# IMW-C910W


## User Manuel

# Table of list

# 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-C910W?

⇨ IMW-C910W is a very inventive product for Portable Mobile WiMAX & WiFi Dual CPE(Customer Premises Equipment) enabling solution of the problem of lack in user terminals possible to use Mobile WiMAX service.
When IMW-C910W is left in pocket or bag with its power on in the area where Mobile WiMAX service is available, user can make concurrent connection to many WiFi terminals by using WiFi transmitted by IMW-C910W, so it enables free use of wireless internet in any area.

⇨ IMW-C910W 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/n) LAN Card or module.
⇨ The PC will be Installed USB port.

### Specification

|  | Items | Description |
|---|---|---|
| WiMAX | WiMAX Standard Compliance | IEEE 802.16e-2005 |
|  | Air Interface | Internal Antenna |
|  | Max output Power | 23dBm |
| WiFi | Network Standard | IEEE 802.11 b/g/n(HT20) |
|  | Frequency/Channels | 2.4GHz/11Ch. |
| Power | Battery | Built-in Li-Polymer |
|  | Adaptor | 5V / 2A |
| Dimension |  | 67.0mm x 67.0mm x 14.2mm |

# *The points of name & Components list*

Components List in the package.

① IMW-C910W

② Adaptor [5V / 2A] (Optional)

③ User's Manual

④ Plug

⑤ USB Cable

## Points of name & Function
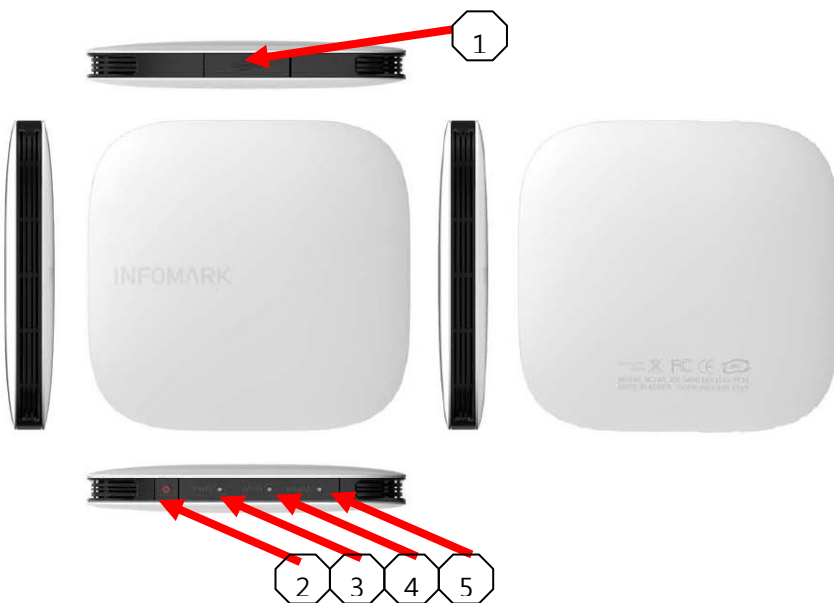
① USB Port : Battery charging and Tethered operation

② Power button: Power turn Om/Off

③ Battery Status : battery status and power (Color : Yellow / Green / Red)

④ WiFi Status: WiFi On/Off Status USB Port : (Color : Green)

⑤ WiMAX Status: WiMAX Signal strength (Color : Yellow / Green / Red)

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 | 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-C910W

## *Power ON/OFF*

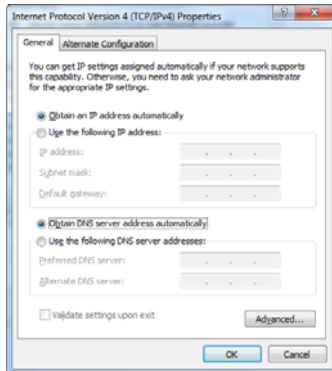Power ON : Push the power button for 3 Seconds.
Power OFF : Push and hold the power button for 20 Seconds.

