User Manual

Biscuit IMW-C610W

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Chapter 1. Attention

- Don't use in high humidity place.
- Use in the clean place.
- Install on the safe place without dropping.
- Don't use and keep around electromagnetic waves.
- Don't put the goods on heavy things.
- Don't install and use in the Sun lights directly.
- Don't throw or dismantle the goods.
- Don't heat the goods and battery.
- Protect the goods from pets and children.
- Don't put the goods and battery in the water.
- Don't hold power adaptor in the wet hands.

Chapter 2. Introduction & Requirements

Introduction of goods

What is the IMW-C610W?

- ⇒ IMW-C610W is a very inventive product for WiMAX & WiFi Dual CPE(Customer Premises Equipment) enabling solution of the problem of lack in user terminals possible to use Mobile WiMAX service.
- ➡ IMW-C610W included WiFi AP support Mobile WiMAX Service through WiFi can be supported portable devices (Laptop, Desktop, PDA and Smart Phone etc.)

System Requirements.

- ⇒ User's device will be installed WiFi (IEEE 802.11b/g) LAN Card or module.
- \Rightarrow The PC will be Installed USB port.

Specification

	oation	
	Items	Description
WiMAX	WiMAX Standard Compliance	IEEE 802.16e-2005
WiFi	Network Standard	IEEE 802.11 b/g
Power	Battery	Built-in Li-Polymer(3.7V/2700mA)
	Adaptor	5V / 2A
Dimension / Weight		110mm×64mm×18mm / ??
	Adaptor	5V / 2A

Application



The points of name & Components list

I MW-C610W
Adaptor [5V / 2A]
User's Manual
Plug
USB Cable

Components List in the package.

Points of name & Function



- ① Status LED : WiMAX signal status and WiFi status LED (Color : Blue / Yellow / Green / Red)
- 2 Battery Cover
- ③ Ventilation Hole
- 4 USB Port : Battery charging and Tethered operation
- $\ensuremath{\textcircled{\text{5}}}$ Power button and Battery Status : Power turn On/Off and battery status

LED Status Scenario

WiMAX Signal LED	
------------------	--

Off	Power Off
Yellow LED On and Off	Frequency scanning or ready
Red LED On and Off	Connecting with WiMAX network
Red LED On	WiMAX signal level 1
Yellow LED On	WiMAX signal level 2 ~ 3

Green	LED On	
-------	--------	--

WiMAX signal level 4 ~ 5

WiFi LED

WiFi AP turn On	Blue color
Connection is failed	Green color

Power LED

Remained battery (100% ~ 60%)	Green color
Remained battery (60% ~ 30%)	Yellow color
Remained battery (30% ~ 0%)	Red color
Battery charging	Red color
Battery full charging	Green color

Chapter 3. How to use the IMW-C610W

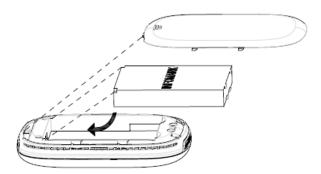
Power ON/OFF

Power ON : Push the power button for 4 Seconds. Power OFF : Push and hold the power button for 20 Secn

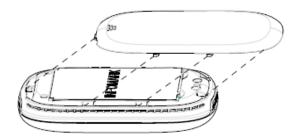


Battery Insert Method

<Insert the battery>

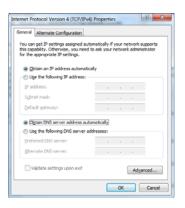


<Install the bottom cover>



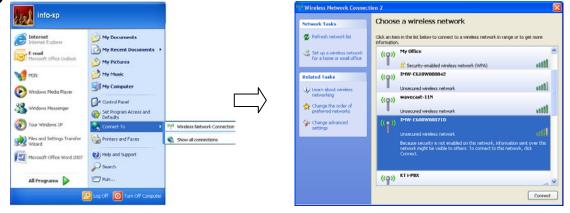
Setting of the WiFi AP

Notice : Configuration of WiFi AP has to be set to "Obtain IP address and DNS sever address automatically".



