbps	-	20-50 m	300 m	PCMCIA card	-	IEEE 802.11 compliant. Based on Harris PRISM™ chipset. C021 model has external antenna.
Nokia	A020 Access Point	DS	2 Mbps	-	20-50 m	300 m	standalone (ethernet)	-	IEEE 802.11 compliant. Based on Harris PRISM™ chipset.
Nomadic	Mercury RF-1	FH	1.6 Mbps*	100 mW	150 m	300 m	standalone (RS232)	1095	*User data rate 300 bps - 115 Kbps. RangeLAN2 compatible.
No Wires Needed	Swallow 550	DS	1,2,5.5 Mbps	18 dBm	-	-	PCMCIA Type II	-	Ext antenna optional. Complies with IEEE 802.11 air interface.
No Wires Needed	Parrot 550 Access Point	DS	1,2,5.5 Mbps	18 dBm	-	-	standalone (ethernet)	-	Dual diversity antenna. Complies with IEEE 802.11 air interface.
P-COM	Model 100-2	DS	56 Kbps - 2.048 Mbps	6 mw or 500 mW	-	75 km	standalone (V.35, DSX-1, G.703)	~6000	Modem and RF deck are separable.
Pinnacle	PinnacleLink	DS	2 Mbps	4 W ERP	-	26 km*	standalone (ethernet)	2195	*With optional amplifiers. Point-to-point and multipoint capability.
Pinnacle	PinnacleLink	DS	11 Mbps	4 W ERP	-	26 km*	standalone (ethernet)	2295	*With optional amplifiers. Point-to-point and multipoint capability. IEEE 802.11 compliant.
Proxim	RangeLAN2 7100 ISA	FH	1.6 Mbps	100 mW	150 m	300 m	ISA card	595	15 channels. OEM version available.
Proxim	RangeLAN2 7401/02 PC Card	FH	1.6 Mbps	100 mW	150 m	300 m	PCMCIA Type II	695	15 channels. One-piece modem. Several antenna options.
Proxim	RangeLAN2 7910/11 Serial Adapter	FH	1.6 Mbps	100 mW*	150 m	300 m	standalone (RS232)	-	*500 mW for 7911. Serial port baud rates up to 115.2 Kbps
Proxim	RangeLAN2 7920/21 Ethernet Adapter	FH	1.6 Mbps	100 mW*	150 m	300 m	standalone (ethernet)	-	*500 mW for 7921. Note that this is a modem that interfaces to an ethernet card or hub. It is not an access point, which is a different product.
Proxim	RangeLAN802 8401/02 PC Card	FH	2 Mbps	100 mW*	150 m	300 m	PCMCIA Type II	-	*400 mW version available. Two antenna options. IEEE 802.11 compliant

Proxim	RangeLAN802 8520/21 Access Point	FH	2 Mbps	100 mW*	150 m	300 m	standalone (ethernet)	-	*8521 is 400 mW. Several antenna options. IEEE 802.11 compliant
Proxim	RangeLink	FH	1.6 Mbps	100 mW	-	4.8 km	standalone (ethernet)	5950-7450	6 models, range/data rate depends on model.
Proxim	Symphony Cordless ISA Card	FH	1.6 Mbps	-	45 m	90 m	ISA card	149	
Proxim	Symphony Cordless PC Card	FH	1.6 Mbps	-	45 m	90 m	PCMCIA Type II card	199	
RadioConnect	Wireless Remote Office Link	DS	256 Kbps (or more)	-	-	32 km	standalone (10BaseT ethernet*)	-	Also has 6 telephone ports for voice/fax.
Solectek	AIRLAN/Bridge 200E	DS	2 Mbps	4 W ERP	-	40 km	standalone (ethernet)	3495	3 channels. High gain and sectoral/omni antenna options.
Solectek	AIRLAN/Router 200E	DS	2 Mbps	4 W ERP	-	40 km	standalone (ethernet)	5995	Includes Cisco router. Token ring version also available
Solectek	AIRLAN/Bridge 400E	DS	4 Mbps	4 W ERP	-	32 km	standalone (ethernet)	4495	-
Solectek	AIRLAN/Bridge 1000E	DS	10 Mbps	4 W ERP	-	40 km*	standalone (ethernet)	8895	*With optional high-gain antennas
Solectek	MP200-E	DS	2 Mbps	-	-	40 km	standalone (ethernet)	-	Multipoint capability. US/Canada only.
Solectek	MP550-E	DS	5.5 Mbps	-	-	32 km	standalone (ethernet)	-	Multipoint capability. US/Canada only.
Solectek	MP1100-E	DS	11 Mbps	-	-	40 km	standalone (ethernet)	-	Multipoint capability. US/Canada only.
Symbol	Spectrum24 LA 2400	FH	1 Mbps	100-500 mW	55-75 m	300 m	PCMCIA Type II	-	66 sequences, 10 hops/s
Raytheon	Raylink PC Card	FH	2 Mbps	100 mW	150 m	300 m	PCMCIA Type II	-	IEEE 802.11 compliant. Access point uses same card
RDC	PortLAN	FH	1 Mbps	-	150 m	830 m	PCMCIA Type II	695	-
RF-Link	2.4 GHz Wireless RS232	DS	Up to 192 Kbps	200 mW	150 m	2 km	standalone (RS232)	399	15 channels
Teletronics	Wireless LAN Card	DS	2 Mbps	50 mW*	350 m	50 km*	PCMCIA Type II	175	*With optional amplifier (500 mW out) and antenna. IEEE 802.11 compliant.
Teletronics	Access Point	DS	2/10 Mbps	50 mW*	350 m	50 km*	standalone (ethernet)	525	*With optional amplifier (500 mW out) and antenna. IEEE 802.11 compliant.
TTI Wireless	InterBuilding Link 200TSE	DS	2 Mbps	15 dBm	-	48 km	standalone (ethernet)	-	Repeater configurations available
TTI Wireless	InterBuilding Link 500TSE	DS	5 Mbps	15 dBm	-	48 km	standalone (ethernet)	-	Repeater configurations available
TTI Wireless	InterBuilding Link 1100TSE	DS	11 Mbps	15 dBm	-	48 km	standalone (ethernet)	-	Repeater configurations available