## *How to charge battery*

The built-in battery can be charged from either USB cable or wall Charger (Optional)
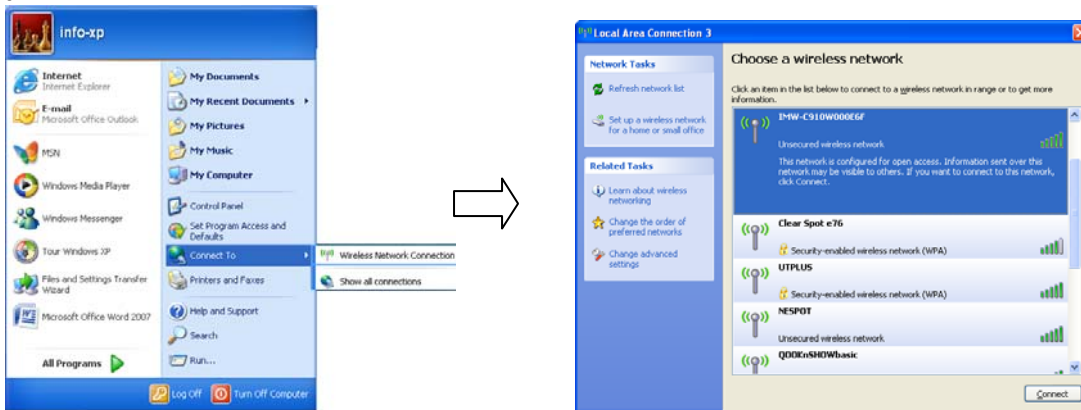
## *Setting of the WiFi AP*

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



## Setting with Window XP

● &lt;Start&gt;➔&lt;Connect to&gt;➔&lt;Wireless Network Connection&gt;➔ Choose WiFi AP of IMW-C910W in the list

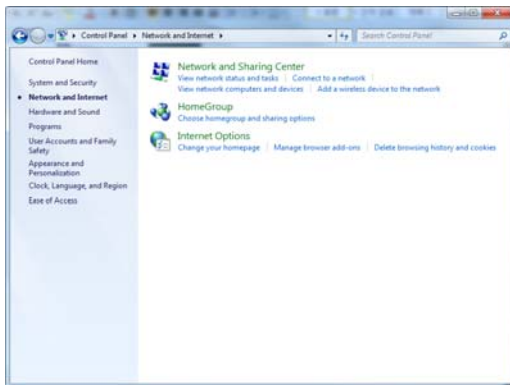## Setting with Window 7

● <Start>➔<Control Panel>➔<Network and Internet>➔<Connect to Network>
➔Choose the WiFi AP of IMW-C910W in the list
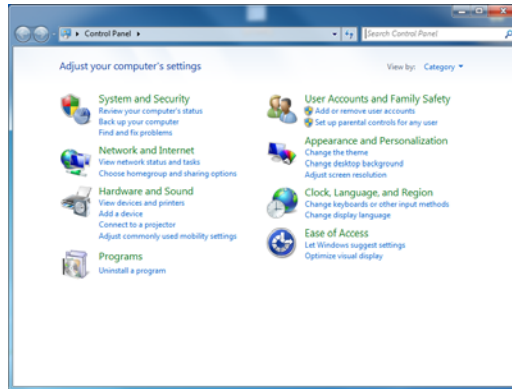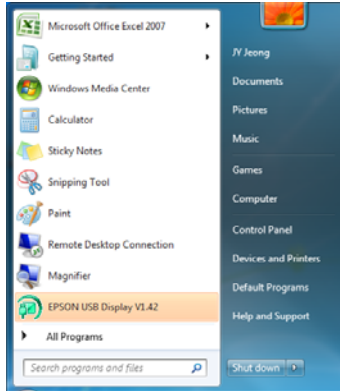