Setting with Window XP

<Start>→<Connect to>→<Wireless Network Connection>→ Choose WiFi AP of IMW-C610W in the list



Setting with Window 7

<Start>→<Control Panel>→<Network and Internet>→<Connect to Network> →Choose the WiFi AP of IMW-C610W in the list

Microsoft Office Excel 2007 , Image: Started	
Control Flowel System of Sectors Control Flowel System of Sectors Control Flowel System Control Flowel Control Co	Committee and a second se

Setting with Mac OS ● Click the wireless Icon on the menu → Choose the WiFi AP of IMW-C610W in the list

<i>I</i> 🖗	* 🛜 🔹 🖪	(2:00)	Thu 1:35 AM	Q
((te	None of your prefe Select the network you enter the network pass	want to join fro	m the list, and then	
	BISCUIT3000033		0	
	BISCUIT5000720			
	BISCUIT5000755 BISCUIT500075C			
	IMW-C600W00004	3	* *	
	Remember this	network		·
Other.		Can	cel Join)

Setting of USB (RNDIS)

Notice :

1. Your PC connected to web server of IMW-C610W through WiFi.

2. Driver of RNDIS can down load from web sever of IMW-C610W.

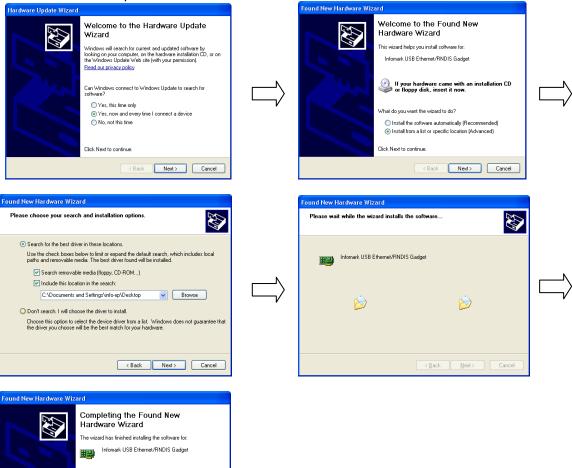
3. Refer to USB Driver Page No. XX for download.

Setting with Window XP

Click Finish to close the wizard.

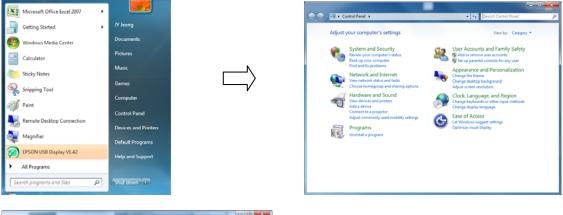
Kack Finish Cancel

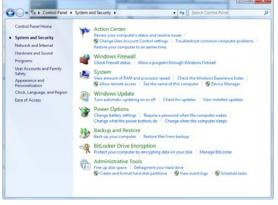
- 1. IMW-C610W should be connected with PC by USB cable.
- 2. Below is each step of RNDIS installation.



- 1. IMW-C610W should be connected with PC by USB cable.
- 2. Below is each step of RNDIS installation.

<Start>→<Control Panel>→<Network and Internet>→<Connect to Network>



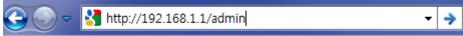


Chapter 4 Configuring CM

Connect to Web CM (Web Connection Manager)

