TABLE OF CONTENTS

MAINTENANCE SECTION

PART	DESCRIPTION	PAGE
1	**WBS24 OPERATIONAL STATE**	1.1
	1.1 LED INDICATION	1.1
	1.2 WBS24 TROUBLESHOOTING	1.4
	1.3 WBS24 STATUS THROUGH WEB	1.6
2	**WBS24 SOFTWARE UPGRADE**	2.1
	2.1 UPGRADE THROUGH WEB BROWSER	2.1
	2.2 UPGRADE THROUGH THE NETWORK BOOTING	2.5
3	**WLI SOFTWARE UPGRADE**	3.1
	3.1 CONNECTING CONSOLE TERMINAL TO WLI BOARD	3.1
	3.2 CONFIGURING CONSOLE TERMINAL	3.3
4	**WLI DEBUGGING**	4.1
	4.1 CONNECTING TO WLI CONSOLE	4.1
	4.2 CLI COMMAND OF WLI	4.1
5	**WBS24 DEBUGGING**	5.1
	5.1 CONNECTING WBS24 SIO PORT TO A PC SERIAL PORT	5.1
	5.2 CLI COMMAND OF WBS24	5.1
6	**WIP-5000M SERVICE MANUAL**	

Maintenance

This section describes the WBS24 operational state, WLI debugging and WLI/WBS24/WIP upgrade.

1 WBS24 Operational State

1.1 LED Indication

The table below explains the LED status of WBS24 Combo:

Table 1.1 WBS24 Combo LED

LED	Function	Blue LED ON	Blue LED OFF	Blue LED Flickering
WLAN	Wireless LAN operation	Wireless LAN is in normal operation	Wireless LAN is not operated	Data is transmitted /received through the wireless LAN
LAN	LAN operation	LAN is in normal operation	LAN is not operated	Data is transmitted /received through LAN
WLI	Connection with WLI	Correctly connected to the WLI board	Not connected with the WLI board	Data is sent/received through the WLI board or DASL line
LD1	Display of channel B in use			
LD2	Display of channel B in use			
PWR	Power supply	Power is properly supplied	Power is not supplied	-

1.1.1 Booting Fails

WBS24 is not started if the flash memory in which programs are saved is damaged.
If WBS24 is forcibly stopped while upgrading, the flash memory may be damaged. In this case, 5 LEDs except the PWR(Power) LED are simultaneously flickering on a regular basis. To solve the problem, it is recommended to upgrade the WBS24 software through the network boot-up.

NOTE

Software Upgrade through the Network Boot-Up

For upgrading the WBS24 software through the network boot-up, refer to 'Upgrade through the Network Boot-Up'.

1.1.2 Error Solution by the LED Status

The flowchart below explains the problem solution in accordance with the LED status of WBS24:

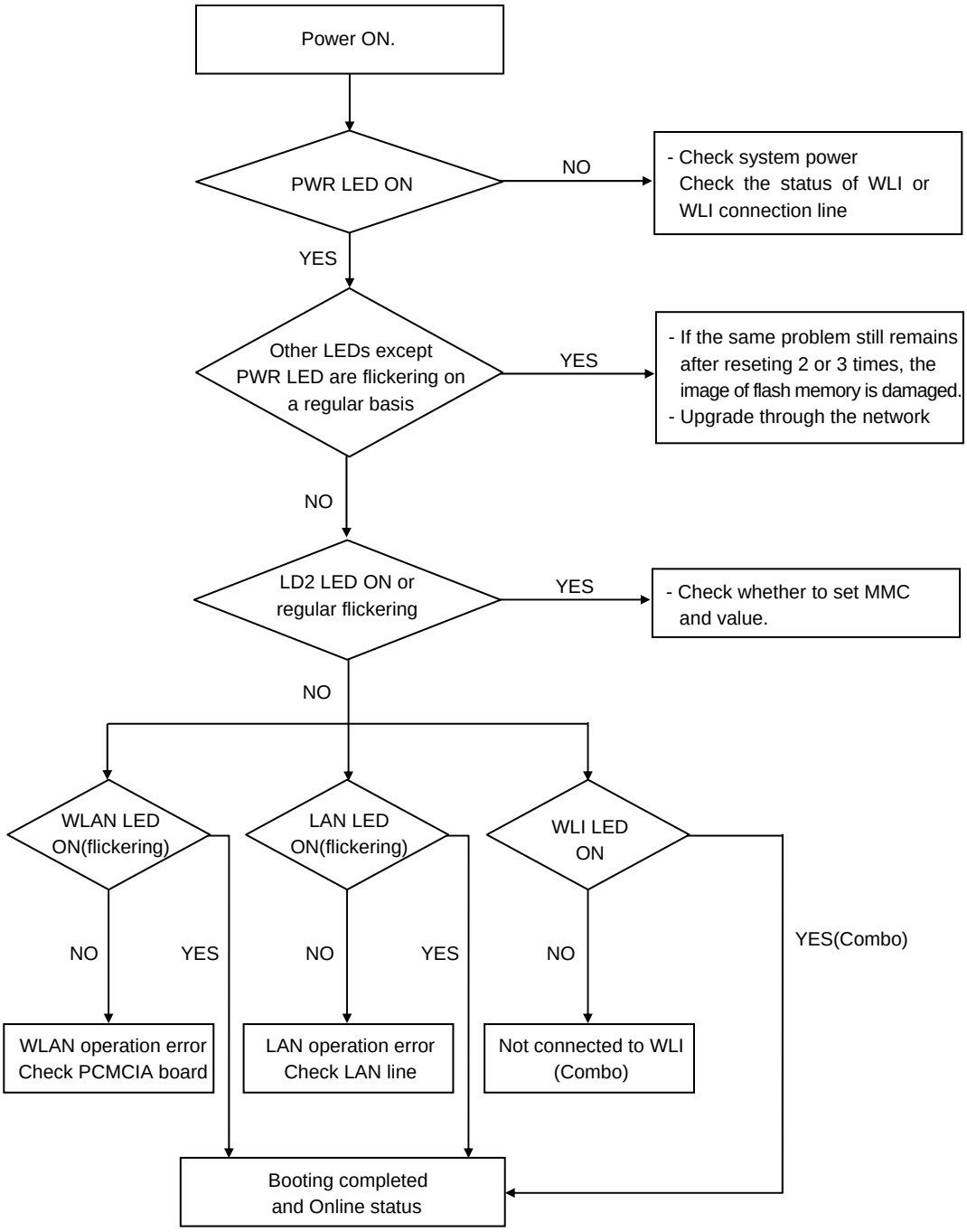


Figure 1.1 WBS24 Error Solution Flowchart

1.2 WBS24 Troubleshooting

This section describes problems that may occur while using WBS24 and their solution.

Table 1.2 WBS24 Fault and Solution

Error	Possible Cause	Checkpoints
PWR LED does not turn ON	Power is not properly supplied	Check if power is properly fed
	Cable connected to the system is not normal	Check if the cable coupled to WLI is properly connected
	Cable damaged	Check/replace cable
	Wrong cables are connected	Check if the cable is a standard Category 5 straight-through Ethernet cable
LAN LED does not turn ON	Network is not operated	Check if the network is operated and refer to the network administrator
	Cable damaged	Check/replace cable
	Wrong cables are connected	Check if the cable is a standard Category 5 straight-through Ethernet cable
WBS24 boot is not normal	Wrong installation	See Installation Section.
	Wrong system DB setting	See Programming Section
WIP-5000M Registration fails	Out of WBS24 coverage	Check the range of WBS24 coverage
	WBS24 is down	Check WBS24 installation and operation
	Incorrect procedure for WIP-5000M registration	Check the MMC setting See Programming Section Check the procedure for WIP-5000M registration - SYSTEM ID - USER ID - PASSWORD
	Wrong IP setting between WBS24 and WIP-5000M	Check the MMC setting - IP address - Gateway - subnetmask - Available RF CH
LED status of WBS24 is abnormal	H/W malfunction	Reboot WBS24 and test.
	Software malfunction	Reboot WBS24 and test. If the problem still remains, reset WBS24 or load the software again
WBS24 is not	Changes are not immediately	Wait until the changes are applied

Error	Possible Cause	Checkpoints
properly operated after setting is changed	applied	
WIP-5000M call is not connected	Out of the WBS24 service	Check the range of WBS24 service
	WBS24 is down	WBS24 installation and operation
	Wrong IP setting between WBS24 and WIP-5000M	Check the MMC setting - IP address - Gateway - Subnetmask - Available RF CH
WIP-5000M does not perform Hand-off	Out of the WBS24 service	Check the range of WBS24 service
	Interference between channels that use WBS24	Check if WBS24 RFCH is assigned. Check the distance from the adjacent AP. Do not use Bluetooth and microwave oven simultaneously.

1.3 WBS24 Status through Web

> **NOTE**
> The TCP/IP properties of PC need to be set to the same range of WBS24.

If you connect to the IP address of WBS24 through the wire/wireless LAN in the Web browser of a PC, the initial screen will appear as shown below:

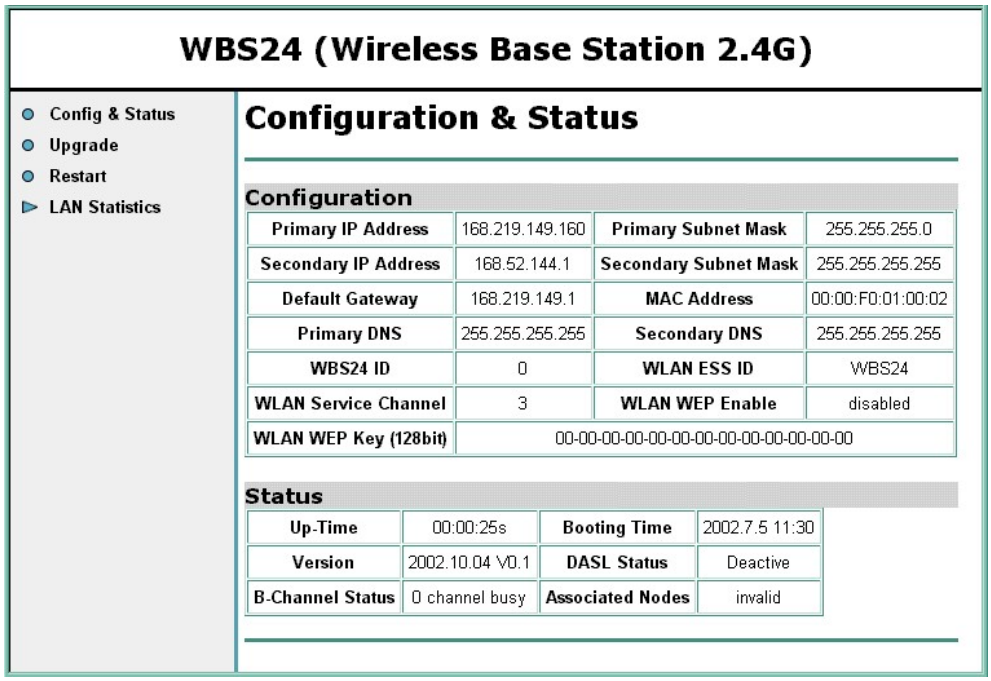


Figure 1.2 Web Screen for WBS24 Status Retrieval (Initial Screen)

1.3.1 Main Menu Description

Four main menus are at the left side of the screen. The table below explains the function of each menu:

Table 1.3 Main Menu of the Web Screen for WBS24 Status Retrieval

Menu	Description
Config & Status	Retrieve multiple configuration values and statuses
Upgrade	Upgrades the WBS24 software
Restart	Used to restart WBS24
LAN Statistics	Statistical information on data transmitted/received through WLAN and Ethernet

1.3.2 Configuration & Status Retrieval

If you select the [Configuration & Status] menu, you can retrieve the settings and operation status of LAN and WLAN as shown below:

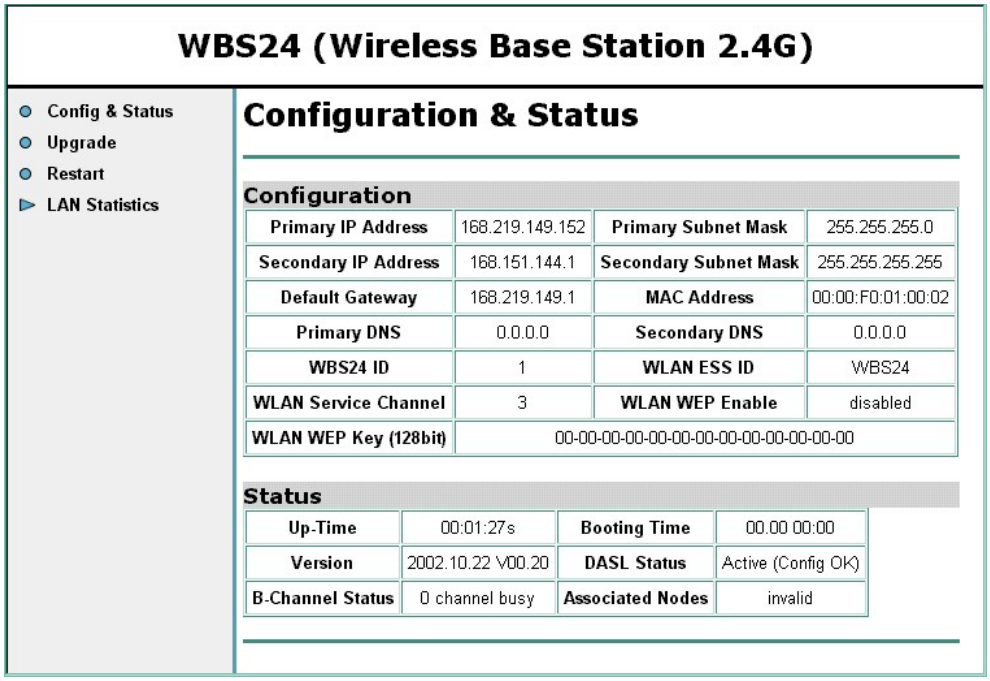


Figure 1.3 Web Screen for WBS24 Status Retrieval (Config & Status)

The table below explains the Status item:

Table 1.4 Status Item

Item	Description
Up-Time	Time passed after booting
Booting Time	Time when WBS24 is booted for the last time
Version	WBS24 version information
DASL Status	Connection to WLI - Deactive: DASL line is not active - Active (Not Config): DASL line is active, but an initialization message is not received from the system - Active (Config OK): DASL line is active, and an initialization message is received from the system
B-channel Status	Number of calls currently used
Associated Nodes	Currently invalid

1.3.3 Software Upgrade

If you select the [Upgrade] menu, you can upgrade the WBS24 software.
Upon first access, enter user ID and password. If you do not know user ID and password, please ask your system administrator.(Default-User ID: wlan, Password: wlan)

NOTE

Software Upgrade

For upgrading the WBS24 software, refer to ‘WBS24 Software Upgrade’.

