PN20

Shuttle Wireless Kit

Realtek RTL8187

User Guide

Content

Chapter 1 Introduction	3
Chapter 2 Specifications	4
Chapter 3 Installation/ Un-installation	5
3.1 Installation	5
3.1.1 For Window XP and Windows 2000 user	5
3.1.2 For Windows Vista user	9
3.2 Un-installation	14
Chapter 4 Wireless LAN Management GUI	16
4.1 Introduction of Main Window	16
4.2 Station mode	20

Chapter 1 Introduction

Thank you for purchasing Realtek RTL8187 Wireless LAN USB 2.0 Adapter. Realtek RTL8187 Wireless LAN USB 2.0 Adapter is another perfect combination of both performance and cost-effective product introduced by Realtek. Realtek hopes you can enjoy the wireless world through this solid profiled wireless card.

RTL8187 provides a full solution of all the IEEE 802.11 b/g protocols. Both of our solutions passed the WIFI tests and will be compatible with all the wireless products with WIFI logo. If you have a Realtek RTL8187 Wireless LAN USB 2.0 Adapter on hand, it means you can connect to the wireless world without any difficulty.

RTL8187 provides all the data rates in the IEEE 802.11 b/g standards. RTL8187 supports both the short and long preambles to ensure the compatibility of legacy wireless products and new ones, saving the panic works for end users to find compatible products.

Since the security has became one of the most important issue in the wireless society, Realtek provides you with the full security coverage from the naïve 64/128bits Wep encryptions, second generation WPA-PSK encryption, to the most advanced WPA2-AES encryption. WPA2 is the latest security standard currently approved by WIFI standard. Realtek cares about your security on the wireless world and makes our efforts to protect our users from malicious sniffers.

Saving mode, Adhoc wireless Lan, Wake on Lan(WOL) and other exciting features are also included in this Realtek RTL8187 Wireless LAN USB 2.0 Adapter. We will guild you through these exciting features in the following chapters and we believe that you will have a great satisfactory with its performance and ease of use.

Chapter 2 Specifications

Host system connections

Interface	Fully complies with USB 2.0 or 1.1
USB date transfer	USB high speed (480Mbps), and full speed (12Mbps)
rate	

Wireless LAN (WLAN) environment connections

WLAN Interface	Multimode features
	Fully complies with IEEE 802.11 b/g specifications
WLAN transfer rate	802.11 b: DQPSK with data scrambling capability to provide
	data rate of 1, 2, 5.5, and 11Mbps
	802.11 g: A high-speed Fast Fourier
	Transform(FFT)/Inverse Fast Fourier Transform (IFFT)
	provide data rate of 6, 9, 12, 18, 24, 36, 48 and 54Mbps
WLAN Frequency	2.4 ~ 2.497 GHz ((Industrial Scientific Medical Band)
band	
Operation Channel	Channel 1 ~ 11
Coverage Area	Indoors: 100m with straight path
	Outdoors: 400m
Compatibility	Fully compatible to IEEE 802.11 b/g devices
Security	Hardware-based IEEE 802.11i encryption/decryption
	engine, including 64-bit/128-bit WEP, TKIP, and AES
Antenna	Detachable dipolar antenna
Wake on WLAN	Wake up system by wireless LAN (AP mode)

Chapter 3 Installation / Un-installation

3.1 Installation

3.1.1 For Windows XP and Windows 2000 user

Before you proceed with the installation, please notice following descriptions.

Note1: The following installation was operated under Windows XP. (Procedures are similar for Windows 98SE/Me/2000.)

Note2: If you have installed the USB WLAN driver & utility before, please uninstall the old version first.