Utilicom	LongRanger 2020/ISM2.4-4TS256	DS	Up to 256 Kbps	0.25 - 4 W ERP	-	50 km*	standalone (RS232/RS422/EIA530/V.35)	2550*	*Depends on version. Directional antennas extra. Full-duplex.
WaveAccess	Jaguar DS132	FH	3.2 Mbps*	50 mW	-	1.5 km	standalone (10BaseT ethernet)	1395	*Max. throughput 2.5 Mbps. QPSK, 16QAM modulation.
WaveAccess	WaveLyNX BR132 Wireless Bridge	FH	3.2 Mbps	50 mW	-	32 km*	standalone (10BaseT ethernet)	2495	*With highest-gain antenna option. Range is greater at 1.6 Mbps fallback rate.
WaveAccess	Jaguar PC132	FH	3.2 Mbps*	50 mW	100 m	150 m	PCMCIA Type II	695	*Max. throughput 2.5 Mbps. QPSK, 16QAM modulation.
WaveAccess	Jaguar AP132	FH	3.2 Mbps*	50 mW	100 m	1.5 km	standalone (ethernet)	1495	*Max throughput 2.5 Mbps. Access point.
WaveRider	NCL135	FH	1.6 Mbps*	18 dBm	-	-	standalone (ethernet)	-	*User throughput up to 800 Kbps. Bridge/router.
Wave Wireless	SPEEDLAN Plus	DS	2 Mbps	0.25 W	-	16 km*	standalone (ethernet)	3900	*40 km w/optional amplifier. 6 selectable channels; includes antenna & cable.
Wave Wireless	SPEEDLAN XE-2	DS	2 Mbps	50 mW	-	40 km*	standalone (ethernet)	2900	*w/optional amplifier. Similar to above, but is single-port bridge.
Wave Wireless	SPEEDLAN 10 BRouter	DS	10 Mbps	4 W ERP	-	16 km	standalone (ethernet)	8900	Multipoint capability; includes antenna & cable
Wave Wireless	SPEEDLAN XE-10	DS	10 Mbps	50 mW	-	40 km*	standalone (ethernet)	4900	*w/optional amplifier. Similar to above, but is single-port bridge.
WebGear	Aviator2.4	FH	2 Mbps	-	150 m	300 m	PCMCIA*	-	*parallel port and USB products also available
Wi-LAN	Hopper Plus Wireless Ethernet Bridge	DS	1.9 Mbps	100 mW	-	9 km	standalone (ethernet)	3295	10 Mchips/s
Wi-LAN	Hopper Plus 30-24	DS	3.0 Mbps	22 dBm	-	-	standalone (ethernet)	-	-
Wi-LAN	Hopper Plus 45-24	DS	4.5 Mbps	-	-	-	standalone (ethernet)	3900	Available October 1998.
Wi-LAN	Hopper FD Wireless Modem	DS/FH	19.2 Kbps*	16 mW	-	-	standalone (RS232)	-	*Full duplex (38.4 kbps max in half duplex)
YDI	Model 2400	FH	115.2 Kbps	100 mW	-	16 km*	Standalone (RS232 sync or async)	1175	*80 km+ with amp. 250 Kbps over-the-air data rate
YDI	WL2400-PCM	DS	2 Mbps	50 mW	150 m	300 m	PCMCIA Type II	485	Used in the AP2400 and laptops. Built-in antenna. IEEE 802.11 compliant.
YDI	WL2400-PCM-J	DS	2 Mbps	50 mW	500 ft	8 km*	PCMCIA Type II	645	*50 km with optional amplifier. Used in the AP2400 and laptops. Ext antenna jack. IEEE 802.11,13 channels.

YDI	WL2400-ISA	DS	2 Mbps	50 mW	150 m	8 km*	ISA card	535	*50 km with optional amplifier. Used in PCs. IEEE 802.11, 13 channels.
YDI	AP-2E Access Point	DS	2 Mbps	50 mW	150 m	8 km*	Standalone (Ethernet 10BaseT or 10Base2)	1495	*50 km with optional amplifier. Requires a WL2400 WLAN card, ordered separately. IEEE 802.11, 13 channels
Z-COM	WL2420 LANEscape/ISA	DS	2 Mbps	50 mW	150 m	8 km	ISA card	420	IEEE 802.11.
Z-COM	WL2430 LANEscape/PCMCIA	DS	2 Mbps	50 mW	150 m	8 km	PCMCIA Type II	450	IEEE 802.11.
Z-COM	WL2410 LANEscape Access Point	DS	2 Mbps	50 mW	150 m	8 km	standalone (ethernet)	800	IEEE 802.11.
Zoom Telephonics	ZoomAir Model 4000	DS	2 Mbps	100 mW EIRP	90 m	300 m	PCMCIA Type II		IEEE 802.11
Zoom Telephonics	ZoomAir Model 4005	DS	2 Mbps	100 mW EIRP	90 m	300 m	ISA card		IEEE 802.11

Product Listings: 5.2/5.8 GHz

Key to modem type:
DS: Direct Sequence Spread Spectrum
FH: Frequency Hopping Spread Spectrum
NB: Narrowband (non-spread FSK, MSK, PSK, etc.)