1.3.4 WBS24 Restarting

Select the [Restart] menu to restart WBS24.
Upon first access, enter User ID and password. If you do not know user ID and password, please ask your system administrator. (Default- User ID: wlan, Password: wlan) If the window below appears, press the [Restart] button to restart WBS24:

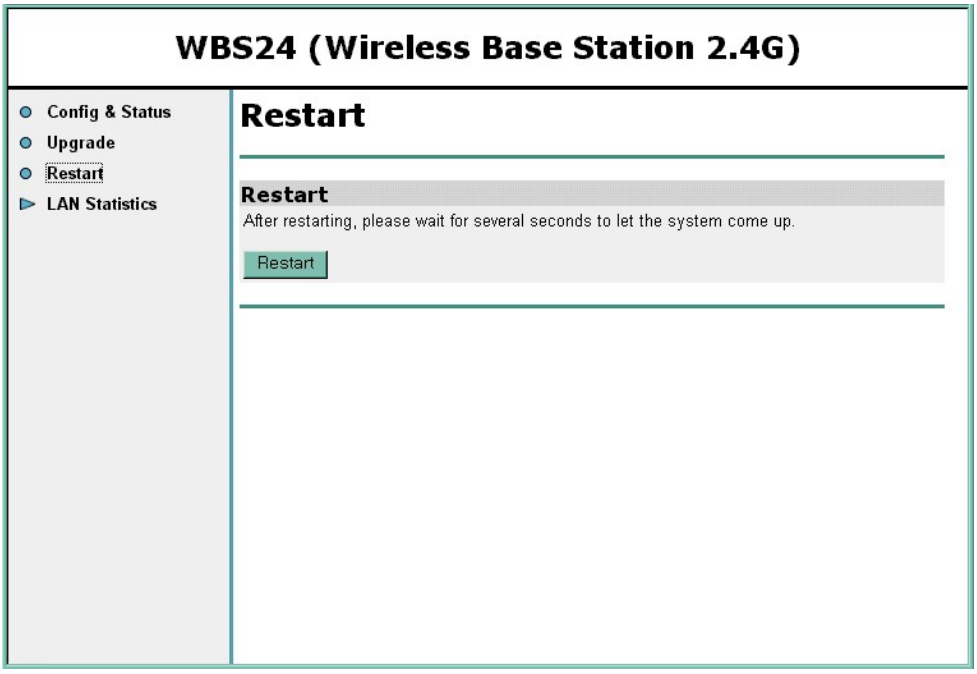


Figure 1.4 Web Screen for WBS24 Status Retrieval (Restart)

1.3.5 LAN Statistical Information

If you select the [LAN Statistics] menu, the Wireless LAN and Ethernet submenu will appear as shown below:

Screen for Wireless LAN Statistics Retrieval

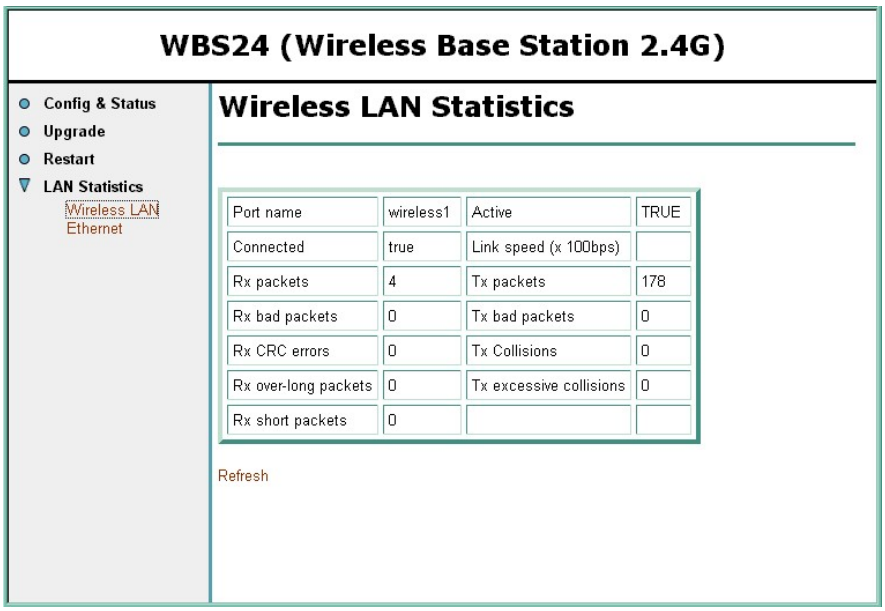


Figure 1.5 Web Screen for WBS24 Status (Screen for Wireless LAN Statistics)

Screen for Ethernet Statistics Retrieval

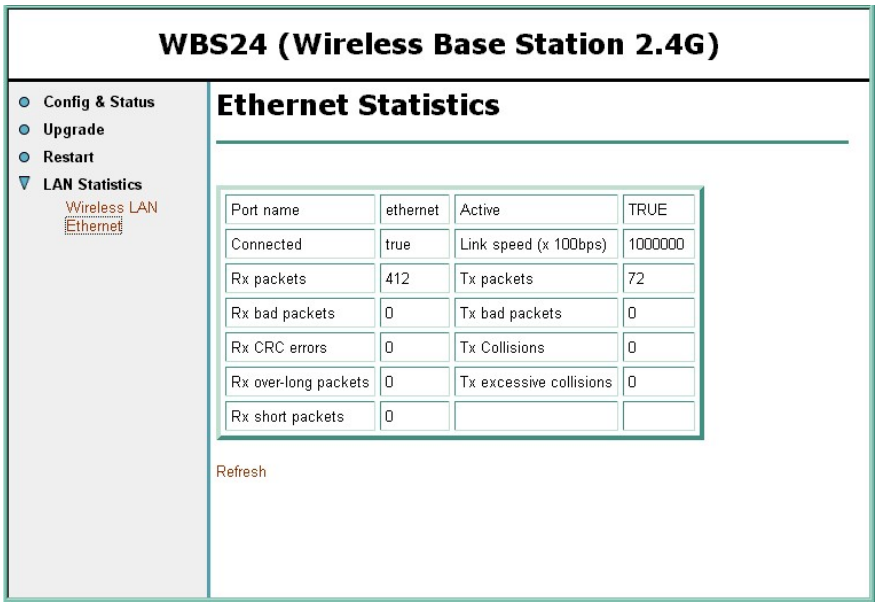


Figure 1.6 Web Screen for WBS24 Status (Screen for Ethernet Statistics)

2 WBS24 Software Upgrade

Upgrade the WBS24 software in the following 2 ways:

- Use the Web browser window
- Use the network booting

It is recommended to use the Web browser window rather than the network booting since the former is easier to set and use than the later.
If an error occurs in WBS24 due to the damaged flash memory (5 LEDs except PWR LED are simultaneously flickering), the upgrade method is returned to the network booting upgrade.

2.1 Upgrade through Web Browser

Using the Web browser of a PC or notebook, you can connect the PC or notebook to WBS24 for upgrade. The upgrade procedure varies depending on the wire/wireless connection method. Upgrade as follows:

2.1.1 Upgrade Steps

The TCP/IP properties of PC need to be set to the same range as WBS24.

1) Connect the PC or notebook to WBS24.
   - Connect the PC through the wireless LAN
     - Preparations
       - PC equipped with the WLAN NIC (Network Interface Card) board (notebook PC is recommended)
       - HTTP upgrade file (tar format)

   Position a PC within approximately 10m far from WBS24, and execute the Web browser, and connect to the IP address of WBS24. The IP address of WBS24 is set in the system, and you can retrieve the settings through [MMC 845]. In the Web window, check if DASL of the Status part is ‘Active (Config OK)’. If not, click the [Refresh] button at the top of the Web browser and wait until it is changed to ‘Active’.

   - Connect the PC through the wired LAN
     - Preparations
       - PC equipped with a wired LAN port (notebook PC is recommended)
       - HTTP upgrade file (tar format)

   Connect the PC to the wired LAN, and execute the Web browser, and connect to the IP address of WBS24. The IP address of WBS24 is set in the system, and you can retrieve the settings through [MMC 845]. In the Web screen, check if DASL of the Status part is ‘Active

(Config OK)'. If not, click the [Re-modify] button at the top of the Web browser and wait until it is changed to 'Active'.

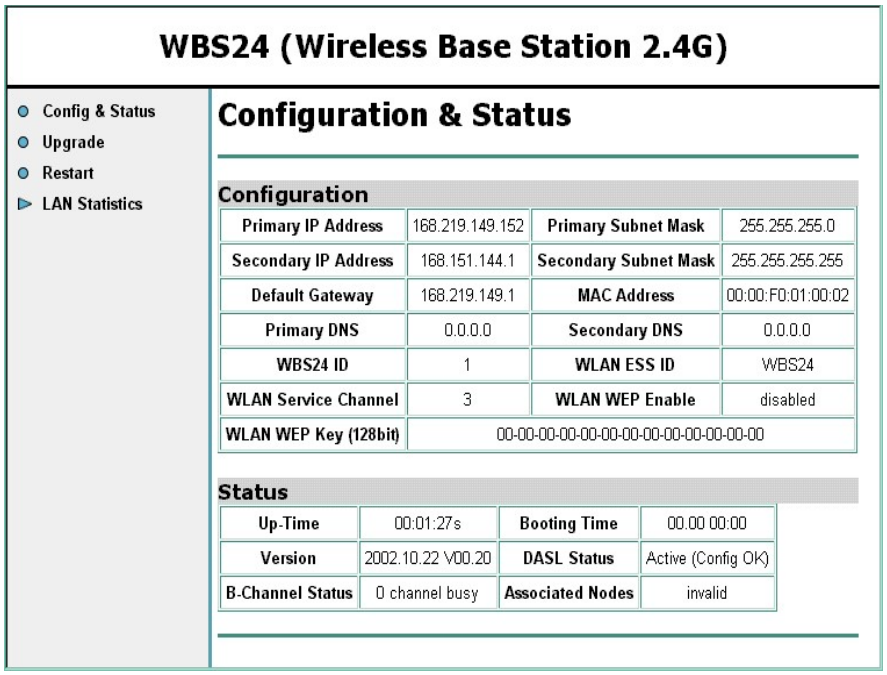


Figure 2.1 WBS24 Software Upgrade Web Screen (Initial Screen)

> **CAUTION**
>
> **WBS24 Roaming**
>
> If a PC is roaming to another WBS24 while upgrading through the wireless LAN, the upgrading is stopped and the flash memory is damaged in the PC.
> Thus, position the PC within nearly 10m far from WBS24. For safety, then, turn off all the power of other WBS24 to prevent roaming to another WBS24.

2) Select the [Upgrade] menu. Upon first access, enter user ID and password. If you do not know user ID and password, please ask the system administrator.
(Default-User ID: wlan, Password: wlan)

3) Once the user authorization is successful, the following window will appear. Click the [Index] button to select the prepared upgrade file (.tar format).

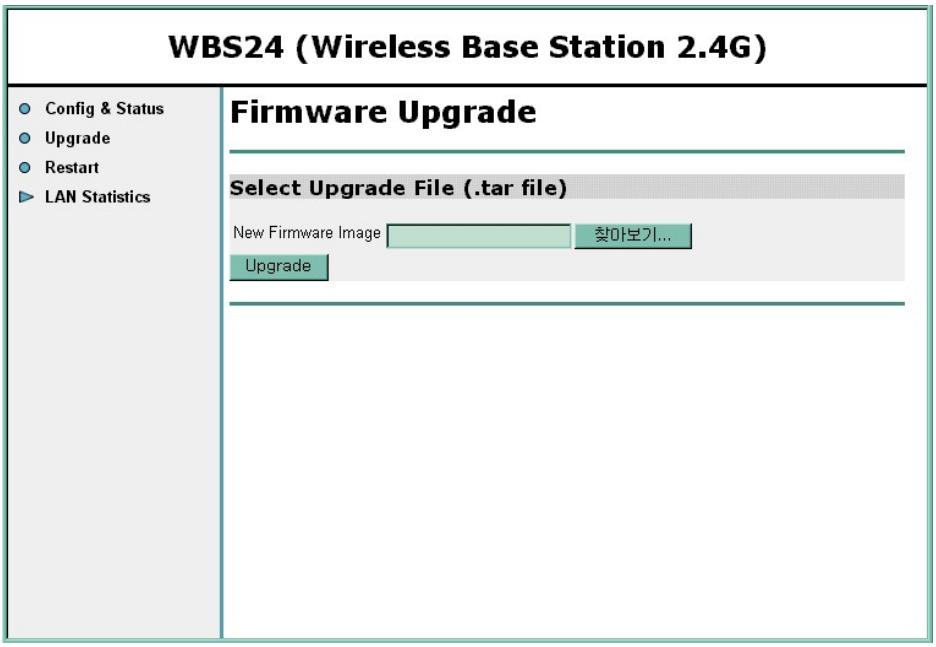


Figure 2.2 Web Screen for WBS24 Software Upgrade (Upgrade File Entry)

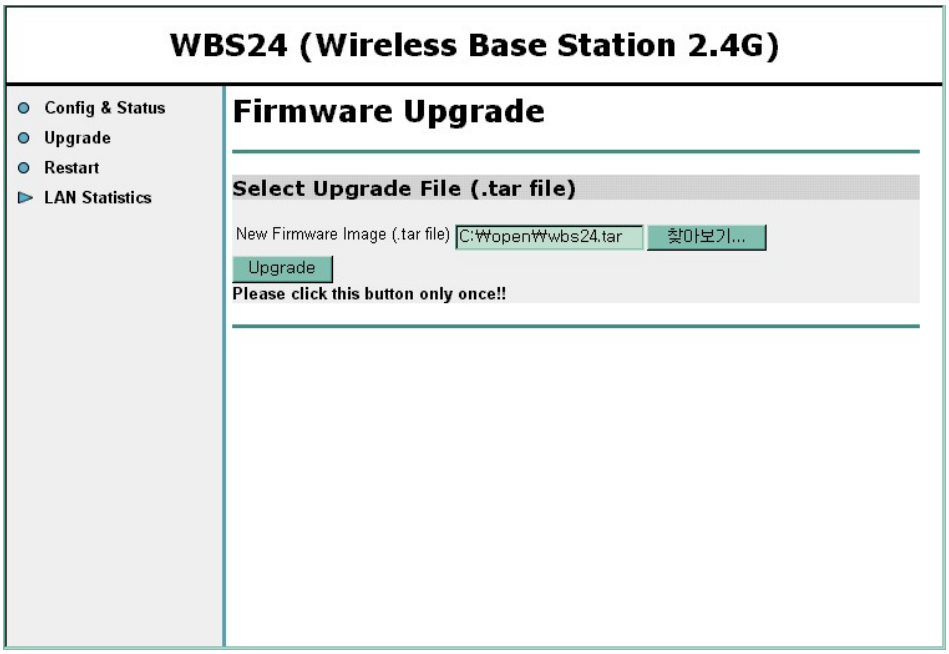


Figure 2.3 Web Screen for WBS24 Software Upgrade (Click the [Upgrade] button)

4) If the following window appears, click the [Upgrade] button. However, click the [Upgrade] button only once. It takes about 3 or 4 minutes to upgrade even if the upgrade time slightly varies depending on the wireless LAN status of WBS24.

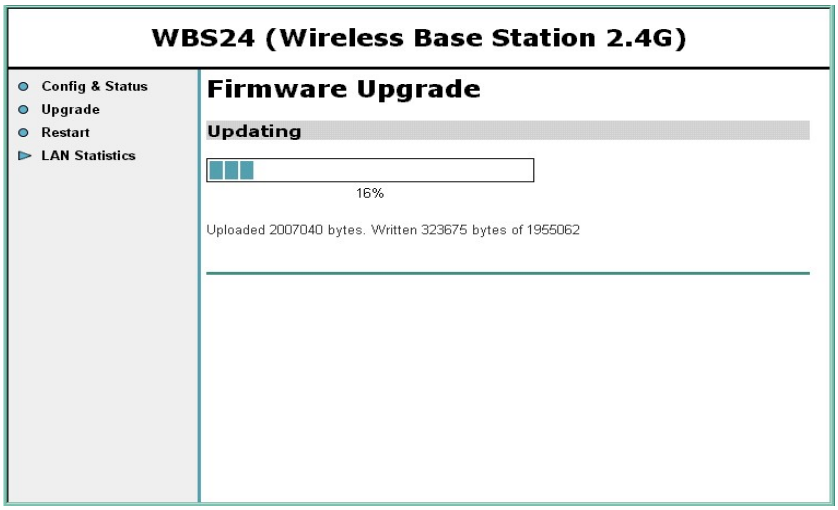


Figure 2.4 Web Screen for WBS24 Software Upgrade (Upgrade in progress)

5) Once the upgrading has been completed, the following screen will appear.
The upgraded version is applied when restarting WBS24. If you want to apply the upgraded version immediately, click the [Restart] button to restart WBS24.
After restarting, check the version through the Web screen.