Start CM

- Use web browser to connect Web CM
- Type Address 192.168.1.1/admin



×

※ Microsoft Internet Explorer is recommended

Input ID/Password

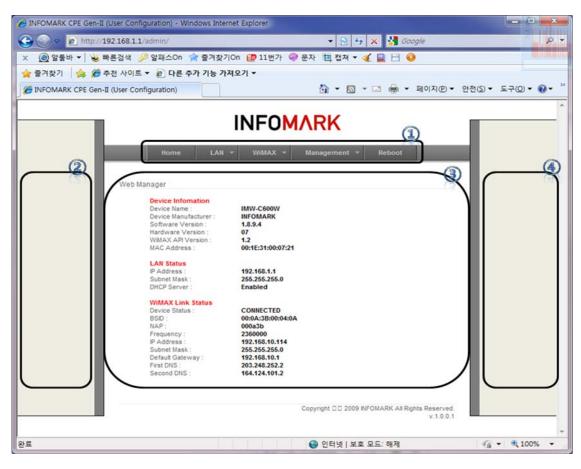
- A Pop-up window will requests for specific ID and Password to enter into Web CM
- ID : admin / Password : admin



Description of Web User Interface

Introduction

This is to describe user interface of Biscuit



1 Main Menu

Main Menu help user to choose settings of LAN/WLAN, WiMAX frequency, Authentications, Device management.

② Sub Menu

Sub Menu shows detail categories of Main Menu

3 Main Window

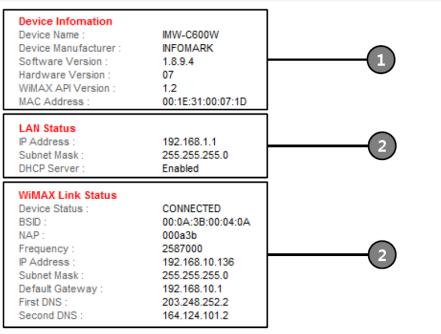
Main Window shows status of device or setting parameters

④ Help Display

It shows additional description of Main Window

Home Menu

Web Manager



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① Device Information

It shows description of Device such as name of device, manufacturer, software version, hardware version, API version and MAC address

LAN information

It shows IP Address, Subnet Mask and setting of DHCP Server

3 WiMAX status information

It shows connection status of WiMAX and Network

LAN settings

1 LAN Status

It shows web address of local area network information.

Infomation

IP Address : 192.168.1.1 Subnet Mask : 255.255.255.0 DHCP Server : Enabled

② LAN Setting

8.4	~	ы	if.e
N.	υ	u	нv

IP Address :	192 . 168 . 1 . 1
Subnet Mask :	255 . 255 . 255 . 0
DHCP Server :	Enabled 🔻
DHCP Range :	192.168.1. 10 ~ 192.168.1. 250
	Apply and Save

- Local IP Address: Input desired IP address that user want to use for Local Area Network

- Subnet Mask:

Input subnet mask to allocated IP address

- DHCP Server:

When DHCP is 'Disabled', please set IP address of client with static address. For example, when the IP address is set as 192.168.1.1, set the client address as follow.

IP Address: from 192.168.1.2 to 192.168.1.253 Subnet Mask" 255.255.255.0 Gateway IP: 192.168.1.1

③ WiFi Status

Infomation

Network name(SSID) :	IMW-C600W00071D
Channel:	1 [2.412 GHz]
Mode :	802.11bg
Security Mode :	None
Tx Power :	Level 4 (5dBm)

It shows Wi-Fi's SSID, Channel and Tx Power

④ WiFi Setting

Modify

Network name :	IMW-C600W00071D
Mode :	802.11bg 👻
Tx Power :	Level 4 (5dBm) 👻
Security Setting :	Disabled 🔻
	Apply and Save

- Network Name:

User can set preferred name of network name

The device comes with SSID of 'KWI-B2200'. This SSID can be changed as preferred.

- Security Setting:

Default setting of Security is 'Disabled'. If changed, 'Apply and Save' button should be clicked.

- WEP (Wired Equivalent Privacy): is a deprecated algorithm to secure IEEE 802.11 wireless networks.

Wireless networks broadcast messages using radio and are thus more susceptible to eavesdropping than wired networks.

This Device provides 64/128 bit encryption for network protection.

- Authentication type: In case of selecting WEP, default setting is 'Auto'.

