

EXHIBIT 6

USERS MANUAL

Spectrum24TM

WIRELESS LAN PC CARD

symbol[®]

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FCC Requirements

This device must operate in compliance with Federal Communications Commission (FCC) Rules and Regulations Parts 15. See FCC registration label (located on bottom of equipment) for FCC registration.

This equipment has been tested and found to comply with the limits for Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Re-orient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

RF Notice

Any changes or modifications to Symbol Technologies equipment not expressly approved by Symbol Technologies could void the user's authority to operate the equipment.

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Introduction

Spectrum24, Symbol's next-generation wireless LAN, provides a high level of performance with the advantage of open architecture. Its ease of installation, high throughput, expandable capacity and superior interference immunity make it ideal for mobile communications and real-time data access applications.

Spectrum24 is a frequency hopping spread spectrum cellular network that operates between 2.4 to 2.5 GHz throughout the world. This modulation technique provides a high capacity network using single or multiple access points within large or small environments.

Spectrum24 features include:

- Bridging architecture to provide communication between multiple radio or wired network segments.
- A design that will support the forthcoming IEEE 802.11 specification.
- A 1.0 Mbps data rate for fast operation.
- Seamless roaming for mobile users of devices such as laptop computers, wireless PCs, scanning terminals and computer devices with PCMCIA slots.
- Low power operation for battery-powered devices.

Wireless LAN PC Card

The Spectrum24 Wireless LAN PC Card allows PC card-equipped host systems to easily configure and connect to the Spectrum24 through Access Points (APs). The PC Card offers high-level performance, but makes low power demands on host systems.

The PC Card features:

- high throughput/high network capacity
- very low power consumption
- a design that will support the forthcoming IEEE 802.11 specification
- seamless, full roaming mobility within a facility while staying connected to the LAN
- protocol software upgrade through flash memory

Introduction

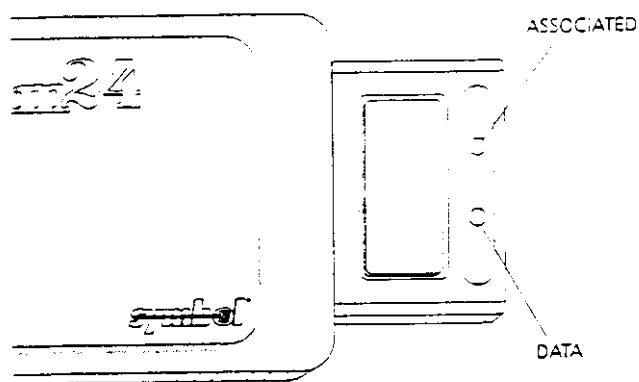
- standard Network Driver Interface Specification (NDIS) and Open Data-link Interface (ODI) drivers
- one-piece PC Card design
- molded or external antenna options
- support for Socket Services v2.0 and Card Services v2.01
- easy connection for wireless LANs.

The Wireless LAN PC Card installs in devices with Type II PCMCIA slots. The Personal Computer Memory Card International Association (PCMCIA) is responsible for developing the PC Card standard.

LED Indicators LEDs located on the molded antenna provide status information:

- ASSOCIATED** green LED indicating PC Card is associated with an AP
- DATA** yellow LED indicating data traffic between the PC Card and AP

Note: LEDs are not available on earlier models.



Power Management The PC Card operates in CAM (continuously aware mode) which means the radio remains on during operation. The PC Card can reduce power usage with PSP (power save polling). In PSP the MU (mobile unit) conserves power by suspending communication while the associated AP saves data for the MU. The MU wakes at given intervals and checks for messages from the AP. These options are software-configurable.

Network Operating System Support The software supplied includes support for:

- Novell Netware v3.x or v4.x
- Novell LAN Workplace for DOS v4.2
- Novell NetWare Requester for OS/2
- Microsoft Windows for Workgroups v3.11
- FTP PC TCP
- IBM DOS LAN Support Program v2.2b
- IBM OS/2 LAN Server Requester
- IBM OS/2 NTS/2
- others using NDIS or ODI.

Package Contents Check the package for:

- Wireless LAN PC Card
- Wireless LAN Installation and Utilities Diskette.

Note: If an item is missing or not functioning properly, contact the Symbol Support Center for a replacement.

Verify the PC Card model indicated on the card and packaging. Refer to *International Models* on page 27.