5.2 GHz (US U-NII Band) Wireless LAN/MAN Modem Products

Vendor	Product	Type	Data Rate	Power	Maximum Range Indoor/Outdoor		Configuration	Price ($US)	Miscellaneous
WaveSpan	Stratum 20	NB	20 Mbps*	-	-	8 km	standalone (10/100 Mbps ethernet + DSX-1)	-	*Full duplex. Also includes dual T1 rate links.
WaveSpan	Stratum 100	NB	100 Mbps*	-1 dBm		8 km	standalone (10/100 Mbps ethernet + DSX-1)	-	*Full duplex. Also includes dual T1 rate links.

5.8 GHz Wireless LAN/MAN Modem Products

Vendor	Product	Type	Data Rate	Power	Maximum Range Indoor/Outdoor		Configuration	Price ($US)	Miscellaneous
Cylink	AirPro T1	DS	1.544 Mbps	-	-	35 km	standalone (DSX-1)	-	E1 (2.048 Mbps) version also available
Direct Network Services	FreePort	DS	5.7 Mbps	1 W ERP	80 m	-	standalone (ethernet)	-	Also uses 2.4 GHz. Trellis-coded 16PSK, 32 chips/baud
Direct Network Services	AirPort II	DS	5.7 Mbps	1 W ERP	-	2.9 km	standalone (ethernet)	-	Also uses 2.4 GHz. Trellis-coded 16PSK, 32 chips/baud
Glenayre	Lynx.sc Model 31000	DS	1.544 Mbps	23 dBm	-	80 km	standalone (DSX-1)	-	E1 (2.048 Mbps) version also available
Glenayre	Lynx.sc Model 31600	DS	2 X 1.544 Mbps	23 dBm	-	80 km	standalone (DSX-1)	-	E1 (2.048 Mbps) version also available
P-COM	Model 100-5	DS	56 Kbps to 2.048 Mbps	100 mW	-	50 km	standalone (V.35, DSX-1, G.703)	-	Modem and RF deck are separable.
RadioLAN	Model 101 Wireless ISA CardLINK	NB	10 Mbps	50 mW	36 m	91 m	ISA card	349	-
RadioLAN	Model P101 Wireless PC CardLINK	NB	10 Mbps	50 mW	36 m	91 m	PCMCIA card	449	-
RadioLAN	Model 10A Wireless NetworkLINK	NB	10 Mbps	50 mW	36 m	91 m	ISA card	799	-
RadioLAN	Model BL208 Wireless BackboneLINK	NB	10 Mbps	50 mW	36 m	91 m	standalone (ethernet)	999	-
WaveSpan	Model 5800 Wireless Ethernet Bridge	FH	10 Mbps	-	-	8 km*	standalone (ethernet)	-	*Up to 32 km at lower throughputs. Full duplex. 256-QAM modulation (or other if needed), Reed-Solomon FEC, adaptive FH.


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2.4 GHz
Reviews
Articles
Vendors
Links

WLAN Product Reviews

David Newman and Kevin Tolly, "Wireless LANs: How Far? How Fast?", **Data Communications**, March 21, 1995, pp. 77-86. Covers PCMCIA adapters and access points from Aironet (ARLAN), Lucent, DEC, Solectek and Xircom.

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Dave Molta and Josh Linder, "The High Wireless Act", **Network Computing**, July 1, 1995, p. 82ff. Covers 900 MHz products from ATT&T, DEC and Solectek, plus Windata FreePort (2.4/5.8 GHz) and several infrared systems.

Padraic Boyle, "Wireless LANs: Free to Roam", **PC Magazine**,February 20, 1996, pp. 175-204. Covers PCMCIA adapters and access points from Aironet, AT&, BreezeCOM, DEC, IBM, Proxim, RDC, Solectek and Xircom.

Dave Molta, "The Bridges of Wireless County", **Network Computing**, October 15, 1995, pp. 76-87. Covers wireless bridge products from Aironet, C-SPEC, Cylink, Persoft, Solectek and Windata.

The Tolly Group, "Tolly Report on RDC Wireless LAN" (PDF format), September 1995. Compares the RDC PortLAN PCMCIA adapter with three competitive 2.4 GHz products from Lucent, Proxim and Xircom.

Peter Clegg, "Review: Digital Equipment Corp. RoamAbout", **LAN Times**, Feb. 27, 1995, p. 82. Reviews the 900 MHz PCMCIA unit.

Steven G. Clegg, "Wireless That Goes the Distance", **LAN Times**, Feb. 19, 1996, p. 96. Reviews the RDC PortLAN.

Steven G. Clegg, "Roam on the Network Range", **LAN Times**, Jan. 22, 1996, p. 80. Reviews the Xircom Netwave PCMCIA product.

"Wireless Radio LAN Technology Performance Test", Canterbury Christ Church College (UK). Compares FTP transfer rates between access points and PCMCIA-equipped laptops, for seven different 2.4 GHz WLAN products.

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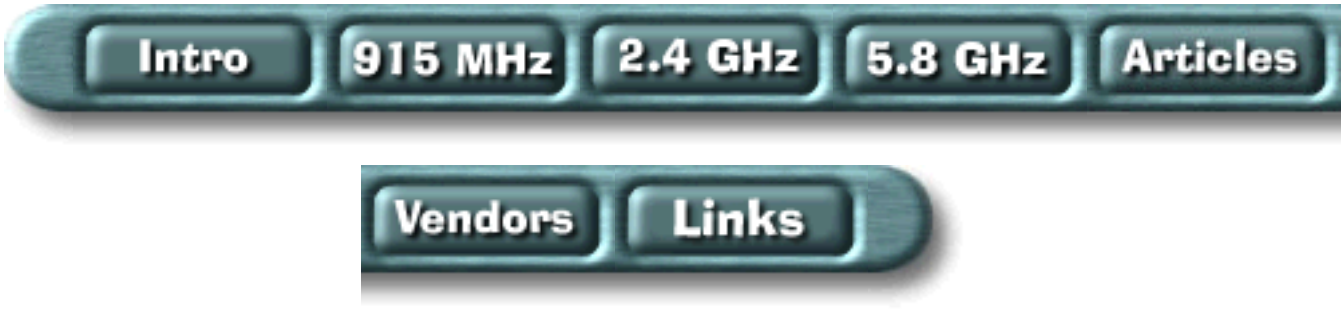
Joel Conover, "Bridging The Miles With 10-Mbps Spread Spectrum Wireless Networking ", **Network Computing**, October 24, 1997. Three 10 Mbps products from C-SPEC, Solectek and Wave Wireless reviewed.