- Auto : This support both open system and shared key.
- Open System: Open system allow link to all clients but permit communication to clients that have same WEP key.
- Shared Key: Shared Key allow link and communication to clients that have identical shared key as AP.
- Key Length: For user convenience, select 64bit or 128 bit encryption.
- Key Pass Phrase: WEP Key is generated automatically. Input random character to generate key. Please make a separate note the key in order to connect to the device.

- WPA: The WPA protocol implements the majority of the IEEE 802.11i standard, and was intended as an intermediate measure to take the place of WEP while 802.11i was prepared. This Device provides WPA, WPA2 and USB both.

- WPA Type : This Device provides WPA, WPA2.

- WPA(Wi-Fi Protected Access) : WPA protocol implements the majority of the IEEE 802.11i standard. WPA is based on TKIP(Temporal Key Integrity Protocol) and it provide higher security of wireless communication.
- WPA2 : AES(Advanced Encryption Standard) use additional encryption algorithm and it comply with WAP.
- ▶ Use Both: It provide both WPA and WPA2 and it is default value when selecting WPA.
 - Encryption: It is to encrypt Unicast packets and support Auto, TKIP, AES-CCMP. Default is Auto.
 - Key Pass Phrase: Input WPA key value to blank and click 'Apply and Save'

S NAT Setting

Port Forwadin Enabled V Port Forwadin	Host IP 192.168.1.	Service Port	Add
DMZ Host Enabled	Host IP 192.168.1.	Save	
Remote Admi Enabled	n Remote Admin Port 80	Save	

• Port Forwarding setting:

Port forwarding is the practice of forwarding a TCP/IP packet in a network address translator gateway to a predetermined network port on a host within a masqueraded, typically private network based on the port number on which it was received from the originating host. The technique is used to permit communications by external hosts with services provided within a private local area network.

- Port Forwarding List :
- DMZ Host :
- Remote Admin :

WiMAX Configuration

The parameter of WiMAX configuration are listed as Parametric Data, Network Info, Device Info, Frequency and Authentication

Parametric Data description

- Auto Refresh: When check box of enable is marked, real time values of WiMAX will be shown.
- Reset stat: This function initialize WiMAX monitoring value with 'Reset stat' button.
- Link Status Info

Device State :	Data Connected	Freq :	2587000
BSID :	00:0A:3B:00:04:0A	Tx Power:	-12
RSSI:	-51	CINR :	30

- Device State: It shows current status of WiMAX connection.
- Freq: It shows current connection frequency.
- BSID: It shows BSID of connected WiMAX BS.
- Tx Power: It shows output power of device.
- RSSI: It stands for Receive Signal Strength Indicator. (Higher value states bad signal)
- CINR: It stands for carrier to interference ratio. (Lower value states more noise)

MAC Statistics Information

BW Req : [SDU]	11478	BW Req Retry :	11
Tx Packet :	6374	Rx Packet :	9390
Tx Dropped :	197	Rx Dropped :	0
Tx Bytes :	551694	Rx Bytes :	10369840
Tx Bytes Dropped :	133900	Rx Bytes Dropped :	0
[PDU]			
Tx Packets :	98864	Rx Packets :	9397
Tx Bytes :	1804841	Rx Bytes :	10488862
Rx CRC Error :	45	Rx ICV Error :	0
Rx HCS Error :	3	Rx KEY Error :	0
Rx Length Error :	0		

This indicates Tx/Rx Packet information

PHY Status

FITT Status			
BSID :	00-0A-3B-00-04-0A	Freq :	
[Basic PHY Paramete	ers]		
Frame num :	14778549	DL Symbol :	29
FCH :	0xfda1e0	UL Symbol :	18
TTG :	296	Curr PI :	0
RTG :	168	Prev PI:	0
[Link Quality]			
CINR mean :	30	CINR std dev :	24
CINR A mean :	34	CINR B mean :	29
RSSI mean :	-54	RSSI std dev :	-60
[Power Control]			
Mode :	open loop(retention)		
Tx Total Pwr(avg) :	-3	Tx Sub Pwr(avg) :	-17
Tx Total Pwr(last) :	-4	Tx Sub Pwr(last) :	-17
Tx Total Pwr(max) :	-4	Tx Sub Pwr(max) :	-17
Tx Total Pwr(min) :	5	Tx Sub Pwr(min) :	-12