Installation

Installation includes hardware and software setup.
Installation procedures vary for different systems and network operating systems.

Requirements

The computer system requires:

- Type II or greater PCMCIA slot
- PC/MS-DOS 3.3 or later; IBM OS/2 2.1
- booting from a local drive
- 10 to 16 KB available conventional or upper memory space (terminate-and-stay-resident driver only; does not include network protocol stack)
- available interrupt (IRQ)
- available I/O port address
- available upper memory range (4 KB/32 KB).

To communicate with the network, verify:

- Spectrum24 Access Point installed and running
- NET_ID according to AP setting.

The Installation Program requires:

- MS-DOS 3.3 or later (OS/2 users, refer to README.OS2)
- 80 row by 25 column display
- 3.5" 1.44 MB floppy drive
- hard drive
- 400 KB free conventional memory space.

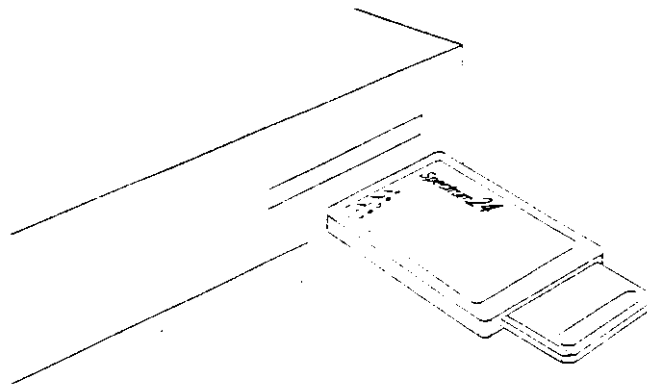
Note: If the computer is unable to use the installation program, refer to *Custom Installation and Configuration* on page 8.

Inserting the PC Card

Before installing the PC Card observe the precautions:

- Installation and removal methods vary for different host devices. Refer to host documentation for information.
- Avoid contact with liquids.
- For other installation issues, refer to the README.TXT file on the diskette.

Arrows on the front of the PC Card indicate the insertion point to the slot (Pin 1).



Antenna

Keep the area around the molded antenna clear from materials that may block radio transmission (i.e. concrete, metals, electrical systems). Inadequate access point coverage may also reduce network performance.

Note: Some models do not have a molded end-cap antenna. Refer to the antenna documentation for information on use.

Installation

Installing Driver Interfaces

Microsoft NDIS and Novell ODI allow loading of multiple protocol stacks. Multiple protocol stacks allow a workstation or mobile unit to communicate with more than one protocol. NDIS and ODI differ in loading and configuration methods.

The installation program copies driver and configuration files to the hard drive. The installation program may modify AUTOEXEC.BAT. The automatic installation assumes default settings. To control value selection, use the manual installation.

The installation program also includes diagnostics functions for testing the PC Card.

Note: For additional installation information, refer to the README.TXT file provided on the diskette. For installation in OS/2 systems, refer to the file README.OS2 on the diskette.

To run the installation program in DOS:

1. Insert the Installation and Utilities Diskette into the floppy drive.
2. Change current drive to the drive containing the floppy.
3. At the system prompt enter:

INSTALL

4. Follow the instructions from the installation program.
 - For Netware ODI DOS clients, select *Netware ODI DOS Client Installation* from the main menu. This allows an automatic or manual driver installation and configuration.
 - For installations other than Novell Netware, select *Driver Installation Instructions* from the main menu. This provides procedures for installing drivers in different environments.
 - For an overview of the installation program, select *Help* from the main menu and select *Installation Overview*.

Excluding Memory Range

Following installation, if using an extended memory manager, prevent conflicts with other devices by excluding the upper memory block where the radio resides. The memory block excluded corresponds to values in NET.CFG or PROTOCOL.INI. In I/O mode, exclude a 4 KB memory range. In memory mode, exclude a 32 KB memory range. For example if using EMM386 with the PC Card starting at 0xD000, modify the memory manager device line in CONFIG.SYS as follows for memory mode:

```
DEVICE=C:\EMM386.EXE X=0000-07FF
```

Or for I/O mode:

```
DEVICE=C:\EMM386.EXE X=D000-D0FF
```

Note: Memory manager parameter settings vary. Refer to the memory manager software documentation for excluding memory blocks.