Frank J. Derfler, Jr., "Skylinks: Wireless Bridges are an Inexpensive Way to Link LANs in Two Buildings. But How Well Do They Work?", **PC Magazine**, January 7, 1997. Brief review of bridge products from C-SPEC, Solectek, Persoft, Aironet and Clarion.

Dave Molta, "Wired on Wireless: A New Class of 802.11 Devices Go the Distance", **Network Computing**, March 22, 1999. Review of currently available IEEE 802.11 WLAN products.

Kevin Flood and Scott Hamilton, "Round Table II: Wireless LANs", **The Tolly Group**, 1999. Review of several WLAN products with data rates >2 Mbps.



Articles on WLAN Products and Applications

"Wireless Field Test Project". Very interesting site which gives details on a project funded by the National Science Foundation to evaluate the use of wireless LAN hardware for the linking of schools. Also described is a wireless project in Mongolia.

Paul Schreier, "Spread Spectrum Challenges FM in Wireless Telemetry Systems", Personal Engineering & Instrumentation News, February 1996, pp. 29-38. Surveys a wide range of 900 MHz and 2.4 GHz SS modem products.

Paul Schreier, "Technology, Regs Dictate Multiple Decisions for Wireless Links", Personal Engineering & Instrumentation News , February 1997. Updated survey of a wide range of WLAN products.

Bruce Tuch, "Development of WaveLAN, an ISM Band Wireless LAN", **Lucent Technical Journal**, July/August 1993, pp. 27-37.

Guntis Barzdins and John Tully, "Wireless Internet Access in Latvia". An excellent practical article on wireless networking with the Aironet ARLAN (2.4 GHz) and Lucent WaveLAN (900 MHz) equipment, with emphasis on outdoor links.

Stuart Cheshire, "MosquitoNet". Describes mobile networking work of the Stanford Operating Systems and Networking Group, including the use of WaveLAN and Metricom WLAN equipment.

Randy H. Katz, "Bay Area Research Wireless Access Network (BARWAN)". Another project involving integration of different wireless components, including WLAN SS systems.

David Bantz and Frederic Bauchot, "Wireless LAN Design Alternatives", **IEEE Network**, March/April 1994, pp. 43-53.

Alex Hills and David B. Johnson, "A Wireless Data Network Infrastructure at Carnegie Mellon University", **IEEE Personal Communications**, February 1996, pp. 56-63.

Stephan Orr, "Wireless LAN Technology Struggles to be Useful and Cheap", **Computer Design**, March 1996, p. 94ff.

Willem Hollemans and Arie Verschoor, "Performance Study of WaveLAN and Altair Radio-LANs" **Proc. 5th IEEE International Symposium on Personal, Indoor and Mobile Radio Communications (PIMRC '94)**, September 18-22, 1994, pp. 831-837.

A. Claessan, L. Monteban and H. Moelard, "The AT&T GIS WaveLAN Air Interface and Protocol Stack", **Proc. 5th IEEE International Symposium on Personal, Indoor and Mobile Radio Communications (PIMRC '94)**, September 18-22, 1994, pp. 1442-1446.

Richard LaMaire et al, "Wireless LANs and Mobile Networking: Standards and Future Directions",

IEEE Communications Magazine, August 1996, pp. 86-94.

Adriaan Kamerman, "Spread-Spectrum Techniques Drive WLAN Performance", **Microwaves & RF**, September 1996, p. 109ff.

Z.L. Shi, W. Tan, M. Fattouche and J. Sokoloski, "A Novel DS/FH Spread Spectrum Wireless Modem", **Wireless 96 (8th International Conference on Wireless Communications)**, 1996. Describes Wi-LAN "Hopper" product design.

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Angela Champness, "Understanding IEEE 802.11", **Communications News**, August 1997. Overview of the IEEE 802.11 standard (1-2 Mbps, 2.4 GHz).

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Andy Seybold and Dave Hughes, "Experts Debate Free Wireless", **MicroTimes** (Date unknown). Debate about the practical problems of WLAN deployment.

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Mary Eisenhart, "Really Mobile Computing: Ricochet Untethers The Net", **MicroTimes**, May 27, 1996. On the Metricom Ricochet 915 MHz system.

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"Idaho School District's Wireless WAN Opens Intranet, Internet Potential", **T.H.E. (Technology Horizons in Education) Online**, November 1997. Brief description of wireless linking of schools in Idaho using C-Spec's OverLAN product.

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Peter Rysavy, "Planning and Implementing Wireless LANs", **Network Computing**, January 14, 1999.