This indicates antenna level information of device

PHY Statistics Information

DL MAP :	10778213	DL MAP Error :	0
UL MAP :	10778213	UL MAP Error :	0
FFB :	0	ACK :	0
I-RNG :	1	P-RNG :	9758
B-RNG :	84836	H-RNG :	0

- This indicates statistics of antenna level of device.
- PHY Burst Statistics Information

DL Burst : DL HARQ Burst : UL Burst : UL HARQ Retry :	11040 0 95791 0	DL Burst Error : DL HARQ Dropped : UL HARQ Burst :	33 0 0
DIUC0: QPSK 1/2 CTC 1 DIUC4: 64QAM 1/2 CTC DIUC5: 64QAM 2/3 CTC DIUC6: 64QAM 3/4 CTC DIUC7: 64QAM 5/6 CTC UIUC1: QPSK 1/2 CTC 1 UIUC2: QPSK 3/4 CTC 1 UIUC2: 16QAM 1/2 CTC UIUC4: 16QAM 3/4 CTC	CR0 (B:0/332) (num: CR0 (B:1/3079) (num CR0 (B:12/3044) (num CR0 (A:0/2502) (B:20 CR0 (A:0/94190) (num CR0 (N:0/1114) (num: CR0 (B:0/364) (num:	332, err: 0) :: 3079, err: 1) m: 3044, err: 12) 0/2079) (num: 4581, err: 20) : 94190, err: 0) 1114, err: 0) 364, err: 0)	

- This indicates modulation information of device.

Network Information description

- Auto Refresh : When check box is enabled, Network and MAC status of device in monitored in real time.
- WiMAX Link Status

Device Status :	CONNECTED
BSID :	00:0A:3B:00:04:0A
NAP :	000a3b
Frequency :	2587000
IP Address :	192.168.10.117
Subnet Mask :	255.255.255.0
Default Gateway :	192.168.10.1
First DNS :	203.248.252.2
Second DNS :	164.124.101.2

- Device Status: This indicates connection status of WiMAX device.
- BSID: This indicates BSID of WiMAX network.
- NAP(Network Access Provider): This indicates operator's ID.
- Frequency: This indicates connected frequency.
- IP Address: This indicates Static IP Address acquired from BS.
- Subnet Mask: This indicates Static Subnet Mask acquired from BS.
- Default Gateway: This indicates Gateway acquired from BS.
- First DNS: This indicates the first DNS acquired from BS.
- Second DNS: This indicates second DNS acquired from BS.

Service Flow

- This indicates QoS status information of device in detail.

Device Information

Device Information

Device Name :	IMW-C610W
Device Manufacturer : Software Version :	INFOMARK 1.8.9.4
Hardware Version :	07
WiMAX API Version :	1.2
MAC Address :	00:1E:31:00:07:1D

- Device Name: This indicates model name of device.
- Device Manufacturer: This indicates manufacturer of device.
- Software Version: This indicates firmware information of device.
- Hardware Version: This indicates hardware version of device..
- MiMAX API Version: This indicates WiMAX Common API Version.
- MAC Address: This indicates MAC address of device.

Frequency Setting

M/ADD
_
DEL

- 1 No: Please register frequency that desiered to be used in sequenc.
- ② First Freq.(kHz): Please register the first frequency NAP operator's range.
- ③ Last Freq.(kHz): Please register last frequency NAP operator's range.
- ④ Next Freq.(kHz): Please register step of frequency range.
- (5) Bandwidth(kHz): Please register bandwidth of NAP operator's frequency.
- 6 FFTSize: Please register FFTSize of NAP
- O After all through from (1) to (6), click 'M/ADD' for modification or add.
- (8) this indicates registered frequency list of device.
- (9) In order to remove selected frequency, click 'DEL' button.