Reboot the system after modifying CONFIG.SYS.

Verifying Installation

To verify installation, attempt to attach to the network according to the network operating system documentation. If network attachment fails:

- Verify ASSOCIATED and DATA LEDs on PC Card are active. Inactivity may indicate incorrect Network ID, bad unit or AP connection.
- Run the diagnostics included with the installation program. Failing the diagnostics may indicate which component of the network is failing.
- Refer to *Troubleshooting* on page 17 if other symptoms occur.

Custom Installation and Configuration

In some cases the installation program may not be sufficient to set up client software. For example if a protocol stack is already installed on the system or if other network operating systems are used. Refer to network operating system documentation.

Installing ODI

SLAODI.COM supports Novell Netware and FTP Software's PC/TCP and others compatible with ODI. SLAODI.COM is compatible with the ODI v1.5 specification.

For ODI, mobile units require a *multiple link interface driver (MLID)* called SLAODI.COM. SLAODI.COM is the radio device driver. The multiple stacks the mobile unit uses (e.g. TCP/IP, IPX) are known as the *multiple protocol interface (MPI)*. A *link support layer (LSL)* program provides the link between the MLID and MPI. ODI is loaded as a *terminate-and-stay-resident (TSR)* program. ODI program files may be run from the command line or as part of a batch file.

ODI binding and configuration information is stored in NETCFG and may be edited with an ASCII text editor. Refer to *Configuration Parameters* on page 14.

Example ODI Setup for NetWare

Novell Netware has two possible configurations:

NETX network shell

VLM virtual loadable module

Refer to Novell documentation for more information.

For example, to attach to a NetWare environment:

1. Modify CONFIG.SYS to exclude a memory range for the PC Card.

Note: If using VLM, change the LASTDRIVE parameter in CONFIG.SYS to Z:

Custom Installation and Configuration

2. Copy the files as needed from the drivers diskette to a sub-directory on the boot disk.
3. Modify AUTOEXEC.BAT to include the following:

```
[PATH]\LSL
[PATH]\SLAODI
[PATH]\IPXODI
[PATH]\NETX      (OR VLM)
```

Note: If the MU does not associate before attaching to the network, copy the S_WFA utility to the directory and add it between SLAODI and IPXODI.

4. Create NET.CFG with an ASCII text editor in the same directory as SLAODI. Include the following lines:

```
LINK DRIVER SLAODI
FRAME ETHERNET_802.2

MODE
IOADDRESS 300
MEMORY D000
INTERRUPT 5

NET_ID 101
```

5. Reboot the system.
6. Follow LOGIN procedures according NetWare documentation.

Example ODI Setup for PC/TCP

To install ODI for FTP's PC/TCP:

1. Modify CONFIG.SYS to exclude a memory range for the PC Card.
2. Copy the files as needed from the drivers diskette to a sub-directory on the boot disk.
3. Modify AUTOEXEC.BAT to include the following:

```
[PATH]\LSL
[PATH]\SLAODI
[PATH]\ODIPKT
[PATH]\ETHDRV
```

Custom Installation and Configuration

Note: If the MU does not associate before attaching to the network, copy the S_WFA utility to the directory and add it between SLAODI and ODIPKT.

4. Create NET.CFG with an ASCII text editor in the same directory as SLAODI. Include the following lines:

```
LINK DRIVER SLAODI
FRAME ETHERNET_II
```

```
MODE
IOADDRESS 300
MEMORY D000
INTERRUPT 5
```

```
NET_ID 101
```

5. Reboot the system.
6. Follow login procedures according network setup.

Custom ODI Configuration

ODI settings are located in NET.CFG. SLAODI.COM gets its configuration information from NET.CFG. For example:

```
LINK DRIVER SLAODI
FRAME ETHERNET_II
FRAME ETHERNET_802.3
```

```
MODE
IOADDRESS 300
MEMORY D000
INTERRUPT 5
NET_ID 101
MODE
```

Keywords and values are separated with a space. If a keyword does not require a value, the parameter is enabled with the keyword itself. To disable those parameters, remove the keyword from the file. Refer to *Configuration Parameters* on page 14.

Installing NDIS

SLANDIS.EXE is compatible with the NDIS v2.01 specification.