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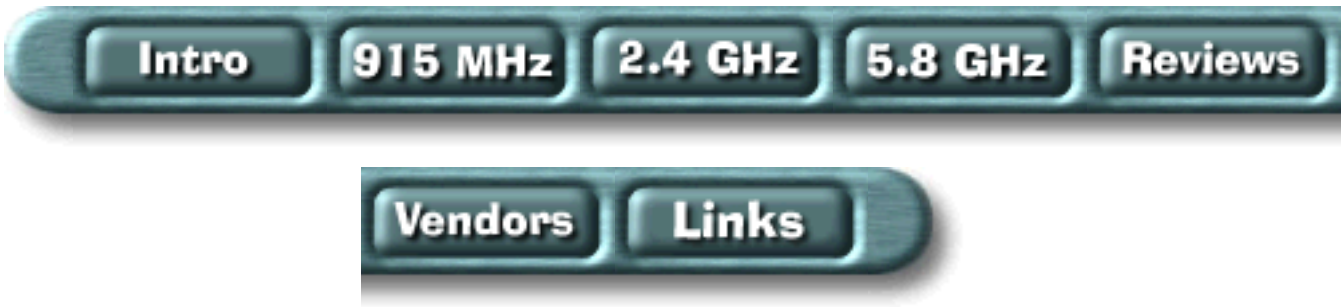
Edward C. Prem, "Wireless Local Area Networks", August 1997. On-line WLAN tutorial.

Kevin Flood, "Staging a Comeback: Emerging Standards Position Wireless Networks for Broad Appeal", **The Tolly Group**, October 18, 1999. Good overview of WLAN standards - IEEE 802.11, Bluetooth, etc.



WLAN Vendor Information

ACT Networks, Inc.
188 Camino Ruiz
Camarillo, CA 93012
Tel: 800-367-2281 or 805-388-2474
Fax: 805-388-3504
Email: info@acti.com

ADTRAN, Inc.
901 Explorer Boulevard
P.O. Box 140000
Huntsville, AL 35814-4000
Tel: 800-9ADTRAN or 256-963-8000
Fax: 256-963-8699
Email: info@adtran.com

Aerotron-Repco Sales, Inc.
2400 Sand Lake Road
Orlando, FL 32809-7666
Tel: 800-950-5633 or 407-856-1953
Fax: 407-856-1960

Aironet Wireless Communications, Inc.
367 Ghent Road, Suite 300
Akron, OH 44334-0292
Tel: 800-394-7353 or 330-665-7900
Fax: 330-665-7922
Email: sales@aironet.com
Another source of Aironet products is Telxon.

Altvater Gruppe (in German)
Riemenstrasse 30 - D-74906
Bad Rappenau, Germany
Tel: +49-7264/804-0
Fax: +49-7264/804-210
Email: info@altvater.com

USA: Airdata WIMAN Systems
2950 Tamiami Trail N. Suite 16
Naples, FL. 34103
Tel: 941-261-1633
Fax: 941-261-5325

Apex Wireless Inc.
2465 Central Ave., Suite 103
Boulder, CO 80301
Tel: 303-443-6699
Fax: 303-442-7123

Email: rf@apexwireless.com

Breeze Wireless Communications (formerly Lannair)
2195 Faraday Ave, Suite A
Carlsbad, CA 92008
Tel: 619-431-9880
Fax: 619-431-2595

Cabletron Systems
35 Industrial Way
Rochester, NH 03867-5005
Tel: 603-332-9400
Fax: 603-337-2211

CDS Technologies
104-33 Hargrave Street
Winnipeg, MB, Canada R3C 3T9
Tel: 888-709-7080 or 204-947-5626
Fax: 204-956-5607
Email: sales@cdscomputer.com

Clarion
Clarion Corp. of America (Att: Phil Van Wettering)
115 Franklin Tpke, Suite 242
Mahwah, NJ 07430
Tel: 201-818-8889
Fax: 201-818-1014
Email: PVW@clarionnet.com

CRL (Central Research Laboratories) Ltd.
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Hayes, Middlesex, UK UB3 1HH
Tel: +44 (0)181 848 6661
Email: jbates@crl.co.uk

C-SPEC Corp.
20 Marco Lane
Dayton, OH 45458
Tel: 800-GOCSPEC or 937-439-2882
Fax: 937-439-2358 Email: sales@c-spec.com

Cylink Wireless
910 Hermosa Court
Sunnyvale, CA 94086 USA
Tel: 408-735-5800
Fax: 408-735-6643
Email: info@cylink.com

Note: Company acquired by P-Com in April 1998.

Data Communications Technologies
2200 Gateway Centre Blvd, Suite 201
Morrisville, NC 27560-9122 USA
Tel: 1-800-344-1395
Fax: 919-462-0300
Email: sales@dctcorp.com

DATA-LINC Group
2635 151st Place N.E.
Redmond, WA 98052-5562
Tel: 206-882-2206 or 425-882-2206
Fax: 206-867-0865 or 425-867-0865
Email: info@data-linc.com

Digital Equipment Corp.
153 Taylor Street
TAY2-2/11D
Littleton, MA 01460
Maynard, MA
Tel: 1-800-344-4825 (1-800-DIGITAL)
Fax: 1-800-234-2298
Note: The Roamabout products are also available from Cabletron

Digital Ocean
11206 Thompson Ave.
Lenexa, KS 66219-2303
This company has gone out of business.

Digital Transmission Systems, Inc.
3000 Northwoods Parkway (Bldg. 330)
Norcross, GA 30071
Tel: 770-798-1300
Fax: 770-798-1325
E-mail: info@dtsx.com

Digital Wireless Corp.
One Meca Way
Norcross, GA 30093
Tel: 770-564-5540
Fax: 770-564-5541
Email: mkting@digiwrls.com

Direct Network Services
20 Central Avenue
Ayer, MA 01432

Tel: 978-772-9978
Fax: 978-772-9984
Email: kirkland@directnetserv.com

EMTAC Technology Corp.
1F, 22, Industry E. 9 Rd., S.B.I.P.
Hsinchu, Taiwan R.O.C.
Tel: 886 3 574-4145
Fax: 886 3 574-4141
Email: emtac@ms24.hinet.net

FreeWave
1898 Flatiron Court - Suite 2B
Boulder CO 80301
303-444-3862
303-786-9948

