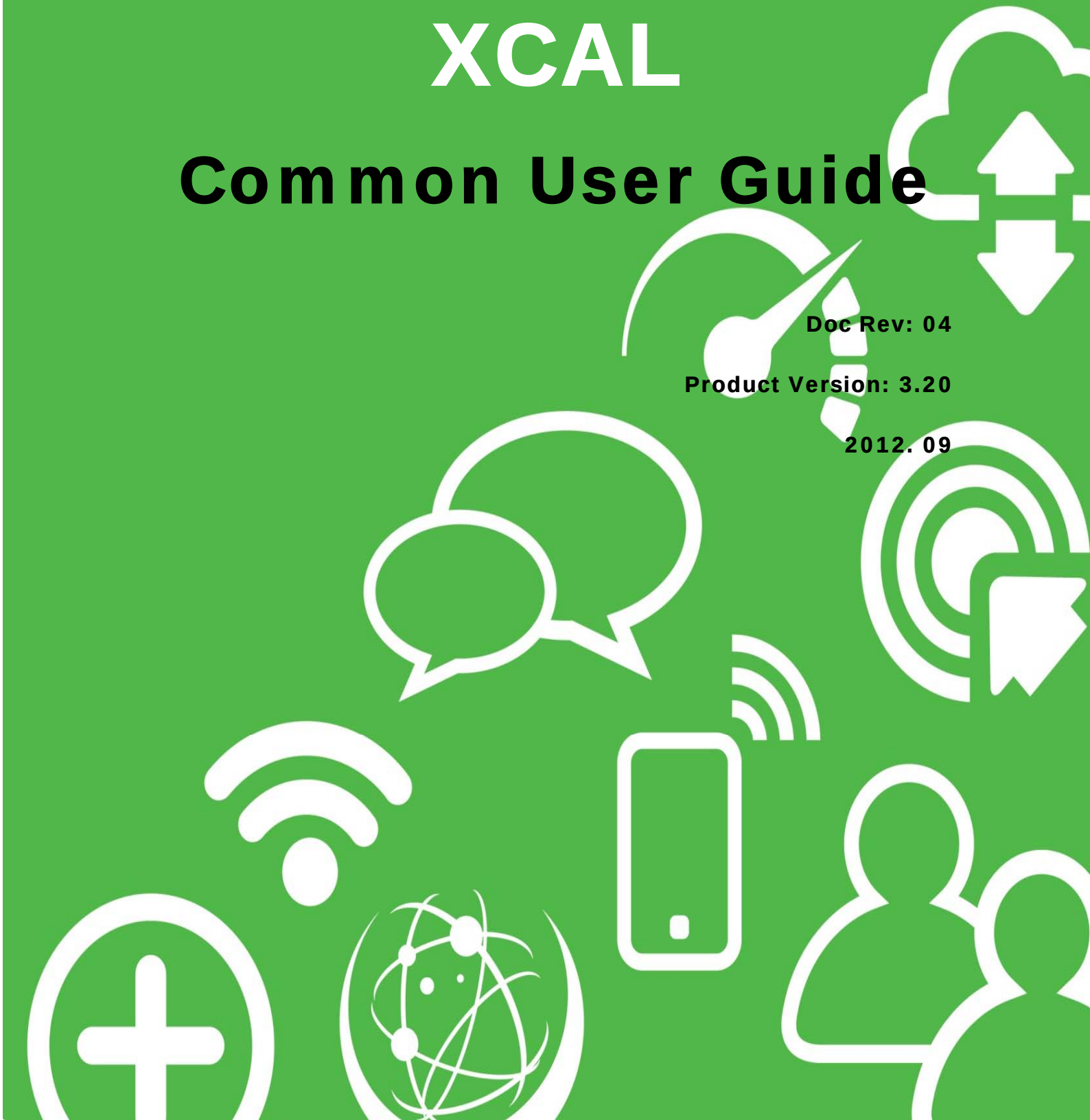
XCAL

Common User Guide



Doc Rev: 04

Product Version: 3.20

2012. 09

Accuver Co., Ltd.,

Address: #1-301, Complex 2, Pangyo7 Techno Valley #633, Sampyung-Dong, Bundang-Gu, Seongnam-Si, Kyungki-Do

Web site: www.Accuver.com

Phone #: +82-31-788-1700

Fax #: +82-31-705-1246

Revision History

Doc Revision	Product Release Version	Date of Release	Note
0	3.2		
1	3.2		
2	3.2		
3	3.2	2012 Sep	AutoCall update
4	3.2	2012 Sep	System Requirement update

Contents

Introduction

Overview

XCAL is a real-time software solution for wireless network optimization and performance measurement. It interfaces Test Terminals such as Mobile Phones, Modems, Network Cards, and Scanners to collect Data and to perform QoS Tests

XCAL collects Layer 1, 2, 3 messages, and TCP/IP packets from both the air and data interface of all commercially available technologies [CDMA IS95A/B, 1XRTT, EVDO (Rev. 0, Rev. A, and Rev. B), GSM, GPRS, EDGE, UMTS, HSDPA, HSUPA, HSPA+, DC-HSDPA, WiMAX, and LTE].

It also performs various QoS Test on Voice and Data Service by embedded automated Call Scripts.

XCAL combines RF Air Interface information and QoS Tests in same platform for overall performance measurement and analysis.

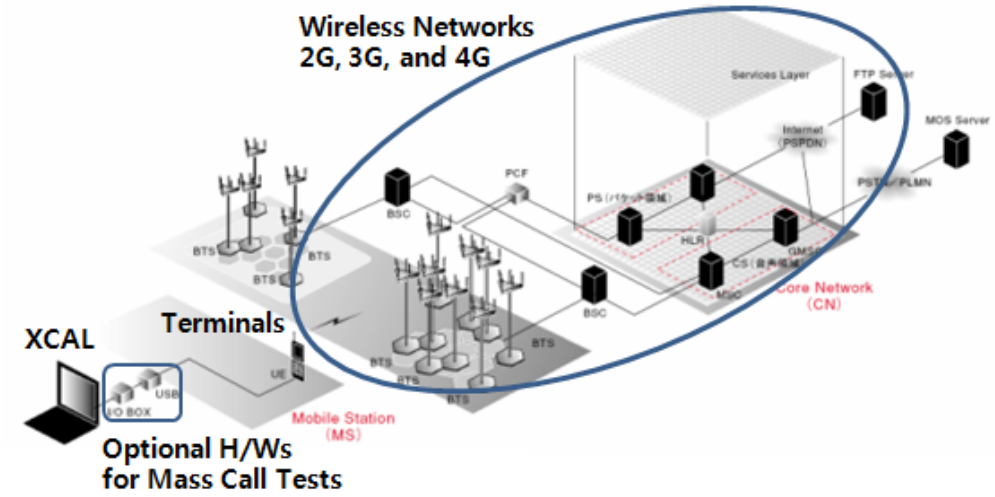
XCAL has been also proven as a good solution in global to significantly reduce overhead and improve operational efficiency.

XCAL is basically developed for Single PC (Laptop) solution but it could be extended to Mass Call Test Solution with additional H/Ws to run quite a lot of Terminals in

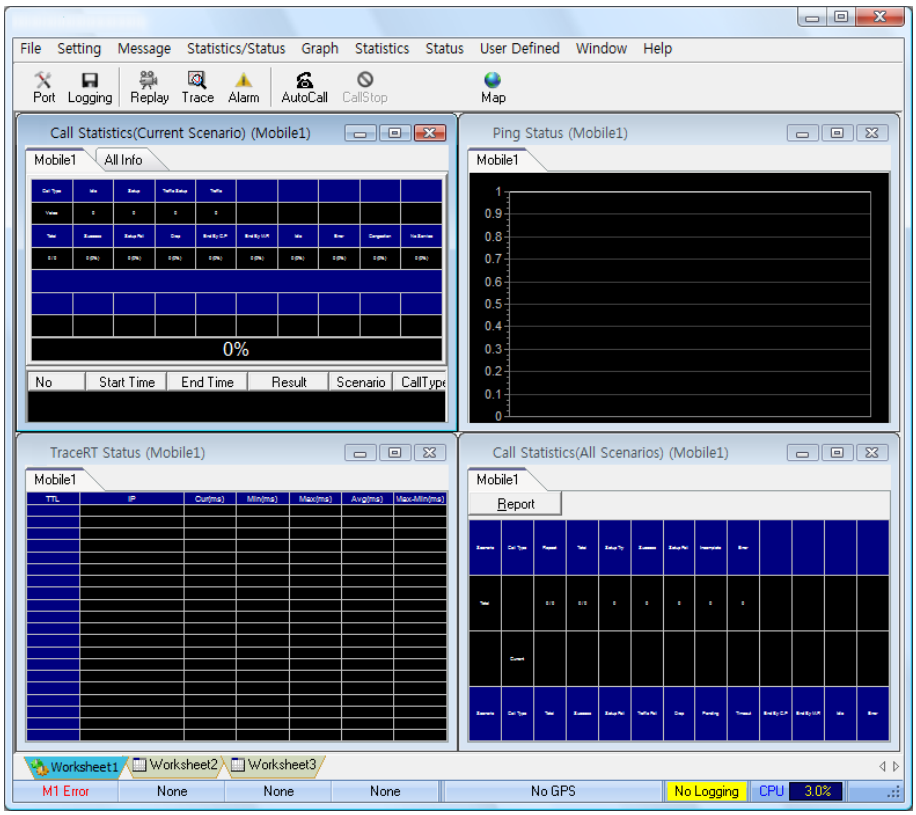
parallel for benchmarking test and Capacity test.

XCAL could be classified to various product names by the license options included.

For example, XCAL is generally called as XCAL-X with WiMAX License only.



XCAL System Overview



XCAL Program Main Screen

Features

The key features of XCAL are as follows:

- To collect data over both layer 1/2/3 messages and TCP/IP packets simultaneously of different technologies.
- To support CDMA IS95-A/B, 1XRTT, EVDO (Rev. 0, Rev. A, and Rev. B), GSM, GPRS, EDGE, UMTS, HSDPA, HSUPA, HSPA+, DC-HSDPA, WiMAX, and LTE.
- To support Various Mobile Chipsets.

  CDMA/EVDO: Qualcomm chipset & VIA Chipset

  GSM/GPRS/EDGE: Qualcomm Chipset & Nokia Chipset

  WCDMA/HSDPA/HSUPA:

  Qualcomm chipset, Nokia Chipset, Samsung Chipset, Icera Chipset & Infineon Chipset

  DC-HSDPA: Qualcomm Chipset

  HSPA+: Qualcomm Chipset & Infineon Chipset

  WiMAX:

  Runcom Chipset, Beceem chipset, GCT Chipset, Sequans Chipset, Intel Chipset, MediaTek Chipset, Samsung Chipset

  LTE:

  Qualcomm Chipset, LGE Chipset, Samsung Chipset, GCT Chipset, Sequans Chipset, Altair Chipset, HiSilicon Chipset
- To support Various Scanners.

  PCTel Scanner: LX Scanner, EX Scanner, PCI Scanner (MX Scanner by OCT-2011)

  Anritsu Scanner: 8720, 8740, 8780

  DRT Scanner: CDMA/EVDO, GSM/WCDMA, WiMAX (LTE by the end of 2011)

  Panasonic Scanner: WCDMA

  R&S Scanner: TSMW (LTE only), (TSMQ & TSMW by the end of 2011)
- To log and decode RRC/NAS/RLC/RLP, and TCP/IP message in real-time platform

- To display measured data in various types of viewer window

  Line Graph, Bar Graph, Map View, Table View, Statistics View, and Message View in real-time.

- To support automatic call scripts and QoS measurements

  Voice, FTP, HTTP, UDP, Email, VoIP, VOD, Ping, IPerf, SMS/MMS Call Tests

  Voice MOS & Video MOS measurements

- To support Audible and visible Alarm for important events.
- To support log file (DRM and Qualcomm MDM) replay.
- To support GPS interface and GIS mapping plot.
- To support an export a Log to CSV file format.
- To support an export a log to Google & MapInfo map format.
- To support a favorite and template screen view.

System Requirements

Before you begin, ensure that your system meets the following requirements.

Minimum

Item	Minimum
CPU	Pentium Dual Core processor, 1.5 GHz or higher processor
Monitor	1024 * 768(16bit) or above
RAM	2GB or above
Hard Drive	120GB or larger hard disk for collecting data
Operation System	Windows XP or higher

Recommended

Recommended system requirement varies depending on mobile chipset type.

[For 3G/WiMAX]

Item	Recommended
CPU	Pentium Core2Duo processor, 2.0 GHz or higher processor
Monitor	1280 * 1024(32bit) or above
RAM	4GB or above
Hard Drive	300GB (7200 RPM) or larger hard disk for collecting data
Operation System	Windows XP or higher

[For LTE]

Item	Recommended
CPU	Core I5 processor or higher processor
Monitor	1024 * 768(16bit) or above
RAM	4GB or above
Hard Drive	500 (7200 RPM) or larger hard disk for collecting data
Operation System	Windows XP or higher

Getting Start

Components

Following components are provided with purchase.

- Software Installation CD (include User Guide) or S/W file in Web Link.
- Key Lock Dongle (USB) or S/W license file.
- Optional GPS Antenna (USB)

Installing Software (with Setup Package)

Before installation of new Setup Package, you are kindly requested to uninstall old XCAL if you have it already installed before.

Following procedure enables you to install XCAL software on test PC appropriately. All applications should be closed on your PC before beginning installation.

1. Insert the supplied CD-ROM into your CD-ROM drive.

The CD-ROM shall automatically run, and installation wizard is started.

If the installation window does not appear, find the **setup.exe** from the supplied CD-ROM/XCAL Setup.

(In case you have a Setup S/W via Web Link, please find the **setup.exe** and run it.)

2. Installation wizard is started, read carefully and follow installation instructions properly.

   The S/W will install the following S/W modules;

   - XCAL main S/W application
   - Microsoft Dot Net Frame Work Application (Only for Windows XP)
   - SmartMap Engine Application
   - WinPCAP Application
   - HHD Serial Port Monitoring Module
   - MapXtreme OEM Application
   - Microsoft Dot NetFrame Work Application

3. In middle of Installation, you will be requested the following things;

   - Type Name and Company Name
   - Assign Program Group and Program Folder

     (In default, it will use 'ACCUVER' as Program Group and 'program files/ACCUVER/XCAL' or 'program files(x86)/ACCUVER/XCAL' as Program Folder.)

   - Press <Next>, <Update>, <OK>, and <Finish> buttons.

Installing Software (with Patch Files)

Before installation of new Patch files, you must have XCAL installed before.

Following procedure enables you to install XCAL software patch on test PC appropriately. All applications should be closed on your PC before beginning installation.

1. Download a S/W patch from Web Link provided by ACCUVER.

   A S/W patch is generally provide in Zipped file. You are kindly requested to unzip it after downloading.

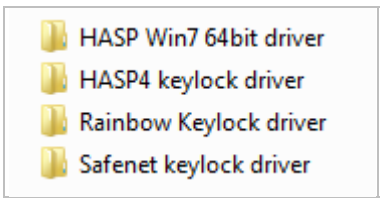
2. Copy and Paste all unzipped files and folders into the folder where previous XCAL was installed. Please replace all files with the Patch Files.

Installing License (with USB License Dongle)

If you have a USB License Dongle, please be sure to install a Driver File first before to plug in. If not, please skip this procedure.

Following procedure enables you to install XCAL software patch on test PC appropriately. All applications should be closed on your PC before beginning installation.

1. USB Dongle Driver files are in the folder of 'Driver' in root folder of XCAL as following;



- Evaluation USB Dongle License (Time-Locked) 

  HASP Win7 64bit driver : Driver file for Windows 7 64 Bit OS

  HASP4 Keylock driver : Driver file for Windows XP, Vista, 7 32 bit OS

- Commercial USB Dongle License (Permanent License) 

  There are 2 types of Driver files and choose one of them.

  Rainbow Keylock driver : Driver file for Windows XP, Vista, & 7

  Safenet KeyLock driver : Driver file for Windows Vista, & 7

2. Run Setup Files of proper license driver.
3. After installation, plug in a USB Dongle.

Installing License (with machine code)

If you have a License based on S/W file license on your machine code, please follow these steps to install a License File. If not, please skip these procedures.

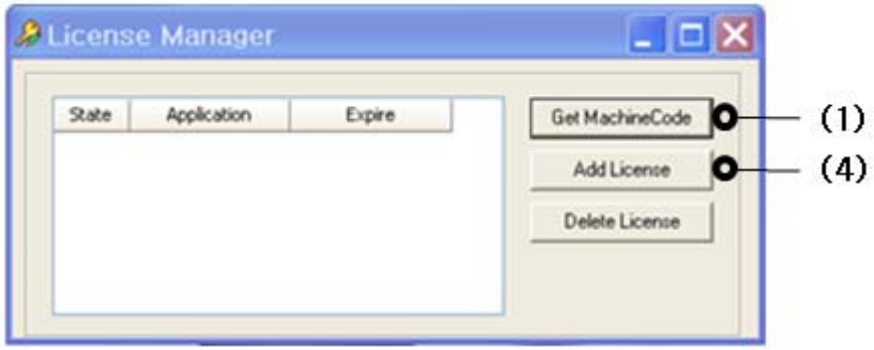
1. Download a License Manager Application from ACCUVER.
2. Run it and get machine code file of your Laptop.

   When Machine Code file (*.mc) is created, send it to ACCUVER.
3. ACCUVER will provide a proper license file on a given Machine Code.