For NDIS, mobile units require the *radio device driver* (SLANDIS.EXE). A protocol manager (e.g. PROTMAN) binds NDIS drivers to the protocol stack. A network bind (e.g. NETBIND) program binds all the network stack components. NDIS is loaded as a system block device driver. NDIS drivers are installed in CONFIG.SYS.

NDIS configuration information is stored in PROTOCOL.INI and may be edited with an ASCII text editor. Refer to *Configuration Parameters* on page 14.

- Copy the files as needed from the diskette.
- Use an ASCII text editor to modify CONFIG.SYS and AUTOEXEC.BAT.

Example NDIS Setup for NetBIOS

To install NDIS for IBM NetBIOS:

1. Add the following lines to CONFIG.SYS:

```
DEVICE=[PATH]\PROTMAN.DOS /I:[PATH]  
DEVICE=NDIS:SLANDIS.EXE  
DEVICE=[PATH]\DXMAOMOD.SYS 001  
DEVICE=[PATH]\DXMEOMOD.SYS ,20,1  
DEVICE=[PATH]\DXMTOMOD.SYS 0=N es=4 est=4 st=64  
s=64 c=64 n=64 rnd=64 rdc=yes
```

Where [PATH] is the location of PROTOCOL.INI and NDIS files.

Note: The protocol manager PROTMAN.DOS may vary depending on the system.

Custom Installation and Configuration

2. Modify PROTOCOL.INI to contain:

```
[PROTMAN_MOD]
  DriverName = PROTMANS
[DXMAIDXCFG]
  DXMEO_MOD = DXMEO.NIF
[DXMEO_MOD]
  DriverName = DXMEOS
  Bindings = SYMBOLNET_MOD
; MACs:
[SYMBOLNET_MOD]
  DRIVERNAME=SYMBOLS
  IOADDRESS=0x300
  INT=5
  MEM=0x0000
  SOCKET=1
  NET_ID=0x101
```

Note: Parameter values may vary according to environment. Refer to *Configuration Parameters* on page 14.

3. Add the following line to AUTOEXEC.BAT before network drivers:

```
C:\NDIS\NETBIND.EXE
```

4. Reboot system.

Example NDIS Setup for PC/TCP

To install NDIS for FTP's PC/TCP:

1. Add the following lines to CONFIG.SYS:

```
DEVICE=\LSP\PROTMAN.DOS /I:[PATH]
DEVICE=[PATH]\SLANDIS.EXE
DEVICE=[PATH]\DIS_PKT.GUP
```

Where [PATH] is the location of PROTOCOL.INI and NDIS files.

Note: The protocol manager PROTMAN.DOS may vary depending on the system.

Custom Installation and Configuration

2. Modify PROTOCOL.INI to contain:

```
;
; Sample PROTOCOL.INI entry for PC/TCP Protocol
; Stack
;
[protman]
  DriverName=PROTMANS

; MACs:
[SYMBOLNET]
  DRIVERNAME=SYMBOLS
  IOADDRESS=0x300
  INT=5
  MEM=0xD000
  SOCKET=1
  NET_ID=0x101

; PC/TCP Protocol Stack:
[PKTDRV]
  drivename      = PKTDRVS
  bindings       = SYMBOLNET
  intvec         = 0x65
```

Note: Parameter values may vary according to environment. Refer to *Configuration Parameters* on page 14.

3. Add the following line to AUTOEXEC.BAT before network drivers:

```
C:\NDIS\NETBIND.EXE
```

4. Reboot system.

Custom Installation and Configuration

Custom NDIS Configuration

NDIS settings are located in `PROTOCOL.INI`. `SLANDIS.EXE` gets its configuration information from `PROTOCOL.INI`. For example:

```
[SYMBOLNET]
DRIVERNAME=SYMBOLS
IOADDRESS=0x300
INT=5
MEM=0xDE00
SOCKET=1
NET_ID=0x101
```

Keywords and values are separated with an equal sign. If a keyword does not require a value, the parameter is enabled with the keyword itself. To disable those parameters, remove the keyword from the file. Hex values are specified as `0xhh` with leading `0x`.