A. Ignore the following dialog. Please click "Cancel".

Found New Hardware Wiz	ard
	Welcome to the Found New Hardware Wizard Windows will search for current and updated software by looking on your computer, on the hardware installation CD, or on the Windows Update Web site (with your permission). Read our privacy policy
	Can Windows connect to Windows Update to search for software? Yes, this time only Yes, now and gvery time I connect a device No, not this <u>t</u> ime
	Click Next to continue.
	< <u>B</u> ack <u>N</u> ext > Cancel

B. Insert the Installation CD to your CD-ROM Drive. Execute the "setup" program.



C. Choose Setup Language



D. Click "Next" to process the installation



E. The system starts to install the software of the WLAN adapter.





F. Please click "Finish" to complete the installation.

REALTEK RTL8187 Wireless LAN Driver and Utility				
	InstallShield Wizard Complete Setup has finished installing REALTEK RTL8187 Wireless LAN Driver and Utility on your computer.			
	< Back Finish Cancel			

G. Now your PC has wireless network connection



3.1.2 For Windows Vista user

A. Ignore the following dialog. Please click "Cancel".



B. Insert the Installation CD to your CD-ROM Drive. Execute the "setup" program.

🕞 🔵 🗢 📕 🕨 Comput	er 🕨 Removable Disk (H:) 🔸	RTL8187_Vista 🕨	▼ 4+ S	earch	Q
🕒 Organize 👻 🏢 View:	s 🔻 📄 Open 🔞 Burn				2
Favorite Links	Name	Date modified	Туре	Size	
Documents	VistaX64 VistaX86	2007/7/26 卜午 04: 2007/7/26 下午 04:	File Folder File Folder		
Pictures Music	Setup.dll	2006/5/17 上午 11:	Application Extens	161 KB	
🖗 Recently Changed	data1.hdr	2007/1/9下午 09:51	HDR File	22 KB	
Searches	🔞 data2 🚳 ISSetup.dll	2007/1/9 下午 09:51 2007/1/9 下午 09:51	Cabinet File Application Extens	462 KB 540 KB	
	layout.bin	2007/1/9下午09:51 2006/5/24下午12:	BIN File Application	1 KB 445 KB	
Folders	setup	2006/12/6 下午 07: 2007/1/9 下午 09:51	Configuration Sett INX File	1 KB 230 KB	
Setup Date modified: 2006/5/24 下午 12:10 Application Size: 444 KB Date created: 2007/7/26 下午 04:37					

C. The system will automatically detect the card and display "Hardware Installation" screen. Click "Continue" to continue.



Setup Status			24
REALTEK RTL8187 W	reless LAN Driver is co	onfiguring your new sof	tware installation.
stallShield ————			
			Cancel

Now searching for Hardware and installing Drivers

D. Please click "Finish" to complete the installation.



E. Please click the "Start" than select "Connect To"

	Recent Items
Windows Live Messenger Download	Computer
Windows DVD Maker	Network
Y Paint	Connect To
Windows Meeting Space	Control Panel
	Default Programs
All Programs	Help and Support
Start Search	

F. Please select your wireless network name and click "Connect"

Show All	•	
tw.shuttle.local	Unsecured network	le.
BEST COFFEE	Unsecured network	Ee
WIFLY WIFLY	Unsecured network	•d

G. Please click "Connect Anyway"

Connect to a network	
tw.shuttle.local is an unsecured network	
<u>Connect Anyway</u> Information sent over this network might be visible to others.	
Connect to a different network	
	Cancel

 H. You can select "Save this network, Start this connection automatically", Windows will connect to wireless network on start up. Than click "Close" to finish.

Connect to a network	
Successfully connected to tw.shuttle.local	
Save this network	
✓ Start this connection automatically	
	Close

I. Now your PC has wireless network connection

3.2 Un-installation

A. Uninstall the RTL8187 WLAN Driver from "Start"→ "All Programs"→
 "Realtek RTL8187 Wireless Network Driver and Utility" or "Control Panel""→"Change or Remove Programs".

Please click "Un-istall" (or "Change/Remove") to remove RTL8187 WLAN driver.