   Please keep in mind that a S/W license will work only on a matched machine code. It could not be transferrable to other laptop.
4. Run a License Manager Application again and register(Add) a License File.

Please make it sure that you have a good internet connection.

A S/W license is requested once to check



Installing License (with Network License)

If you have a License based on Network License Server, please follow these steps to install a License File. If not, please skip these procedures.

1. Open an URL of License Server.

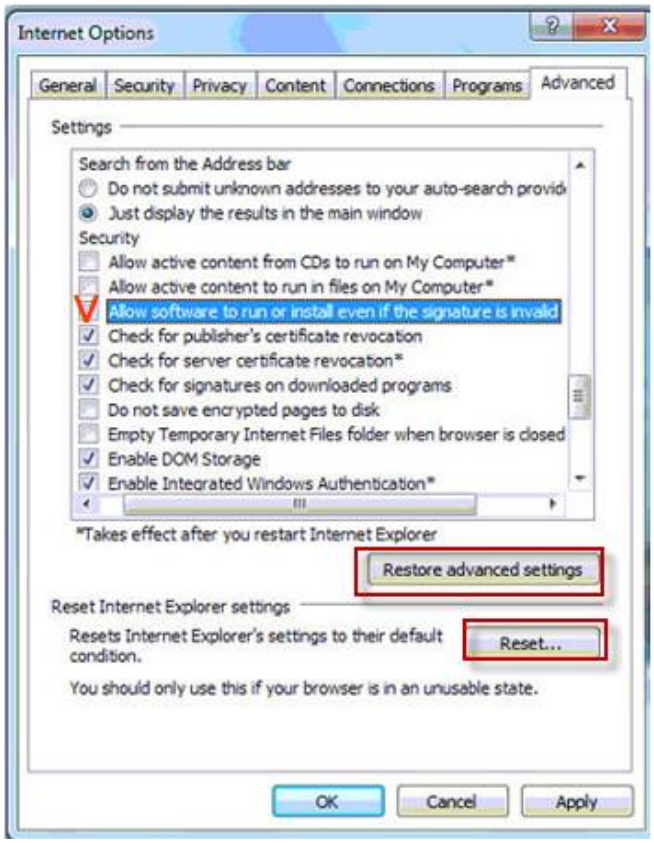
   Please contact to your Network License Manager to know the URL.

   Please use an MS Internet Explorer 8 or older in Web Browsing.

2. On first access, you are requested to install an Network License ActiveX.

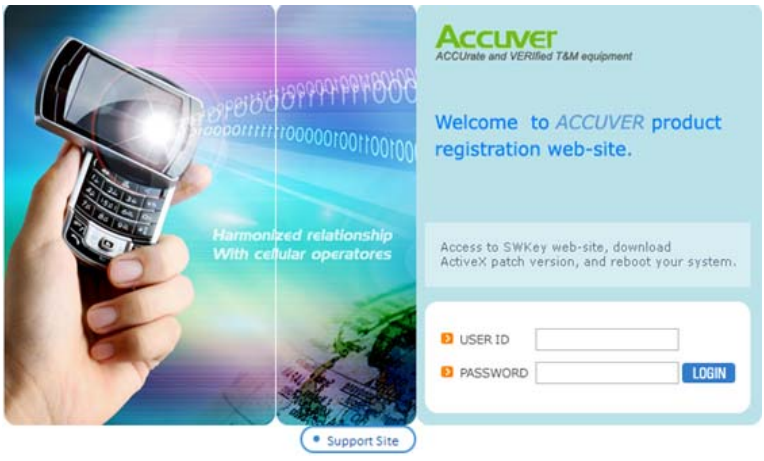
   Please disable all firewall and lower security level.

   - go to Internet Options and Advanced,
   - run Restore advanced settings
   - run Reset Internet Explorer settings
   - Check if "Allow software to run or install even if the signature is invalid" is checked or not. If not, check this one.



3. Log in to a License Server Web Page.

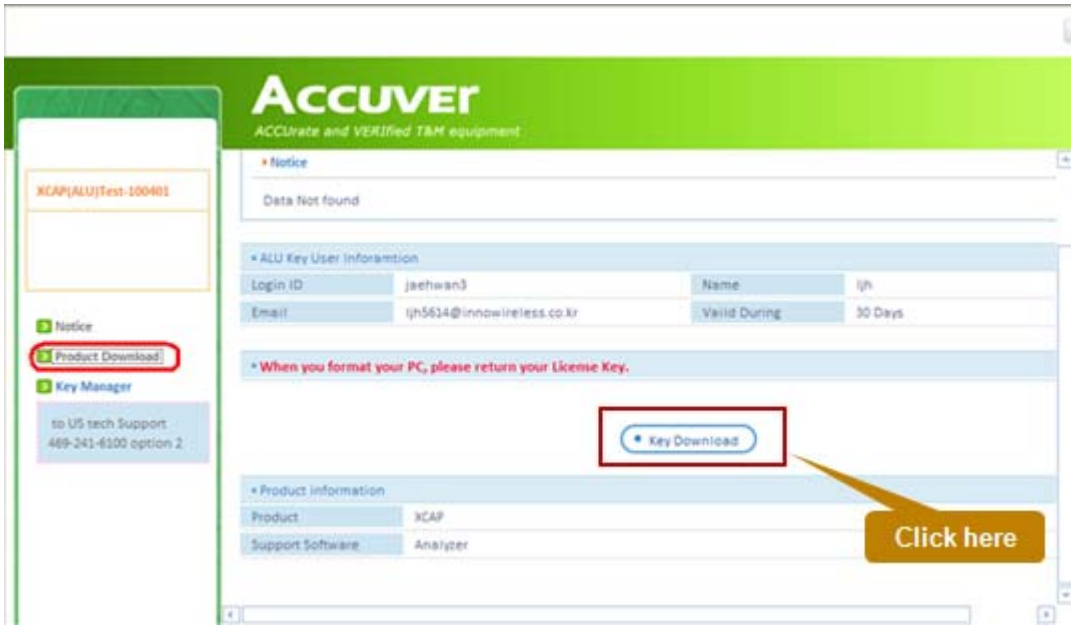
   Please contact to your Network License Manager to know ID and PASS.



4. After Log on, you will see the page of ‘Key (Network License) download’.

   Please click the button of ‘Key Download’ to get a Network License.

   Then move to ‘Product Download’ part to get a XCAL Main S/W Package.



5. Network License will be valid for an allowed Time Duration in Network Server.
   - Once a Network License is given, same license is not allowed to be regenerated until expiry of allowed Time Usage.
   - When you need to handover your license to others before expiry, you must return your license to Network Server.

     The process of Returning License is following;

     A. Log in to Network Server
     B. After log on, there will be 2 options of 'Key Restore' and 'Key Extend'.
     C. Click the button of 'Key Restore' and now the pre-occupied license is released.
   - When you want to use a Network License after Expiry, please click the button of 'Key Extend' instead of 'Key Restore' in above procedure.

Setting for Windows OS

The following Windows settings are requested to assure a correct test and get a best test result.

Set Item	State	Purpose
Firewall	Off*	To access to mobile station
Windows Update	Not automatically	To maximize the performance of data call
Synchronization with Internet Time	Not synchronized	To prevent a logging time from being mixed up owing to the automatic change of time by this synchronization with the time from internet server
User Account Control	Off	To create a log file of call test
Etc.		To maximize the performance of data call, all programs accessing to Internet network automatically such as messenger, Internet Explorer should be closed.

Remark)

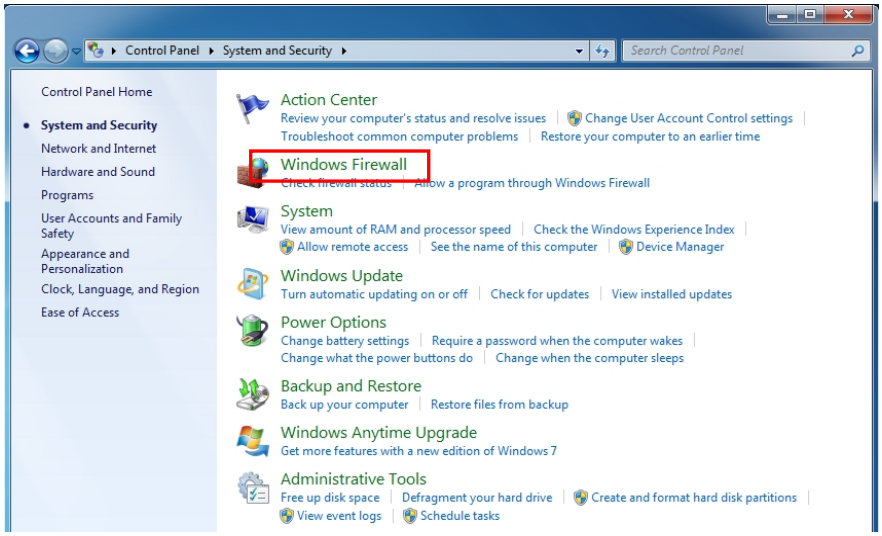
*: When XCAL LTE S/W is launched, firewall is automatically set as Off. But, to check whether this automatic setting is done well may be required according to your PC system.

See the following procedures to set the above items according to Windows OS.

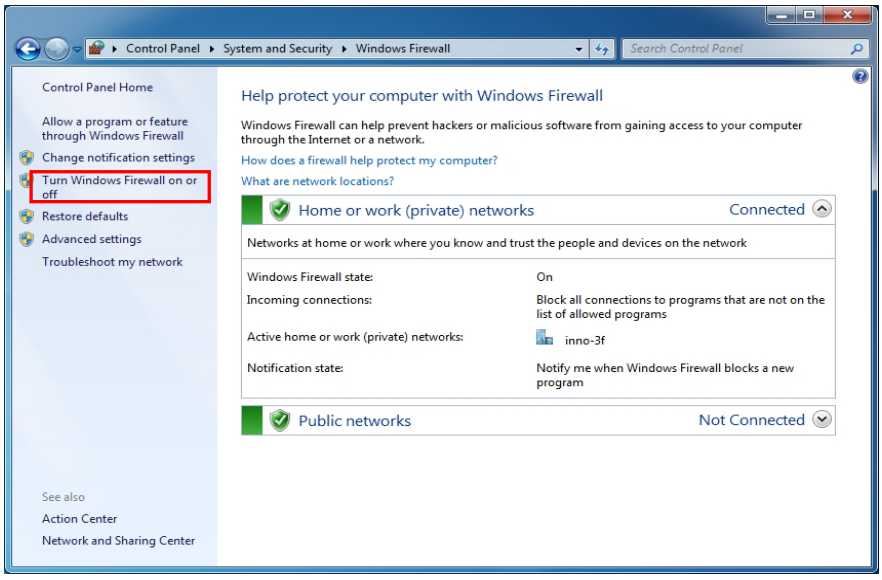
Windows7

[Firewall]

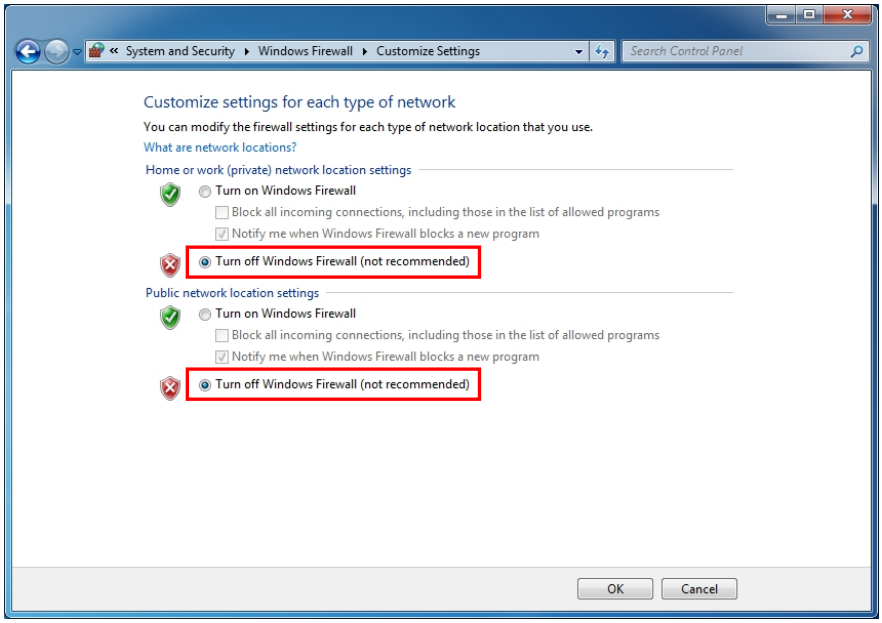
1. Go to **Start** – **Control Panel** – **System and Security** – **Windows Firewall**.



2. Select **Turn Windows Firewall on or off**.



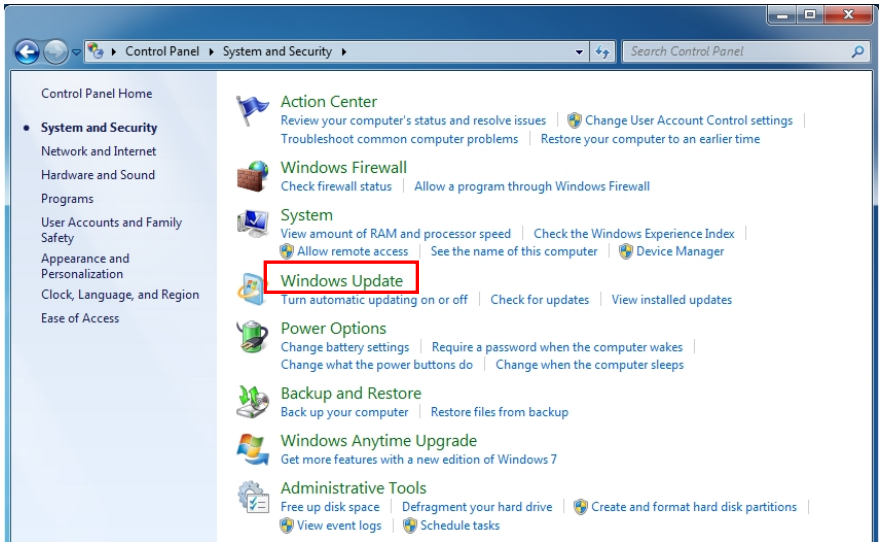
3. Select the checkbox for **Turn off Windows Firewall (not recommended)** of **Home or work (private) network location settings**, and select the checkbox for **Turn off Windows Firewall (not recommended)** of **Public network location settings**.


System and Security ▸ Windows Firewall ▸ Customize Settings
Search Control Panel
Customize settings for each type of network
You can modify the firewall settings for each type of network location that you use.
What are network locations?
Home or work (private) network location settings
Turn on Windows Firewall
Block all incoming connections, including those in the list of allowed programs
Notify me when Windows Firewall blocks a new program
Turn off Windows Firewall (not recommended)
Public network location settings
Turn on Windows Firewall
Block all incoming connections, including those in the list of allowed programs
Notify me when Windows Firewall blocks a new program
Turn off Windows Firewall (not recommended)
OK
Cancel

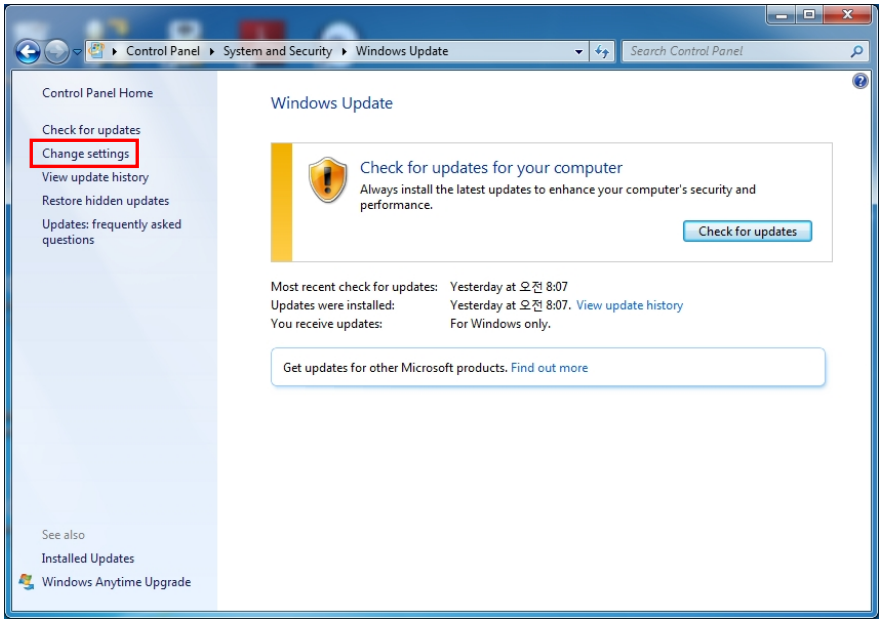
4. Click **OK**.