Configuration Parameters

Use an ASCII text editor to modify `NET.CFG` or `PROTOCOL.INI`. Hex values are indicated with a leading `0x`. `NET.CFG` does not use the leading `0x`. `PROTOCOL.INI` requires the leading `0x`. Modify the files with the following parameters:

Keyword	Description
<i>Frame</i>	Designates support for Ethernet frame types. Default is 802.3. Contact your system administrator for your network frame type. (ODI only)
<i>Mode</i>	Add <i>Mode</i> to the file to set I/O mode. If <i>Mode</i> is not in file, the PC Card is set to memory mode (default). I/O mode requires 16 bytes of I/O space, 4 KB of attribute memory. Memory mode requires 16 bytes of I/O space, 32 KB of memory (4 K attribute or 32 K common memory). In memory mode the attribute and common memory start at the same segment address. Only 8-bit I/O is supported.

Custom Installation and Configuration

<i>IOAddress</i>	I/O address in hex (0x240 to 0x380) where PC Card can be addressed. Default is 0x300. PROTOCOL.INI requires the leading 0x. NET.CFG does not.
<i>Mem (for NDIS) Memory (for ODI)</i>	PC Card resource memory location (0xC000 to 0xE900). 32KB block for Memory Mode; 4KB block for I/O Mode. Default is 0xD000. PROTOCOL.INI requires the leading 0x. NET.CFG does not.
<i>Interrupt</i>	Designates the port hardware interrupt (3 - 15). Default is 5.
<i>NET_ID</i>	Matches the access point NET_ID. Refer to access point documentation. Default is 0x101. PROTOCOL.INI requires the leading 0x. NET.CFG does not.
<i>Socket</i>	Device slot (1 or 2) which has the PC Card installed. Default is 1.
<i>Socketsservices</i>	Enables Socket Services installation if no parameter or if the parameter is Y (requires I/O mode). N disables Socket Services.
<i>Cardservices</i>	Enables Card Services installation if no parameter or if the parameter is Y (requires I/O mode). N disables Card Services.
<i>Powermgmt</i>	Sets power management mode. The value of 1 sets the PC Card for power save polling (PSP). The default is 0 for continuously aware mode (CAM) where the PC Card is always on.

Custom Installation and Configuration

<i>Beacon_Algorithm</i>	Selects the beacon algorithm (1 - 10) for every nth beacon. Beacons are broadcast every 100 msec, so a value of 1 selects 10 polls per second. 1 provides the best performance while 10 provides the best power saving. A value of 11 selects a dynamic algorithm that varies from the Beacon_Maximum to the Beacon_Minimum. Dynamic algorithms use Beacon_Minimum if there is network traffic for the unit and extend to Beacon_Maximum if there is no traffic.
<i>Beacon_Minimum</i>	Programs the minimum beacon interval for the dynamic algorithms.
<i>Beacon_Maximum</i>	Programs the maximum beacon interval for the dynamic algorithms.
<i>Pwr_Off</i>	Sets the PC Card to sleep mode after initialization.
<i>Diversity</i>	enables or disables diversity antennas. 1 enables the SECONDARY antenna connector. 0 disables diversity antennas. Default is 1.

Troubleshooting

Check the following symptoms and their possible causes before contacting the Symbol Support Center.

<i>NETX fails to find a server</i>	AP not connected to wired network wrong or incompatible frame type incorrect NET_ID; check for MU association or use S_UTIL to set faulty AP or PC Card
<i>VLM version 1.02 does not load</i>	memory range not reserved necessary VLM files are not present incompatible IPXODI (version 2.11)
<i>NDIS driver does not install/work</i>	NET_ID, memory, address, I/O address hex values in PROTOCOL.INI not specified with leading 0x memory range not reserved incompatible protocol manager and stack improper linking in PROTOCOL.INI memory, I/O and IRQ setups conflict with other installed software and/or hardware

Troubleshooting

<i>ODI driver does not install/work</i>	memory range not reserved incompatible protocol manager and stack improper linking in NET.CFG memory, I/O and IRQ setups conflict with other installed software and/or hardware
<i>TCP/IP fails</i>	incorrect IP/Subnet address incorrect NET_ID; check for MU association
<i>Nothing happens after installing the network software (no login, cannot find server, no TCP connection)</i>	incompatible firmware and driver versions memory, I/O and IRQ setups conflict with other installed software and/or hardware
<i>Slow or erratic performance</i>	out of communication range faulty antenna, antenna connector or cable not using PRIMARY antenna connection for single antenna
<i>Driver does not install or driver hangs during installation</i>	incompatible firmware and driver versions memory range not reserved memory range does not match setting in NET.CFG/ PROTOCOL.INI memory range is too small (use I/O mode if memory is restricted) memory, I/O and IRQ setups conflict with other installed software and/or hardware

Note: Contact your system administrator if other errors occur.