Glenayre Western Multiplex Corp.
1196 Borregas Avenue
Sunnyvale, CA 94089-1302
Tel: 408-542-5200
Fax: 408-542-5300

GRE America, Inc.
425 Harbor Blvd.
Belmont, CA 94002
Tel: 800-233-5973 or 415-591-1400
Fax: 415-591-2001
Email: gre@greamerica.com

IBM Wireless
Mobile and Wireless Systems
8501 IBM Drive MG/78
Charlotte, NC 28262-8563
Email: cpmarket@us.ibm.com

Inficom, Inc.
645 Southcenter, Suite 343
Seattle, WA, USA 98188-2836
Tel: 206-865-9753
Fax: 206-562-6066
Email: sales@inficom.com

InTalk Inc.
P.O. Box 2181
Melbourne, FL, USA 32901
Tel: 800-510-1516 or 407-724-7972

Fax: 407-724-7886
Email: sales@intalk.com

Intermec Technologies Corp.
6001 36th Avenue West
P.O. Box 4280
Everett, WA 98203-9280
Tel: 425-348-2600 or 800-347-2636
Fax: 319-369-3324
Email: info@intermec.com

KarlNet, Inc.
5030 Postlewaite Rd.
Columbus, OH 43235-3450
Tel: 614-457-5275
Fax: 614-442-7599
Email: sales@karlnet.com

Lucent Technologies Inc.
WaveLAN Commercial Sales
Room 1H62
5 Wood Hollow Road
Parsippany, NJ 07054
Tel: 201-581-4296/4297 or 1-800 WAVELAN
Fax: 201-581-4282
Email: support@wavelan.com

MaxTech Corp.
13915 Cerritos Corporate Drive
Cerritos, CA 90703
Tel: 562-921-1698
Fax: 562-802-9605

Metricom, Inc.
980 University Ave.
Los Gatos, CA 95030
Tel: 800-556-6123 or 408-399-8200
Email: info@metricom.com

Microhard Systems Inc.
#209, 12 Manning Close N.E.
Calgary, AB, Canada T2E 7N6
Tel: 403-248-0028
Fax: 403-248-2762
Email: info@microhardcorp.com

SIA "Mikrotikls"

Aizkraukles iela 23
Riga, LV-1006
Latvia
Tel: +371 2 528 982, or +371 2 520 286
Fax: +371 7 542 530
Email: mt@mt.lv

Multicap
Antwerpsesteenweg 124/19
B-2630 Aartselaar, Belgium
Tel: ++32 (0)3 877.44.80
Fax: ++32 (0)3 887.10.16
Email: multicap@eunet.be

Multipoint Networks Inc.
This company merged with Wireless, Inc. in June 1998.

Netwave Technologies, Inc.
6663 Owens Drive
Pleasanton, CA 94588
Tel: 510-737-1600 or 800-NETWAVE (sales)
Fax: 510-847-8744
Email: info@netwave-wireless.com

Nokia Wireless LAN Products
Tel: 877-386-2276 (US/Canada), 781-238-4988 (Int'l)
Fax: 781-238-4988
Email: nwbcsales@nokia.com

Nomadic Technologies
2133 Leghorn Street
Mountain View, CA 94043
Tel: 415-988-7200
Fax: 415-988-7201
Email: nomad@robots.com

Norand Corporation
Norand is now a division of Intermec Technologies Corp.

No Wires Needed bv
P.O.Box 343 / NL - 3720 AH Bilthoven, Netherlands
Jan Steenlaan 5 / NL - 3723 BS Bilthoven, Netherlands
Tel: +31 30 2280910
Fax: +31 30 2280911
Email:tim@nwn.com

O'Neill Connectivities, Inc.

607 Horsham Road
Horsham, PA 19044
Tel: 800-624-5296 or 215-957-5408
Fax: 215-957-6633

OTC Telecom
2036 Bering Drive
San Jose, CA 95131
Tel: 800-770-6698 or 408-245-6888
Fax: 408-245-8886
Email: otcsales@ezylink.com

Pinnacle Communications, Inc.
410 Fame Road
Dayton, OH 45449-2315
Tel: 937-847-2434
Fax: 937-847-2463
Email: info@pinnaclecomm.co

P-COM Inc.
3175 S. Winchester Blvd.
Campbell, CA 95008
Tel: 408-866-3666 or 1-800-646-PCOM (7266)
Fax: 408-866-3655

Proxim, Inc.
295 North Bernardo Ave.
Mountain View, CA 94043
Tel: 800-229-1630 or 415-960-1630
Fax: 415-960-1984
Email: sales@proxim.com

RadioConnect Corporation
6041 Bristol Parkway
Culver City, California 90230
Tel: 310-338-3388
Fax: 310-338-3399
Email: info@radioconnect.com

RadioLAN
455 DeGuigne Drive, Suite D
Sunnyvale, CA
Tel: 408-524-2600 or 888-2RadioLAN
Fax: 408-524-0600
Email: sales@radiolan.com

Raytheon Electronics

362 Lowell Street
Andover, MA 01810
Tel: 508-470-9011
Fax: 508-470-9452
Email: raylink@raytheon.com

RDC Communications Ltd.
1 Hamelacha Street
Lod 71293, Israel
Tel: +972-8-977-7000
Fax: +977-8-977-7050
Email: support@rdccom.com

RDC Networks Inc.
1160 Chess Drive, Suite #1
Foster City, CA 94404
Tel: 415-577-8075
Fax: 415-577-8077
Email: support@rdcnetworks.com

RF-Link Systems Inc.
1F, No. 9, Prosperity Rd. 1,
Science-Based Industrial Park,
Hsinchu, 300, Taiwan
Tel: 886-3-579-9999
Fax: 886-3-577-6699
Email: marketing@mail.rflink.com.tw