[Windows Update]

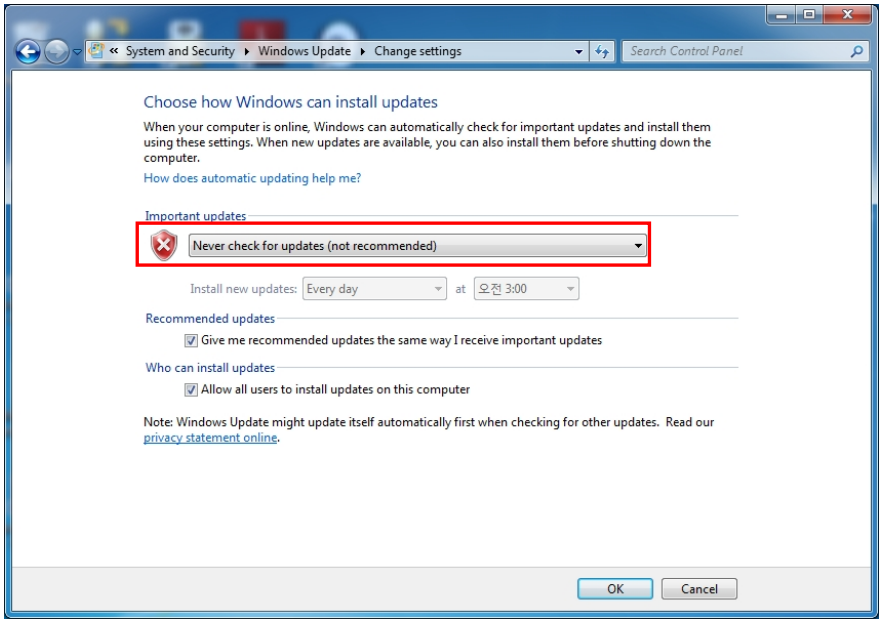
1. Go to **Start** – **Control Panel** – **System and Security** – **Windows Update**.



2. Select **Change settings**.



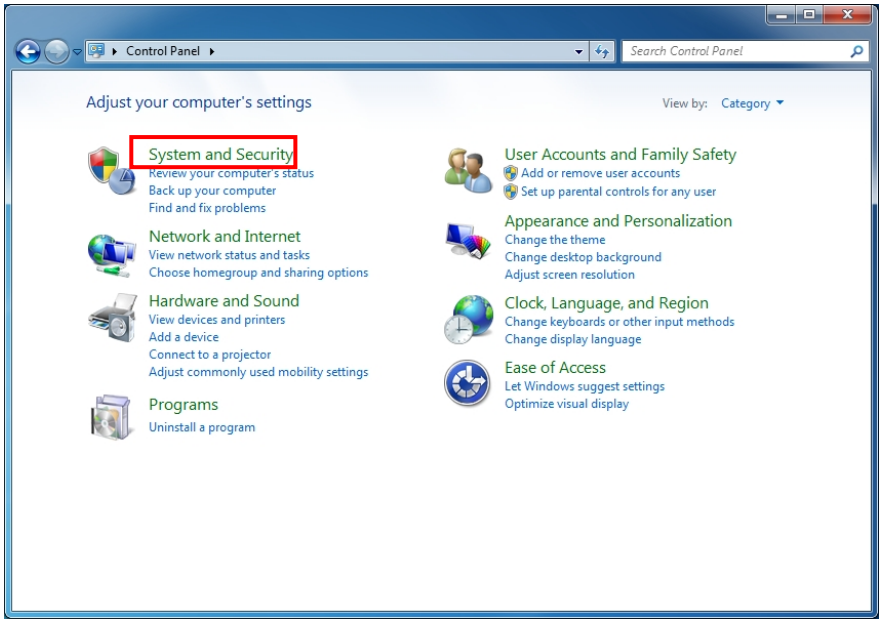
3. Select **Never check for updates (not recommended)**.


System and Security ▸ Windows Update ▸ Change settings
Search Control Panel
Choose how Windows can install updates
When your computer is online, Windows can automatically check for important updates and install them using these settings. When new updates are available, you can also install them before shutting down the computer.
How does automatic updating help me?
Important updates
Never check for updates (not recommended)
Install new updates: Every day at 오전 3:00
Recommended updates
Give me recommended updates the same way I receive important updates
Who can install updates
Allow all users to install updates on this computer
Note: Windows Update might update itself automatically first when checking for other updates. Read our privacy statement online.
OK
Cancel

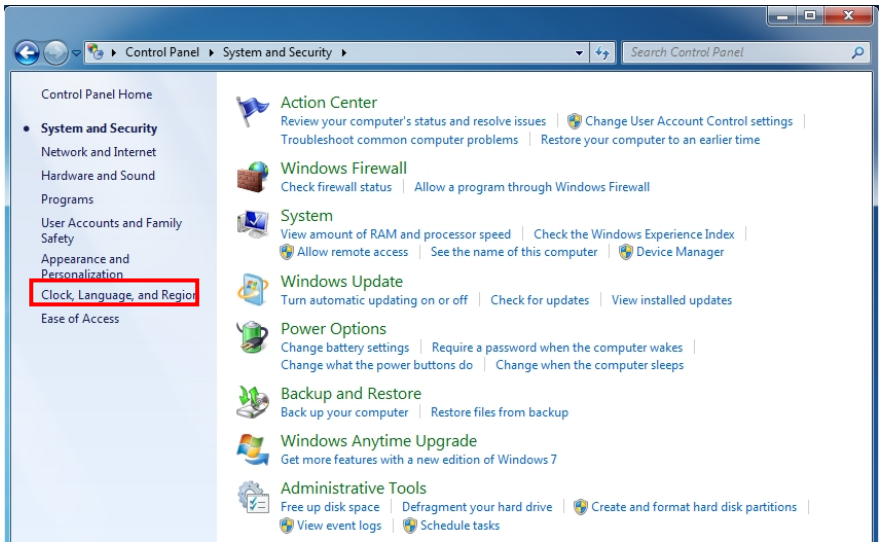
4. Click **OK**.

[Synchronization with Internet Time]

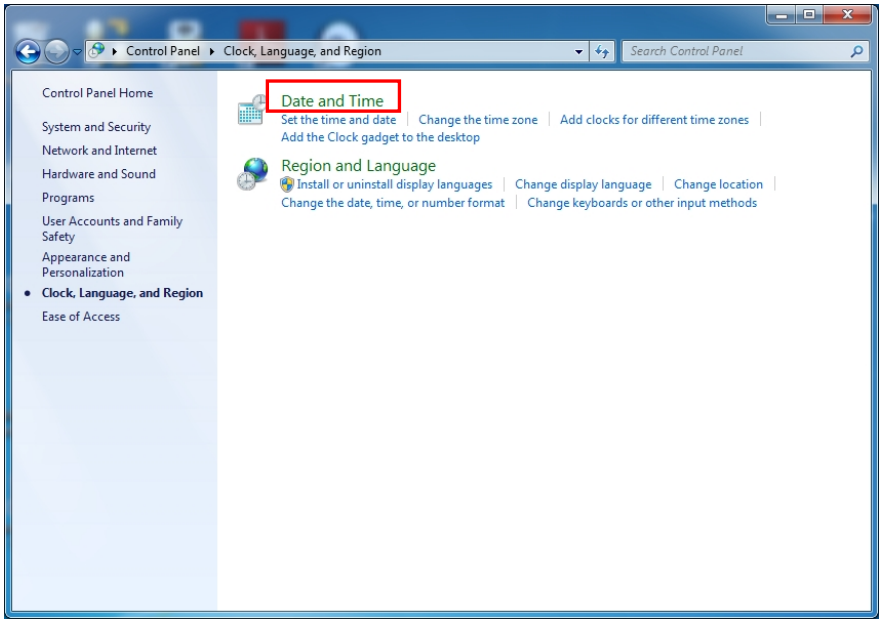
1. Go to **Start** – **Control Panel** – **System and Security**.



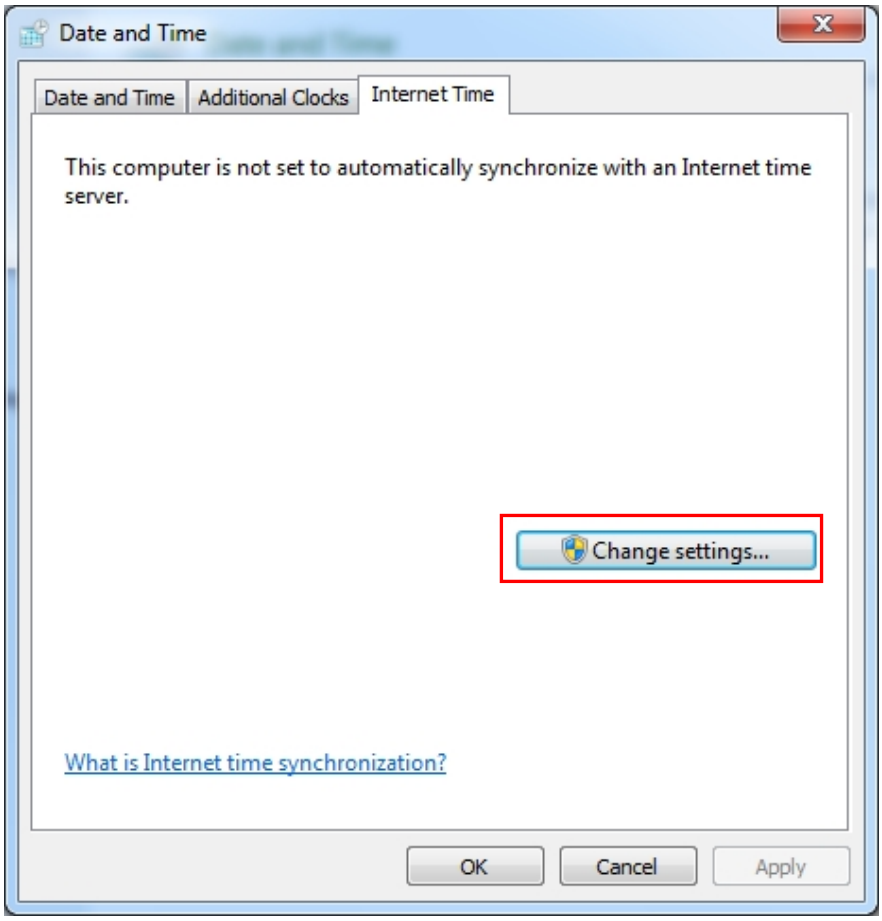
2. Select **Clock Language and Region**.



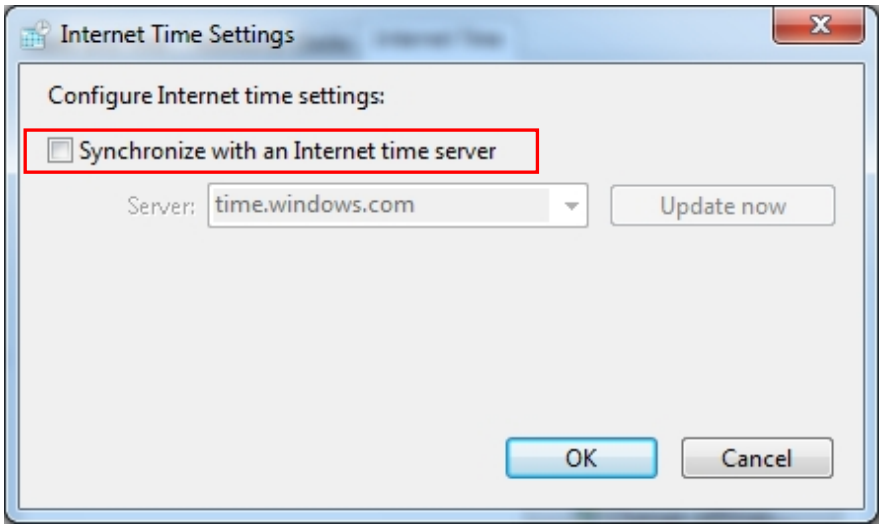
3. Select **Date and Time**.



4. **Date and Time** window appears. Select **Internet Time** tab, and click **Change settings…** button.



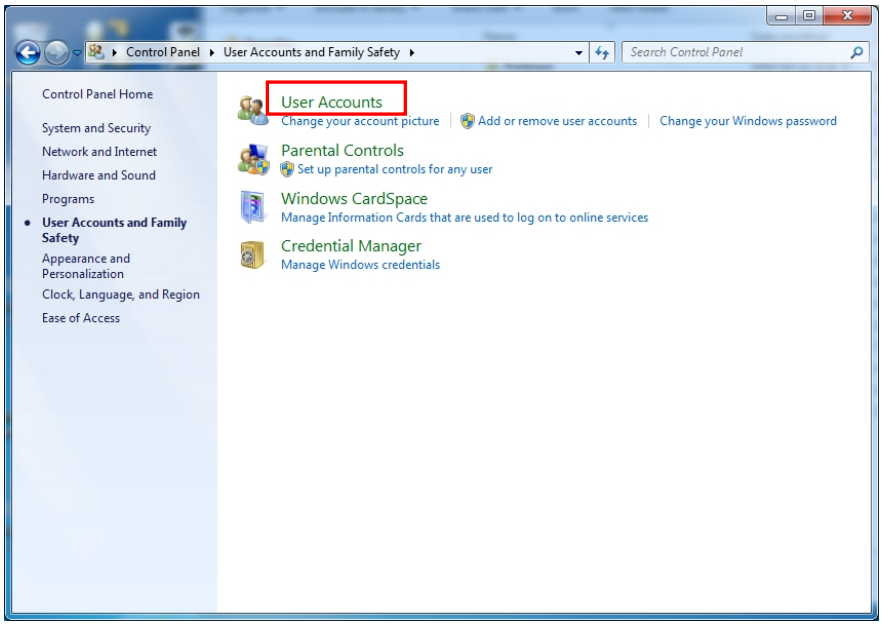
5. Unselect the checkbox for **Synchronize with an Internet time server**.



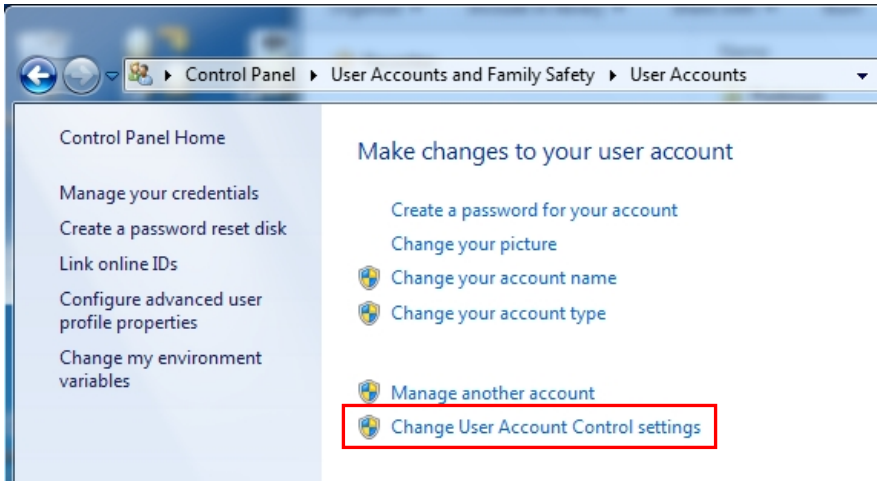
6. Click **OK**.

[User Account Control]

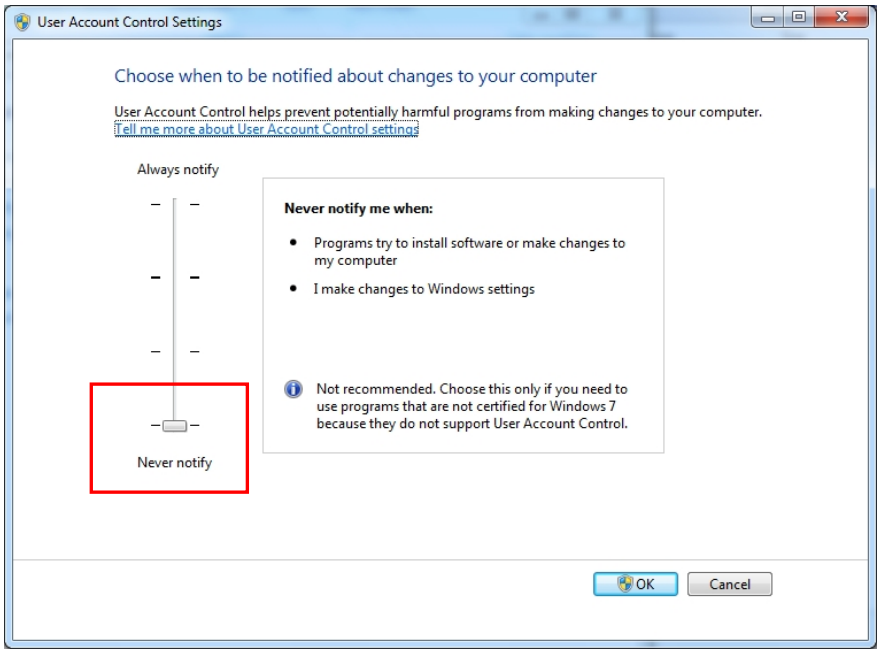
1. Go to **Start** – **Control Panel** – **User Accounts and Family Safety** – **User Accounts**.



2. Select **Change User Account Control settings**.



3. Move the control bar at the lowest level.



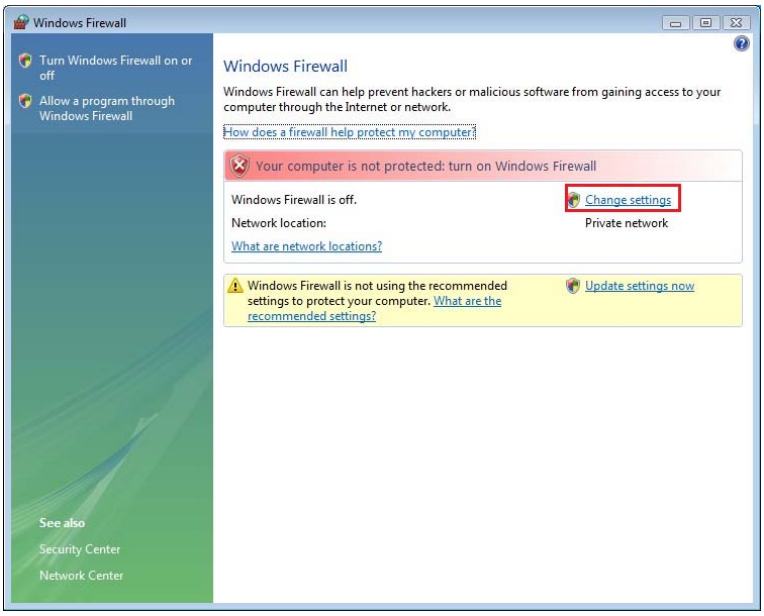
4. Click **OK**.