Errors Some messages may appear during initialization of the PC Card or when an attempt is made to load a network driver interface.

Message	Description
<i>A Spectrum24 LAN Adapter could not be found.</i>	Not a wireless LAN PC Card, incorrect memory range, incorrect socket number, PC Card is in wrong slot. Check MEM, IOADDRESS and SOCKET settings in NET.CFG or PROTOCOL.INI.
<i>A hardware initialization error occurred.</i>	Could not find Socket or Card Services and an error occurred when trying to configure card through hardware.
<i>Spectrum24 WLAN adapter failed initialization.</i>	Software unable to initialize PC Card.
<i>The INTERRUPT keyword must specify a decimal number.</i>	Value specified with keyword is invalid or out of range. Modify NET.CFG or PROTOCOL.INI.
<i>The IOADDRESS or Port keyword must specify a hexadecimal number.</i>	Value specified with keyword is invalid or out of range. Modify NET.CFG or PROTOCOL.INI.
<i>The MEMORY keyword must specify a hexadecimal segment number.</i>	Value specified with keyword is invalid or out of range. Modify NET.CFG or PROTOCOL.INI.
<i>The .NET_ID keyword must specify a hexadecimal number up to 1FF.</i>	Value specified with keyword is invalid or out of range. Modify NET.CFG or PROTOCOL.INI.
<i>The SOCKET keyword must specify a decimal number between 1 and 32.</i>	Value specified with keyword is invalid or out of range. Modify NET.CFG or PROTOCOL.INI.

Troubleshooting

The IOWORDSIZE keyword must specify 8. Value specified with keyword is invalid or out of range. Modify NET.CFG or PROTOCOL.INI.

The BEACON_ALGORITHM keyword must specify a decimal number between 1 and 21. Value specified with keyword is invalid or out of range. Modify NET.CFG or PROTOCOL.INI.

The POWERMGMT keyword must specify a decimal number of 0 or 1. Value specified with keyword is invalid or out of range. Modify NET.CFG or PROTOCOL.INI.

Utility Programs

The utility programs included on the diskette are compatible with PCs that have an Intel/Cirrus PCIC compatible PCMCIA interface. The utilities run under DOS.

Note: Do not run S_VER and S_UPDATE after the driver is installed. Doing so requires uninstalling and reinstalling the driver. Use the S_UTIL program instead.

S_WFA In some situations, the S_WFA utility is necessary to provide a short waiting period after running the driver and before attaching to the network. The utility waits for the MU to associate with an AP before continuing.

At the DOS prompt, enter:

```
s_wfa
```

The system displays:

```
SLAAP found at 0E50
Waiting for MU Association
Type any key to abort...
Firmware: V0.79 950807
Country: USA
IEEE: 00A0F8000039
Searching, Adapter is associated:
NET ID: 175
AP ID: 1
Mode: CAM
Scans: 15
AP IEEE: 00A0F8FD8986
```

S_VER S_VER displays the version/date of the installed firmware. To display the firmware information at the DOS prompt, enter:

```
s_ver
```

The system displays:

```
Spectrum24 LAN Adapter Version Display Utility, V1.25
(C) Copyright 1994 Symbol Technologies, All Rights Reserved.
Flash access enabled

FIRMWARE, IEEE Addr: 00 A0 F8 00 00 63
Ver: 'V0.68'
Date: '941104'
Country: 'USA'
Diversity: 'OFF'
```

Utility Programs

S_UTIL S_UTIL can configure the PC Card, obtain statistics and perform self tests. S_UTIL is effective only after the driver has been installed.

If no command line parameter is given, the program provides the available commands. Each command requires a one letter code. Some commands allow optional parameters.

At the DOS prompt, enter:

```
s_util <func> [parm]
```

where func is:

- A displays PC Card configuration
- B [xxx] displays Net_ID and AP_ID information.
The optional parameter xxx sets the PC Card's preferred AP ID.
- C sets to PC Card to continuously aware mode
- I displays PC Card information and statistics
- N <yyy> sets the Net_ID (yyy) for the PC Card
- P sets the PC Card to power save polling mode
- T <u> [v] [w] sets beacon parameters. The u parameter indicates the algorithm. The v parameter indicates the minimum beacon interval. The w parameter indicates the maximum beacon interval.