🛅 Realtek RTL8187 Wireles	s Network Driver and Utility	🕨 🎇 Realtek RTL	8187 Wireless N	etwork Driver	and Utility
		🛃 Uninstall			
		🞇 Wi-Set Wizar	rd		
to Add or Remo	ve Programs				
	Currently installed programs:	Show up <u>d</u> ates	Sort by: Name	*	
Change or	<u></u>		5120	55,50mb	
Programs	STATES IN THE STATES INTO STATES IN THE STATES INTO	or G Wireless PC Card	Size	2.00MB	
	Realtek RTL8187 Wireless ! Utility	Network Driver and	Size	3.68MB	
	Click here for support information	<u>in.</u>	Used <u>oc</u>	casionally	
Add <u>N</u> ew Programs			Last Used On	9/20/2005	
	To change this program or remo Change/Remove.	ve it from your computer,	click Change	Remove	
	🛃 SigmaTel AC97 Audio Drivers		Size	0.09MB	
Add/Remove <u>Windows</u> Components	TOSHIBA Hotkey Utility for Displ	ay Devices	Size	1.06MB 🔽	
	InstallShield Wizard				
	Realtek RTL8187 USB preparing the InstallShi the rest of the setup pro	WLAN Driver and Utility So IdR Wizard, which will guid cess. Please wait.	etup is de you through		
]	Cancel		

B. Please click "OK" if you want to remove RTL8187 USB WLAN Driver.

Confirm l	Jninstall 🛛 🗙
Do you w	ant to completely remove the selected application and all of its components?
	Cancel
	Now removing the Realtek RTL8187 Wireless Network Driver
	50 <mark>%</mark>
、	

C. Please click "Finish" to complete the un-installation.

Realtek RTL8187 Wire	Realtek RTL8187 Wireless Network Driver and Utility						
	Maintenance Complete InstallShield Wizard has finished performing maintenance operations on Realtek RTL8187 Wireless Network Driver and Utility.						
	K Back Finish Cancel						

Chapter 4 Wireless LAN Management GUI

4.1 Introduction of Main Window

A. Main Me	REALTEK RTL8187 Wire	less LAN Utility	
	Refresh(<u>R)</u> RT-Set(<u>S</u>) Mode(<u>M</u>	I) View(V) About(A)	
	MyComputer	General Profile Available Network Advanced Status Statistics Easy Config	
	Redicek R I LOIO7 Wir	Status: Associated Throughout:	
		Sneed: 11 Mhns	
B. Adapter	ist Area	Encryption: None Two 00% Tatalo 12%	C. Property Area
		SSID: tw.shuttle.local	
		Signal Strength:	
		76%	
		Link Quality: 64%	
		Network Address:	
		Mac Address: 00:C0:02:FF:AC:34	
		IP Address: 192,168,150,20 Subpet Mack: 255,255,0	
		Gateway: 192.168.150.1	
		ReNew IP	
	< >		
D. Clabal C	Show Tray Icon	Disable Adapter	Close
D. Global C	I Radio Off	Windows Zero Confia	
E. Status B	leady	N	UM .

A. Main Menu

The main menu includes five submenus.

Refresh

As clicking the refresh menu, we can update and re-enumerate the contents of adapter list area.

RT-Set

Mode

Wireless configuration was quickly switched to be either [Station] or [Access Point] or [Access Point(WDS)].

🙁 REALTEK RTL818	7 Wirel	ess LAN Utility				
Refresh(<u>R</u>) RT-Set(<u>S</u>)	Mode(M)	View(⊻) About(<u>A</u>)				
🖃 🛄 MyComputer	🖌 Statio	n Av	ailable Network 🛛 A	dvanced Status Statistics E	asy Config	
Realtek RTL8	Acces	is Point				
	Acces	s Point(WDS) Stat	us: Associated	Throughput:		
		Spe	ed: 11 Mbps			
		Ту	e: Infrastructur	e 1997		
		Encrypti	in: None	Tx:0.00%,Tc	otal:0.00%	
		SS	D: tw.shuttle.lo	cal		
		Signal Streng	h: []]]		76%	
		Link Quali	y: 		66%	
		Network Addre	s:			
			Mac Address	00:C0:02:FF:AC:34		
			IP Address	: 192.168.150.20		
			Subnet Mask:	255.255.255.0		
			Gateway:	192,168,150,1		
			R	eNew IP		
<	>					
Show Tray Icon	,		Disable Ada	pter	ſ	Close
🗌 Radio Off					L.	
						NUM

View

Enable/disable the present of status bar. Without check mark in front will make the status bar hidden.