Vista

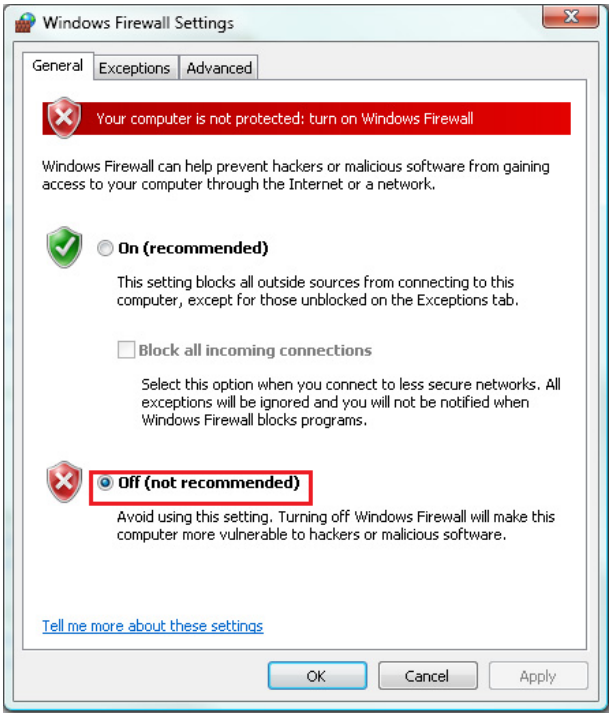
[Firewall]

1. Go to **Start** – **Control Panel** –**Security.** Select **Windows Firewall** tab.

2. Windows Firewall window appears. Click **Change settings** button.



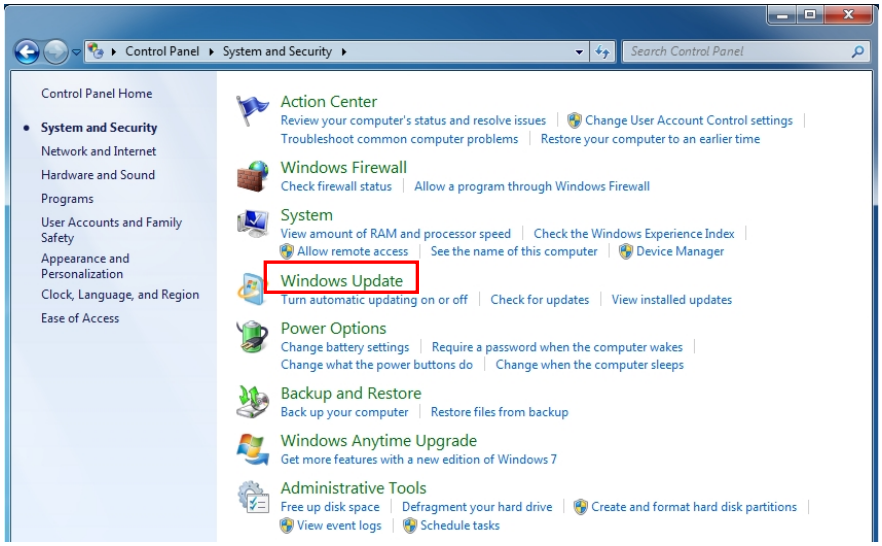
3. Windows Firewall Settings window appears. Select checkbox for **Off (not recommended)**.



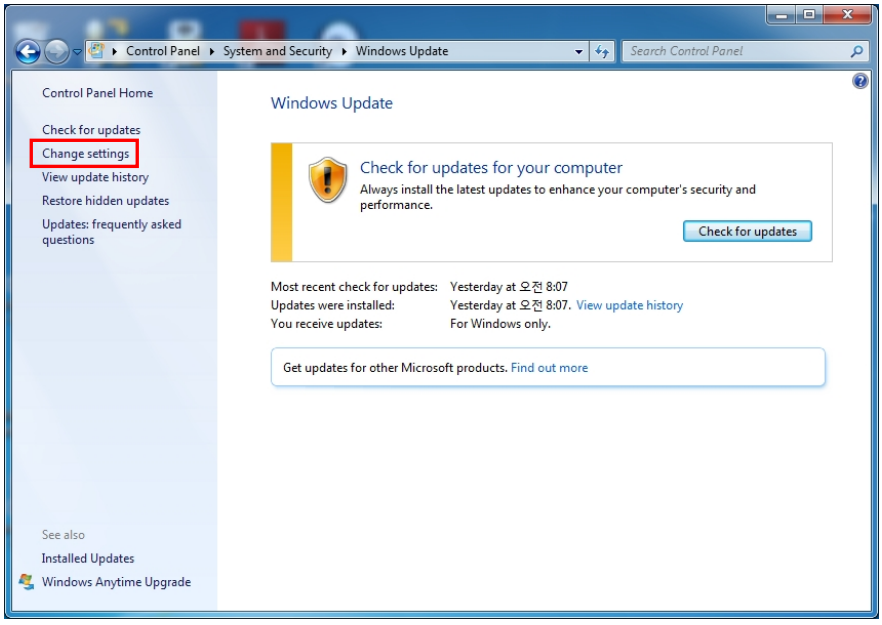
4. Click **OK**.

[Windows Update]

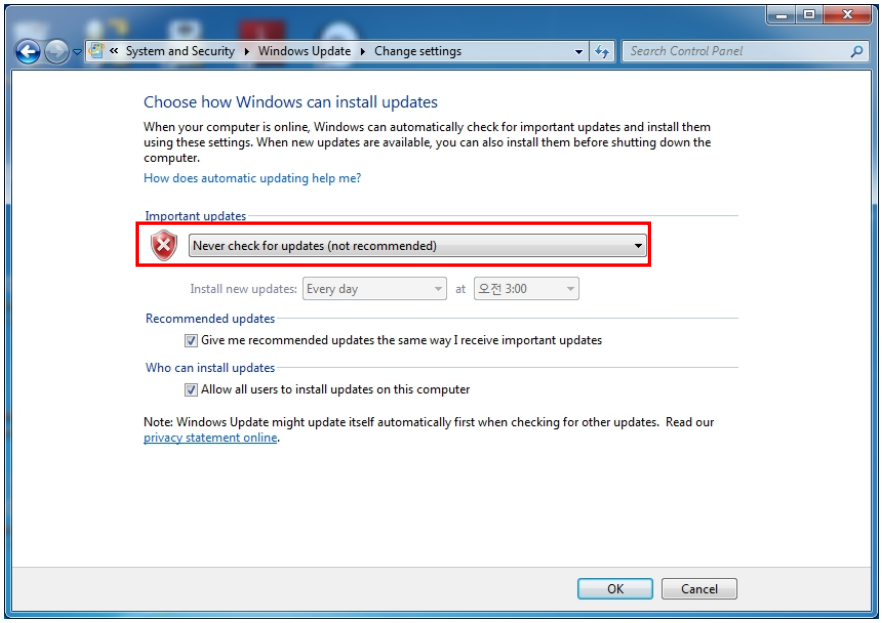
1. Go to **Start** – **Control Panel** – **System and Security** – **Windows Update**.



2. Select **Change settings**.



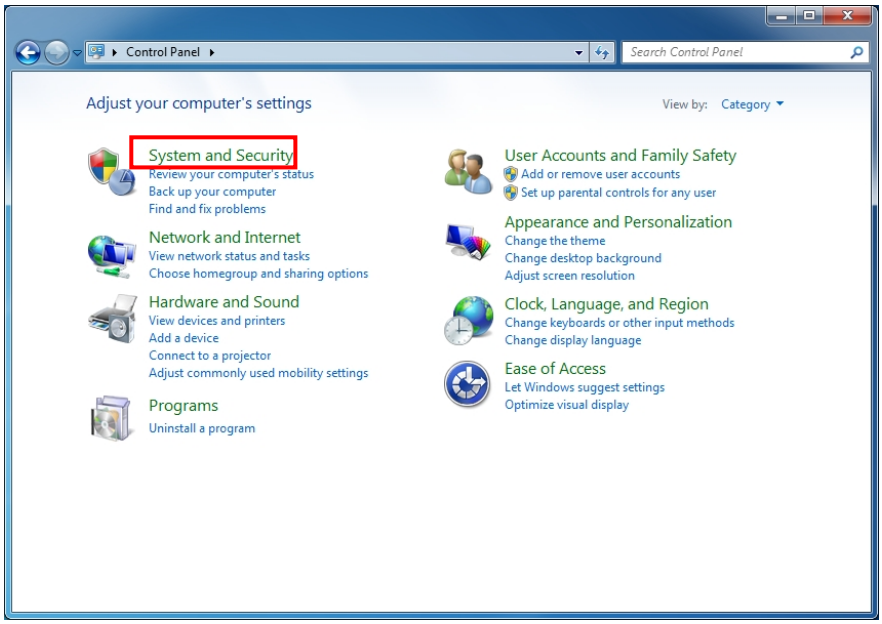
3. Select **Never check for updates (not recommended)**.



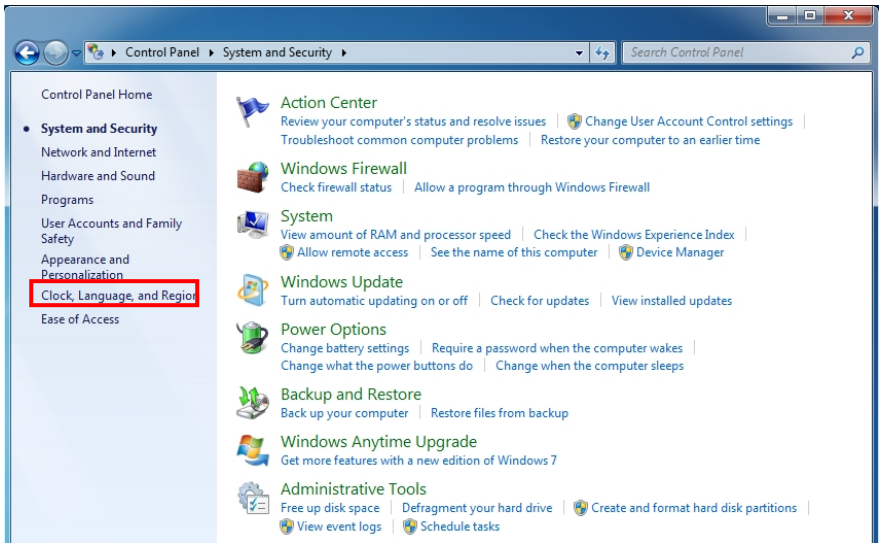
Click **OK**.

[Synchronization with Internet Time]

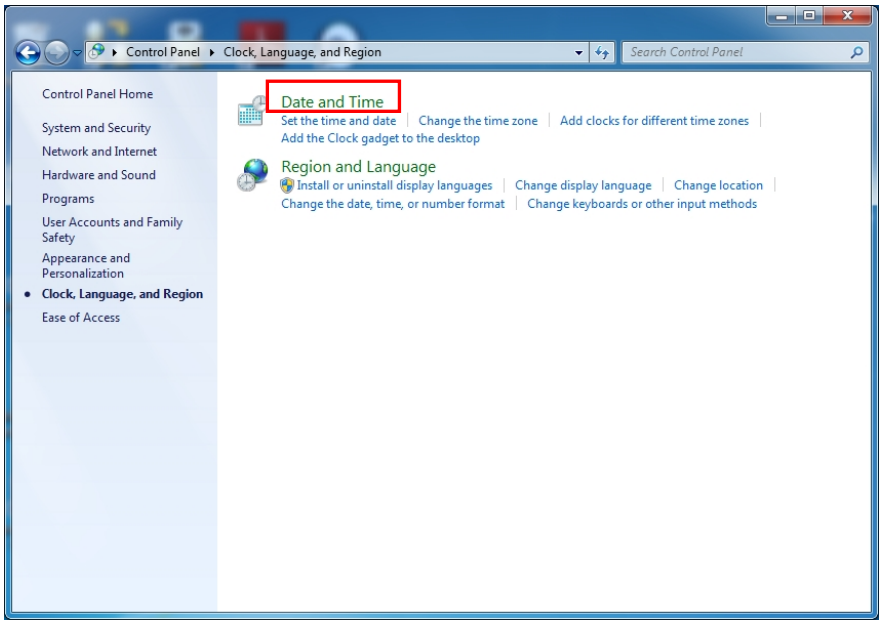
1. Go to **Start** – **Control Panel** – **System and Security**.



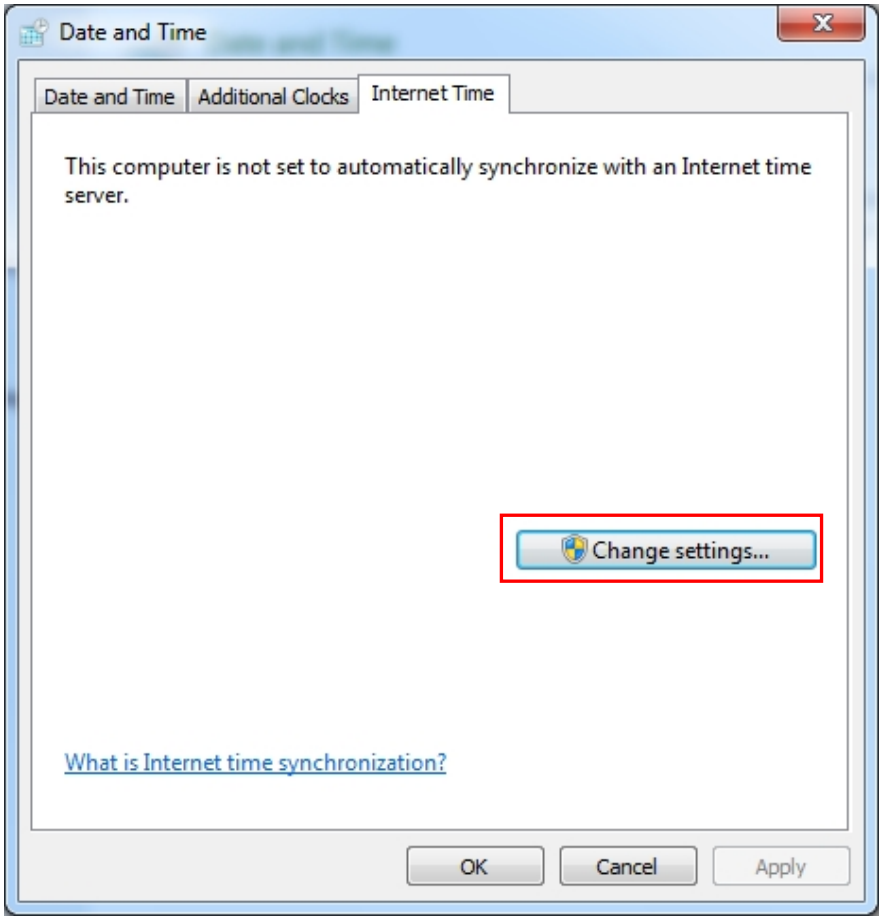
2. Select **Clock Language and Region**.



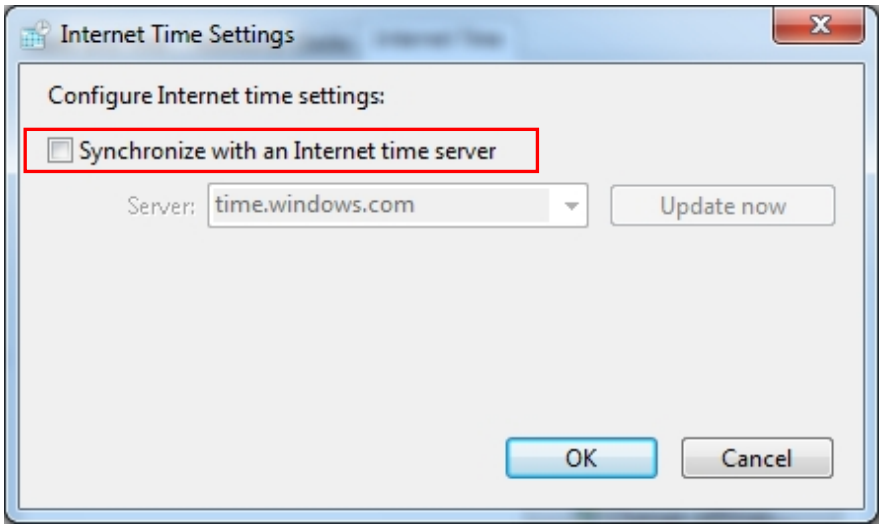
3. Select **Date and Time**.



4. **Date and Time** window appears. Select **Internet Time** tab, and click **Change settings…** button.