Solectek Corporation
6370 Nancy Ridge Drive, Suite 109
San Diego, CA 92121-3212
Tel: 800-437-1518 or 619-450-1220
Fax: 619/457-2681

Symbol Technologies, Inc.
116 Wilbur Place
Bohemia, NY 11716
Tel: 800-SCAN 234 or 516-563-2400
Fax: 516-563-2831

Teletronics International Inc.
1803 Research Blvd., Suite 404
Rockville, MD 20850
Tel: 301-309-8500
Fax: 301-309-8851
Email: sales@teletronics.com

Telxon Corp.
3330 West Market Street
Akron, OH 44334-0582
Tel: 800-800-8008
Email: sales@telxon.com

TTI Wireless

17830 Englewood Dr. #1
Cleveland, OH 44130
Tel: 800-860-2519 or 440-243-9033
Fax: 440-243-9045
Email: Pbonk@ttiwireless.com

UNICOM Inc.

MATIX-MEDIA UNICOM America	UNICOM Pty. Ltd. Australia
P.O. Box 3486	P.O. Box 184
Winter Springs, FL, USA 32708	Mt. Waverley VIC 3149 Australia
Tel: 888-696-5517 or 407-696-5517	Tel: +61-3-9543-9400
Fax: 407-696-5526	Fax: +61-3-9543-9500
Email: unicom-usa@unicompl.com	Email: UNICOMPL@msn.com

Utilicom Inc.
323 Love Place
Goleta, CA 93117
Tel: 805-964-5848
Fax: 805-964-5706

Wave Wireless Networking
1748 Independence Boulevard, C-5
Sarasota, FL 34234
Tel: 800-721-9283
Fax: 941-355-0219
Email: sales@speedlan.com

WaveAccess Wireless Communications
One Apple Hill, Ste. 203
Natick, MA 01760
Tel: 508-653-3646 or 508-653-3306
Email: ascott@waveaccess.com

WaveRider Communications Inc.
255 Consumers Rd., Suite 500
Toronto, Ontario, Canada M2J 1R4
Tel: 416-502-3200
Fax: 416-502-2968
Email: info@waverider.com

WaveSpan Corp.
500 N. Bernardo Avenue
Mountain View, CA 94043
Tel: 650-919-0190
Fax: 650-919-0191
Email: info@wavespan.com

Webgear Inc.
60 South Market Street, Suite 205
San Jose, CA 95113
Tel: 877-932-4327 or 408-271-9888
Email: sales@webgear.com

Wi-LAN Inc.
#300-801 Manning Rd. N.E.
Calgary, AB, Canada T2E 8J5
Tel: 800-258-6876 or 403-273-9133
Fax: 403-273-5200
Email: wi-lan@wi-lan.com

Windata
Assets of this company have been acquired by Direct Network Services

Wireless, Inc.
19 Davis Drive
Belmont, CA 94002
Tel: (650) 595-3300
Fax: (650) 595-2417
Email: info@wire-less-inc.com

Wireless Scientific
1890 South 14th Street
Building 100, Suite 105
Amelia Island, FL 32034
Tel: 904-261-6977
Fax: 904-261-2129
Email: wsci@net-magic.net

Xetron Corporation
460 West Crescentville Rd.
Cincinnati, OH 45246
Tel: 513-881-3500
Fax: 513-881-3379
Email: sarab@xetron.com

Young Design, Inc
308 Hillwood Ave
Falls Church, VA 22046
Tel: 703-237-9090
Fax: 703-237-9092
Email: marketing@ydi.com

Z-COM, Inc.
7F-2, No. 9, Prosperity 1st Rd.

Science-Based Industrial Park
Hsinchu, Taiwan
Tel: +886-3-5777364
Fax: +886-3-5773359
Email: center@zcomwireless.com

Zoom Telephonics
207 South Street
Boston, MA 02111
Tel: 800-666-6191 or 617-423-1072
Fax: 617-423-3923
Email: sales@zoom.com

Wireless LAN/MAN Resources

This page provides some links to organizations and other resources on the net related to wireless LANs and/or spread spectrum communications.

Amateur Radio Spread Spectrum Communications Page

FCC On-line Equipment Authorization Database

Future Computing Environments: Wireless Projects, Vendors, and Products

Spread Spectrum Scene

Telecom Information Resources

Wireless Books Online

Wireless Design Online

The Wireless LAN Alliance

The Linux Wireless LAN Howto Home Page

The Wireless LAN Interoperability Forum

Wireless Networking and Mobile IP References

Antenna Sources for Wireless LAN/MAN Applications

Antenex, Inc. 2000-205 Bloomingdale Road Glendale Heights, IL 60139 USA Tel: 800-323-3757 or 630-351-9007 Fax: 630-351-9009 Email: sales@antenex.com	Directional yagi antennas for 915 MHz, omnidirectional collinear antennas for 915 MHz and 2.4 GHz.
Antennas America, Inc. 4860 Robb St., Suite 101 Wheat Ridge, CO 80033-2163 Tel: 303-421-4063 Fax: 303-424-5085 Email: marx@antennas.com	Patch directional antennas (8-12 dBi gain) for 915 MHz and 2.4 GHz
Antenna Specialists 30500 Bruce Industrial Pkwy. Cleveland, OH 44139 Tel: 440-349-8400 Fax: 440-349-7430 Email: antenna@allentele.com	Planar, omnidirectional and yagi antennas for 915 MHz and 2.4 GHz
Astron Antenna Co. 22560 Glenn Drive, Suite 114 Sterling, VA 20164-4440 Tel: 703-450-5517 Fax: :703-450-9753 Email: astronco@monumental.com	Omnidirectional (low-profile and portable) antennas for 915 MHz and 2.4 GHz, directional yagi and sectoral antennas for 2.4 GHz.
California Amplifier 460 Calle San Pablo Camarillo, CA 93102 Tel: 805-987-9000 Fax: 805-987-8359 Email: sales@calamp.com	Grid parabolic reflector antennas for 2.4 GHz.
Conifer Corp. 1400 N. Roosevelt Avenue Burlington, Iowa 52601 USA Tel: 800-843-5419 or 319-752-3607 Fax: 319-753-5508 Email: conifer@conifercorp.com	Parabolic and panel directional antennas for 2.4 GHz, gains from 10 dBi to 23 dBi.