Refresh(R) RT-Set(S) Mode(M) Vew(V) About(A) Image: MyComputer Status Status Status Status Easy Config Image: Realtek RTL8187 Wr Image: Realtek RTL8187 Wr <th>REALTEK RTL8187 Wirel</th> <th>ess LAN Utility</th> <th></th>	REALTEK RTL8187 Wirel	ess LAN Utility	
MyComputer Realtek RTL8187 Wr Status: Associated Type: Infrastructure Encryption: None Tx:0.00%, Total:0.00% SSID: tw.shuttle.local Signal Strength: Mac Address: 00:C0:02:FF:AC:34 IP Address: 192.168.150.1 ReNew IP Show Tray Icon Disable Adapter	Refresh(<u>R)</u> RT-Set(<u>S</u>) Mode(<u>M</u>)	View(Y) About(A)	
Status: Associated Throughput: Speed: 11 Mbps Type: Infrastructure Encryption: None Tx:0.00%, Total:0.00% SSID: tw.shuttle.local Signal Strength: 76% Link Quality: 65% Network Address: 00:00:02:FF:AC:34 IP Address: 192.168.150.20 Subnet Mask: 255.255.05 Gateway: 192.168.150.1 ReNew IP Close	Hycomputer	✓ Status Bar(5) ilable Network Advanced Status Statistics Easy Config	
Status: Associated Findographic: Speed: 11 Mbps Type: Infrastructure Encryption: None Tx:0.00%, Total:0.00% SSID: tw.shuttle.local Signal Strength: Link Quality: Mac Address: 00:C0:02:FF:AC:34 IP Address: 192.168.150.20 Subnet Mask: 255.255.2 Gateway: 192.168.150.1 ReNew IP Show Tray Icon	Realtek R I L 8187 Wil	Chature Accordiated Throughput:	
Speed: I1 Mips Type: Infrastructure Encryption: None Signal Strength: 76% Link Quality: 65% Network Address: 00:C0:02:FF:AC:34 IP Address: 192.168.150.20 Subnet Mask: 255.255.255.0 Gateway: 192.168.150.1 ReNew IP		Status: Associated Hillodgiput.	
Encryption: None Tx:0.00%, Total:0.00% SSID: tw.shuttle.local Signal Strength: 76% Link Quality: 65% Network Address: 00:00:02:FF:AC:34 IP Address: 192.168.150.20 Subnet Mask: 255.255.255.0 Gateway: 192.168.150.1 ReNew IP Close		Speeu: II Mops	
End ypdol. None Tx:0.00%, Total:0.00% SSID: tw.shuttle.local Signal Strength: 76% Link Quality: 65% Network Address: 00:C0:02:FF:AC:34 IP Address: 192.168.150.20 Subnet Mask: 255.255.255.0 Gateway: 192.168.150.1 ReNew IP Disable Adapter			
Signal Strength: Link Quality: Mac Address: 00:C0:02:FF:AC:34 IP Address: 192.168.150.20 Subnet Mask: 255.255.2 Gateway: 192.168.150.1 ReNew IP Show Tray Icon		SSID: tw chuttle local	
Signal Strength: Link Quality: Network Address: Mac Address: 00:C0:02:FF:AC:34 IP Address: 192.168.150.20 Subnet Mask: 255.255.255.0 Gateway: 192.168.150.1 ReNew IP Show Tray Icon □Disable Adapter □Close			
Link Quality: Network Address: Mac Address: 00:C0:02:FF:AC:34 IP Address: 192.168.150.20 Subnet Mask: 255.255.255.0 Gateway: 192.168.150.1 ReNew IP Show Tray Icon		Signal Strength:	
Network Address: Mac Address: 00:C0:02:FF:AC:34 IP Address: 1P Address: <th></th> <th>Link Quality:</th> <th></th>		Link Quality:	
Mac Address: 00:C0:02:FF:AC:34 IP Address: 192.168.150.20 Subnet Mask: 255.255.255.0 Gateway: 192.168.150.1 ReNew IP Show Tray Icon		Network Address:	
IP Address: 192.168.150.20 Subnet Mask: 255.255.255.0 Gateway: 192.168.150.1 ReNew IP Show Tray Icon Disable Adapter Close		Mac Address: 00:C0:02:FF:AC:34	
Subnet Mask: 255.255.0 Gateway: 192.168.150.1 ReNew IP		IP Address: 192.168.150.20	
Gateway: 192.100.100.1 ReNew IP ReNew IP Show Tray Icon Disable Adapter		Subnet Mask: 255,255,255,U	
ReNew IP Show Tray Icon Oisable Adapter Oise		Gd(Bmdy: 192.106.130.1	
Show Tray Icon Disable Adapter Close		ReNew IP	
Show Tray Icon Disable Adapter Close			
Show Tray Icon Disable Adapter Close			
Show Tray Icon Disable Adapter Close	< >		
	Show Tray Icon	Disable Adapter	Close
Radio Off	Radio Off	L	
Hide or display status bar	hide or display status bar		NUM