The system displays:

```
Spectrum24 API Utility V0.25
Usage: S_UTIL <function code> [<optional parameters>...]
Function codes and [optional] parameters:
A - Display Adapter Configuration Info
B - Display NET_ID/AP_ID Info
B <AP_ID> - Set Preferred AP_ID
C - Set Continuous Mode
I - Display Adapter Info/Statistics
N <NET_ID> - Set NET_ID
P - Set Power Save Mode
T [<Algorithm> [<min> [<max>]] - Set beacon parameters
```

For example, to put the PC Card into PSP mode, enter:

```
s_util p
```

To set the beacon algorithm, enter:

```
s_util t 11 2 10
```

Note: The 2 and the 10 are optional.

S_INFO S_INFO provides a dynamic, full screen display of PC Card statistics and configuration variables. This utility can identify if the PC Card is communicating with the radio network.

At the DOS prompt, enter:

```
s_info
```

The system displays:

```

Spectrum24 Monitor Utility V1.00
Firmware  V0.31 950829      Status  Associated      Diversity On
Country/   USA  00A0F8-000237 Net_ID   133  AP_ID   2  CAM  Bcn  1
Hop Seq    7   Delta  25   Freq    2407  AP_Pwr  1  AP_Cnt  1
                                     Assoc    1  Full   33  Partial  0

--- Transmit Statistics ---
Tx_Host    1244  ...10...20...30...40...50...60...70...80...90...100 per second
Tx_MDir_U   2
Tx_Dir_U    1242
Tx Bytes   27639  Byte/sec    0

--- Receive Statistics ---
Rx_Host    1358  ...10...20...30...40...50...60...70...80...90...100 per second
Rx_MDir_U  9226
Rx_Dir_U    2492
Rx Bytes   47853  Byte/sec  1224

--- Roaming Reason ---
AP No Tx  0  AP RSSI  0  AP Drop  0
TxRxQual  0  AP Load  0  ModeChg  0
Entry Stat AP_ID Hop RSSI #MU Load Entry Stat AP_ID Hop RSSI #MU Load
1  5  2  7  80  2  30  6
2
3
4
5
10

```

The display includes: Firmware version and date, association status, operating mode, beacon control value, country code, current frequency, hop sequence, AP_ID, transmit and receive counters (directed/non-directed), and a list of available APs.

Utility Programs

S_UPDATE S_UPDATE updates the flash image with a new firmware file. This program does not change the IEEE address or the country code. When the program completes, it displays:

Update Operation completed

At the DOS prompt, enter:

s_update

The system displays:

```
Spectrum24 LAN Adapter FLASH Loader Update Utility, V1.25
(C) Copyright 1994 Symbol Technologies. All Rights Reserved.
Reading the firmware binary file (test.bin)...
Press any key to continue, CTRL-C to abort
FIRMWARE: IEEE Addr: 00 A0 F8 00 00 63
Ver: 'V0.68'
Date: '941104'
Erasing flash... Operation successful
Programming Flash...
Stats: Max Loop = 0 at address 20B1
Number of bytes programmed = 27E, Avg cycles = 1
Programming operation successful
Update Operation completed
```

Specifications

Physical Characteristics

<i>Dimensions (less antenna)</i>	3.3 in. x 2.1 in. x 0.2 in. (85 mm x 54 mm x 5 mm)
<i>Weight (with antenna)</i>	1.6 oz (45.36 g)
<i>Operating Temperature</i>	32 to 130 °F (0 to 55 °C)
<i>Storage Temperature</i>	-5 to 150 °F (-20 to 65 °C)
<i>Humidity</i>	95% max. non-condensing
<i>Cargo/Packaged</i>	6 ft drop; 5 Hz vibration Mil-Std 810E
<i>Altitude</i>	15,000 ft - Storage 8,000 ft - Operating
<i>Vibration</i>	2 G peak, sine; 0.02 G peak random (5Hz - 2000Hz)
<i>Shock</i>	40 G, 11 ms, half sine
<i>ESD</i>	meets CE-Mark
<i>PCMCIA Compliance</i>	Type II, Version 2.01 Card and Socket Services 2.1