## Setting with Mac OS

●Click the wireless Icon on the menu ➔ Choose the WiFi AP of IMW-C910W in the list
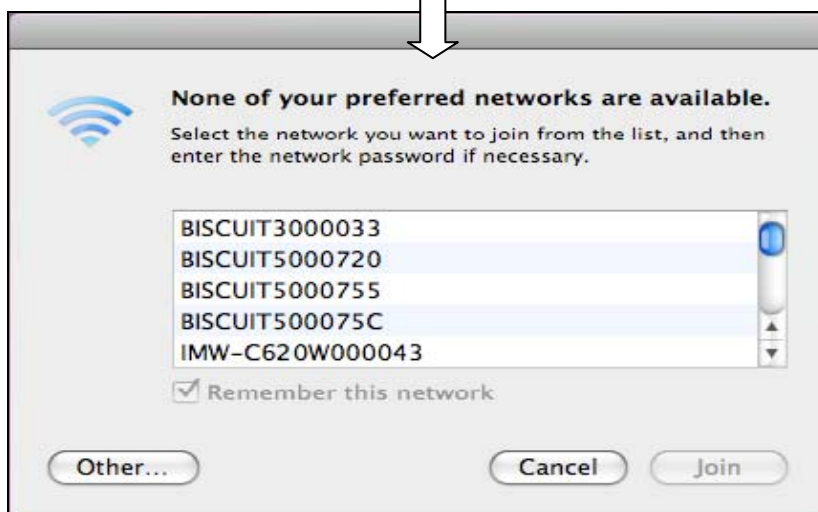
## *Setting of USB (RNDIS)*

Notice :
1. Your PC connected to web server of IMW-C910W through WiFi.
2. Driver of RNDIS can down load from web sever of IMW-C910W.
3. Refer to USB Driver Page No. XX for download.

### Setting with Window XP

1. IMW-C910W should be connected with PC by USB cable.
2. Below is each step of RNDIS installation.
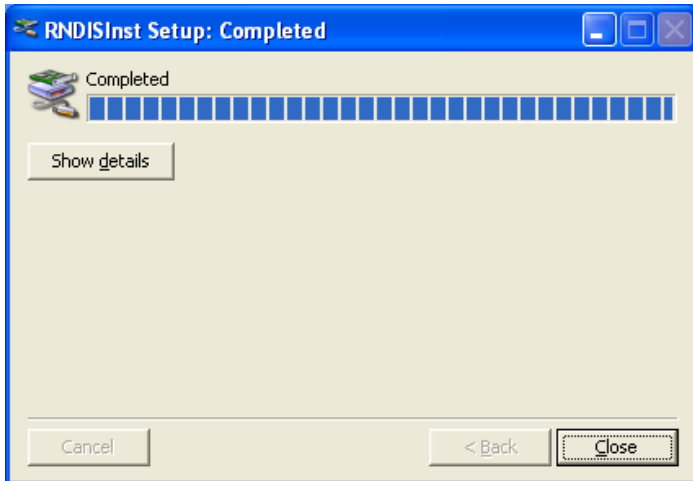
## Setting with Window 7

1. IMW-C910W should be connected with PC by USB cable.
2. Below is each step of RNDIS installation.

&lt;Start&gt;➜&lt;Control Panel&gt;➜&lt;Network and Internet&gt;➜&lt;Connect to Network&gt;
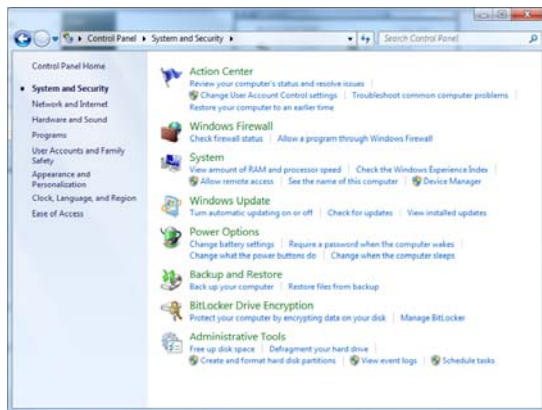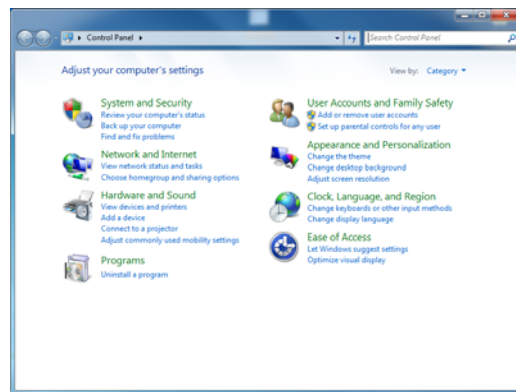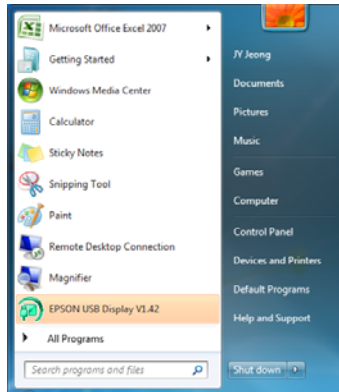
# Chapter 4 Configuring CM