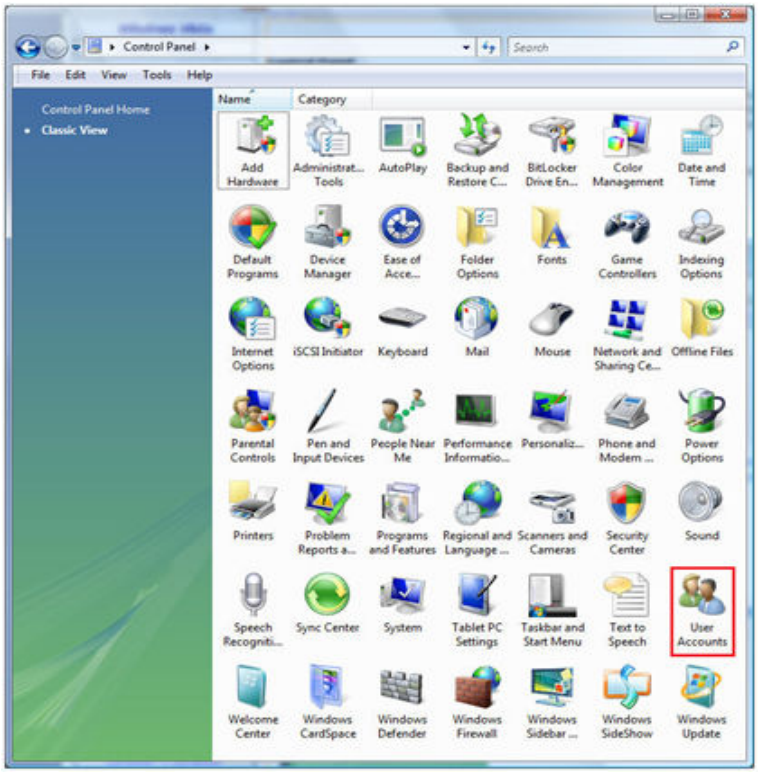
5. Unselect the checkbox for **Synchronize with an Internet time server**.



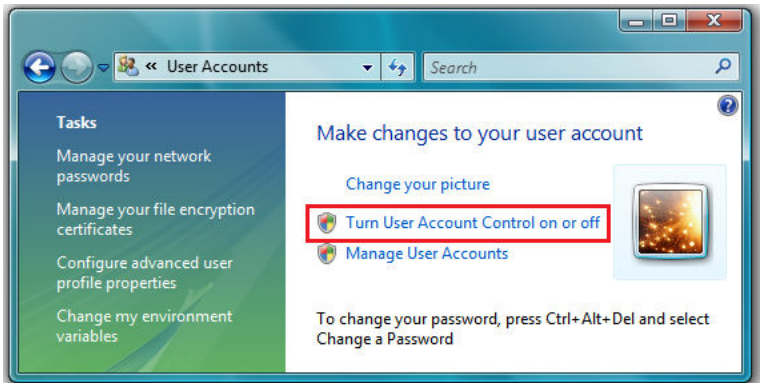
6. Click **OK**.

[User Account Control]

1. Click **Start** – **Control Panel - User Accounts**.



2. Click on **Turn User Account Control on or off**.



3. Uncheck the box for **Use User Account Control (UAC) to help protect your computer**.

4. Click **OK**.
5. Reboot the PC.

Connecting Device

Following procedure explains how to connect mobile station and host PC.

Connecting Device in XCAL

XCAL allows some devices as following;

- Mobile Phone with Data Cable
- Data Card
- USB Modem (Dongle)
- Scanner
- GPS

To connect a Device to XCAL, you are requested to install a proper driver first in your laptop.

If your laptop do not recognize the device in Device Manager in Windows OS, XCAL can not recognize the device as well.

1. Install a proper device driver.

   Driver file of Device would be different per device model and manufacturer.

   Please contact to Device Provider to get a proper driver.
2. Plug in a device.
3. Check the installation of Device in 'Device Manager' in Windows OS.
4. Run XCAL.

Connecting Device in XCAL-MO and in P8E

XCAL-MO and P8E allows some devices as following;

- Mobile Phone with Data Cable
- Data Card
- USB Modem (Dongle)

To connect a Device to XCAL-MO & P8E, you are requested to install a proper driver first as like as XCAL.

In case of XCAL-MO and P8E, it has an individual Windows OS in each H/W slot and you are kindly requested to install a driver file on each H/W slot in separate.

If your H/W slot does not recognize the device in Device Manager in internal Windows OS, XCAL-MO & P8E can not recognize the device.

1. Turn on XCAL-MO and P8E.
2. Run XCAL-MO/P8E Host Program and it will activate H/W Slots.
   A. Slot Recognition (Slot On/Off) and Click <OK> button.
   B. Slot H/W S/W update go on and after completion of S/W update, XCAL-MO Main window will show up.
3. Access to H/W Slot via VNC.

   VNC is a remote desktop application to access to an internal Windows OS in H/W slot.

   You can get a freeware application of VNC from the following link;

   http://www.realvnc.com/cgi-bin/download.cgi

   cf) A free version of VNC for Windows works on Windows Vista and 7 as well even a Web page says it works only up to Windows XP.

   The address of each H/W slot is following;

   H/W Slot 1 ~ 5 : 1.1.2.1 ~ 1.1.2.5

   If a VNC asks a password, please type 'accuver'.
4. Copy a driver file to a general USB Memory Stick and plug it in a H/W slot.

Via VNC, open a USB Memeory in a Windows Explorer in H/W slot and install a driver file into H/W slot.

5. Plug in a Device and check the installation of Device in 'Device Manage' in a H/W slot. If a device is not recognized properly in a H/W Slot, XCAL-MO and P8E can not recognize the device as well.
6. If you want to use the device on all ports of a H/W slot, please repeat the step of 5 per port.
7. Via VNC, open a Command Window (DOS Prompt Window).

   Type 'C:\>ewfmgr c: -commit' and press <Enter>

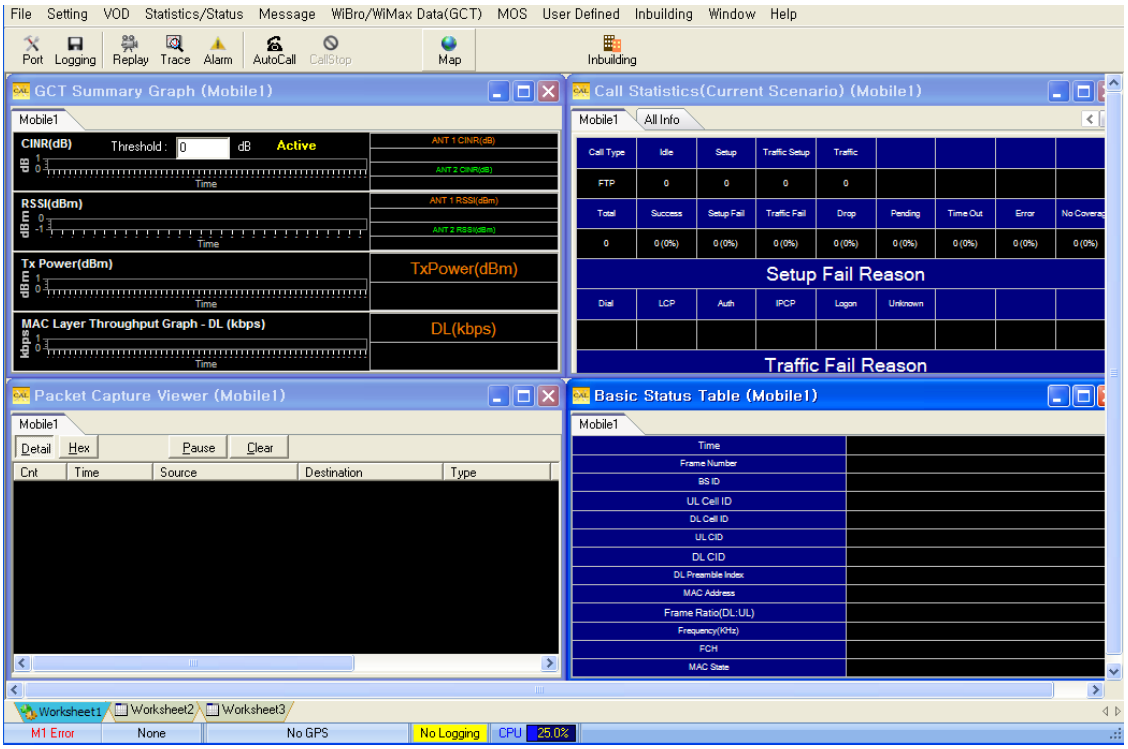
   Type 'C:\>exit'
8. Via VNC, Press <ALT> + <F4> button in same time to restart an internal Window OS in a H/W slot.
9. After rebooting of H/W slot, your driver file will be kept permanently in a H/W slot.

   Without the proper procedure above, the driver file will be lost after rebooting of a H/W slot because it has auto-recovery feature to the original state of Windows OS.

Running XCAL

1. Go to **Start** – **Accuver** – **XCAL**, or double click on XCAL icon on desktop.

2. XCAL program is run, and XCAL main window appears.



XCAL main window

Configuring Port

This chapter explains how to configure external devices such as mobile station, GPS, scanner, and etc that are conencted to XCAL.

One slot supports one test mobile. You may test with several test mobiles by activating each slot in **Port Setting** window.

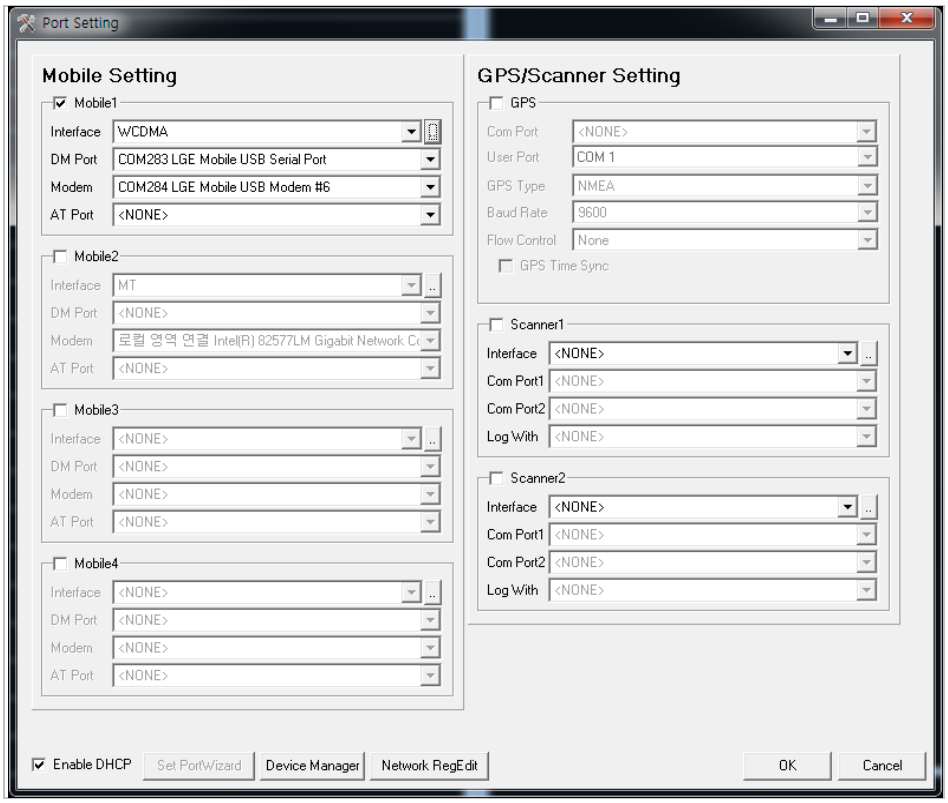
NOTE: Before you begine port setting, check SIO mode. SIO mode in mobile may vary, check ISO mode depending on test mobile type.

Port setting, which is configured in mobile, and Data Port setting in XCAL should correpond. For detail of Data Port setting, see **Configuring Data Port part**.

NOTE: For port configuration for each technologes, refer to corresponding technologies' Features User Guide provided seperately.

Starting Port Configuration

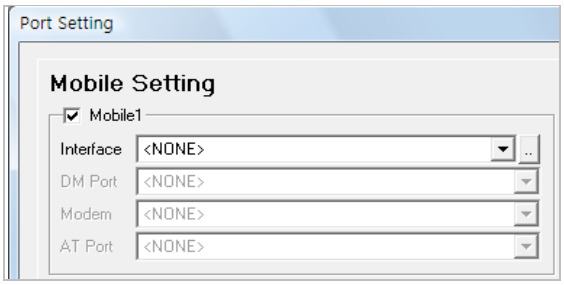
1. To open **Port Setting** window, select Menu bar - **Setting** – **Port Setting**, or click on **Port**  icon from Icon bar.
2. **Port Setting** window appears.



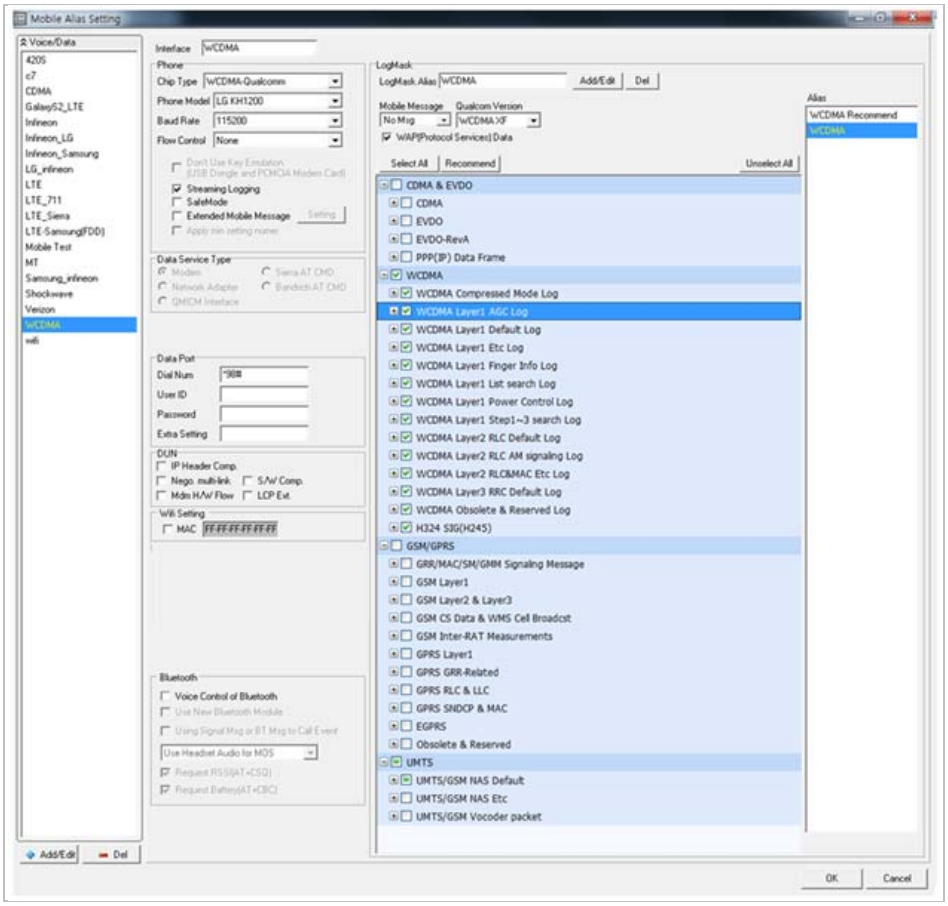
Configuring Mobile Port (In Mobile Alias Setting window)

In **Port Setting** window, each Mobile# for **Mobile Setting** area is for each mobile port configuration.

1. Select the checkbox for Mobile# you want configure and start configuration.
2. To open Mobile Alias Setting window, click [...] icon next to **Interface** in **Port Setting** window.



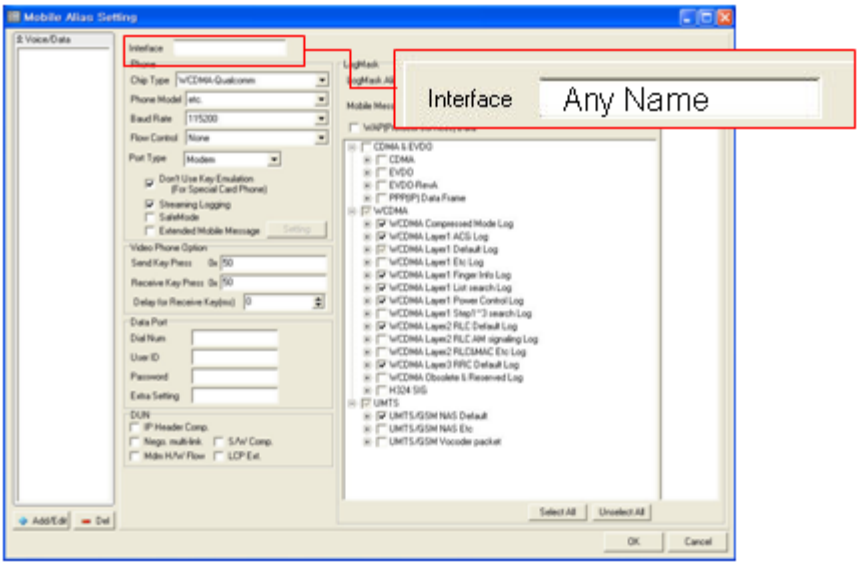
3. Mobile Alias Setting window appears.