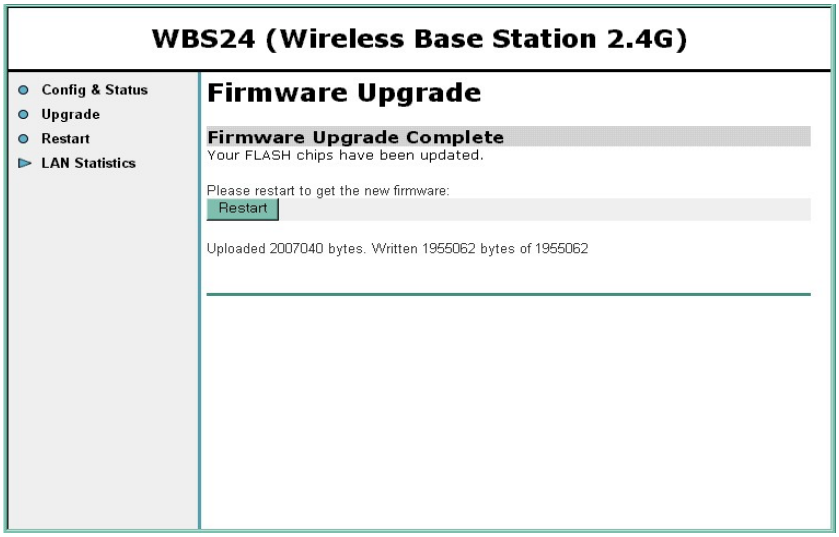


Figure 2.5 Web Screen for WBS24 Software Upgrade

6) To upgrade multiple WBS24s, in case of wireless connection, move the PC to the location where each WBS24 is situated, and repeat the steps 1~5. In case of wire connection, connect one PC to the IP address of each WBS24 and upgrade according to the steps 1~5.

2.2 Upgrade through the Network Booting

This upgrade method is used to recover errors, if the flash memory is damaged (including other errors). This method is disabled not through the wireless LAN but through the wired LAN. If WBS24 is connected to the wired LAN, you can perform upgrading with WBS24 unchanged. If not, however, connect the PC to WBS24 through the wired LAN. This section describes the upgrade method on the assumption that WBS24 is connected to the wired LAN.

Preparations

- Server PC equipped with the wire LAN port
- Network booting upgrade file (bin format)

Upgrade Steps

To boot the network, install the TFTP/BootP server program in a PC and execute the program.

NOTE

Using software other than Cabletron TFTP/BootP Services 2.0

This guide describes the upgrade method using the 'Cabletron TFTP/BootP Services 2.0' software. If other software is used, refer to the user guide to the software.

See WBS debugging section for console setup instructions.

Using the TFTP/BootP Services Software

The default of WBS24 is designed to upgrade using http. To use TFTP/BootP, change the settings of WBS24. Connect the console to WBS24, and turn on the power of WBS24 with the SPACE BAR pressed on the keyboard. Then, the boot mode console appears and then move to the next setting.

]configflash netboot yes

]reset

boot

boot

If a message appears, the setting is normal.

The Clear Setting command is as follows:

]configflash netboot no

]reset

If there is another Bootp program in the network to which a PC is connected, the procedure for WBS24 upgrade and initialization is not properly performed.

Set the Cabletron TFTP/BootP Services 2.0 software, as follows:

1) Download the program from the Internet, and execute the Setup.exe command to install the program.

2) Execute the program(for basic directory setting, execute ‘C:\TFTPBOOT\BIN\TFTPBOOT.EXE’), and click the [Start Download] tab.

3) Enter the IP of the installed PC and click the [BootP Server] tab.

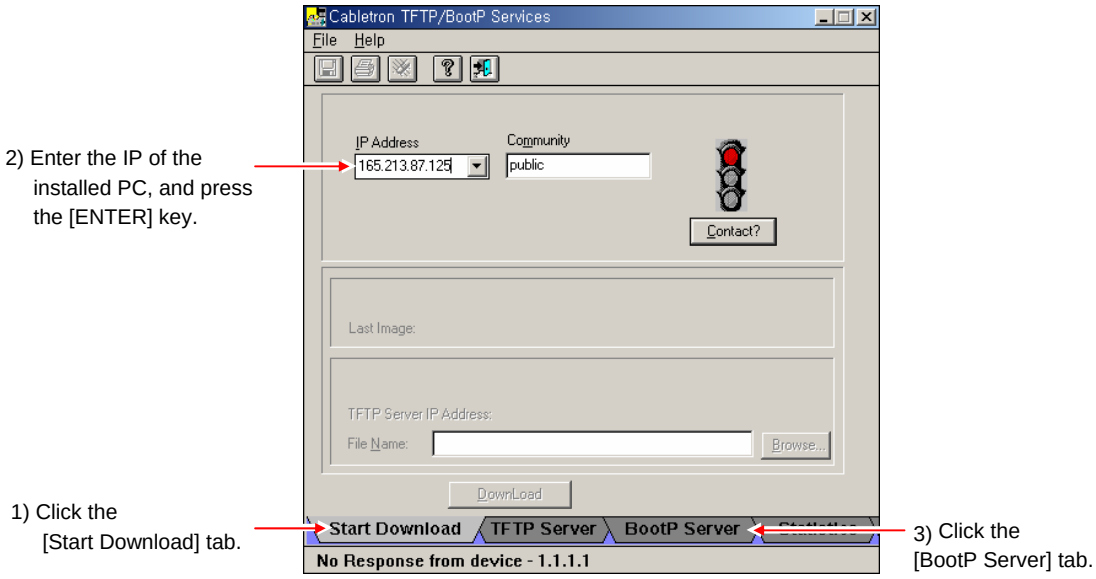


Figure 2.6 WBS24 Software Upgrade through Network Booting (1)

4) Then, the following window will appear. Enter MAC Address, IP Address, File Name, and click the [Update] button.(6 digit of the MAC Address is divided by '-')

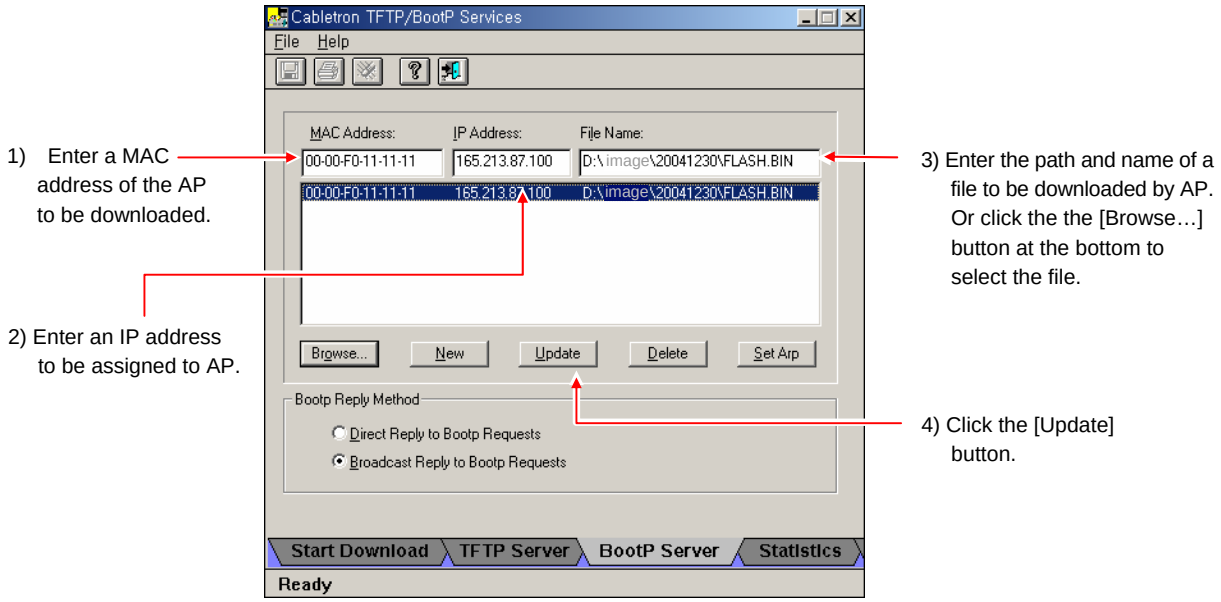


Figure 2.7 WBS24 Software Upgrade through Network Booting (2)

5) If you turn off and on the power of WBS24, the upgrading is automatically performed. If the upgrading is successful, the WLAN, LAN, and WLI LED turn blue after booting.
If the upgrading is not performed and the LED error still remains, check if the wired LAN is properly connected and the TFTP/BootP server is normally set.

3 WLI Software Upgrade

This section describes how to upgrade the software of 8WLI board.

3.1 Connecting Console Terminal to WLI Board

3.1.1 8WLI of OfficeServ 500

1) To upgrade the software of 8WLI board, use a PC terminal emulation software (e.g., TeraTerm). To connect the console terminal to the 8WLI board, use the console cable with 9-pin RS-232C connector.

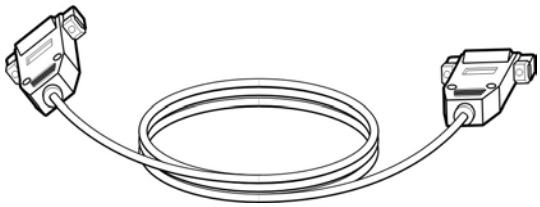


Figure 3.1 Console Terminal Connection Cable (8WLI)

2) Connect one end of the console cable to the RS-232C connector of the 8WLI board, and connect the other end to the serial port of the console terminal (PC).

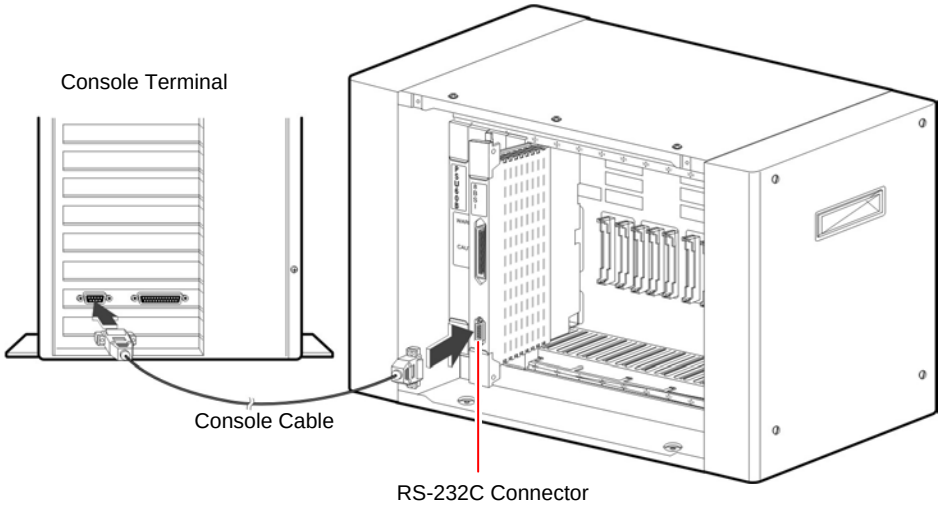


Figure 3.2 Connecting Console Terminal to 8WLI Board

3.1.2 4WLI of OfficeServ 7200

1) To upgrade the software of 4WLI board, use a PC terminal emulation software (e.g., TeraTerm) is installed. To connect the console terminal to the 4WLI board, use the console cable with 9-pin RS-232C connector and RJ-45 connector.

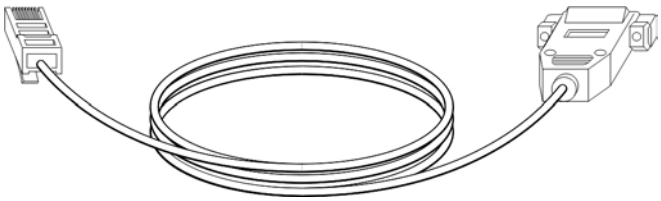


Figure 3.3 Console Terminal Connection Cable (4WLI)

2) Connect one end of the console cable to RJ-45 connector of the 4WLI board and connect the other end to the serial port of the console terminal (PC).

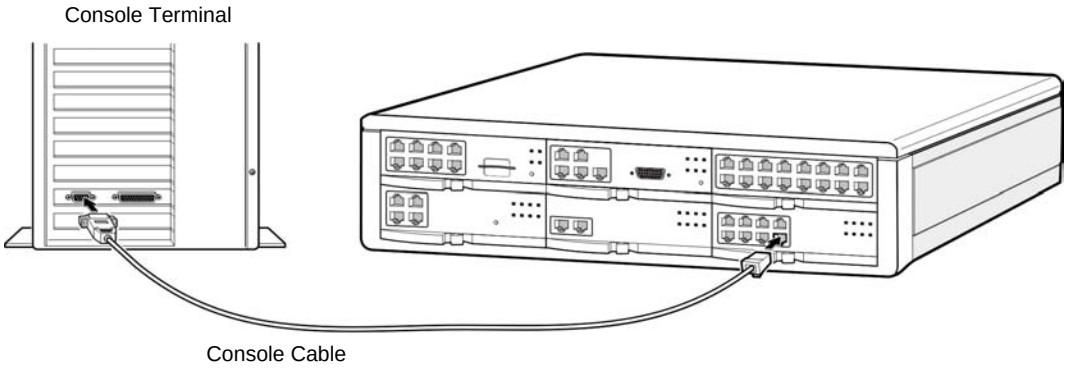


Figure 3.4 Connecting Console Terminal to 4WLI Board

3.1.3 S4WLI of OfficeServ 100

1) To upgrade the software of S4WLI board, use a PC terminal emulation software (eg. TeraTerm). To connect the console terminal to the S4WLI board use the cross over cable with 9-pin RS-232 connector.

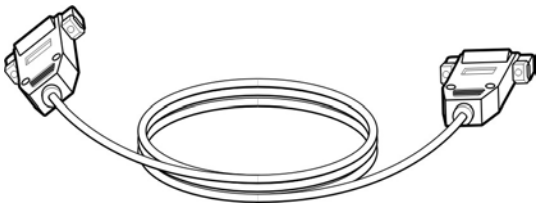


Figure 3.5 Console Terminal Connection Cable (8WLI)

2) Connect one end of the console cable to RS-232C connector of the 8WLI board and the other end to the serial port of the console terminal (PC).

3.2 Configuring Console Terminal

The values of the console terminal to be used are described as follows:

- Emulation: Compatible with VT-100/ANSI
- Bps: 9600 bps
- Stop bit: 1
- Data bit: 8
- Parity bit: Nothing
- Flow control: Nothing

Console terminal setting depends on the terminal type or operating system. The files (WLIROM.HEX, MWLIROM.HEX) are loaded to the 8WLI board through the following two terminals:

- Loading a file through Tera Terminal
- Loading a file through Qmodem

3.2.1 Loading a File with Tera Terminal

1) Start a PC.