## *Connect to Web CM (Web Connection Manager)*

### Start CM

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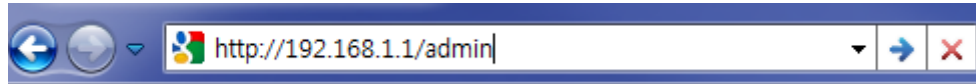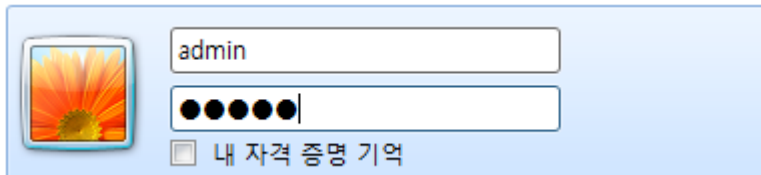


※  Microsoft Internet Explorer is recommended

### 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
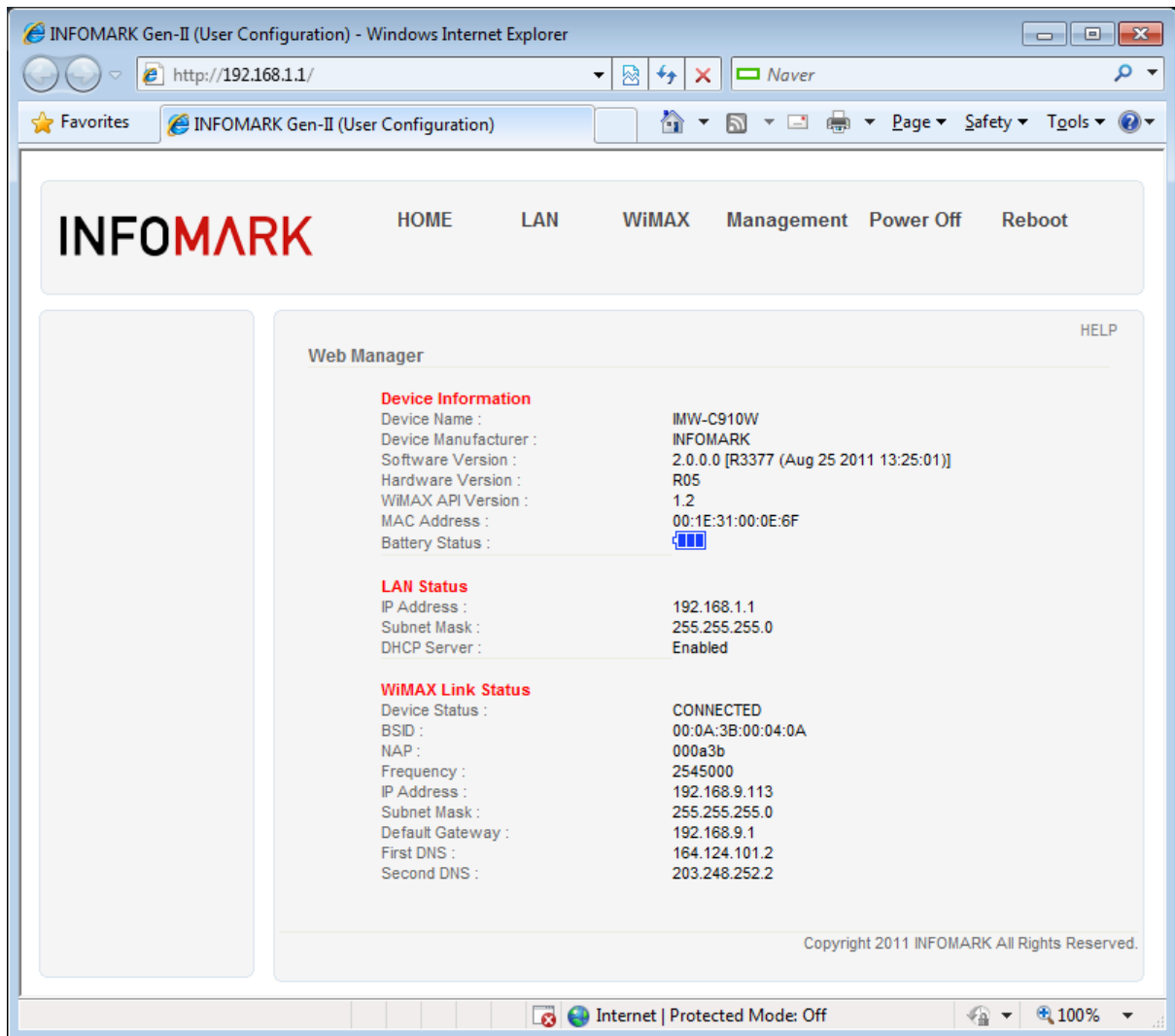
① Main Menu

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

① Device Information

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

② 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

HELP

**Connection Information**

☐ Auto Refresh

**WiMAX Connection Status**
Connection Status :           CONNECTED
Signal strength :             .ıll  RSSI:-50 , CINR:30
Connection Up Time :          01:02:10
Battery Status :              🔋

**WiMAX IP Information**
IP Address :                  192.168.9.113
Subnet Mask :                 255.255.255.0
Gateway :                     192.168.9.1
Primary DNS Server :          164.124.101.2
Secondary DNS Server :        203.248.252.2
MAC Address :                 00:1E:31:00:0E:6F

**WiMAX Device Information**
Model :                       IMW-C910W
Software Version :            2.0.0.0 [R3377 (Aug 25 2011 13:25:01)]
Firmware Version :            2.1.5.4

**Producer Information**
Copyright :                   INFOMARK
Terminal Manufacturers Website :    http://www.infomark.co.kr

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## *LAN settings*

① LAN Status

It shows web address of local area network information.