※ Example of frequency register

- Center frequency of NAP: 2567000, 2577000, 2587000

- Bandwidth of NAP : 10MHz
- NAP의 FFTSize : 128
- 1. ① Type 1 to register No1 (To modify pre-exist No, inout same No. to modify)
- 2. 2 Input 2567000 as starting frequency
- 3. ③ Input 2587000 for last frequency
- 4. ④ Input step of frequency as 10000, (Increase in 10MHz steps)
- 5. (5) Input Bandwidth as 1000.
- 6. <a>6 Input FFTSize as 128
- 7. Select \bigcirc
- 8. Select 'Reboot' in main window

Authentication Setting

PKM :	Enable	Disable		1
Alpha Delimiter :	C Enable	Disable		Ŭ
EAP Method :	EAP-TLS	•]		2
EAP Fragment Size :	1300	bytes		
CA Certificate #1 :	installed: root.pem	, subca.pem	찾아보기	3
CA Certificate #2 :			찾아보기	0
CA Certificate #3 :			찾아보기	4
Client Certificate :	installed: client_or	ıly.pem	찾아보기	5
Private Key :	installed: client_pr	ivate_key_only.pem		6
Private Password :	•••••]	~0
Inner NAI (ID) :	socswmschap		<u> </u>	8
Inner NAI Password :				_ ~
Outer NAI (Anonymous ID):	random			9
Erase Certificate :	CA Certificate	- Erase		a
	Save			Ь
	Save			

① PKM: Please select if the certificate is desited to be used..

② EAP Method: When PKM is available, select the authenticiation method as EAP-AKA/EAP-TLS/EAP-TTLS.

- (3) CA Certificate #1: Register certificate in Root CA.
- ④ CA Certificate #2/#3: Regisger #2 and #3 certificate in Sub CA successively.
- (5) Client Certificate: Register Client Certificate
- 6 Private Key: Register Private Key Certificate
- ⑦ Private Password: Input Private Password accuired from NAP
- (8) Inner NAI (ID): Input Inner NAI (ID) accuired from NAP.
- (9) Inner NAI Password: Input NAI Password accuired from NAP.
- (a) Outer NAI (Anonymous ID): Input Outer NAI accuried from NAP.
- (b) Erase Certificate: In order to erase certificate (CA Certificate, Client Certificate, Private Key Certificate),

slelct and click 'Erase' to remove.

© Click Save to store the configuration.

* Example: EAP-AKA

- 1. Select ① as Enable
- 2. 2 Select EAP-AKA
- 3. Select © to save configuration
- 4. Click 'Reboot' in main window

(Warning: This EAP-AKA works with UICC include version of device.

※ Example: EAP-TLS

- 1. Select ① as Enable
- 2. 2 Select EAP-TLS
- 3. ③ Register Root CA Certificate
- 4. In case there is Sub CA Certificate, register in (4)
- 5. (5) Register Client Certificate file
- 6. (7) Input private password
- 7. (a) input Outer NAI (Anonymous ID) (ex:random@infomark.co.kr or MAC Address@infomark.co.kr)
- 8. Select © to save configuration
- 9. Click 'Reboot' in main window

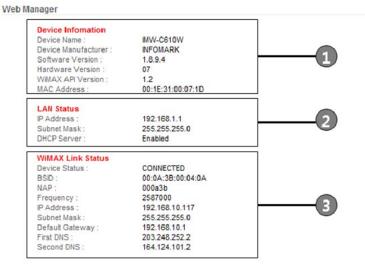
※ Example: EAP-TTLS

- 1. Select ① as Enable
- 2. 2 Select EAP-TTLS/MSCHAPV2 (Select TTLS provided from NAP)
- 3. In case there is Root CA Certificate, register with 3
- 4. In case there is Sub CA Certificate, register with 4
- 5. Input inner NAI (ID) with (8).
- 6. Input inner NAI password with 9
- 7. (a) input Outer NAI (Anonymous ID)
 - (ex:random@infomark.co.kr or MAC Address@infomark.co.kr)
- 8. Select C to save configuration
- 8. Select © to save configuration
- 9. Click 'Reboot' in main window