2) Execute the Tera terminal.

3) If console terminal is not connected, the ‘Cannot open COM1’ message is displayed. Then, click [File] → [New Connection] to display a new window.

4) Select [Set] → [Serial Port] and set the values of the following items. Click the [OK] button.
   - Bits per second: 9600
   - Stop bit: 1
   - Data bit: 8
   - Parity bit: Nothing
   - Flow control: Nothing

5) Then a new Tera terminal is displayed.

If PC can’t connect to the WLI, push the reset button on the WLI card.

Downloading New Software

WLI board can upgrade software by downloading the WLIROM.HEX file through the console terminal. Save the file in the console terminal, and download it through the following method:

1) If the WLI board is normal, the following message is displayed. Once the window is displayed, press the [ENTER] key.

```
VoWLAN Console <8-Port WLI Board>
```

2) Enter the 'flo' command at the prompt and press the [ENTER] key. Then, the following menu is displayed:

```
<WLI>flo
================== Select One ========================
[1]  Single  WLI   HEX FILE Loading <Addr =0x00110000>
[2]  Multi   WLI   HEX FILE Loading <Addr = 0x00190000>
[R]  Restart
```

CAUTION

Executing the 'flo' Command

If the 'flo' command is executed, the power of all BSs connected to the 8WLI board is turned off, and their wireless LAN function is stopped. Execute this command when upgrade is ready.

3) Select [1] and load the WLIROM.HEX file from the PC to the 8WLI board. Then, the following message is displayed. The [2] item is not currently provided. Do not select [2].

```
Selected 1> Single- WLI HEX FILE Loading
Please Start Loading!!
```

4) Click the [Sending a file] from the [File] menu of the Tera term window.

5) Then, the [Sending a text] window is displayed. Select the WLIROM.HEX file and click the [OK] button.

6) Transmission contents are displayed while the WLIROM.HEX file is being sent to the WLI board. When the transmission is completed, the HEX file information is displayed as follows. It takes about 15 minutes to send the file to the WLI board.

```
=========HEX FILE INFORMATION =======================
   HEX FILE START ADDR = 0x00110000
HEX FILE END ADDR      = 0x0013465D
HEX FILE TOTAL ADDR    = 0x0002465D
=========== FLASH MEMORY WRITE START===============
STEP 1. SECTOR ERASE   → SUCCESS
STEP 2. PROGRAM WRITE  → SUCCESS
=========== FLASH MEMORY WRITE END ===============
Please [R] key to Restart or [L] key to Loading Again !!
```

7) Enter ‘R’. If the two HEX files are sent properly, the following message is displayed:

```
************************************************
* VoWLAN Console <8-Port WLI Board >           *
************************************************
```

3.2.2 Loading a File Through Qmodem

1) Execute Qmodem.exe in the DOS window. This manual describes the loading based on the Qmodem whose version is ‘SST V3.1a’. If a Qmodem version is different, refer to the corresponding manual.

2) Press the [Alt+P] key to set a modem value. Then, the <Set Modem Speed> window is displayed. Set the modem speed to 9600.

3) Press the [ENTER] key to check if the <WLI> prompt is displayed. If the <WLI> prompt is not displayed, check cable status, communications port status of a PC, and modem parameter setting status again.

4) Enter the ‘flo’ command at the <WLI > prompt. Then, the following message is displayed:

```
<WLI> flo
============== Select One =============
[1]  Single  WLI   HEX  FILE  Loading  <Addr  =  0x00110000>
[2]  Multi   WLI   HEX  FILE  Loading  <Addr  =  0x00190000>
[3]  Restart
```

5) Select [1]. Then, the following message is displayed:

```
Selected 1> Single – WLI HEX FILE Loading
Please Start Loading !!
```

6) Press the [Page-Up] key to upload the file for upgrade to the 8WLI board. Then, the following message is displayed:

```
**[ Upload Protocols ]**
* A) Ascii              *
* X) Xmodem             *
* C) Xmodem CRC         *
* R) Relaxed  Xmodem    *
* Y) 1K-Xmodem          *
* B) Ymodem Batch       *
* Your choice  ?        *
**********************
```

7) Press [A] and select the <A)Ascii> menu.

8) Enter the path of a file to be uploaded. For example, if the upload file is located at the place where the Qmodem file is located, just enter '.\WLIROM.HEX'. If the upload file is located at the place where the Qmodem file is not located, enter the file name as well as the whole path of the upload file.

9) Then, the following transfer mode window is displayed:

```
***********************Upload Files(Transmit)*********************
 Enter the transfer mode:
1)Prompted   2) Time  delay  3) No delay
*****************************************************************
```

10) When selecting [3], the upload starts. Check the upload status displayed in the window.

11) When the upload is completed, the HEX information is displayed as follows.
The displayed information depends on the version of WLI software. Displaying 'Flash Memory Write End' means the upload is successfully completed.

```
===========HEX FILE INFORMATION ==========
HEX  FILE  START  ADDR  =  0x00110000
HEX  FILE  END  ADDR    =  0x00013465D
HEX  FILE  TOTAL  LEN   =  0x0002465D

---------- FLASH MEMORY WRITE START -------------
STEP 1. SECTOR ERASE   → SUCCESS
STEP 2. PROGRAM WRITE  → SUCCESS
---------- FLASH MEMORY WRITE END ---------------

Please [R] key to Restart or [L] key to Loading Again !!
```

12) Press the [R] key and restart the WLI board. If the file is properly sent, the following window is displayed:

```
*****************************************
* VoWLAN Console < 8- Port WLI Board >    *
*****************************************
```

4 WLI Debugging

4.1 Connecting to WLI Console

Connect the console terminal to WLI board by referring to ‘Connecting Console Terminal to WLI board’.

4.2 CLI Command of WLI

The CLI commands that can be used in WLI are as follows:

help

Displays the information on S/W operating in WLI board.
How to execute: help <Enter>

```
<WLI> help
* ROM Base :  Version = 2004.03.05 11:00 MWLI ** CONSOLE
```

sys

Displays the WLAN information or system information of [MMC845] used commonly in WBS24. The information includes SYSTEM ID, SYSTEM KEY, WEP SERVICE status, SYSTEM CODEC, REGISTER status, SERVICE CODEC, Tx Power, system network information, and the status of the WBS24 being connected.
How to execute: sys <Enter>

```
<WLI> sys
********  System  Data Base Information  *************
 -SYSTEM KEY: 31 32 33 34 35 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
 -SYSTEM ID: 35 35 35 35 35 35  - 555555
 -WEP Disabled: 33 32 31 34 35 36 37 36 57 30 31 32 34 0 0 0
 -SYSTEM CODEC is A-raw        - WIP REGISTER :Enabled
 -SERVICE CODEC :  2 8 0 18
 -WBS Status: D D D D   (→ Displayed as A when WBS24 is being connected)
 -WBS USEABLE RF CHANNEL: 42 10 (→ Information bit of the channel used by
WBS24)
 -WBS Tx Power Control : [1]:3  [2]:3  [3]:3  [4]:3
 -MsgCount : 0000      -MaxCount : 0007       -FreeCount: 0500
 (System Network Information)
 SYSTEM IP : 165.213.097.012 (System Network Information)
 SYSTEM NETMASK : 255.255.255.000
 SYSTEM Gateway : 165.213.097.001
 SYSTEM MACADDRESS: 00:00:F0:3A:25:EB
```

wbs

Displays the network and version information of WBS24 Combo.
How to execute: wbs <port_number> <Enter>

- port_number: No. of the port of the WLI connected toWBS24 Combo.

```
<WLI> wbs 1
******** WBS_01  WBS24  Information (0002E716) *************

 -MAC_ADDR: 0 0 F0 3A 1E 7A    - RF channel: 1 carrier
 - Version: '04.03.18V01.12    - Gateway: A5 D5 61 1
 - PRIMARY  IP: A5 D5 61 D3    - MASK: FF FF FF 0       - DNS: 0 0 0 0
 - SECONDARY  IP: A8 D0 90 A   - MASK: FF FF FF FF      - DNS: 0 0 0 0
```

ip

Displays the information on the IP of WIP-5000M.
How to execute: ip <index> <Enter>

- index: No. of the index of WIP-5000M.

```
<WLI> ip 1
******** Offset 01  IP-POOL  Information (0002EB52) *************

 - Total Cnt: 0023     - Using:  Assigned
 - IP: A5.D5.61.32.    - MAC: 0.4.47.50.A.25.
```

restart

Restarts the WEB24 being connected.
How to execute: restart <port_number>

- port_number: No. of the port of the WLI connected to WBS24.

```
<WLI>restart 1
WBS1 Restart !! by MMC
<WLI>
[00]:DL Released
```

pr

Displays the message generated from WLI.
As a toggle type, this command sets or does not set options of a command.
How to execute: pr <n/v/d/r>

- n: Displays the message exchanged between WLI and WBS24.
- v: Displays the message exchanged between system and WLI (WBS24, WLI).

- r: Displays the message commonly applied to WLI from the messages exchanged between system and WLI.
- d: Displays the message related with DASL of WLI.

```
<WLI> pr n    (← The print command is set.)
Console print :  L3
<WLI> pr n    (← Toggled. The print command is released.)
Console print :

<WLI> pr n
Console print :  L3
<WLI> pr v    (← Various print commands can be set.)
Console print :  L3 View
<WLI> pr r
Console print :  L3 WME View
<WLI>
```

flo

Used for WLI S/W upgrade. Refer to 'WLI Software Upgrade'.
How to execute: flo <Enter>

5 WBS24 Debugging

5.1 Connecting WBS24 SIO Port to a PC Serial Port

Connecting Console

Set the console terminal to be used as follows:

- Bps: 19200 bps
- Stop bit: 1
- Data bit: 8
- Parity bit: nothing
- Flow control: nothing

Setting method of the console terminal depends on the terminal type or operating system.

Connecting Telnet

Telnet (port 23) is connected through the IP allocated to WBS24 when the WBS24 is connected to the network and being operated.

If the WBS24 keeps rebooting use the following steps:

1. Make sure the following value are correct:
   - System ID is not “WBS24”.
   - System Key is not “00000”.
   - IP Address of WBS24 is not “0. 0. 0. 0. 0.”
   - RF Channel of WBS24 is not 0.

2. Make sure the WBS24 is not set to network booting mode. If WBS24 is connected to the data network with DHCP server and the “Network Booting” is enabled this problem will occur.
   - Connect serial cable to the WBS24.
   - Run terminal emulation program, e.g. TeraTerm.
   - Power up the WBS24 while pressing the SPACE key on the PC.
   - Disable the network booting mode:]Configflash net boot no,]Reset
   - Restart the WBS24.

5.2 CLI Command of WBS24

The CLI commands that can be used in WBS24 are as follows:

Login

Login ID/Password are required to connect to WBS24.
Login ID and password are as follows:
Login ID: wlan
Password: wlan

```
 You must supply a username

Login: wlan
Password: ****

Login successful
-->
```

User Logout

If connecting to the console terminal when disconnecting WBS24 without logout, the last directory used is connected again. If connecting to the telnet, connection is not available for about 5 minutes.
How to execute: user logout <Enter>

```
--> user logout

Logging out.
```

Add New ID and Password to the WBS24

After login (ID: admin, PW: admin) to the WBS24 use the following commands to perform the function. Addition of new user is possible only by super user (ID: admin).

system list user

This is to see all existing IDs (users).

system add user wlan1

To add new user “wlan1”.

system set user wlan1 access engineer

To assign access privilege of “wlan1” to “engineer” level authority.

system set user wlan1 may configure enabled

To allow user “wlan1” to change environment.

user change wlan1

To change user to wlan1.

user password

To change current user password.

user change admin

To change user to admin (super user).

system config save

To save changes.

Delete the WBS24 ID

After login (ID: admin, PW: admin) to the WBS24 use the following commands to perform the function. Addition of new user is possible only by super user (ID: admin).

system list users

To check all existing IDs (users).

system delete user wlan1

To delete user “wlan1”.

system list users

To check the changes.

system config save

To save changes.

co en

Used to enter into the console for debugging.
How to execute: co en <Enter>

```
--> co en
Switching from CLI to console mode - type 'exit' to return

165.213.97.211>
```

exit

Used to return to CLI from console for debugging.
How to execute: exit <Enter>

```
165.213.97.211> exit
Returning to CLI from console
```

version

Displays the information on S/W operating in WBS24.
How to execute: version <Enter>

```
165.213.97.211> version
WBS24 version: '04.03.18 V01.12 22:00
BSP: WBS24 BSP v1.0 (ISOS 8.2)
CSP: He100/2xx CSP v2.3 (ISOS 8.2)
```

help

Displays the list of the commands that can be used in WBS24 console.
How to execute: help <Enter>

```
165.213.97.211 help

Commands are:

apset        chips     config      event       flashfs      fm
pa           pdhcp     restart     rom         sip
uptime       version   wbslm       wlan        wli          ww

  '.'       repeats the last command
Type 'help all' or 'help <command>' for more details
```

restart

Restarts WBS24.
How to execute: restart <Enter>

```
165.213.97.211> restart
```

Entering into/Exiting from the Lower Menu

You can enter into each lower menu created by the help command of WBS24.
How to execute: <Lower Menu Name> <Enter>

```
165.213.97.211> apset
165.213.97.211 apset>
```

Execute the following command to exit from the lower menu:
How to execute: home <Enter>

```
165.213.97.211 apset> home
165.213.97.211>
```

apset

A lower menu. This command is commonly used in WBS24 Combo and includes the information on WBS24. Enter 'home' to exit from the lower menu.

apset status

Displays the information WBS24 is set.
How to execute: apset status <Enter> or, apset <Enter> status <Enter> because apset is a submenu name.

```
165.213.97.211 >apset
165.213.97.211 apset>status

============ Configuration Display ============
  WBS24 COMBO
  WLI ID                 ID = 1
  WBS ID                 ID = 1
  Primary IP (ip1)          = 165.213.97.211
  Primary IP Mask (sub1)    = 255.255.255.0
  Secondary IP (ip2)        = 168.208.144.10
  Secondary IP Mask (sub2)  = 255.255.255.255
  Gateway IP (gw)           = 165.213.97.1
  DNS1 IP (dns1)            = 0.0.0.0
  DNS2 IP (dns2)            = 0.0.0.0
  ESS ID (essid)            = 555555
  Assigned RF Channel(rfch) = 1
  Assigned RF Channel list  = 42 10
  Wep Enable (wepenable)    = disabled
  Wep Key (128 bit) (wepkey)= 00-00-00-00-00-00-00-00-00-00-00-00-00


  SYSTEM IP  (MCP)          = 165.213.97.12 (System Network Information)
  SYSTEM NETMASK (MCP)      = 255.255.255.0
  SYSTEM GateWay (MCP)      = 165.213.97.1
  SYSTEM MAC (MCP)          =  0- 0-f0-3a-25-eb
  PDHCP CLIENT ENABLE          0  {1:disabled, 0:enable}
  MY MAC                    =  0- 0-f0-3a-1e-7a
  Txpower Control : 3 0:NIC CARD 1: 10mW, 2: 25mW, 3: 50mW, 4: 100mW)
165.213.97.211 apset>home
165.213.97.211 >
```

apset dhcp

If WBS24 is a basic type, the number of the methods of receiving network information is three as follows:

- dhcp 0: Receive all network information from the system.
  Default.
- dhcp 1: Enter and save its network information and system IP to interface with the system.
- dhcp 3: Enter and save its network information and wireless information to be used as independent Access Point(AP) regardless of the system.