About

Click the item to show the about dialog. The application version and license information are shown in the about dialog.

B. Adapter List Area

All connected adapters on this system for multiple adapter installations are displayed in this area. It is easy for users to change the selected adapter by one click. The contents of properties area are dependent on wireless configuration that the selected adapter was set up. If only single adapter was installed on the system, only one adapter is always selected.



C. Properties Area

The contents of this area are dependent on current wireless configuration. The current configuration is determined on previous explanation of submenu "Mode". The more detail contents are described in following wireless configuration sections for both Station and AP mode.

General Profile Availat	ole Network Advanced	Status Statistics	Easy Config	
Status: Speed: Type: Encryption: SSID: Signal Strength:	Associated 11 Mbps Infrastructure None tw.shuttle.local	Throughput	: otal:0.13%	
Link Quality:			64%	
-Network Address: -				
	Mac Address: 00:0	D:02:FF:AC:34		
	IP Address: 192.	168.150.20		
	Subnet Mask: 255.3	255.255.0		
	Gateway: 192.	168.150.1		
	ReNew (P		

D. Global Control Bar

Show Tray Icon	Disable Adapter	Close
Radio Off	Windows Zero Config	

Each control items on this bar affects the adapter or management GUI directly.

Show Tray Icon

Making this item to be checked and pressing "Close" button, the management GUI will be minimized and stay on the tray icon located at the right down corner of Windows. On the contrary, management GUI will shut down while pressing "Close" button with unchecked condition.



Radio Off

Turn off the radio for saving power. While the radio being off, the links with

other wireless network nodes are disconnected. User should be care of it while the wireless configuration is in AP mode. The radio off will cause the sub network belong to the AP to disconnect with internet/intranet.

E. Status Bar

Ready

The hints or status of the management GUI are presented in the status bar.

NUM

4.2 Station mode

The following explanations focus on the properties area.

🚜 Wireless LAN Ui	itily - RtWLAN 💷 💷	
Refresh Wi-Set N	Mode(M) View(V) Help(H)	
🖃 🖳 My Compute 🗸	Station rofile Available Network Advanced Status Statistics	
Realtek R	Status: Associated Speed: 54 Mbps Type: Infrastructure Encryption: None Throughput Tx:0%,Total:0% SSID: CiscoWPA2_11G Signal Strength: Mac Address: Mac Address: 00:E0:4C:81:87:02 IP Address: 169.254.83.185 Subnet Mask: 255.255.0.0 Gateway:	
Show Tray Icon 🗌	Radio Off Close	J

Infrastructure and Ad-Hoc

With both Infrastructure and Ad-Hoc types, the properties should looks like the picture beside. Six property pages present different information of current wireless network status.