**LAN Status**

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

**Attached Devices**
| IP Address | MAC Address | IP TYPE |
|---|---|---|
| 192.168.1.10 | 00:26:66:40:C1:FA | DHCP |

② LAN Setting

**LAN Setting**

**Modify**

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

IP Lease Time : 86400 sec

**IP Reservation Settings**

| IP Address | MAC Address | | Client List | | |
|---|---|---|---|---|---|
| 192.168.1. | | << | Client MAC | ▼ | Clear |
| 192.168.1. | | << | Client MAC | ▼ | Clear |
| 192.168.1. | | << | Client MAC | ▼ | Clear |
| 192.168.1. | | << | Client MAC | ▼ | Clear |
| 192.168.1. | | << | Client MAC | ▼ | Clear |

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

**Wi-Fi Status**

**Wireless (Wi-Fi) LAN**
Default Network Name (SSID) : IMW-C910W000E6F
SSID Broadcast : On
Current Users : Show Detail
Wi-Fi Network Range : Short (best battery life)
Wi-Fi Channel : Auto (Ch. 5)
Mode : 802.11bg
Wi-Fi Security : Off

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

④ WiFi Setting

**Wi-Fi Settings**

**Wi-Fi Setting Information**
Wi-Fi Radio On/Off : On [Turn off Wi-Fi]
Network Name : IMW-C910W000E6F
SSID Broadcast : ☑ Enable
Mode : 802.11bg ▾
Channel : Auto ▾
Wi-Fi Network Range : Short ▾
Wi-Fi Max Clients : 8 ▾
Security Setting : Disabled ▾

[Save Settings]

- Network Name:
  User can set preferred name of network name
  The device comes with SSID of 'IMW-C910W'. 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'
.