Cushcraft Corp. 48 Perimeter Road Manchester, NH 03103 USA Tel: 800-258-3860 or 603-627-7877 Fax: 800-258-3868 or 603-627-1764 Email: sales@cushcraft.com	Directional patch, panel and yagi antennas, and omnidirectional antennas, for 2.4 GHz and 5.8 GHz (also 5.2 GHz)
Davicom Technologies 2765 de l'Industrie Trois-Rivieres-Ouest, QC G8Z 3X9 Canada Tel: 819-370-4343 Fax: 819-370-4353 Email: infodavicom@davicom.com	Directional yagi and omni collinear antennas for 915 MHz
Gabriel Electronics Inc. P.O. Box 70 Scarborough, ME 04070 USA Tel: 207-883-5161 Fax: 207-883-4469 Email: info@gabrielnet.com	Solid and grid parabolic antennas for 2.4 GHz and 5.8 GHz
Larsen Electronics, Inc. 3611 N.E. 112th Avenue Vancouver, WA 98682 Tel: 360-944-7551 or 800-426-1656 Fax: 360-944-7556 Email: larsen@larsenet.com	Yagi, panel & omni antennas for 915 MHz; panel and omni antennas for 2.4 Ghz
Maxrad, Inc. 4350 Chandler Drive Hanover Park, IL 60103 Tel: 800-323-9122 Fax: 630-372-8077 Email: sales@maxrad.com	Yagi directional antennas for 915 MHz, yagi and parabolic reflector directional antennas for 2.4 GHz, base station and portable omnidirectional antennas for 2.4 GHz.
Millennium Antenna Corp. 1001 Broad Street, Suite 401 Utica, NY 13501 Tel: 315-798-9374 Fax: 315-798-9431 Email: ask@millenniumantenna.com	Custom VHF/UHF/microwave antennas.
Mobile Mark, Inc. 3900-B River Road Schiller Park, IL 60176 USA Tel: 800-648-2800 or 847-671-6690 Fax: 847-671-6715 Email: sales@mobilemark.com	Directional corner reflector antennas, and omnidirectional antennas, for 915 MHz and 2.4 GHz

Radioware PO Box 1478 Westford MA 01863, USA Tel: 800-950-9273 or 603-899-6959 Fax: 800-903-2987 or 508-251-0515 Email: radware@radio-ware.com	Yagi directional antennas for 915 MHz.
Radio Waves, Inc. 267 Boston Road Corporate Place Billerica, MA 01862 USA Tel: 508-663-5777 Fax: 508-663-6226 Email: info@radiowavesinc.com	Parabolic reflector, horn, sectoral and omnidirectional antennas for frequencies above 1.5 GHz.
RSI Wireless Communications 1757 S. Winthrop Drive Des Plaines, IL 60018 USA Tel: 847-298-9420 Fax: 847-635-7946 Email: sales@rsiwc.com (UK: sales@csauk.com)	Flat panel and parabolic reflector directional antennas for 915 MHz, 2.4 GHz and 5.8 GHz bands, omnidirectional antennas for 915 MHz
Seavey Engineering Associates, Inc. 135 King Street Cohasset, MA 02025 USA Tel: 617-383-9722 Fax: 617-383-2089 Email: info@seaveyantenna.com	Flat plate and parabolic reflector directional antennas, various omnidirectional antennas (few details on web site)
Superpass Co. Inc. 17-162 Jansen Ave Kitchener, ON N2A 2L7 Canada Tel: 519-894-3489 Fax: 519-894-4534 Email: info@superpass.com	Omnidirectional and panel antennas for 2.4 GHz
TECOM Industries, Inc. 9324 Topanga Canyon Blvd Chatsworth, CA 91311 Tel: 818-341-4010 Fax: 818-718-1402 Email: webmaster@tecom-ind.com	Panel, omnidirectional and embedded antennas for 915 MHz, 2.4 GHz, and 5.8 GHz. Parabolic antennas for 2.4 GHz. Dual band 2.4/5.8 GHz panels and parabolics.
Telewave, Inc. 1155 Terra Bella Ave Mountain View, CA 94043 USA Tel: 800-331-3396 or 650-968-4400 Fax: 650-968-1741 Email: sales@telewaveinc.com	Yagi directional and fibreglass collinear omnidirectional antennas for 915 MHz

Telex Communications Inc. Wireless Products Group 8601 E. Cornhusker Hwy. Lincoln, NE 68505 USA Tel: 800-898-6723 or 402-467-5321 Fax: 402-467-3279 Email: sales@telexwireless.com	Directional parabolic, patch, panel and yagi antennas, and omnidirectional antennas, for 2.4 GHz
Til-Tek Antennas Inc. 500 Van Buren St, P.O. Box 550 Kemptville, ON K0G 1J0 Canada Tel: 613-258-5928 Fax: 613-258-7418 Email: info@tiltek.com	Directional parabolic and omnidirectional collinear antennas for 2.4 GHz
Z-Communications Inc. 9939 Via Pasar San Diego, CA 92126 Tel: 619-621-2700 Fax: 619-621-2722 Email: sales@zcomm.com	8 dBi and 14 dBi gain patch antennas (indoor/outdoor) for 2.4 GHz