Reading the following explanations before you reviewing these pages, it could help you to well know the wireless environment around the system.

It is easy use to switch property pages just by left button clicking of mouse the title of each page. The following six sections describe detail information of the opposite page.

A. General page

This page represents the general information of this adapter.

Status: Associated Speed: 54 Mbps Type: Infractructure	
4 Encryption: None Throughput Tx:0%, 5 SSID: CiscoWPA2 11G	Total:0%
6 Signal Strength:	68%
 Network Address Mac Address: 00:E0:4C:81:87:02 IP Address: 169.254.83.185 	
Subnet Mask: 255.255.0.0 Gateway:	

1. Status

The connection status with access point this station has.

2. Speed

Current transition speed in Mbps.(Mega-Bits-Per-Second)

3. Type

Current wireless LAN configuration type

4. Encryption

Current encryption mode used

5. SSID

Name of wireless network

6. Signal Strength

The average quality of signal pf packets received from wireless network. We recommend connecting access point with over 70% signal strength.

7. Throughput diagram

Current throughput, including transmission (Tx) and total traffic (Total).

8. Network Address group

- Mac Address: six two-digital number of this adapter
- IP Address: assigned network address by DHCP server or self-definition in four three-digital number format
- Subnet Mask: the only valid value is 2555.255.255.0
- Gateway: It comes from connected access point. Your system can not connect internet with this field empty.

B. Profile page

This page provides profiles management like add, remove, edit and duplicate just by pressing the button.

Available Profile(s)

The list box shows all the created profiles.

(Gen	eral Profile	Available Net	work Advanced	l Status	Statistics
6	A١	/ailable Profil	e(s)			
		Profile Nar	ne	SSID		1 Add
						2 Remove
						3 Edit
						4 Duplicate
						5 Set Default

1. Add

Add a new profile for access point or IBSS (Ad-Hoc mode).

2. Remove

Remove the selected profile

3. Edit

Edit contents of selected profile

4. Duplicate

Make copy of selected profile.

5. Set Default

Set the selected profile as default selection.

6. Available Network page

This page presents all BSS, including access points and IBSS, around this system. And you could pick one of these network connections.

C. Available Network(s)

Present network connection around this system

SSID	PA2 11G	Chan	None	Unknown	-
Instant	302_WME	1	TKIP	WPA Pre-Shared Key	
1 SMC280)4	1	TKIP	WPA Pre-Shared Key	
🧈 testAH0	I-AES	1	None	Unknown	
ASUS-V	VL500G	3	None	Unknown	
🗢 testtest	t	10	None	Unknown	
👗 12CG		11	None	Unknown	
🕻 Atheros	_WPA2_G	11	None	Unknown	v
<				>	
			ſ	Refresh Add to Prof	file
Note					

1. Refresh

Rescan network connection around this system

2. Add to Profile

Create profile for selected network connection in profile list and add it in to profile list.

D. Advanced page



1. Power Save

None: without power save mode

Min: wake up more frequently to receive packets Max: wake up less frequently to receive packets

2. Wireless Mode

802.11b

802.11g/b

3. 802.11b Preamble Mode

Long: higher quality but with lower performance than preamble short mode

Short: Normal quality but with higher performance then preamble long mode.

Auto: use the preamble mode of current BSS.

4. Fragment Threshold

The threshold of fragment length. Higher threshold increase data transition performance with good signal quality. However, in a poor signal quality environment, data throughput might be worser on high fragment threshold than low fragment threshold.

5. RTS Threshold

Threshold of Request To Send mechanism. The RTS frame will not send out until the packet size over threshold.

6. WOL (Wake On LAN)

The wake-on-LAN is applied for remote control purpose. You could wake up a system through network packets. For Realtek RTL8187 Wireless LAN USB 2.0 Adapter, only the same adapter on another system could wake it up.