How to execute: apset dhcp <setting value> <Enter> or, apset <Enter> dhcp <setting value> <Enter>

- Setting value: 0/1/3(Refer to the description above)

Setting Static IP

Set dhcp to 1, enter the network information, and execute the Save command. Then, a static IP is set after restarting WBS24. This setting is performed when various systems exist in the same subnet.

Command to be used: dhcp, ip1, sub1, gw, ipm, save
How to execute: apset <Enter>

- dhcp 1 <Enter>
- ip1 <IP address to be used for WBS24>
- subnet1 <Network mask to be used for WBS24>
- gateway <Gateway address to be used for WBS24>
- systemip <System IP address to be used for WBS24>
- save <Enter>

CHECK

When IP is changed

Since IP address is changed to the target password, connect telnet through the new password after restart. After executing the Save command, the new password is applied.

```
165.213.97.211 apset> dhcp 1
165.213.97.211 apset> ip1 165.213.97.211

New Primary IP : 165.213.97.211

165.213.97.211 apset> subnet1 255.255.255.0

New Primary Subnet : 255.255.255.0

165.213.97.211 apset> gateway 165.213.97.1

New Gateway IP : 165.213.97.1

165.213.97.211 apset> systemip 165.213.97.12

New MCP IP : 165.213.97.12

165.213.97.211 apset> save
```

dasl

A lower menu. This command is used in WBS24(Combo) and includes the information on the message exchanged between WBS24 and WLI. Enter ‘home’ to exit from the lower menu.

dasl status

Displays the configuration information of WBS24.
How to execute: dasl status <Enter> or, dasl <Enter> status <Enter>

```
165.213.97.211 >dasl
165.213.97.211 dasl> status

WBSID              = 0
RegEnable          = 0xA5
SystemCODEC        = 0x0A
ServiceCODEC       = 0x02,0x08,0x00,0x12
act_status_tb[0]   = 3
act_status_tb[1]   = 3
aiKNLmsgCount      = 0
aiKNLmaxCount      = 3
aiKNLmsgFreeCount  = 512
RestartWaitCnt     = 0
ConfigOk           = 2
AsoStationCount    = 0
Debug              = 0
WebRecovery        = 0
PCMInt_Flag        = 0x41
PCMInt_Cnt         = 0x000007C7
DSPInt_Cnt         = 0x00000004
```

```
UARTInt_Cnt            = 0x00001E56
PCMTxWait_Cnt          = 0x00000000
PCMTxFIDWait_Cnt       = 0x00000000
MAC Address            = 00:00:F0:3A:1E:7A
165.213.97.211 dasl> home
165.213.97.211 >
```

dasl config

Displays the information on the network where WBS24 is set.
How to execute: dasl config <Enter> or, dasl <Enter> config <Enter>

```
165.213.97.211 dasl> config

== System Configuration Display ==
  Primary IP           = 165.213.97.211
  Primary IP Mask      = 255.255.255.0
  Secondary IP         = 168.208.144.10
  Secondary IP Mask    = 255.255.255.255
  Gateway IP           = 165.213.97.1
  DNS1 IP              = 0.0.0.0
  DNS2 IP              = 0.0.0.0
  ESS ID               = 555555
  Assigned RF Channel  = 1
  Usable RF channel    = 0x4210
  Wep Enable           = disabled
  Wep Key (128 bit)    = 00-00-00-00-00-00-00-00-00-00-00-00-00

165.213.97.211 dasl>
```

dasl trace

Displays the message exchanged between WBS24(Combo) and WLI.
How to execute: dasl trace <o/f/d/l/s/a/p/w> <Enter> or, dasl <Enter> trace <o/f/d/l/s/a/p/w> <Enter>

- o: all print ON
- f: all print OFF
- d: toggle print about DASL
- l: toggle print about LLME
- s: toggle print about SIP
- a: toggle print about PA
- p: toggle print about PDHCP
- w: toggle print about WLAN

```
165.213.97.211 > dasl
165.213.97.211 dasl> trace

trace {o,f,d,l,s,a,p,w} : Change Trace option
   o: all print ON
   f: all print OFF
   d: toggle print about DASL
   l: toggle print about LLME
   s: toggle print about SIP
   a: toggle print about PA
   p: toggle print about PDHCP
   w: toggle print about WLAN

Current trace option :

165.213.97.211 dasl> trace s

Current trace option : SIP

165.213.97.211 dasl> trace s

Current trace option :165.213.97.211 dasl>
```

dasl iplist

Displays the information on WIP-5000M registered in the system through WBS24(Combo).
How to execute: dasl iplist <Enter> or, dasl <Enter> iplist <Enter>

```
165.213.97.211 > dasl
165.213.97.211 dasl> iplist

 ===== IP & MAC List (WIP-5000M) =====
[00] 165.213.097.050 00:04:47:50:0a:25
[01] 165.213.097.051 00:04:47:68:00:f4
[02] 165.213.097.052 00:04:47:68:00:62
```

```
[03] 165.213.097.053 00:04:47:68:00:6e
[04] 165.213.097.054 00:04:47:68:00:29
[05] 165.213.097.055 00:04:47:68:00:67

165.213.97.211 dasl>home
165.213.97.211 >
```

sip

A lower menu. This command is used in WBS24(Combo) and includes the message exchanged between WIP-5000M and WBS24. Execute the Event command to verify the message.

event

How to execute: event <show/unshow/r>:

- show: Displays print event.
- unshow: Not displays print event.
- r: Displays print event currently generated.

sip config

A lower menu of sip. This command displays the settings of SIP module used in WBS24.
How to execute: sip config <Enter> or, sip <Enter> config <Enter>

```
165.213.97.211> event show
165.213.97.211> sip
165.213.97.211 sip> config
.../Config> Call, Rel, Invite, Bye, Status, Onbusy, Free, Treg, Prt, Ds,
Alive, codEc, Load
165.213.97.211 sip>
```

sip prt

Sets the output option used in sip.
How to execute: sip prt <0/1> or sip <Enter> prt <0/1> <Enter>

- 1: error case
- 0: debug case

```
165.213.97.211 sip>prt
Set Print() level: Prt <level(0:DEBUG|1:ERROR)>
165.213.97.211 sip> prt 0

Print_Level: SIP_DEBUG set
165.213.97.211 sip>
```

sip status

Displays the information on call connection and WIP-5000M registration table.
How to execute: sip status <0/1><Enter> or sip <Enter> status <0/1> <Enter>

- 0: Call connection information
- 1: WIP-5000M registration information

```
165.213.97.211 sip> status
Show Current Call: Status <type(0:call|1:reg)>

165.213.97.211 sip> status 0

 CallInfo[0] >> tel[3322]:ip[165.213.97.71]:bch[0].
165.213.97.211 sip>
```

wlan

A lower menu of WBS24. This command is used to set information on wireless LAN.

wlan essid

Sets essid. Essid is an ID used in a wireless LAN to connect to various WBS24s using the same network.
Command: essid 123456

```
165.213.97. 211 wlan> essid 123456
 New ESSID : 123456
165.213.97. 211 wlan>
```

wlan channel

Sets RF channel.
How to execute: wlan channel <channel number> <Enter>

- channel number: 1~14 depending on the nation

```
165.213.97. 211 wlan> channel 6
New RF Channel : 6
165.213.97. 211 wlan>
```

wlan beacon

Sets the cycle of a beacon. Beacon is a transmission code that sends the information required for a wireless LAN.
How to execute: wlan beacon <interval> <Enter>

- interval: Up to 4095 on a milliseconds basis

```
165.213.97. 211 wlan> beacon 120
Beacon Interval=120, 0x :78
165.213.97. 211 wlan>
```

wlan dtim

Used not to send a beacon as many time as the setting period. This command is helpful for saving the power of a wireless terminal.
How to execute: wlan dtim <period> <Enter>

- period: An integer from 1 to 255

```
165.213.97. 211 wlan> dtim 14
DTIMPeriod=14, 0x :e
165.213.97. 211 wlan>
```

wlan hidden

Sets whether to include ESSID in a beacon or whether a response is sent when connecting to any from WIP-5000M.
How to execute: hidden <value>

- Value: Integer converted from a binary number bit. 0~3.
- bit 0: Hides ESSID(1: hide 0: not hide)
- bit 1: Sets not to respond when connecting to any(1: not respond, 0: respond)

```
165.213.97. 211 wlan> hidden 3
hidden ESSID 3
165.213.97. 211 wlan>
```

wlan brates/srates/trates

Sets the transfer rate suitable for the WLAN data transmission characteristics.
How to execute: wlan <brates/srates/trates> <value>

- brates: broadcast/multicasting and management frame transfer rate
- srates: Transfer rate of capability field of management frame
- trates: Data transfer rate

- value: 1(1M)/2(2M)/4(5.5M)/8(11M)/f(auto rate)

```
165.213.97. 211 wlan> brates f
wlan setting rates  f
165.213.97. 211 wlan> srates f
wlan setting rates  f
165.213.97. 211 wlan> trates f
wlan setting rates  f
165.213.97. 211 wlan>
```

wlan preamble

Sets the short and log preambles of 802.11b. Preamble is a method of synchronizing beam.
How to execute: preamble <bit combination> <Enter>

- bit combination: 0~3
- bit 0: long Preamble(0: Disable 1: Enable)
- bit 1: short Preamble(0: Disable 1: Enable)

```
165.213.97. 211 wlan> preamble 3
wlan setting Preamble  3
165.213.97. 211 wlan>
```

WIP-5000M

Service Manual

Publication Information

SAMSUNG TELECOMMUNICATIONS AMERICA reserves the right without prior notice to revise information in this publication for any reason.

SAMSUNG TELECOMMUNICATIONS AMERICA also reserves the right without prior notice to make changes in design or components of equipment as engineering and manufacturing may warrant.

Copyright 2005

Samsung Telecommunications America

All rights reserved. No part of this manual may be reproduced in any form or by any means—graphic, electronic or mechanical, including recording, taping, photocopying or information retrieval systems—without express written permission of the publisher of this material.

Trademarks

Product names mentioned in this manual may be trademarks and/or registered trademarks if their respective companies.

PRINTED IN USA

INTRODUCTION

Purpose

This manual provides information on the specifications of WIP-5000M, which is a mobile phone for use at homes, and describes how to disassemble and reassemble parts. Also, this manual describes failures that may occur while using the product, troubleshooting the failures.
This manual shows hardware block diagrams and exploded view.

Document Content and Organization

This manual consists of four chapters, one annex and an abbreviation as follows:

CHAPTER 1. Specifications

This chapter describes configuration and specifications of WIP-5000M.

CHAPTER 2. Troubleshooting

This chapter describes the hidden menus of WIP-5000M and how to troubleshoot failures that may occur during operation.

CHAPTER 3. Software Upgrade

This chapter describes how to upgrade the software of WIP-5000M.

CHAPTER 4. WIP-5000M Debugging

This chapter describes how to debug your WIP-5000M.

ANNEX A. PCB Component Layout

Annex A shows layout of WIP-5000M PCB components.

ABBREVIATION

Abbreviation provides the acronyms used in this manual and their full names.

© SAMSUNG Telecommunications America, L.P.

Conventions

The following types of paragraphs contain special information that must be carefully read and thoroughly understood. Such information may or may not be enclosed in a rectangular box, separating it from the main text, but is always preceded by an icon and/or a bold title.

WARNING

WARNING

Provides information or instructions that the reader should follow in order to avoid personal injury or fatality.

CAUTION

CAUTION

Provides information or instructions that the reader should follow in order to avoid a service failure or damage to the system.

CHECK

CHECKPOINT

Provides the operator with checkpoints for stable system operation.

NOTE

NOTE

Indicates additional information as a reference.

OPERATION PROCEDURES

Indicates the operational procedures that should be executed in sequence.

© SAMSUNG Telecommunications America, L.P.

Reference

WIP-5000M User Guide

WIP-5000M User Guide provides users of the WIP-5000M mobile phone with instructions on using the basic functions, convenient features and application menus.

OfficeServ Wireless Installation and Maintenance Manual

This manual provides an overview of Wireless Base Station 2.4GHz (WBS24), Access Point (AP), the Wireless Local area network Interface (WLI) board, and Wireless IP Phone 5000 Mobile (WIP-5000M) required to use wireless LAN features by inter-working with the OfficeServ 7000 Series, OfficeServ 500, and OfficeServ 100, and describes how to install and maintain WBS24 and to perform MMC programming.

Revision History

EDITION	DATE OF ISSUE	REMARKS
00	03. 2005.	Original

© SAMSUNG Telecommunications America, L.P.

SAFETY CONCERNS

For product safety and correct operation, the following information must be given to the operator/user and shall be read before the installation and operation.

Symbols

Caution

Indication of a general caution

Restriction

Indication for prohibiting an action for a product

Instruction

Indication for commanding a specifically required action

© SAMSUNG Telecommunications America, L.P.

CAUTION

Detaching Parts from Front and Rear Sides

The parts on the rear side are connected to the board on the front side by cables; thus, too strong force may cause the cables to be cut.

During Upgrade

Make sure that the power of WBS24 (combo) and WIP-5000M remain on while downloading new software. If the power goes off during download, the WIP-5000M may not operate properly.

Detaching Speakers

Non-woven fabric is attached to the speakers by a double side tape; thus, be careful that the non-woven fabric is not detached from the speakers.

Repairing Product

A part should be replaced with the one who meets qualifications.

© SAMSUNG Telecommunications America, L.P.

TABLE OF CONTENTS

Purpose i
Document Content and Organization i
Conventions ii
Reference iii
Revision History iii
Symbols iv
Caution v

CHAPTER 1. Specifications 1

1.1 Hardware Description 1
1.1.1 Front/Side View 1
1.2 Specifications 4

CHAPTER 2. Troubleshooting 6

2.1 WIP-5000M Password Verification Procedure 6
2.2 Using Test Mode 8

CHAPTER 3. Software Upgrade 10

3.1 TFTP Server Program Setting 11
3.2 Upgrading S/W in Engineering Mode 12
3.3 Checking WIP-5000M Connection 14
3.4 S/W Upgrade Using the Internet 15
3.5 S/W Upgrade Using the Internet (Downloader S/W) 20

CHAPTER 4. WIP-5000M Debugging 21

4.1 Connecting to WIP-5000M Debugging Mode Via Telnet 21
4.2 List of Commands Used in WIP-5000M Debugging Mode 22

© SAMSUNG Telecommunications America, L.P.

ANNEX A. PCB Component Layout 21

A.1 Front PCB Component Layout 27

A.2 Rear PCB Component Layout 28

ABBREVIATION 23

© SAMSUNG Telecommunications America, L.P.

CHAPTER 1. Specifications

This chapter describes the hardware description and specifications of WIP-5000M.

1.1 Hardware Description

1.1.1 Front/Side View

This section describes the buttons on the front and sides of WIP-5000M.