Radio Characteristics

<i>Frequency Range</i>	Country dependent. Typically 2400 MHz to 2500 MHz
<i>Frequency Hopping</i>	Hops 79 in US and Europe 23 in Japan Hop Rate 10 hops/sec (per FCC part 15.247) Hop Sequences 66 (per IEEE 802.11 draft specification)
<i>Radio Data Rate</i>	1 Mbps per channel

Specifications

<i>Radio Power Output</i>	500, 230 or 100 mW versions
<i>Power Management</i>	per IEEE 802.11 draft CAM Sleep Mode: < 50 μ A Receive @ 5V: 500mW=300mA 100mW=300mA Transmit @ 5V: 500mW=650mA 100mW=400mA PSP Avg. TX and RX: < 30 mA
<i>Range</i>	open environment over 1000 ft. (300 m) typical office/retail environment over 180 and within 250 ft. (56 to 76 m)
<i>TX Max. Radiated EIRP</i>	US: FCC part 15.247 Europe: ETS 300 320 Japan: RCR STD-33
<i>Modulation</i>	Binary GFSK
<i>TX Out-of-Band Emissions</i>	US: FCC part 15.247, 15.205, 15.209 Europe: ETS 300 320 Japan: RCR STD-33
<i>Network Characteristics</i>	
<i>Driver Support</i>	ODI v1.6, NDIS v2.01
<i>Ethernet Frame</i>	DIX, Ethernet_II, IEEE 802.2, IEEE 802.3

International Models

Models are dependant on country or community regulations:

Country/ Community	Rated Output Power	Antenna	Model Number
USA and Canada	500 mW	molded end-cap	LA-2400-5AZJ-01
	500 mW	external	LA-2400-5AZL-01
	100 mW	molded end-cap	LA-2400-1AZJ-01
	100 mW	external	LA-2400-1AZL-01
Australia	500 mW	molded end-cap	LA-2400-5AZJ-23
	500 mW	external	LA-2400-5AZL-23
New Zealand	500 mW	molded end-cap	LA-2400-5AZJ-37
	500 mW	external	LA-2400-5AZL-37
Japan	230 mW	molded end-cap	LA-2400-2CXJ-03
	230 mW	external	LA-2400-2CXL-03
Korea	230 mW	molded end-cap	LA-2400-2DVJ-04
	230 mW	external	LA-2400-2DVL-04
France	100 mW	molded end-cap	LA-2400-1EYJ-07
	100 mW	external	LA-2400-1EYL-07
Spain	100 mW	molded end-cap	LA-2400-1BWJ-11
	100 mW	external	LA-2400-1BWL-11
United Kingdom	100 mW	molded end-cap	LA-2400-1AZJ-05
	100 mW	external	LA-2400-1AZL-05
Ireland	100 mW	molded end-cap	LA-2400-1AZJ-06
	100 mW	external	LA-2400-1AZL-06
Germany	100 mW	molded end-cap	LA-2400-1AZJ-08
	100 mW	external	LA-2400-1AZL-08
Austria	100 mW	molded end-cap	LA-2400-1AZJ-09
	100 mW	external	LA-2400-1AZL-09

International Models

Italy	100 mW molded end-cap	LA-2400-1AZJ-10
	100 mW external	LA-2400-1AZL-10
Belgium	100 mW molded end-cap	LA-2400-1AZJ-12
	100 mW external	LA-2400-1AZL-12
Netherlands	100 mW molded end-cap	LA-2400-1AZJ-13
	100 mW external	LA-2400-1AZL-13
Switzerland	100 mW molded end-cap	LA-2400-1AZJ-15
	100 mW external	LA-2400-1AZL-15
Portugal	100 mW molded end-cap	LA-2400-1AZJ-16
	100 mW external	LA-2400-1AZL-16
Sweden	100 mW molded end-cap	LA-2400-1AZJ-17
	100 mW external	LA-2400-1AZL-17
Denmark	100 mW molded end-cap	LA-2400-1AZJ-18
	100 mW external	LA-2400-1AZL-18
Finland	100 mW molded end-cap	LA-2400-1AZJ-19
	100 mW external	LA-2400-1AZL-19
Norway	100 mW molded end-cap	LA-2400-1AZJ-20
	100 mW external	LA-2400-1AZL-20
Greece	100 mW molded end-cap	LA-2400-1AZJ-29
	100 mW external	LA-2400-1AZL-29
Luxembourg	100 mW molded end-cap	LA-2400-1AZJ-34
	100 mW external	LA-2400-1AZL-34

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