- Input MAC Address: the six two-digit numbers of Realtek RTL8187
 Wireless LAN USB 2.0 Adapter on target system.
- Wake Up: press this button to wake it up

7. Set Defaults

Restore the default value to be current setting

8. Apply

Apply the current setting to GUI

E. Status page

Ge

neral	Profile Available Network	Advanced	Status	Statistics
	Manufacturer NDIS Driver Version Short Radio Header Encryption Authenticate Channel Set MAC Address Data Rate Channel (Frequency)	= Realte = 5.116 = No = Disabl = Open = FCC = 00:EC = 54 Mb = 1 (24	ek 63.05.08: led 0:4C:81:8 ops 12 MHz)	18 37:02
	Status SSID Network Type Power Save Mode Associated AP MAC Associated AP IP Up Time (hh:mm:ss)	= Assoc = Cisco\ = Infras = None = 00:11 = 0.0.0 = 0:07:	iiated WPA2_1: tructure L:92:7E:A .0 20	1G 40:70

- Manufacturer: It always is RealTek.
- NDIS Driver Version:
- Short Radio Header
- Encryption: Current encryption mode.
- Authenticate: authentication state
- Channel Set: selected channel plan currently.
- MAC Address: MAC address of this adapter.
- Data Rate: wireless LAN transition speed
- Channel(Frequency): current channel number
- Status: wireless network status
- SSID: name of connecting access point
- Network Type: indicate current network configuration type
- Power Save Mode: current setting power save mode
- Associated AP MAC: MAC address of connecting access point
- Associated AP IP: IP address of connecting access point
- Up Time: total connection time

F. <u>Statistics page</u>

You could watch the Tx/Rx status of current wireless connection. This page shows a statistic analysis of packet transition.

General P	rofile 🛛 Available Network 🗍 Advan	ced Status Statistics	
	Counter Name	Value	
	Tx OK	115	
	Tx Error	0	
	Tx Retry	0	
	Tx Beacon OK	0	
	Tx Beacon Error	0	
	RX OK	19	
	RX Retry	1	
	RX CRC Error(U-SUU)	U	
	RX CRC Error (500-1000)	U	
	RX CRC EIIOr (>1000)	0	
	KA ICV EIIOI	0	
			1
Poret			
		Reset	

Federal Communication Commission Interference Statement

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. 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 of the following measures:

- Reorient 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.

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

(1) This device may not cause harmful interference, and

(2) this device must accept any interference received, including interference that may cause undesired operation.

FCC Caution: Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.

IMPORTANT NOTE:

FCC Radiation Exposure Statement:

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment.

This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

IEEE 802.11b or 802.11g operation of this product in the U.S.A. is firmware-limited to channels 1 through 11.

This device is intended only for OEM integrators under the following conditions:

The transmitter module may not be co-located with any other transmitter or antenna.

As long as conduction above is met, further transmitter test will not be required. However, the OEM integrator is still responsible for testing their end-product for any additional compliance requirements required with this module installed (for example, digital device emissions, PC peripheral requirements, etc.).

IMPORTANT NOTE: In the event that these conditions can not be met (for example certain laptop configurations or co-location with another transmitter), then the FCC authorization is no longer considered valid and the FCC ID can not be used on the final product. In these circumstances, the OEM integrator will be responsible for re-evaluating the end product (including the transmitter) and obtaining a separate FCC authorization.

End Product Labeling

The final end product must be labeled in a visible area with the following: "Contains TX FCC ID: S8C-PN20"

Manual Information That Must be Included

The OEM integrator has to be aware not to provide information to the end user regarding how to install or remove this RF module in the user's manual of the end product which integrate this module.

The users manual for OEM integrators must include the following information in a prominent location

IMPORTANT NOTE: To comply with FCC RF exposure compliance requirements. The antenna must not be co-located or operating in conjunction with any other antenna or transmitter.

"To comply with FCC RF exposure compliance requirements, the antenna used for this transmitter must be installed to provide a separation distance of at least 20 cm from all persons and must not be co-located or operating in conjunction with any other antenna or transmitter.