Figure 1.1 Front View of WIP-5000M

Button Description

Button	Description
	Used when calling or receiving an outside trunk call/when transferring a call.
MENU	Used when entering the menu mode.
	Used when moving the menu bar upward. Go to the main menu from the initial screen.
	Used when moving the menu bar downward. Go to the Volume/Ring menu from the initial screen.
	Used when moving the menu bar to the right direction/Directory. Go to the Phone Book menu from the initial screen.
	Used when moving the menu bar to the left direction. Go to the message menu from the initial screen.
OK	Used when selecting or saving the selected item for function settings.
C/MUTE	Used when erasing letters or moving to an upper menu. Used when setting mute during a call.
HOLD	Used when holding a call.
TRSF	Used when connecting to another phone number while a phone call is in progress.
CONF	Used when making a conference.
*/	Used when applying the etiquette mode.
0 ~ 9 WXYZ	Used when dialing or entering characters.
#/	Used when applying the automatic key lock.
	Used when turning the power on/off, when returning to the initial screen or when terminating the call.
	Used when controlling the volume of voice or key tone.

Icon (Display) Description

Icon	Features
	This indicates the signal intensity. : weak signal : strong signal
	This turns on when the service is not available.
	Blinks when trying to make a call and turns on when a call is connected.
	The status that indicates an alarm is set.
	Displayed when a message is received.
	Etiquette function or vibration function is enabled.
	Indicates that the automatic key lock is enabled.

© SAMSUNG Telecommunications America, L.P.

Icon	Features
	Indicates the battery charging level. : fully charged : sufficient : insufficient : needs to be charged immediately

Figure 1.2 Right Side View of WIP-5000M

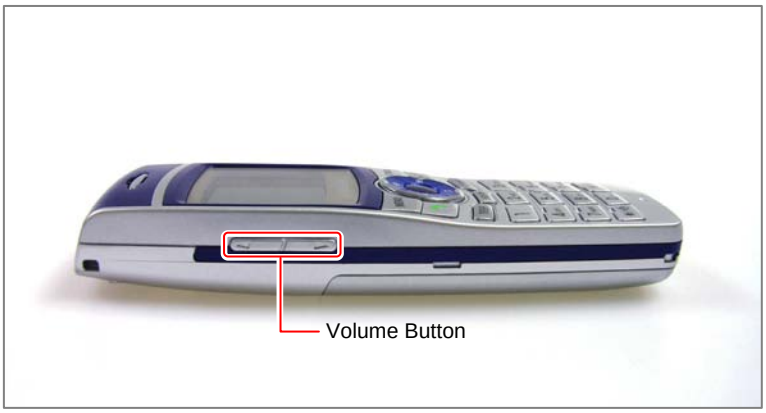


Figure 1.3 Left Side View of WIP-5000M

1.2 Specifications

The specifications of the WIP-5000M are as follows.

Table 1.1 General Specifications of WIP-5000M

Items	Specification
Model Name	WIP-5000M
Frequency	2.4 GHz ISM Band (2400~2483.5 MHz)
Size(mm)	43 (width) × 126 (length) × 19 (height)
Operating Temperature(°C)	0~45 ˚C
Operating Humidity(%)	0~90 %
Weight	95 g
Battery Charge Time	2 Hour
Battery Duration	Call duration: 2 Hours 30 Minutes Standby duration: 25 Hours

Table 1.2 Electrical Specification of WIP-5000M

Item	Specification	Remarks
Communication Speed	1, 2, 5.5, 11 Mbps	Variable
Rated Power	14 ±1 dBm	RBW 100 kHz, VBW100 kHz, and BW 22 MHz when measuring channel power using spectrum
Spurious Emission	25 uW or less (-16 dBm or less)	@Fc-26~Fc-13 MHz, Fc+13~Fc+26 MHz
	2.5 uW or less (-26 dBm or less)	@<fc-26 MHz>fc+26 MHz
Frequency Tolerance	±25 ppm	-
Max Rx Input Level Allowed	-30 dBm	@ FER: 8 × 10-2 11 Mbps CCK Modulation
Rx Sensitivity	-81 ±2 dBm	-
Average Current Consumption	250 mA Typ.	@ 2 % Tx, 98 % Rx
Consecutive Tx Current Consumption	450 mA or less	-
Consecutive Rx Current Consumption	400 mA or less	-
Pass Bandwidth	26 MHz or less	-
Power Supply	+3.8 V Litum-Ion Battery Charger: - input: 110~220 VAC - output: DC4.2 V 800 mA	-

© SAMSUNG Telecommunications America, L.P.

Item	Specification	Remarks
Typical Power Consumption	Calling: 440 mA/3.8 VDC Sleep mode: 20 mA/3.8 VDC	-

Table 1.3 Detail Specifications of WIP-5000M

Item	Specification
Air Interface Standard	IEEE802.11b DSSS
Data Rates Supported	1 Mbps, 2 Mbps, 5.5 Mbps, 11 Mbps
Modulation Technique	Direct Sequence Spread Spectrum: DBPSK @ 1 Mbps DQPSK @ 2 Mbps CCK @ 5.5 Mbps and 11 Mbps
Operational Channel	Europe:13 (ETSI) Ch1~Ch13/America (FCC): Ch1~Ch11
Medium Access Protocol	Carrier Sense Multiple Access/Collision Avoidance(CSMA/CA)
Network Architecture Type	Infrastructure
Security	128 bit WEP(Wired Equivalent Privacy) key
Available Transmit Power	15 dBm max @ 22 MHz channel bandwidth
Range	Depend upon AP antenna gain - Indoor: Approximately 150 ft - Outdoor: 400 m (Reception is good in all directions up to 150 m from AP, but is good only in certain directions from 150 m to 400 m distance from the AP.)
Antenna	Inside-Antenna (Intenna)
Call Signal Protocol	Session Initiation Protocol (SIP) Request For Comments 2543 bis 09 Compliant
LCD	128 × 64 dot Mono + 1 Icon Line
LED, LCD Back light	Color: Blue, EL-Sheet (Blue)
Warranty	One Year

© SAMSUNG Telecommunications America, L.P.

CHAPTER 2. Troubleshooting

This chapter describes the hidden menus of WIP-5000M and how to troubleshoot failures that may occur during operation.

2.1 WIP-5000M Password Verification Procedure

WIP-5000M users who have forgotten the password can verify the password by executing the following procedure:

When WIP-5000M is not in Key Lock State

NOTE

OfficeServ Series AP

WBS24 is an Access Point (AP) that can inter-work with the following systems: OfficeServ 500, OfficeServ 100, and OfficeServ 7000 Series. For detailed information on WBS24 (combo), refer to the 'OfficeServ Wireless Installation Manual and OfficeServ Wireless Maintenance Manual'.

CHECK

When WIP-5000M is not in Key Lock State

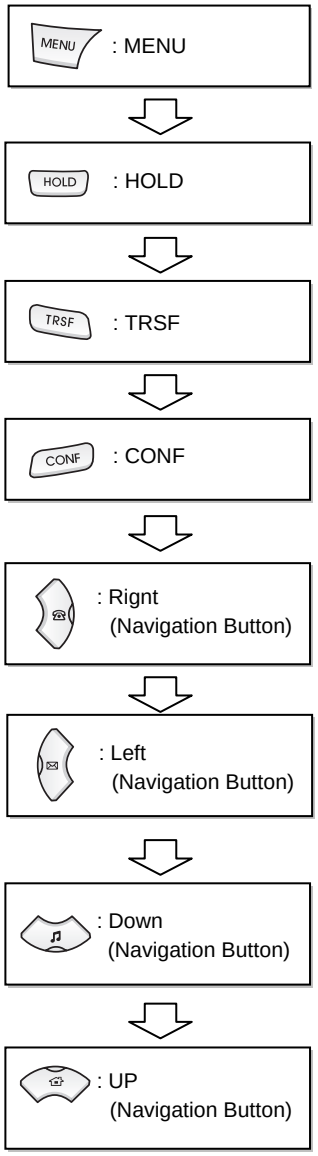
WIP-5000M will not change to 'Key Lock' status unless registered to WBS24. Register the WIP-5000M to WBS24 and change the status to 'Key Lock'. Refer to the 'WIP-5000M User Guide' for the registration procedure.

Switch to 'Key Lock' state by pressing and holding the '#' key and execute the next ('When WIP-5000M is in Key Lock State') procedure:

When WIP-5000M is in Key Lock State

If the WIP-5000M is in Key Lock state, users can check the password regardless of whether the WIP-5000M is registered to WBS24.

Press the buttons according to the sequence shown below to display the password:



Use MMC 101 to reset WIP-5000M passcode to 1234.

2.2 Using Test Mode

This section describes how to use the test mode for checking and setting the terminal status, S/W version and various current statuses.

- To enter the test mode, enter MENU → HOLD → */ → #/ button in order.

S/W Version

- MENU → HOLD → */ → #/ → 1

  Displays current S/W version.

Samsung Ver 1.00 26.11.2004 (Zone:) Build 0

IP Address

- MENU → HOLD → */ → #/ → 2 ABC

  Displays WIP-5000M's IP address.

IP address
165.213.99.100

MAC Address

- MENU → HOLD → */ → #/ → 3 DEF

  Displays WIP-5000M's MAC address.

MAC address
00:02:78: F5:08:54

Phone State

- MENU → HOLD → */ → #/ → 4 GHI

  Displays UI(User Interface) status, SIP(Session Initiation Protocol) status, current codec configuration and registered AP type.

UI: StateOnHook Sip: Terminating Codec: 711a/u, 729 AP Type: Standard

Display RSSI

- MENU → HOLD → */ → #/ → 5 JKL
- In case of conversation, ♫ → #/

  Displays WIP-5000M's RSSI(Received Signal Strength Indication) information.
  - 1: # of Scanned AP
  - MAC: MAC Address of WBS24
  - C: Channel in use (1~11)
  - CQ: Call Quality (0~92)
  - SL: Signal Level (27~154)

1	MAC	C	CQ	AS	SL
102701	b	30	75	20	

Quality Of Voice	Communication Quality(CQ)	Signal Level(SL)
Good	92-40	9 A – 78
Poor	40-20	78 – 5A
Bad	20-0	5A–16

The WIP DBG En/Dis, Telnet, and Data Clear modes are set for development.

WIP DBG En/Dis (Debugging Mode)

- MENU → HOLD → */ → #/ → 6 MNO

  Enables or disables WIP-5000M debugging mode.

Telnet

- MENU → HOLD → */ → #/ → 7 PQRS

  Enables user to connect to WIP-5000M via Telnet.

Auto Answer

Set handset to Auto Answer Mode.

Scan Test

- MENU → HOLD → */ → #/ → */

  Scans AP around WIP-5000M.

Prism Scan Test
Scan Channel ? _

SET AEC(Acoustic Echo Cancellation)

- MENU → HOLD → */ → #/ → #/

  Enables or disables AEC (Acoustic Echo Cancellation) function.

Echo Cancel : On
1: Disable
2: Enable ←

CHAPTER 3. Software Upgrade

This chapter describes how to upgrade the software of WIP-5000M.

Prepare the following items to upgrade the software of WIP-5000M:

- Desktop or portable PC
- LAN cable
- WBS24 combo
- WIP-5000M
- S/W image (WIP-5000M S/W image)
- TFTP program (WinTFTP Server 1.0)

NOTE

OfficeServ Series AP

WBS24 is an Access Point (AP) that can inter-work with the following systems: OfficeServ 500, OfficeServ 100, and OfficeServ 7000 Series. For detailed information on WBS24, refer to the 'OfficeServ Wireless Installation Manual and OfficeServ Wireless Maintenance Manual'.

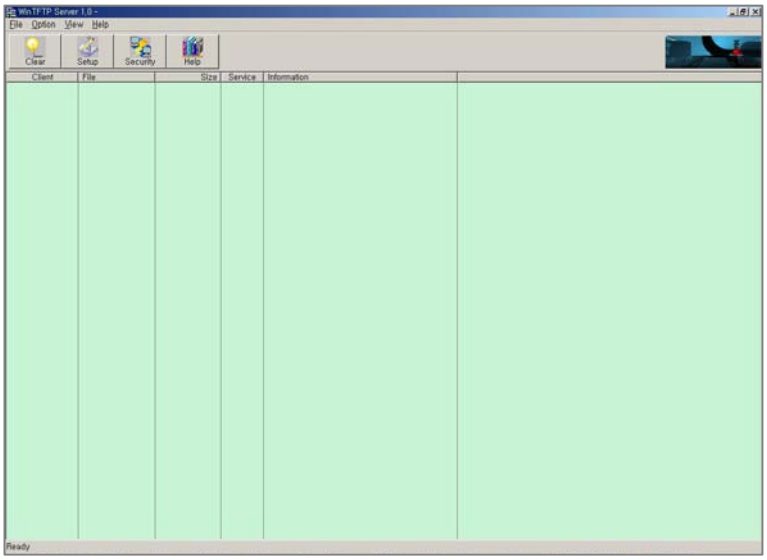
WIP-5000M is upgraded using the built-in Web server.

WIP-5000M can upgrade software using a wire or wireless LAN. Microsoft Explorer and a TFTP Server program (e.g. WinTFTP) must be installed and a software image required for upgrade should be saved into the PC to upgrade software.

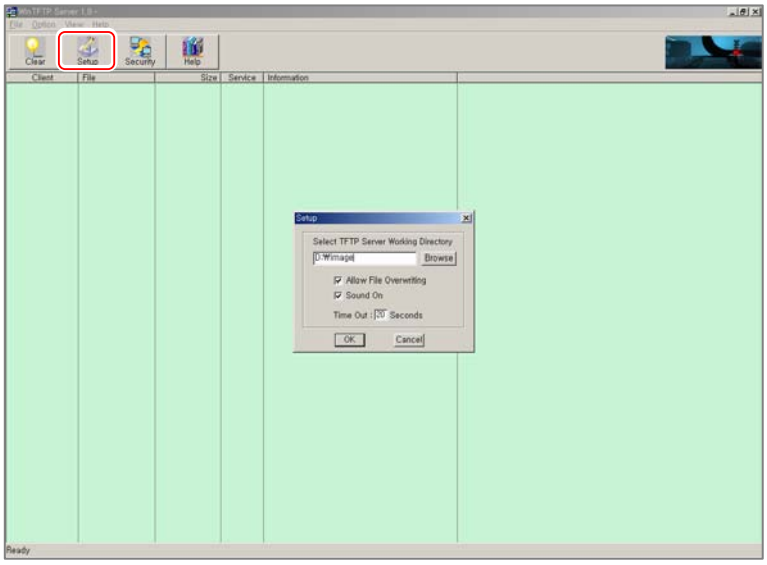
3.1 TFTP Server Program Setting

Set PC Internet Protocol (TCP/IP) IP address to the same subnet as the Samsung WLAN system.

1) Install and execute WinTFTP Server program.



2) Enter the 'Setup' menu and select the folder where the S/W image of the target WIP-5000M is saved. Click the [OK] button to start the TFTP server. The S/W image of the target WIP-5000M should be saved in a pre-defined folder.



3.2 Upgrading S/W in Engineering Mode

Engineering Mode is used for upgrading a WIP-5000M that is not registered to WBS24. Since this process starts while the power is off, turn off the power or detach and re-attach the battery in case the power is on.

1) While the power of WIP-5000M is off, press the button and '5' button simultaneously.

2) The following menus will appear on the LCD screen. Select '2. Download Mode'.

```
Download 01.08
1. RF Test Mode
2. Download Mode
3. Ping Test Mode
```

3) Select '1.Edit IP' from the next screen.

```
Download Mode
1. Edit IP
2. Fixed IP
```

4) Enter the IP address of WIP-5000M according to the following conditions:
   - Among addresses of networks to which WBS24 is allocated, select an IP address that will not conflict with other devices.
   - Press the '*' button to enter '.'.
   - After entering the IP address, press the [OK] button to proceed to the next step.

```
Download Mode
Edit IP
Enter here
192.168.111.XXX
```

5) Enter the SSID into the following screen and press the [OK] button to proceed to the next step. The SSID previously set for registration should be entered.

```
Download Mode
Edit SSID
Enter here
```

NOTE

When Entering SSID and WEP Key

Refer to the 'OfficeServ Wireless Installation Manual' and the 'OfficeServ Wireless Maintenance Manual' for procedures on registering and verifying the SSID and WEP key.