⑤ NAT Setting



● 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: 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 : | 733 | BW Req Retry : | 12 |
|---|---|---|---|
| [SDU] | | | |
| Tx Packet : | 37 | Rx Packet : | 40 |
| Tx Dropped : | 0 | Rx Dropped : | 0 |
| Tx Bytes : | 2622 | Rx Bytes : | 6765 |
| Tx Bytes Dropped : | 0 | Rx Bytes Dropped : | 0 |
| [PDU] | | | |
| Tx Packets : | 1846 | Rx Packets : | 24 |
| Tx Bytes : | 28583 | Rx Bytes : | 3356 |
| Rx CRC Error : | 136 | Rx ICV Error : | 0 |
| Rx HCS Error : | 440 | Rx KEY Error : | 0 |
| Rx Length Error : | 5 | | |

- This indicates Tx/Rx Packet information

● PHY Status

```
[Link Information]
BSID :              F7-08-02-1C-30-70      Frequency :         2600000
Bandwidth :         10000
[Basic PHY Parameters]
Frame num :         10077014               DL Symbol :         29
FCH :               0xfd2200               UL Symbol :         18
TTG :               296                    Curr PI :           23
RTG :               168                    Prev PI :           0
[Link Quality]
CINR main :         17                     CINR diversity :    17
CINR mean :         20                     CINR std dev :      10
CINR A mean :       21                     CINR B mean :       14
RSSI main :         -77                    RSSI diversity :    -76
RSSI mean :         -73                    RSSI std dev :      -83
[Power Control]
Mode :              open loop(retention)
Tx Total Pwr(avg) : 9                      Tx Sub Pwr(avg) :   -4
Tx Total Pwr(last) : 11                    Tx Sub Pwr(last) :  -2
Tx Total Pwr(max) : 9                      Tx Sub Pwr(max) :   -4
Tx Total Pwr(min) : 18                     Tx Sub Pwr(min) :   0
```

- This indicates antenna level information of device

● PHY Statistics Information

```
DL MAP :            52660                  DL MAP Error :      1340
UL MAP :            52660                  UL MAP Error :      1340
FFB :               51320                  ACK :               34
I-RNG :             1                      P-RNG :             0
B-RNG :             807                    H-RNG :             0
```

- This indicates statistics of antenna level of device.

● PHY Burst Statistics Information

```
DL Burst :          216                    DL Burst Error :    0
DL HARQ Burst :     24                     DL HARQ Dropped :   0
UL Burst :          1323                   UL HARQ Burst :     791
UL HARQ Retry :     4


DIUC0: QPSK (CTC) 1/2 R0 (N:0/8) (num: 8, err: 0)
DIUC0: QPSK (CTC) 1/2 R6 (N:0/1) (num: 1, err: 0)
DIUC1: QPSK (CTC) 3/4 R0 (N:0/6) (num: 6, err: 0)
DIUC2: 16-QAM (CTC) 1/2 R0 (N:0/176) (num: 176, err: 0)
DIUC3: 16-QAM (CTC) 3/4 R0 (N:0/1) (num: 1, err: 0)
DIUC5: 64-QAM (CTC) 2/3 R0 (A:0/4) (num: 4, err: 0)
DIUC6: 64-QAM (CTC) 3/4 R0 (A:1/10) (num: 10, err: 1)
DIUC7: 64-QAM (CTC) 5/6 R0 (A:9/20) (num: 20, err: 9)
UIUC1: QPSK (CTC) 1/2 R0 (N:0/1323) (num: 1323, 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 :                      F7:08:02:1C:30:70
NAP :                       f70802
Frequency :                 2600000
IP Address :                175.255.249.203
Subnet Mask :               255.255.255.0
Default Gateway :           175.255.249.1
First DNS :                 168.126.63.1
Second DNS :                168.126.63.2
```

- 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 Information**

| | |
|---|---|
| Device Name : | IMW-C910W |
| Device Manufacturer : | INFOMARK |
| Software Version : | 2.0.0.0 [R3377 (Aug 25 2011 13:25:01)] |
| Hardware Version : | R05 |
| WiMAX API Version : | 1.2 |
| MAC Address : | 00:1E:31:00:0E:6F |
| Battery Status : | |