Defining Interface Name

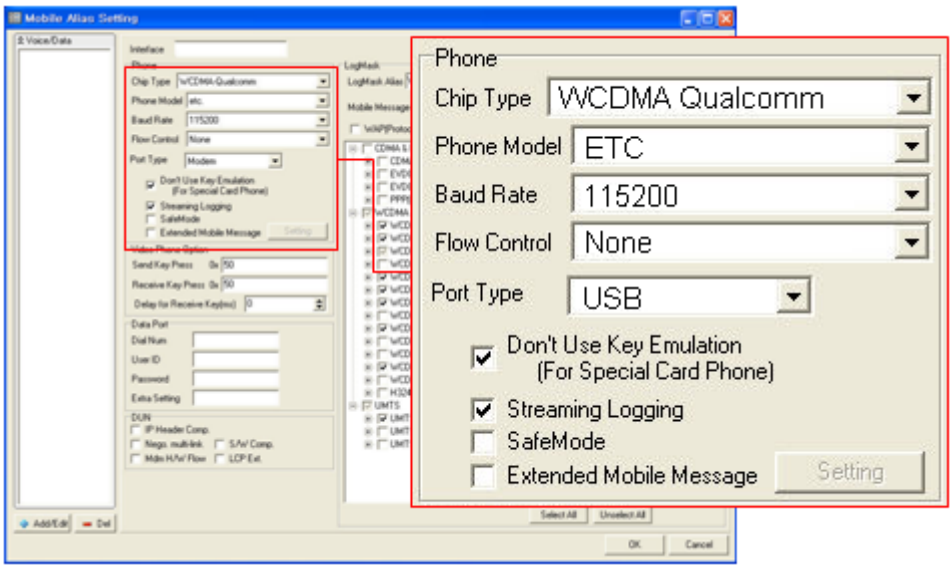
Interface names are to be used for saving mobile configuration in order to re-use configured mobile settings for other mobile ports and model.

1. Enter an Interface name in **Interface** entry field.



Configuring Phone Part

1. Configure mobile information in **Phone** part in **Mobile Alias Setting** window.



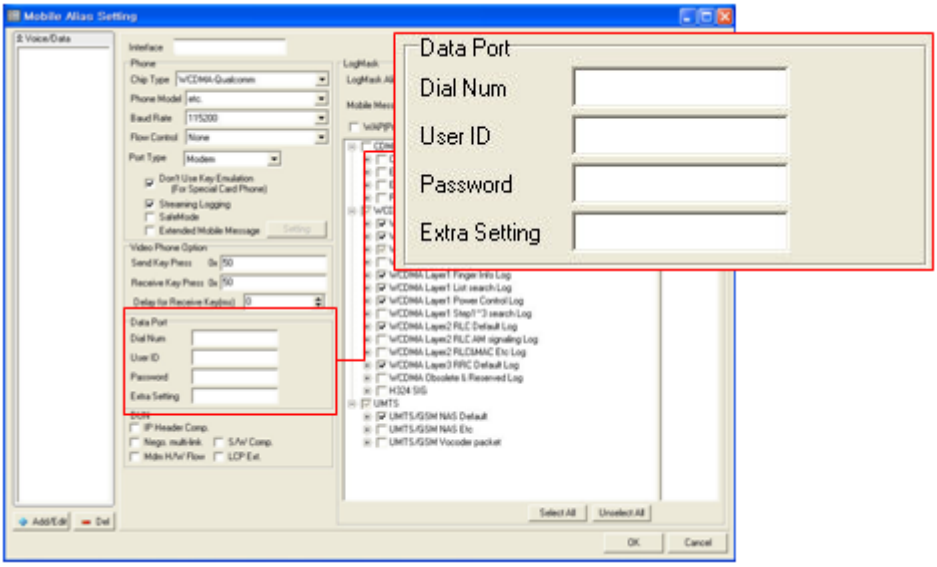
2. Click combo box for **Chip Type** and **Phone Model** to configure corresponding chip type and phone model name of mobile to connect for mobile port.

Classification	Description
Chip Type	Defines the modem chipset of the mobile.
Phone Model	Selects the mobile model.
Baud Rate	Designates the communication speed through DM port.
Flow Control	Designates the method of flow control.
Don't Use Key Emulation (For Special Card Phone)	For specific card phone, key emulation function is note applied.
Streaming Logging	Determines if streaming logging is executed. - Checked (default): XCAL-MO sends Packet Request Logmask to mobile and the mobile will send data continuously without any other requests. - Unchecked: XCAL-MO sends Packet Request Logmask to mobile periodically and the mobile will sends data packets as per the requests. If streaming logging is checked for non streaming mobile, data is displayed once and then blank state will follow.
Safe Mode	In case specific old non streaming mobile, message loss is happened a lot. If user checks this item, message loss should be reduced.
Extended Mobile Message	Additional mobile message User select extended mobile message which user want to see additionally.

Configuring Data Port part

Data Port part in **Mobile Alias Setting** window is for test of PS Data Call such as FTP, HTTP, and etc. It configures general options for Dial-Up Network.

If you want to carry out test with PS data call, you should configure items in **Data Port** part.

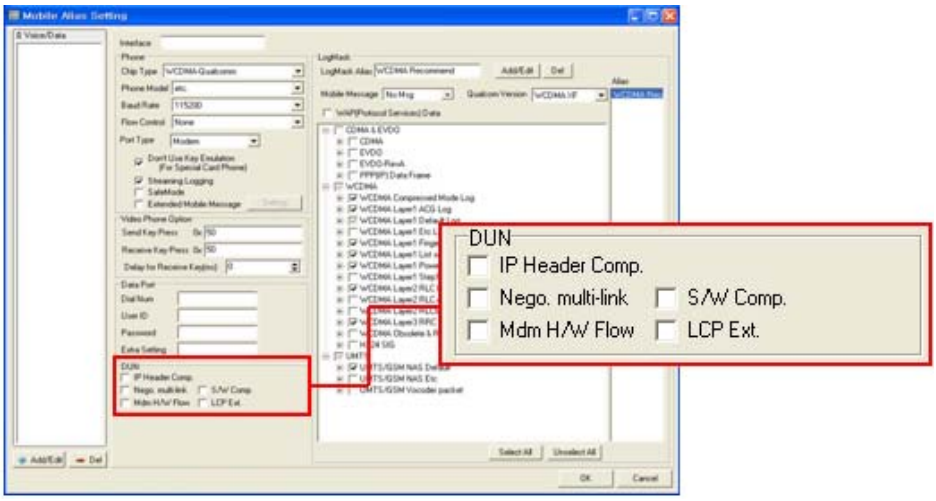


Classification	Description
Dial Num	Dial number to connect to packet data switch.
User ID	User ID to connect to packet data switch.
Password	Password to connect to packet data switch
Extra Setting	at+crm value used by packet data switch. *CDMA/EVDO: at+crm=1, at+crm=150, at+crm=160 ..... *WCDMA : Example: AT+CGDCONT=1,IP+CGEQREQ=1,3,128,384 Note: Refer to standards document “Commands for Packet Domain of 3GPP TS 27.007 (AT command set for User Equipment (UE))”

Configuring DUN Part

DUN part in Mobile Alias Setting window is for configuration of PPP (Point to Protocol) test.

If you want to carry out test for PPP call, you should configure items in **DUN Port** part.

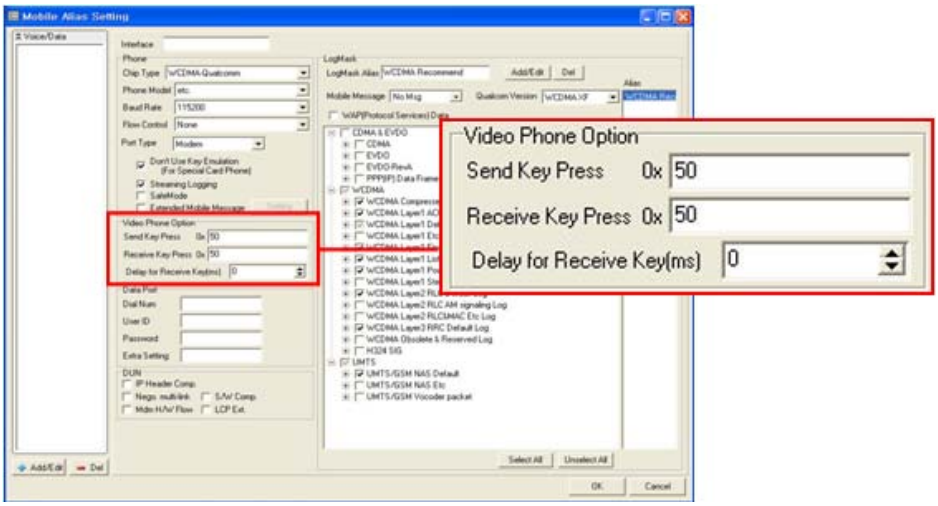


Classification	Description
IP Header Comp	Use IP Header compression.
Nego. Multi-link	Negotiate multi link during initial LCP
S/W Comp	Use software compression.
Mdm H/W Flow	Use hardware control.
LCP Ext	Use LCP expansion.

Configuring Video Phone Option Part

Video Phone Option part in **Mobile Alias Setting** window is for video telephony call tests.

If you want to carry out test with video telephony call, you should configure items in **Video Phone Option** part.

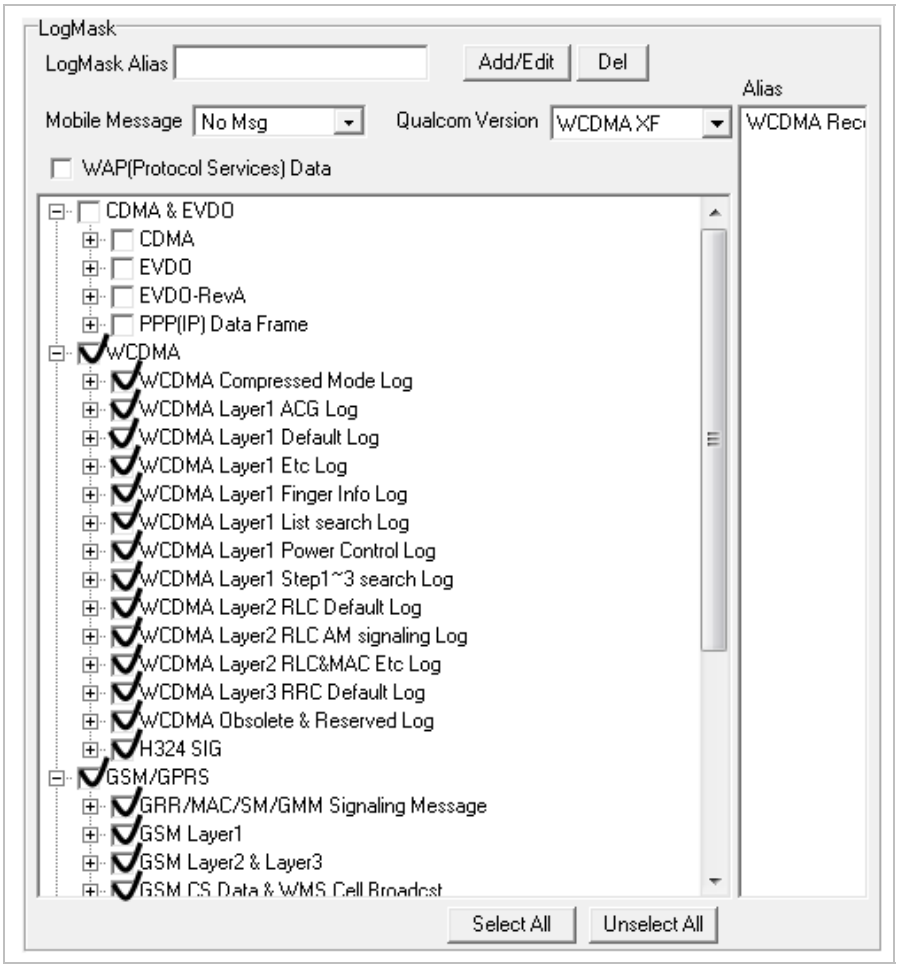


Classification	Description
Send Key Press	Enters send key value of test video mobile. If your send key value is 0x10, enter 10. If you need to enter more than one send key values, use semi colon between key values (e.g. 10;20;30).
Receive Key Press	Enters receive key value of test video mobile.
Delay for Receive Key (ms)	Enters receive key delay value of test video mobile.

Configuring LogMask

LogMask part in Mobile Alias Setting window enables you to define log packets to receive from mobile and monitor in XCAL. By selecting necessary log packets, you may save time for creating logging file and DM processing.

LogMask list varies depending on mobile and chip type.



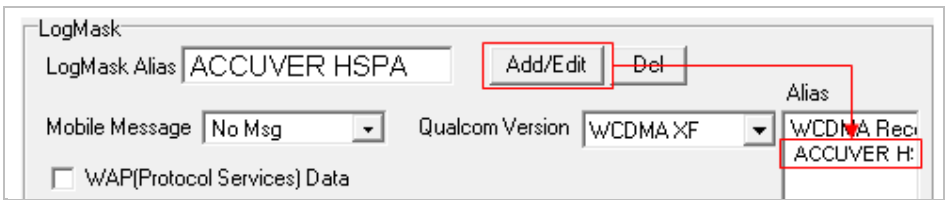
1. Enter a LogMask Alias name in **LogMask Alias** entry field.

   LogMask name are to be used for saving LogMask list configuration in order to re-use configured LogMask list for other mobile ports and model.

2. Select checkboxes for each packet in LogMask list.

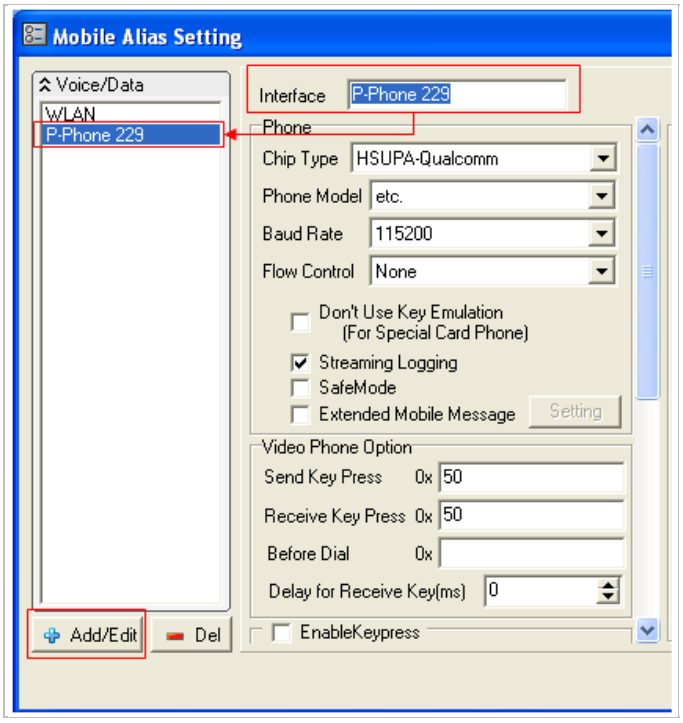
3. Click **Add / Edit** button to save LogMask setting.

4. Make sure that the new LogMask setting is added to LogMask **Alias** list on the right side of LogMask part.



Saving Configuration

1. Click **Add/Edit** button on the left lower side of Mobile Alias Setting window to save all configured settings for mobile port.



2. Click **OK** to close **Mobile Alias Setting** window.

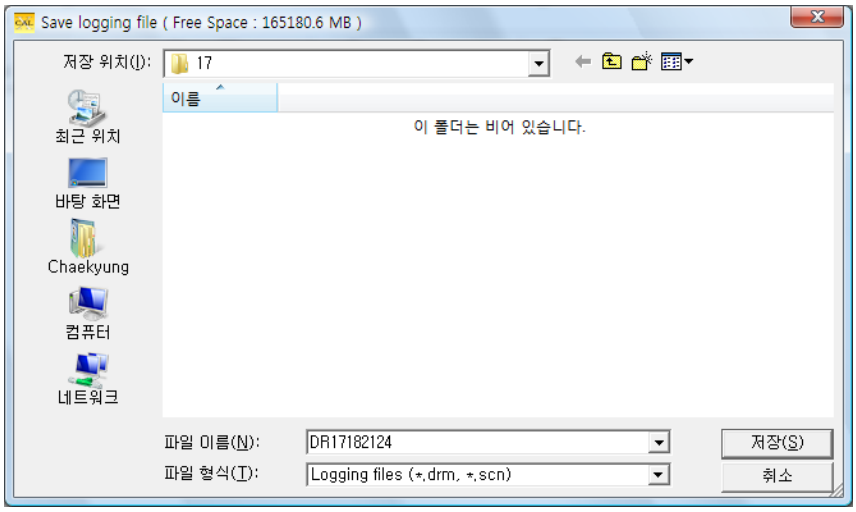
Logging Start/Stop

Start/Stop logging to save measurement data of mobile station into a log file.

Prior to start/stop logging, configuring port process should be done.

1. Select Menu bar – **File** – **Logging On/Off**, or click on **Logging** 

icon from Icon bar.
2. **Save logging files** window appears.



Save logging file window

3. Designate a directory to save log file.
4. Click **Save**.

NOTE: If you select on **Logging** icon while AutoCall is in progress, logging process is initiated.

AutoCall Test

XCAL generates and terminates various types of call tests based on pre-specified call scenario (script) automatically. Multiple call types are avaiable for AutoCall test of XCAL such as voice, video telephony call (WCDMA), FTP, HTTP, PPP, Ping & Trace RT call, and etc. AutoCall scenario should be configured for each call type.