Administration setting

Items of Administrator settings are consist of Status, Firm info., Administration, Upgrade and USB Driver

Status description



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1 Device information

- This provides model name, manufacturer and version of software and hardware 2 LAN setting information

- This provides IP Address, Subnet Mask and DHCP Server setting information ③ WiMAX status information
 - This provides WiMAX connection status information.

Firmware information

kernel version :	Linux version 2.6.23-uc1 (namdo@namdo-desktop) (gcc version 3.4.4) #1 Mon Feb 1 15:03:14 KST 2010
rootfs version :	R762 (Feb 1 2010 15:14:47)
firmware version :	1.8.9.4
WCM version :	2.0.0.0

- kernel version: This indicates version of device OS
- rootfs version: This indicates system file version
- firmware version: This indicates software (firmware) version
- WCM version: This indicates Web CM version

Administration setting

NTP Setting		
Enable NTP Client :	C Enable	
NTP Server :	time.windows.com	
Time Zone :	Korea Standard Time	•
		save
Admin Password		
Admin Password		2
Re-enter to confirm	save	
User Password		
User Password		3
Re-enter to confirm	save	

- ① NTP Setting
 - Enable NTP Client: In case of using NTP Client, enable check box of Enable NTP client
 - NTP Server: Input URL of NTP Server URL
 - Time Zone: Select Time Zone
 - Click save to store the configuratio.

2 Admin Password

- Item to change Web CM Password of Web CM of Admin
- Used to enter URL of http://192.168.1.1/admin/
- Enter same password twice
- Click 'save' to store configuration

③ User Password

- Item to change Web CM Password of Web CM of User
- Used to enter URL of http://192.168.1.1
- Enter same password twice
- Click 'save' to store configuration

Upgrade description

Factory Reset :	factory reset		1
Bin Upgrade :	☑ Keep WiMAX config files 찾아보기	update	2
Kernel Upgrade :	찾아보기	update	3
FS Upgrade :	찾아보기	update	4
Parameter Upgrade :	찾아보기	update	5
VPOS Upgrade :	찾아보기	update	6
FOTA URL :	Enable Auto Upgrade	kecute	

1 This is to return to factory default configuration.

(2) Device supports firmware update with binary fileWhen check box of Keep WiMAX config files is selected, the previous configuration will remain after update

- After selecting file and click 'update' to start upgrade
 - ③ Device supports zImage file update
 - ④ Device supports ramdisk.jffs file update
 - (5) Device supports Prameter bin file update
 - 6 Device supports VPOS bin file upadte
 - ⑦ FOTA URL setting

- FOTA URL: Input URL of the site and save click to restore
- When Enable Auto Upgrade is checked, device will compare the firmware version and on server and update if the firmware is new.

USB Driver description



- 1 This is driver file when USB is used on Windows XP/Vista/7
- ② When used only with RNDIS, select checkbox of Wi-Fi off and save.
- ③ Reboot system in main window

%This will make Wi-Fi off with reboot.

Reboot button description

This is to reboot device when all parameter is set

웹 페이지의 메/	지지	×
Do	you want to reboo	ot the system?
	확인	취소
	1	2
Reboot sys	tem	

- 2 Cancel reboot

User Information

This device complies with part 15 of 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.

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 or more 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

WARNING:

During transmitter operation, in order to meet RF Maximum permissible Exposure Safety Guidelines, a minimum distance of 20cm shall be maintained between this device and personnel.

This equipment may generate or use radio frequency energy. Changes or modifications to this equipment may cause harmful interference unless the modifications are expressly approved in the instruction manual. The user could lose the authority to operate this equipment if an unauthorized change or modification is made.