- 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

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

⑦ 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

| |
|---|
| - Bandwidth of NAP : 5MHz,10MHz<br>- NAP의 FFTSize : 1024<br>1. ① Type 1 to register No1 (To modify pre-exist No, inout same No. to modify)<br>2. ② Input 2500000 as starting frequency<br>3. ③ Input 2650000 for last frequency<br>4. ④ Input step of frequency as 20000, (Increase in 20MHz steps) |

5. ⑤ Input Bandwidth as 10000.
6. ⑥ Input FFTSize as 1024
7. Select ⑦
8. Select 'Reboot' in main window

## Authentication Setting



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 accured from NAP

⑧ Inner NAI (ID): Input Inner NAI (ID) accured from NAP.

⑨ Inner NAI Password: Input NAI Password accured from NAP.

ⓐ Outer NAI (Anonymous ID): Input Outer NAI accuried from NAP.

ⓑ 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. ⓐ 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. ⓐ input Outer NAI (Anonymous ID)
   (ex:random@infomark.co.kr or MAC Address@infomark.co.kr)
8. Select ⓒ 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

**Web Manager**

**Device Information**
Device Name :               IMW-C910W
Device Manufacturer :       INFOMARK
Software Version :          2.0.0.0 [R3377 (Aug 25 2011 13:25:01)]
Hardware Version :          R05
WiMAX API Version :         1.2
MAC Address :               00:1E:31:00:0E:6F
Battery Status :

**LAN Status**
IP Address :                192.168.1.1
Subnet Mask :               255.255.255.0
DHCP Server :               Enabled

**WiMAX Link Status**
Device Status :             CONNECTED
BSID :                      00:0A:3B:00:04:0A
NAP :                       000a3b
Frequency :                 2545000
IP Address :                192.168.9.113
Subnet Mask :               255.255.255.0
Default Gateway :           192.168.9.1
First DNS :                 164.124.101.2
Second DNS :                203.248.252.2

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
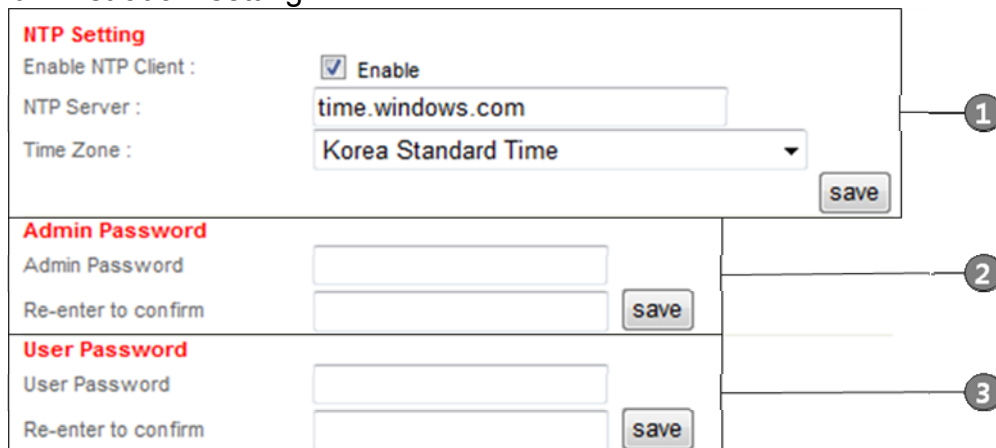- This provides WiMAX connection status information.

## Firmware information



- kernel version: 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



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



① This is to return to factory default configuration.
② Device supports firmware update with binary file

- When 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 Parameter bin file update
⑥ Device supports VPOS bin file update
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.
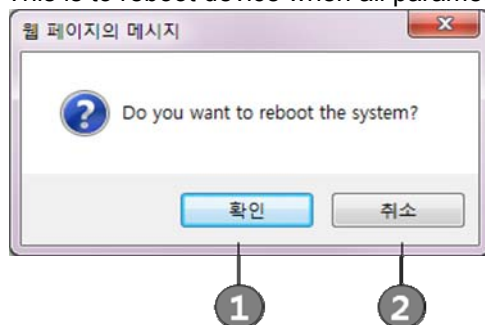-

## 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



① Reboot system

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  1 cm 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.