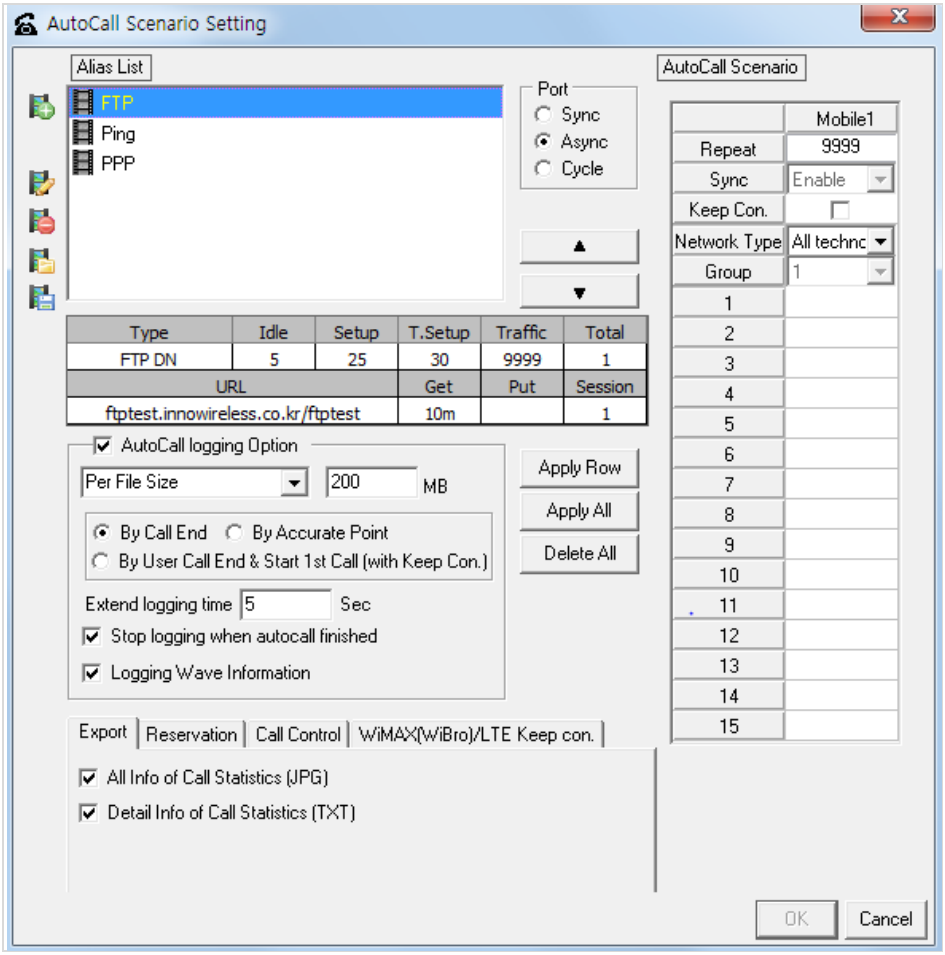
This chapter guides you how to configure AutoCall scenarios for different call types, starts and terminates call tests automatically. XCAL Common User Guide instructs common call types; Voice, FTP, HTTP.

Configuring AutoCall Sceanrio

Before starting AutoCall test, AutoCall scenario (script) for each call type should be configured in advance.

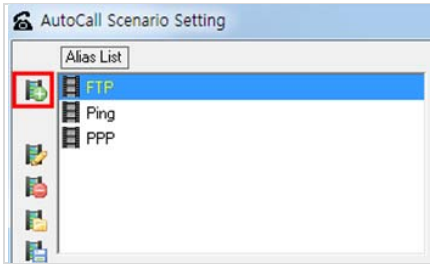
1. To open AutoCall scenario configuration window, select Menu bar – **File** – **AutoCall Start**, or click on **AutoCall** 

icon from Icon bar.
2. **AutoCall Scenario Setting** window appears.

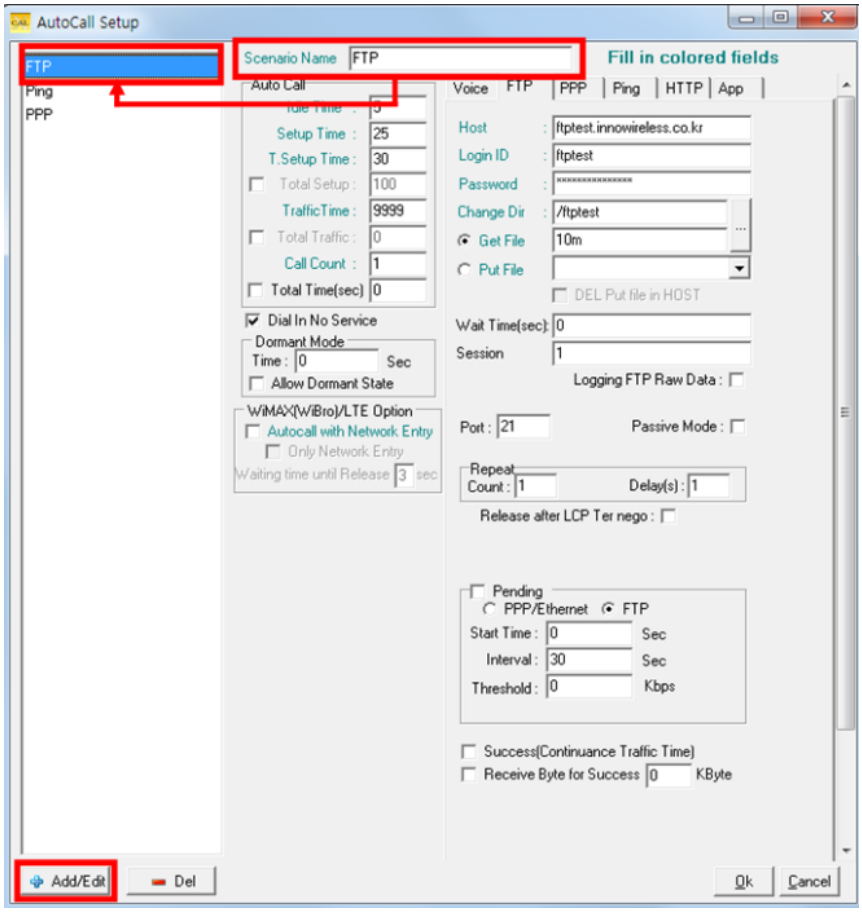


AutoCall Scenario Setting window

3. Click **Create New Scenario** button in **AutoCall Scenario Setting** window.



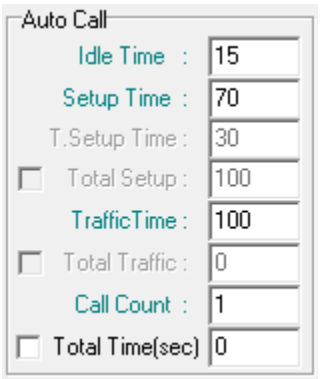
4. **AutoCall Setup** window appears.



AutoCall Setup window

5. Enter an AutoCall Scenario name in **Scenario Name** entry field.

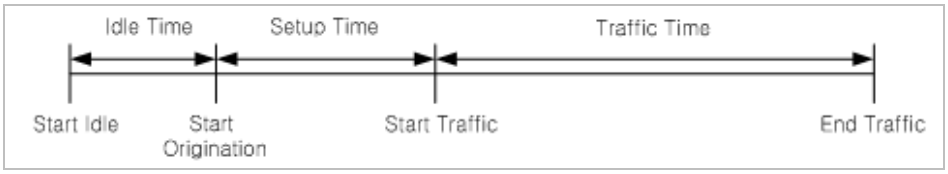
6. Configure AutoCall common options at the left side of **AutoCall Setup** window.



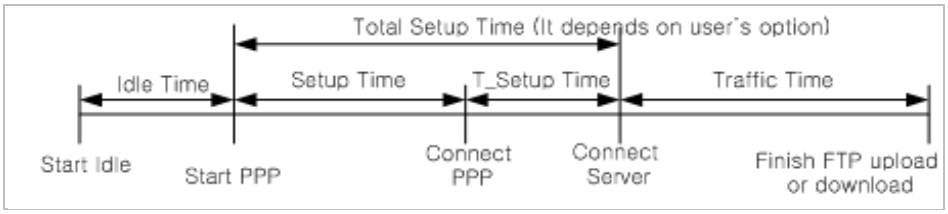
Option	Description
Idle Time	Waiting time in Idle mode between call attempts

Option	Description
Setup Time	Maximum allowance time to connect call to network after Idle Time end and call attempt. (unit: sec)
T.Setup Time	Maximum time period to connect to application server after establishment of PPP connection. This field is valid for packet data service application.
Total Setup	Setup time plus T_Setup time * Applies for only FTP & HTTP Call.
Traffic Time	Session maintenance time to determine call success after session is opened. (unit: sec)
Call Count	Repeat counts each call that Idle / Setup(T_Setup) / Traffic Time
Total Time (sec)	Time interval between calls Enter more than the time of (Idle Time + Setup Time (+T_Setup Time) + Traffic Time)

[Time diagram for Voice calls]

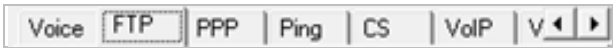


[Time diagram for Data calls]



7. Select a call type tab, and configure call test options for each call type.

   Options in green color should be configured.



   Following sections introduces how to configure common options for each call type. For detail, see **Voice**, **FTP**, **Ping**, and **HTTP**.

8. When all necessary options are properly configured, click **Add/Edit** button at the lower left side of **AutoCall Setup** window to add the configured automated call

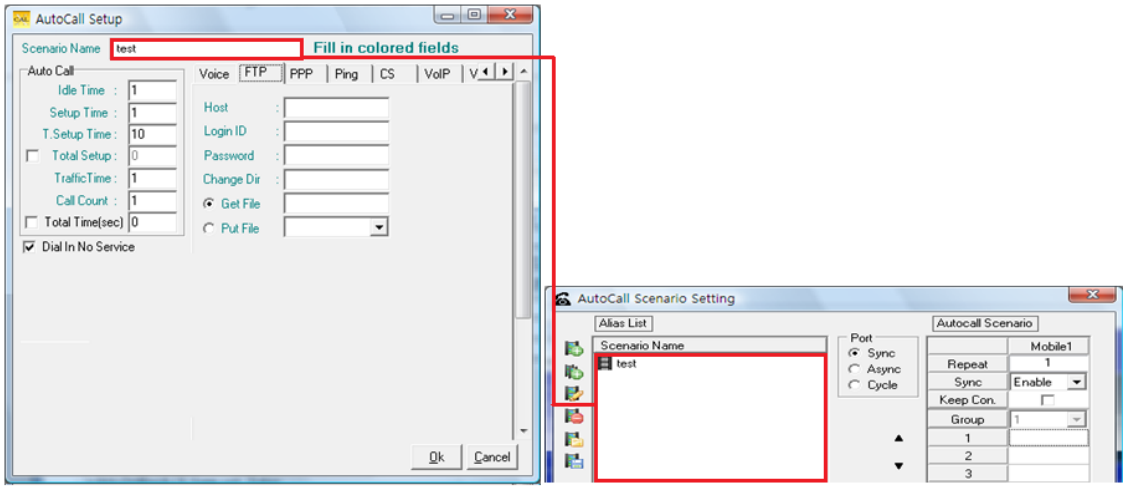
script options to Alias list.

Once an automated call script is created and saved in the Alias list, it is able to be used for other call tests.

9. Click **OK** button in **AutoCall Setup** window.

10. Backing to **AutoCall Scenario Setting** window, make sure that the configured AutoCall scenario is listed in AutoCall Scenario **Alias list**.

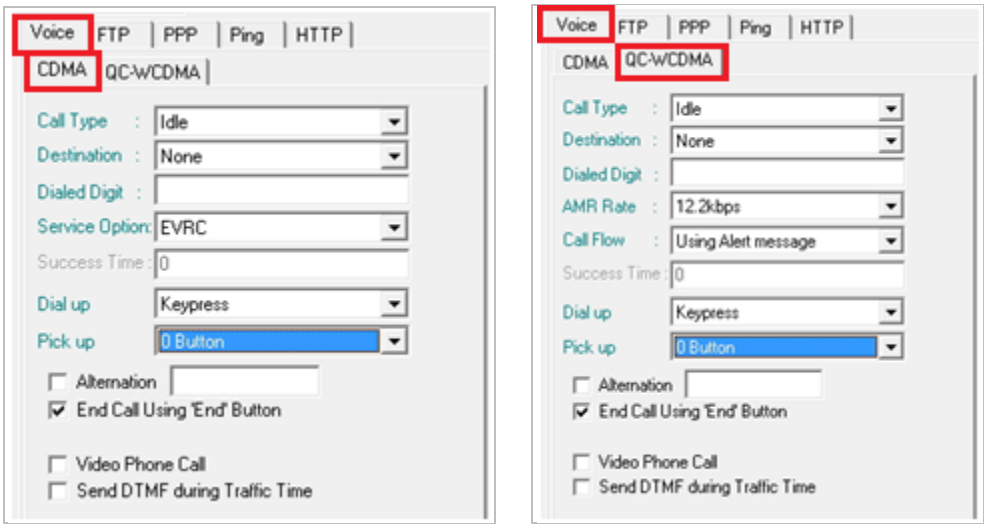
    Once a call scenario is created, it is stored in AutoCall Scenario **Alias list** and is able to be used for other call tests.



11. Click **OK**.

Voice

Select **Voice** tab and configure options for voice AutoCall measurement.



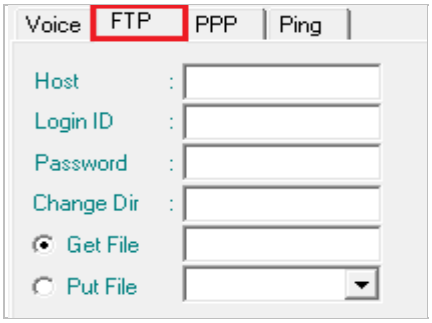
Voice tab in AutoCall Setup window

Option	Description
Call Type	Set AutoCall test type. **Idle**: Connect no calls and keep idle condition. **Origination**: Test mobile transmit call test. **Termination**: Test mobile receive call test. Sufficient Idle Time should be set due to it page responses in Idle Time. **Continuous Call**: The same as Origination, but it maintains a call continuously regardless of Traffic time on Auto Call Part. **M to M Org**: Calling the other mobile in case 2 mobiles are connected to XCAL. (Assign the other mobile in the Destination field). **M to M Ter**: Receiving a call from the other mobile in case 2 mobiles are connected to XCAL. (Assign the other mobile in the Destination field).
Destination	For M to M Org and M to M Ter type test. Select destination mobile number.
Dialed Digit	Designate phone number to be dialed.
Service Option	Designate Service Option for voice call. It is valid on the phones with CDMA Qualcomm chipset.
Dial up	Select how to dial up test mobile. **QC Command:** Dial up through QC Command. **Keypress:** Dial up through mobile key press.

Option	Description
	AT Command: Dial up through AT Command.
Pick up	Select how to pick up test mobile. **Send button:** Click Send button on test mobile to receive call. **0 button:** Click zero (0) button on test mobile to receive call. **AT Command:** Receive through AT Command. **NOTE**: For some WCDMA mobiles, it is impossible to receive call by zero (0) button.
AMR Rate	Designate AMR rate. It is valid on the phones with WCDMA Qualcomm chipset.
Call Flow	Designate the starting point for traffic state. Traffic state starts when RB Setup, Alert, or Connect message is detected.

FTP

Select **FTP** tab and configure options for FTP AutoCall measurement.



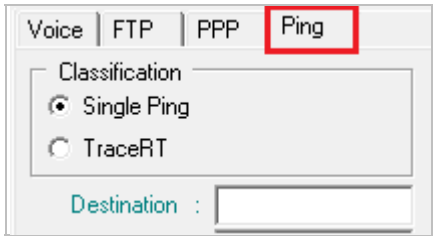
FTP tab in AutoCall Setup window

Option	Description
Host	Designate IP number of host server to connect
Login ID	Login ID of host server
Password	Password of host server
Change Dir	Designate the directory of host server where file to be downloaded.
Ger File	Designate file name to be downloaded.
Put File	Designate file size to be uploaded. Select the file size from the drop down list. To transfer file size which is not on the

Option	Description
	list, type the number. - Unit: k = KB, m = MB - No unit = XCAL assumes MB

Ping

Select **Ping** tab and configure options for Ping AutoCall measurement.

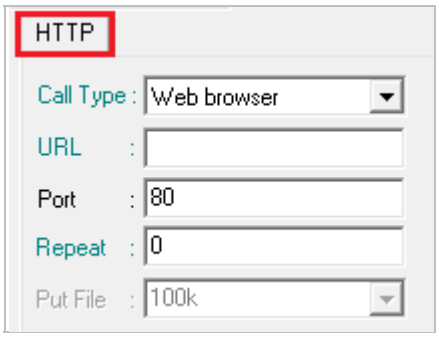


Ping tab in AutoCall Setup window

Option	Description
Classification	**Single Ping**: Meausre delay rate, packet loss rate, and etc. **TraceRT**: Measure delay rate, packet loss rate at network route.
Destination	Enter IP Address and URL for Ping test.

HTTP

Select **HTTP** tab and configure options for FTP AutoCall measurement.



HTTP tab in AutoCall Setup window

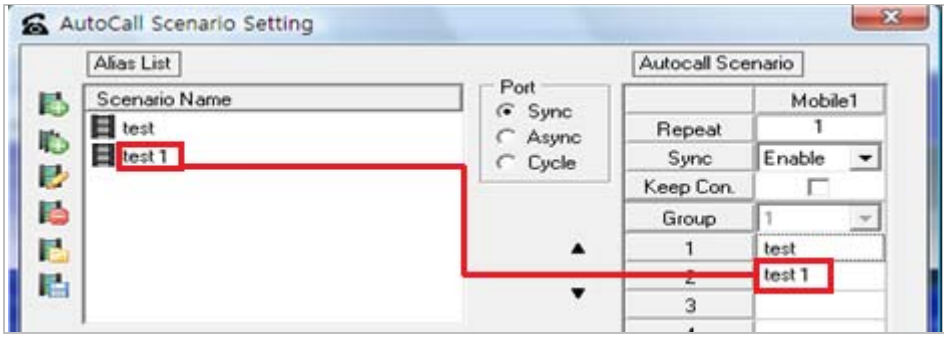
Option	Description
URL	Enter HTTP Address to connect.
Repeat	Enter number of access attempt to HTTP address to connect.