6) Enter the WEP key into the screen shown below. This WEP key can be verified from the WIP-5000M. If a WEP key is not set, press the [OK] button and proceed to the next step.

```
Download Mode
Edit WEPKEY
0
```

7) Select whether to enable WEP key. If a WEP key is not set, press the [OK] button and proceed to the next step.

```
Download   Mode
WEPKEY Mode?
1. Enable
2. Disable
```

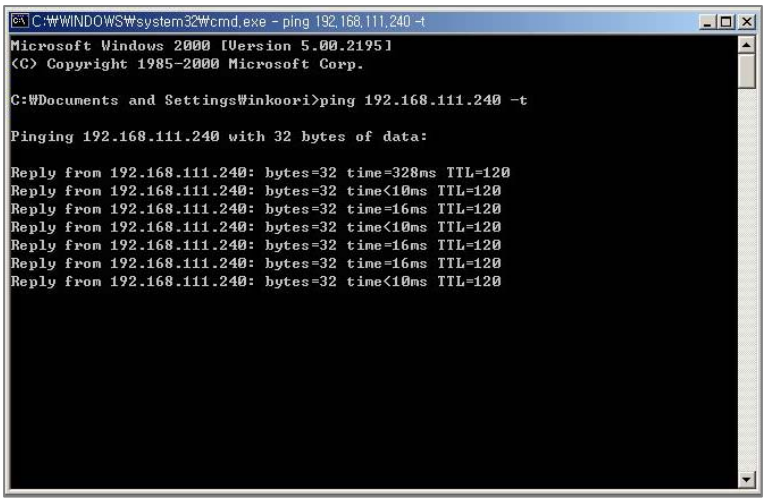
8) On completing the above steps, the following screen appears and the system starts the upgrade.

```
** Downloader **
```

3.3 Checking WIP-5000M Connection

Check the wireless connection between WIP-5000M and WBS24 by connecting a portable PC to WBS24 crossover or connecting both PC and WBS24 to a hub.

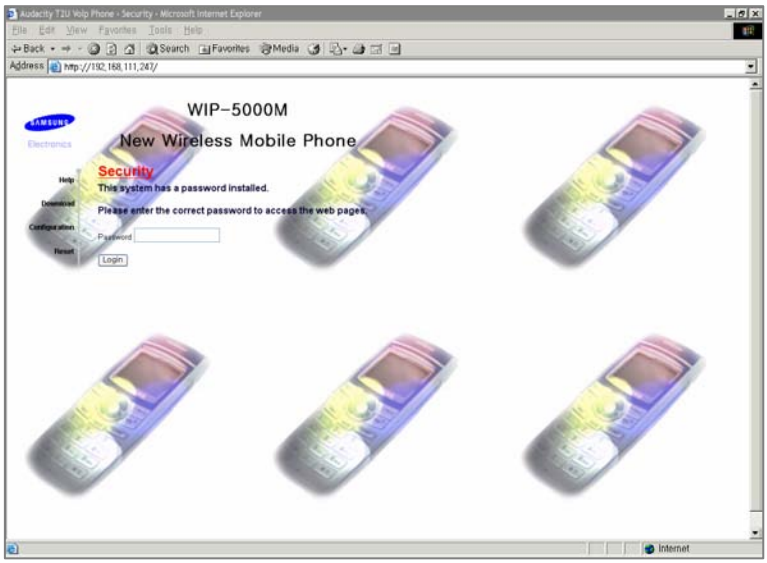
Open a command window at the portable PC and perform a ping test to the previously entered IP address of the WIP-5000M.



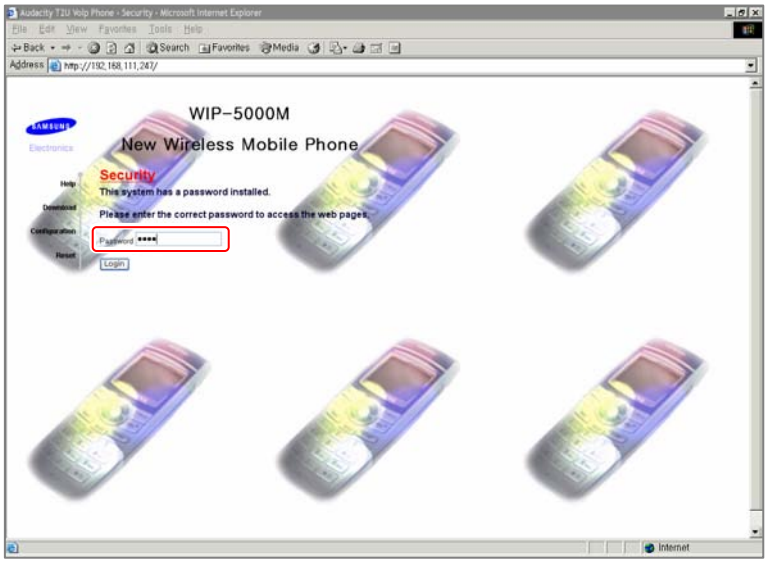
A response should be returned if the WIP-5000M is properly connected to WBS24.
If no response is returned, check if the LAN cable is properly connected and if the IP address of the portable PC is correct. Use CTRL-C to terminate the pinging operation.

3.4 S/W Upgrade Using the Internet

1) Start the Internet browser and enter the IP address of the WIP-5000M into the address field. The following window appears when the WIP-5000M is connected to the web program:



2) Enter the WIP-5000M password into the Password field.

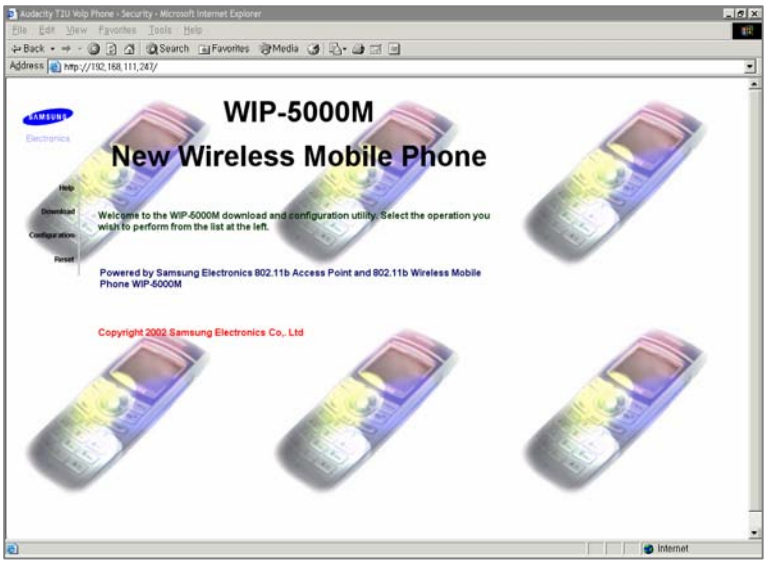


NOTE

In Case You Have Forgotten Your Password

The default password is '**1234**'. If the default password has been changed, refer to the '2.1 WIP-5000M Password Verification Procedure'.

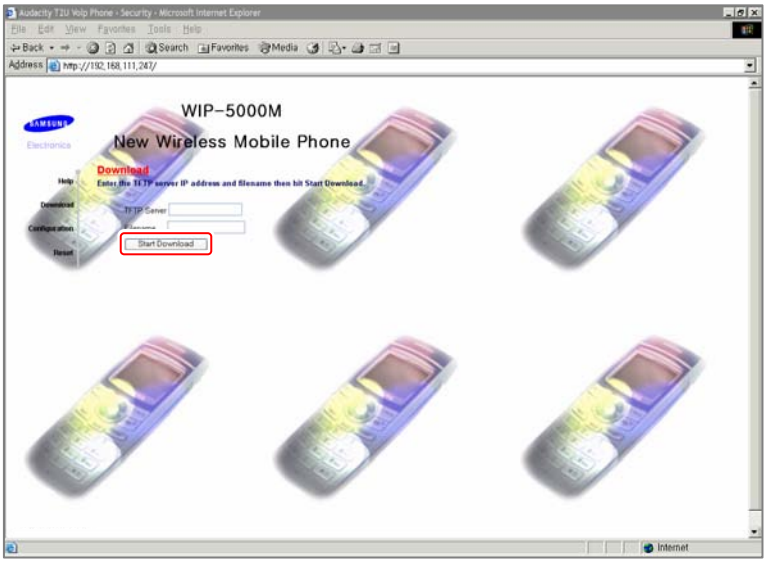
3) On entering the correct password, the following window appears:
(The password inquiry window will be displayed repeatedly until the correct password is entered.)



4) Click the [Download] menu on the left side of the window.

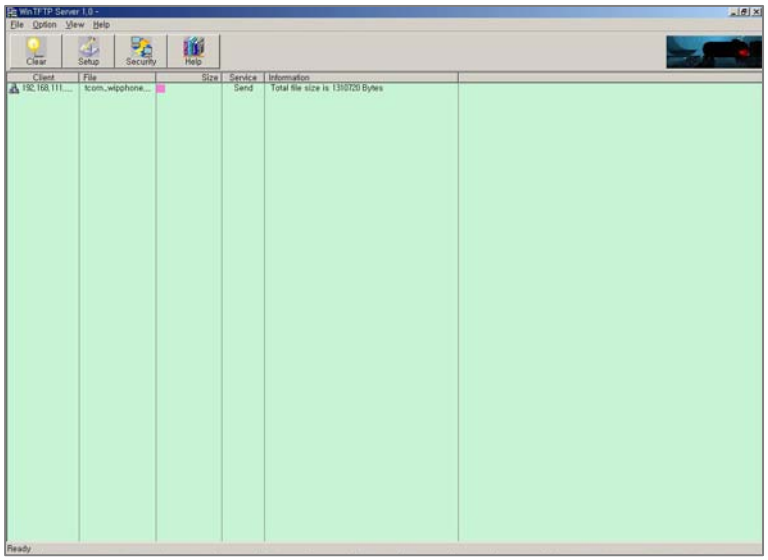
5) The following window appears:

Enter the IP address of the portable PC into the TFTP Server field. In the Filename field, enter the name of the S/W image to download.
Click the [Start Download] button to start the download.



6) If the above download starts while the TFTP Server program is running, the TFTP Server program displays the following window:

(At this time numbers appear on the LCD of the WIP-5000M.)



Check the following items if the download does not start properly:

- Check if the WinTFTP Server program is running.
- Check if the IP address of the TFTP Server(portable PC) is correct.
- Check if the name of the target image file is correct.
- Check if the target image file exists in the folder defined by the WinTFTP Server program.
- After checking the above items, restart the download by clicking the [Start Download] button described in step 5).

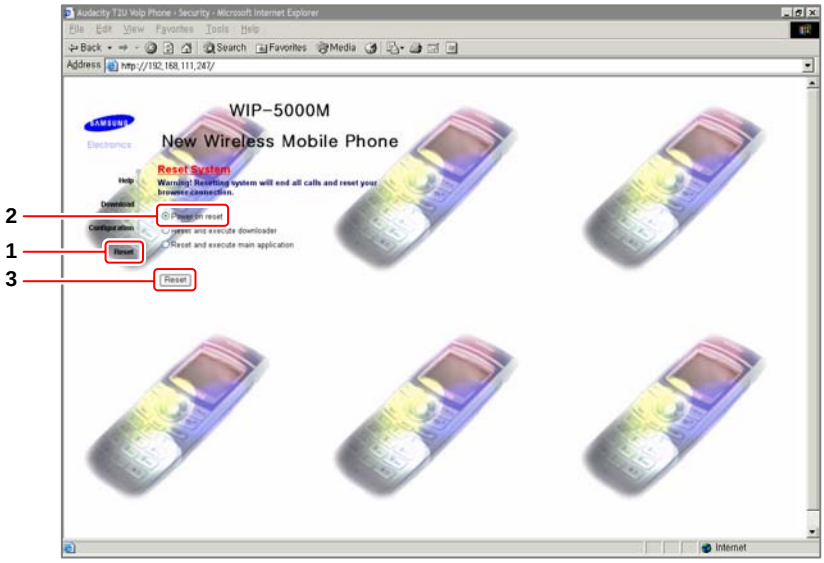
CAUTION

During Upgrade

Make sure that the power of WBS24(combo) and WIP-5000M remain on while downloading new software. If the power goes off during download, the WIP-5000M may not operate properly.

7) The window shown below appears when the download is complete. The 'Downloader' and 'SAMSUNG' messages are displayed alternatively in the LCD of the WIP-5000M.

8) Click the [Reset] menu on the left side of the window. The window shown below will appear. Select [Power on reset] and click the [Reset] button.



Once you successfully complete the above procedure, the starting window will appear if the WIP-5000M is registered to WBS24. If not, the initial SSID entry screen will appear.

NOTE

If download does not start properly

Check the following:
- Is the WinFTP server program being executed?
- Is the IP address of the TFTP server (notebook PC) correct?
- Is the name of the target image file correct?
- Does the target image file exist in the folder set by the WinTFTP server program?

After checking the above items, select [Download] again from the window of the step 7) and start the download again.

CAUTION

Battery Check When Upgrading WIP-5000M Software

Do Not turn off the power of the WIP-5000M during download. The battery of the WIP-5000M is sometimes exhausted and turned off during download. If the battery is turned off during download, normal operation may be impossible. Thus, check the battery status before download. If the battery is low, charge the battery and perform the download procedure.

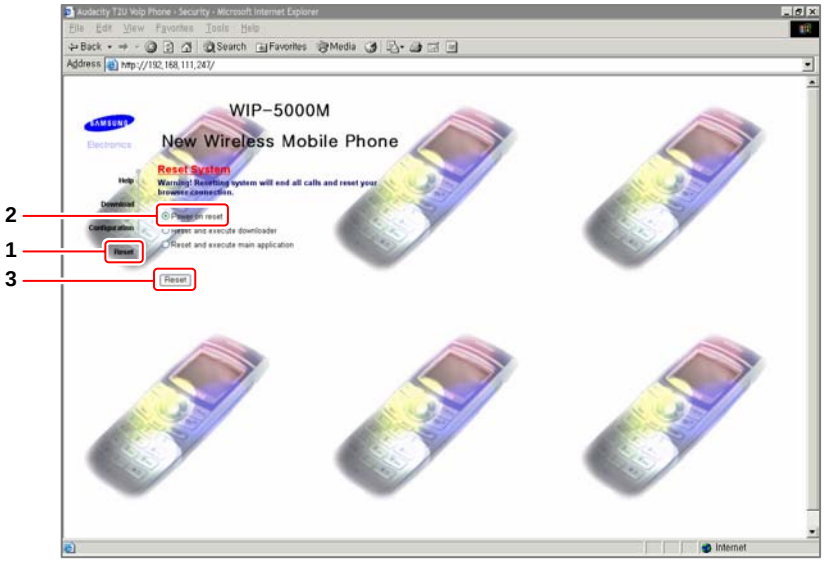
3.5 S/W Upgrade Using the Internet (Downloader S/W)

1) The way the Downloaded S/W is upgraded is identical to the Application S/W. But to prevent the phone from turning off during download, make sure that the battery is full and that the phone is put on the battery charger.

> CAUTION
>
> **During Upgrade**
>
> If failing to upgrade the downloaded S/W, the phone will be unusable because the WIP-5000M downloader S/W has the information that the phone uses when booting.

2) The step to upgrade the downloader image is identical to that to upgrade the application S/W. But the different point is to set the file name to upgrade to the downloader image file name.

3) After the upgrade is completed, click the [Reset] menu on the left side of the window. The window show below will appear. Select [Power on reset] and click the [Reset] button.



4) When the WIP-5000M restarts, the compressed image file previously downloaded will be extracted to the Flash ROM. After this step is completed, the 'COMPLETE' message is displayed in the LCD of the WIP-5000M and the 'Downloader' and 'SAMSUNG' messages are displayed alternatively in the LCD of the WIP-5000M.

5) When upgrading the downloader S/W image is completed, application S/W image is cleared. Therefore application S/W image must be upgraded again. Upgrade the downloader S/W image in Engineering mode, since the Application S/W area is cleared and doesn't exist.

CHAPTER 4. WIP-5000M Debugging

WIP-5000M is a WLAN wireless phone that can connect to the OfficeServ system and receives its own IP. Telnet can be connected through WIP-5000M and debugging can be performed through telnet. The status and configuration information of WIP-5000M can be checked or modified through telnet.

NOTE

Do not change WIP-5000M configuration information

The configuration information set in WIP-5000M is the setting value in the optimized status. Thus, do not change the value randomly.

4.1 Connecting to WIP-5000M Debugging Mode Via Telnet

Take the following procedure to prepare to connect to the debugging mode.

1) Select [Menu] → [Hold] → [*]→ [#] of the WIP-5000M.

2) Select [7. wTelnet Enable].

3) Execute the terminal application to connect to telnet from the PC connected to wired LAN or connected through air interface. In the Windows operating system, application such as 'DOS command prompt' and 'Tera term' can be used.

4) If you know the IP address of the target WIP-5000M (Refer to the Programming Section), try to connect at 'DOS command prompt' as follows:

```
C:\Windows>telnet 165.213.110.144
```

After completing the connection to the WIP-5000M, password is asked as follows. Enter 'wlan' for the password. Then, the login is completed.

```
>>>
>>> Welcome to WIP-5000M Telnet server...
>>>

Password : ****
```

NOTE

If the connection to WIP-5000M fails

If the target WIP-5000M is in power save mode, connection is not established at once. Then, execute the 'ping' command in a PC to the WIP-5000M and check if a response is received from the WIP-5000M. If so, connect to the WIP-5000M.

4.2 List of Commands Used in WIP-5000M Debugging Mode

WIP-5000M can execute the following commands to perform debugging, and verify the list of all commands through the 'help' command.

NOTE

Telnet release automatically

If nothing is entered within 3 minutes after the connection to telnet is established, the connection is released in the WIP-5000M.(However, the case of executing the pr on command is excepted.)

CHECK

When telnet connection is terminated

Execute the 'bye' command to terminate a connection.

help

Displays the list of the following commands:
How to execute: help <Enter>

```
WIP-5000M:165.213.110.114> help

>>> WIP-5000M Debug Command List

help    help
arp     arp                     : Show Arp Table
bye     bye                     : Exit Telnet Debug
codec   codec Type SS P J       : Set CODEC Value
info    info                    : Show WIP-5000M Information
```

```
jitter  jitter value           : Set Jitter Value
netstat netstat                : Set Jitter Value
pr      pr on/off              : Print Debug Messages
state   state                  : Show Call state
ver     ver                    : Show Version information
wlan    wlan                   : Prism Information
wcq     wcq                    : setting Warning Tone CQ value
txrate  txrate rate[0,1,2,3]   : set Prism Tx Rate
tone    tone    tone name on/off

WIP-5000M:165.213.110.114>
```

arp

Displays the arp table of WIP-5000M.
How to execute: arp <Enter>

```
Internet Address         Hardware Address
 [0] 165.213.87.80       00:09:5b:55:a9:a9
 [1] 165.213.87.161      00:d0:b7:09:50:33
 [2] 165.213.110.1       00:0b:bf:a4:17:fc
 [3] 165.213.87.1        00:0b:bf:a4:17:fc
 [4] 165.213.87.130      00:09:5b:55:a9:a9
 [5] 165.213.87.82       00:09:5b:55:a9:a9
 [6] 165.213.110.114     00:04:47:68:00:bb
 [7] 165.213.204.131     00:0b:bf:a4:17:fc
```

codec

Sets the CODEC type to be used for making a call and sets related options.
How to execute: codec <CODEC_type> <silence_suppression> <packet_time> <Enter>

- CODEC_type: Enter 711a, 711u, or 729A.
- silence_suppression: Set or release this function. Enter on or off.
- packet_time: Enter the time on a milli-second basis.

info

Displays the version or setting information of WIP-5000M.
How to execute: info <Enter>

```
>>> WIP-5000M S/W Version Information
    Samsung Ver 1.12   2004/03/18        Build 0
    Mar 18 2004 - 21:17:06

>>> WIP-5000M Current Information
   - ESSID    : 258036
   - AP Type  : Combo
```

```
  - CODEC    : G.711a/u, G.729
    G711A    : YES, SS=NO, Pack=20
    G711U    : YES, SS=NO, Pack=20
    G729     : YES, SS=NO, Pack=40
  - Jitter Time = 180
  - Port No  : DHCP(7000), PA(8000), LM(10000)
  - Restart Reason = Normal Restart....
```

```
>>> WIP-5000M Prism Information
- Current BSSID : 0000 f03a 20c1
- Total Scanned AP Count : 2
  Current AP : MAC(0000f03a20c1), Channel(6), CQ(58), SignalLevel( 44)
  AP #1 : MAC(0000f03a2098), Channel(b), SignalLevel( 26)
- Total Handover/Roaming Cnt = 0
```

jitter

Sets the jitter buffer time of WIP-5000M. If turning off the WIP-5000M after setting, the changed value is applied.
How to execute: jitter <jitter_time> <Enter>

- jitter_time: Enter this value on a ms basis.

netstat

Displays the network configuration information of WIP-5000M.
How to execute: netstat <Enter>

```
>>> WIP-5000M Network Configuration Information

  - IPInfo : myIpAddr              = 165.213.110.114
           : HostName              =
           : DomainName            =
  - Current SubNetMask             = 255.255.255.255
  - Current Broadcast              = 255.255.255.255
  - Current Gateway                = 168.208.144.10
  - Current DNS Addr               = 0.0.0.0
  - Current DNS Addr               = 0.0.0.0
  - Total UDP Rx Packet Cnt        = 1507
  - Total UDP Rx Error Packet Cnt  = 1174
  - Total UDP Rx Multicast Pkt     = 107
```

rtcpchk

When a WIP-5000M is being used, RTCP message is received every 5 seconds. If RTCP message is not received certain times, the system drops the call. This command is used to change the certain times. The changed value is applied when the WIP-5000M restarts. Default is 6 times(30 seconds).

How to execute: rtcpchk <chk_count> <Enter>

- chk_count: Enter an integer from 1 to 500.

stat

Displays the information on the most recently outgoing/incoming call attempted by WIP-5000M.
How to execute: stat <Enter>

```
>>> WIP-5000M Current Call Status Information
   - Endpoint Call-State Information : StateOnHook
     OnHook(1), Waiting(0), Ringing(0), Connect(0), PA(1)
   - SIP State : Sip Terminating
   - globalPhoneStateFlag :
     MULTI_cell  DONE_DHCP_INIT  PHONE_INITIALIZE_OK  RX_SYS_MSG_OK
   - pEndPoint->stateFlags :
     STATE_ENABLE_CALL_TIME_DISP
   - lastCallLogFlag :
     OUTGOING_CALL  DIAL_NUMBER  CALL_STS_CONNECT  CALL_STS_IDLE
PRESS_END_KEY  MAIN_CALL_IDLE_STAT
US
   - Current Call Ringing Value :
     curCallPtr = 0x0
     ringingCallPtr_0 = 0x0
     ringingCallPtr_1 = 0x0
     ringingCallPtr_2 = 0x0
   - prismStatusFlags :
     PRISM_JOINED_ALREADY
   - rtcpRxErrorCnt = 0
   - Call Connected Msg Loss State :
     Total Incoming Call Cnt = 0, Total Outgoing Call Cnt = 2
     Total PA Thread Received CallConnectMsg Cnt = 1
     Total UI Incall ConnectMsg Cnt = 0, Total UI Outcall ConnectMsg Cnt = 1
     Total Unknown Call State in Connect State = 0
```

pr

Selects the output option of the debugging of WIP-5000M.
How to execute: pr <Option> <Enter>

- Option: Sets or release this function. Enter on or off.

ver

Displays the version of WIP-5000M.
How to execute: ver <Enter>

```
>>> WIP-5000M S/W Version Information
    Samsung Ver 1.12   2004/03/18        Build 0
    Mar 18 2004 - 21:17:06
```

wlan

Displays the information relate with wireless connection.
How to execute: wlan <Enter>

```
>>> WIP-5000M Prism Information
- Current BSSID : 0000 f03a 20c1
- Total Scanned AP Count : 3
  Current AP : MAC(0000f03a20c1), Channel(6), CQ(58), SignalLevel( 43)
       AP #1 : MAC(0000f03a2098), Channel(b), SignalLevel( 26)
       AP #2 : MAC(0000f03a2096), Channel(1), SignalLevel( 14)
- Total Handover/Roaming Cnt = 0
```

wcq

Sets the standard call quality. Thus, if CQ(call quality) is lower than the setting quality during a call, a warning sound is generated.
How to execute: wcp <level> <Enter>

- level: Enter an integer from 0 to 90.

txrate

Controls tx rate of prism.
How to execute: txrate <level> <Enter>

- level: Enter a number from 0 to 3.
  (Level 0: 1Mbyte, Level 1: 2Mbyte, Level 2: 5Mbyte, and Level 3: 11Mbyte)

tone

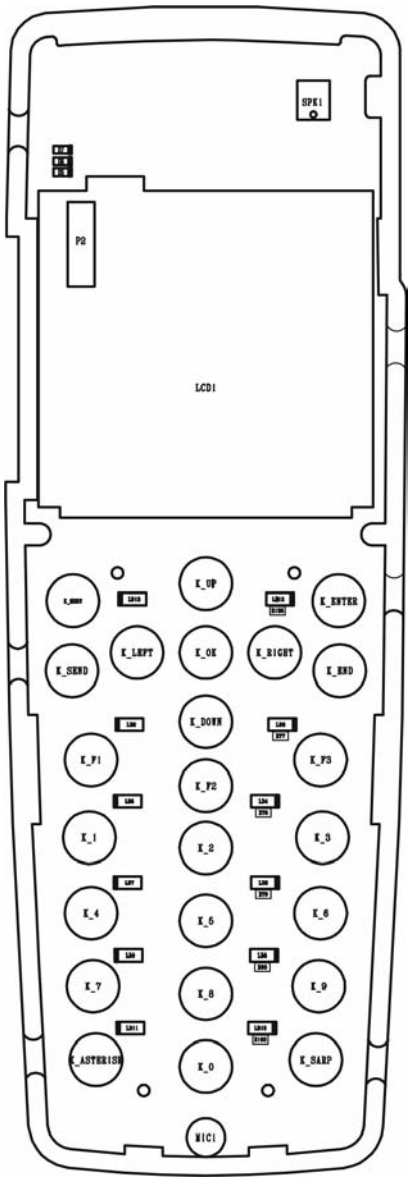
Makes an audio tone once that can be generated in a terminal.(Only available during a call.)
How to execute: tone <tone_type> <on/off> <Enter>

- tone_type: 0~7(Number of available tone types is 7.)
- on/off: Sets or release this function. Select on or off.

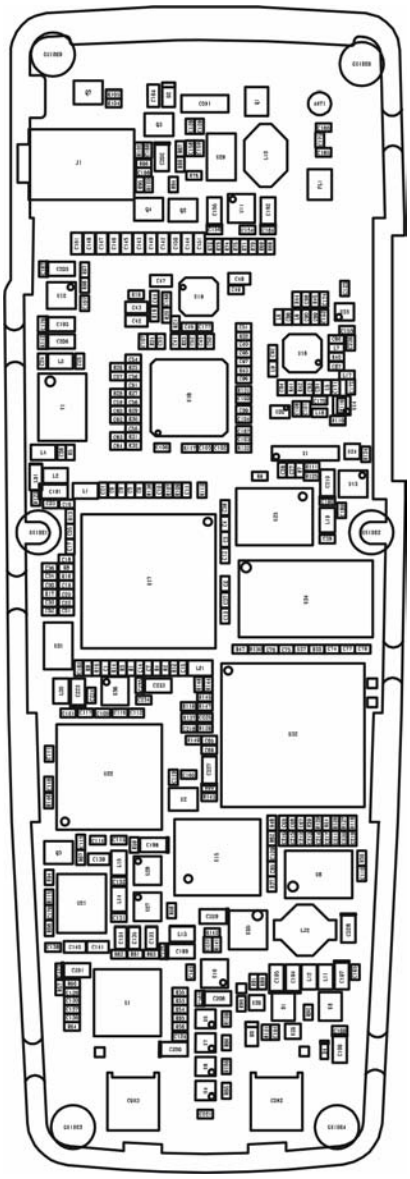
ANNEX A. PCB Component Layout

Annex A shows layout of WIP-5000M PCB components.

A.1 Front PCB Component Layout



A.2 Rear PCB Component Layout



ABBREVIATION

A

AP	Access Point
AEC	Acoustic Echo Cancellation

B

BBP	Base Band Processor

C

CCK	Complementary Code Keying
CPLD	Complex Programmable Logic Device
CPU	Central Processing Unit

D

DSP	Digital Signal Processor
DBPSK	Differential Binary Phase Shift Keying
DQPSK	Differential Quadrature Phase Shift Keying

E

EL	Electro Luminescence
ETSI	European Telecommunications Standards Institute

I

IP	Internet Protocol
I, Q	In phase, Quadrature phase
ISM	Industrial, Scientific and Medical band

L

LAN	Local Area Network
LED	Light-Emitting Diode
LCD	Liquid Crystal Display

© SAMSUNG Telecommunications America, L.P.

M

MAC	Medium Access Control

P

PBA	Printed circuit Board Assembly
PCB	Printed Circuit Board
PCM	Pulse Code Modulation
PLL	Phase Locked Loop

R

RAM	Random Access Memory
RF	Radio Frequency
ROM	Read Only Memory
RSSI	Received Signal Strength Indication

S

SIP	Session Initiation Protocol
SRAM	Static Random Access Memory
SSID	Service Set Identifier

T

TFTP	Trivial File Transfer Protocol

U

UI	User Interface

V

VoIP	Voice over IP

W

WBS24	Wireless Base Station 2.4 GHz
WEP	Wired Equivalent Privacy
WLAN	Wireless Local Area Network

M

MAC	Medium Access Control

P

PBA	Printed circuit Board Assembly
PCB	Printed Circuit Board
PCM	Pulse Code Modulation
PLL	Phase Locked Loop

R

RAM	Random Access Memory
RF	Radio Frequency
ROM	Read Only Memory
RSSI	Received Signal Strength Indication

S

SIP	Session Initiation Protocol
SRAM	Static Random Access Memory
SSID	Service Set Identifier

T

TFTP	Trivial File Transfer Protocol

U

UI	User Interface

V

VoIP	Voice over IP

W

WBS24	Wireless Base Station 2.4 GHz
WEP	Wired Equivalent Privacy
WLAN	Wireless Local Area Network