Configuring Call Scheduler

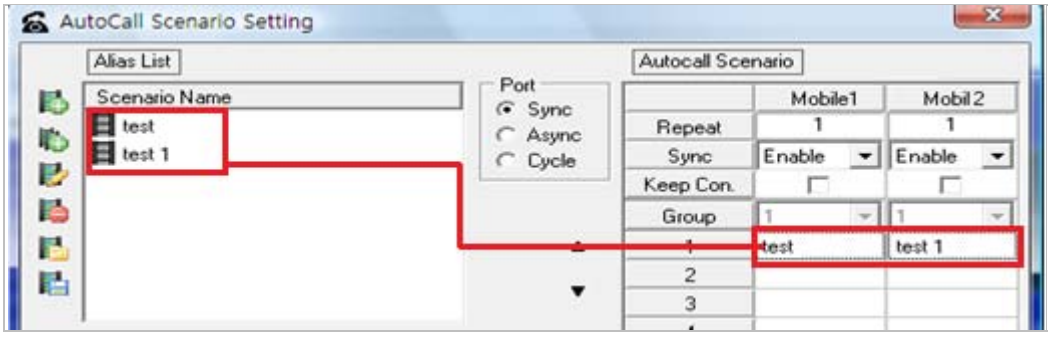
Now, you completed necessary AutoCall Scenario options for each call type, and the configured AutoCall scenarios are listed in AutoCall Scenario **Alias List**.

You need to give sequences on the configured AutoCall scenario by using Call Scheduler in **AutoCall Scenario Setting** window. You may perform call tests sequentially or in parallel with multiple mobile connections.

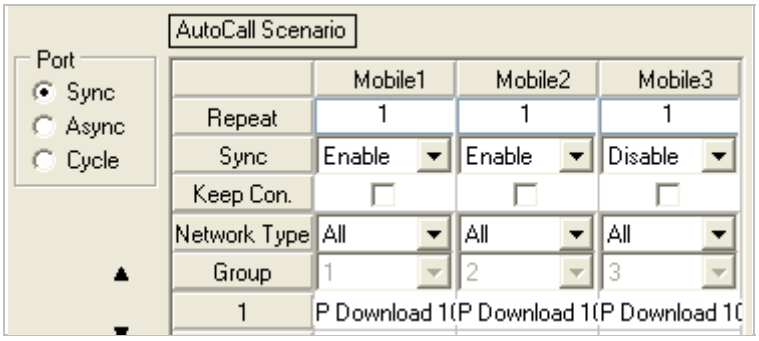
1. To list pre-configured AutoCall scenario from AutoCall Scenario **Alias List**, drag a call scenario from **Alias List** to Call Scheduler section.
2. If you want to perform call test sequentially, drag and drop more call scripts on Call Scheduer. XCAL will run AutoCall test in sequence as scenario is listed.



3. If you want to perform call test in parallel with multiple mobile connections, drag and drop call scenario for other mobile ports.



4. If multiple mobiles are configured in Call Scheduler, configure port options.

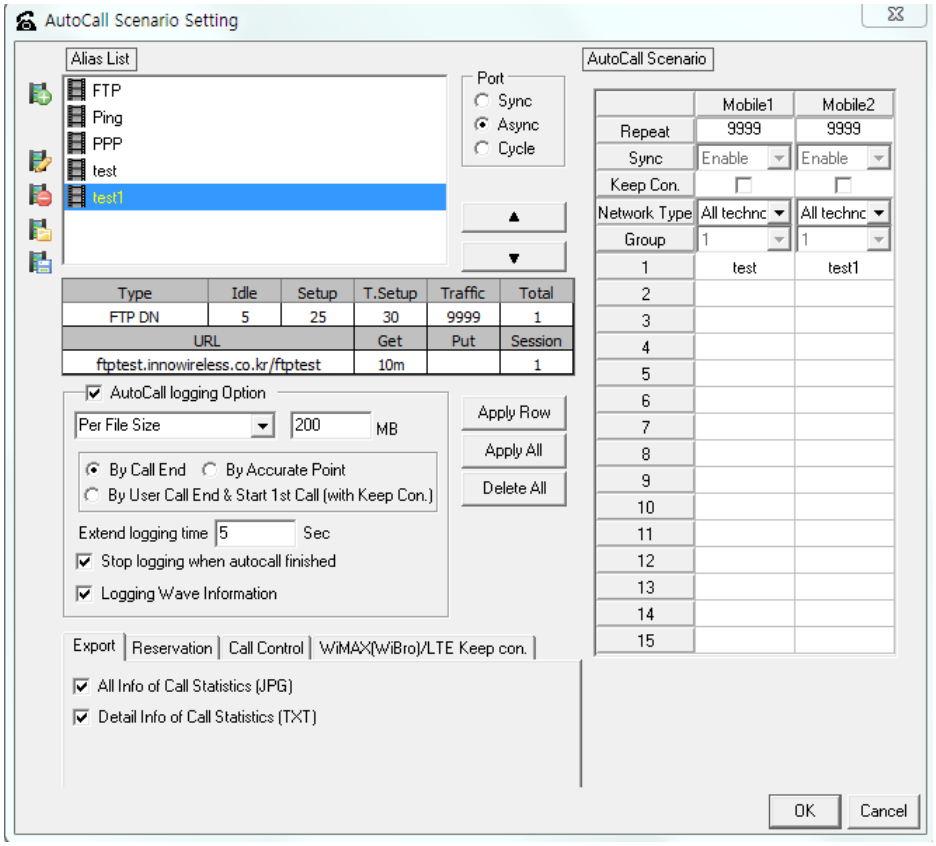


Option	Description
Port 	**Sync**: Synchronizes call start on every call attempt amng multiple mobiles. **Async**: Perofrms call test independently. **Cycle**: Performs call test in turn.
Repeat	Configures how many times a call scenario to be repeated by each mobile.
Sync	Selects between enable or disable sync option. If it is configured to be **Enable**, the mobile port is affected by **Sync** option setting.
Keep Con.	Keeps a PPP connection between multiple PS calls. If it is not selected, XCAL releases PPP connection on every call.
Network Type	Selects network type to perform a call test in.

Starting AutoCall Test

Configuration of AutoCall scenario and AutoCall scheduler is completed. You may start AutoCall test.

1. When all settings are configured in **AutoCall Scenario Setting** window, click **OK** button.



2. **Save logging files** window appears. Designate a directory to save log file.
3. Click **Save**.
4. AutoCall test is started.

Real Time Mapping

XCAL is able to show measurement data on map graphically in real-time when conducting a measurement project with a connection of a GPS receiver. XCAL's real-time map displays major parameters, call events (Drop, Setup Fail, Success, and etc.), BTS/Repeater positions, serving lines, coverage, and etc. The intuitive graphic User Interface for real-time map enables you to visualize features in the map by configuring colors and shape of marks by data range.

This chapter explains how to a) connect GPS receiver to XCAL, b) open map files by map engines, c) start and manage XCAL real-time mapping window.

XCAL real-time map supports the following map engines; MapX, MapXtreme, Smart Map.

Connecting a GPS Receiver

XCAL visualizes BTS, test mobile, measurement route, serving lines, and etc only when GPS receiver is connected to XCAL properly and transfers valid GPS data to XCAL.

To interface with a GPS receiver, connect a GPS receiver by

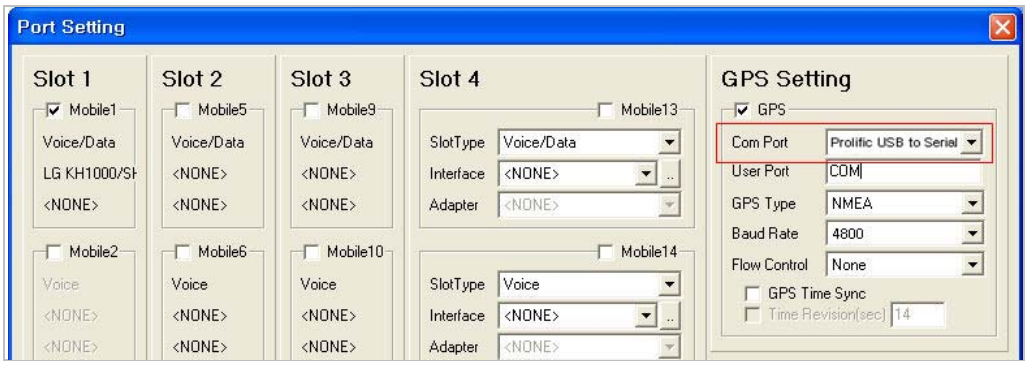
a) Conencting USB type GPS to host PC which is installed with XCAL program.

b) Connecting internal GPS on XCAL hardware. (Optional)

USB GPS

XCAL receives and displays GPS data through serial port of host PC, and supports general GPS supporting NMEA specification.

1. Install a GPS drvier which is provided with a purchase of GPS receiver, and configure COM port in **Device Manager**.
2. Select the COM Port connected to USB GPS receiver in **Port Setting** window. For details of Port Setting window, see **Configuring Port**.

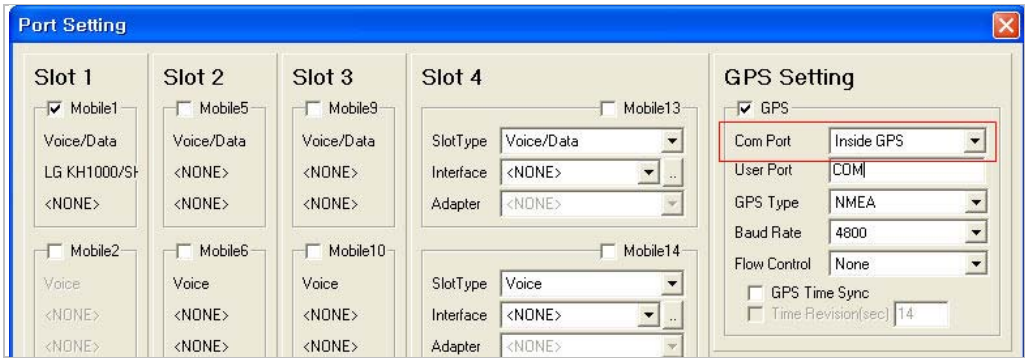


Internal GPS on XCAL H/W

Internal GPS is provided optionally with a purchase of XCAL.

1. Plug in GPS antenna connector to GPS port on XCAL hardware.

2. Select the **Inside GPS** for **Com Port** in **Port Setting** window. For details of Port Setting window, see **Configuring Port**.



Opening Map Files

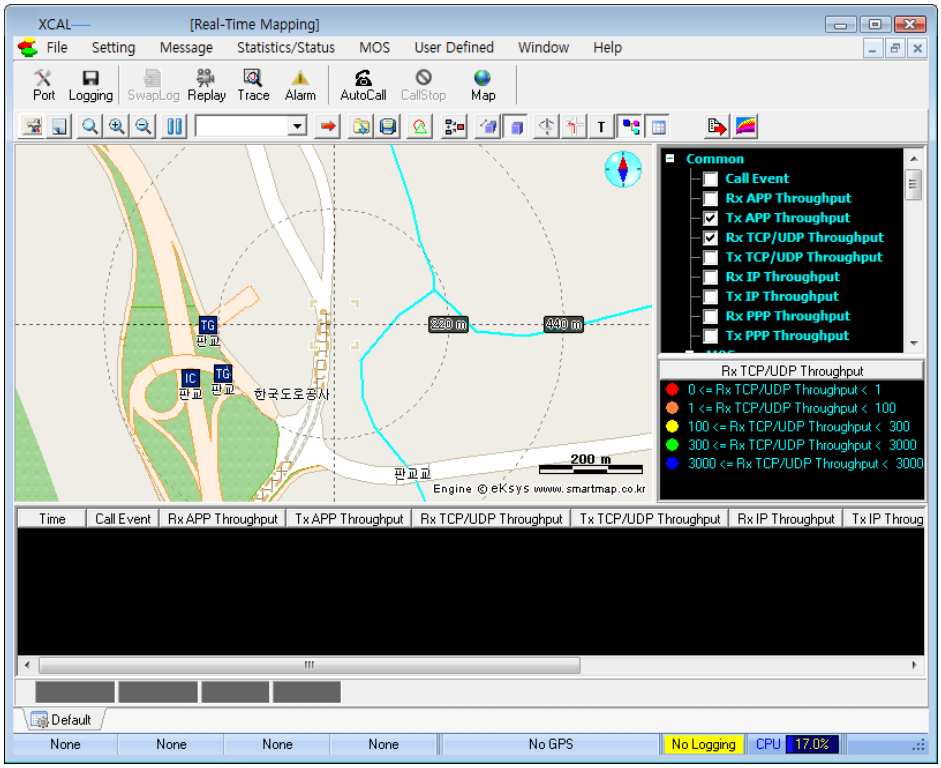
XCAL real-time map supports the following map engines; MapX(of MapInfo), MapXtreme (of MapInfo), Smart Map (free map engine).

Install a Map Engine with a valid license, and configure in XCAL program for each Map Engine type in order to open Map files.

Starting XCAL Real Time Mapping Window

1. To start XCAL real-time map, select main Menu bar – **File** – **Real Time Mapping**, or click **Map** 

icon from Icon bar.
2. Real Time Mapping window appears.



3. Configure map options to import map files by clicking **Map Property** icon at the upper left side of real time mapping window.

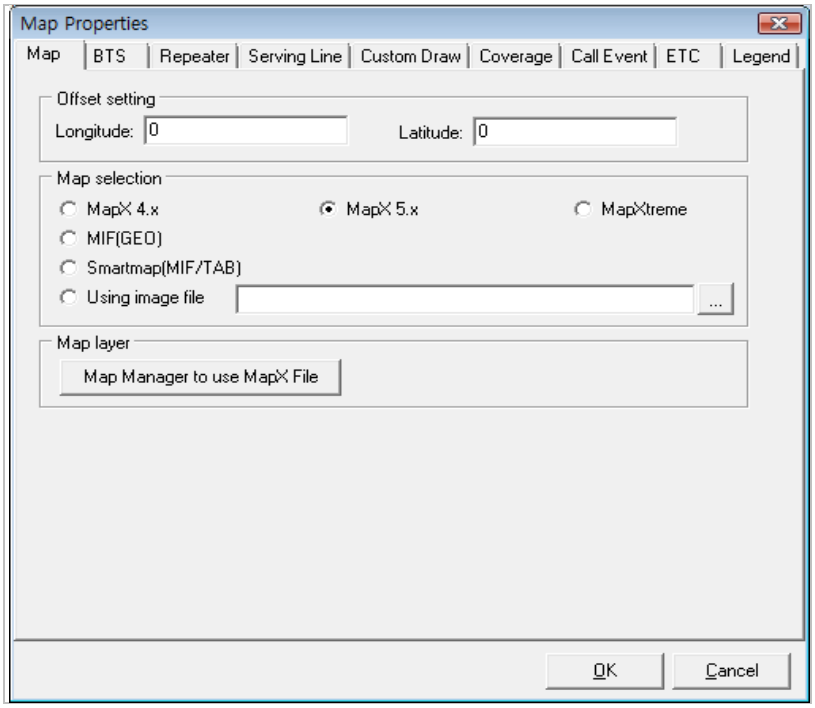
Following sub-chapters will show how to configure map options to import map files by map engine.

Configuring for MapX Engine

MapX engine is provided with map files in *.tab format.

Map files in *.gst format can be imported to XCAL. Map files in *.tab can be converted to *.gst format by using Geoset which is provided as a bundle with the purchase of MapX engine from MapInfo.

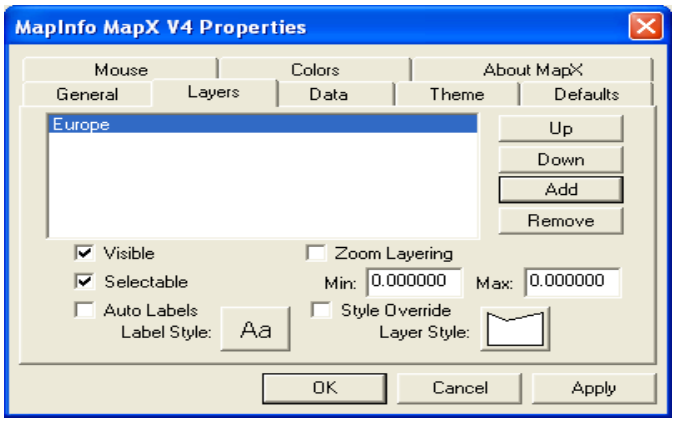
1. In Real Time Mapping window, click **Map Property** icon, and **Map Properties** window appears. Select **Map** tab.



2. Select applicable version of MapX engine between **MapX4.x** or **MapX 5.x** in **Map Selection**.

   Offset setting: Configures offset value for longitude and latitude. Enter value in each entry field.

3. To load map file in *.gst format, select **Map Manager to use MapX File** button. **Layer Control** window appears.
4. Select **Layers** tab, and click **Add** button to import a map file in *.tab format.

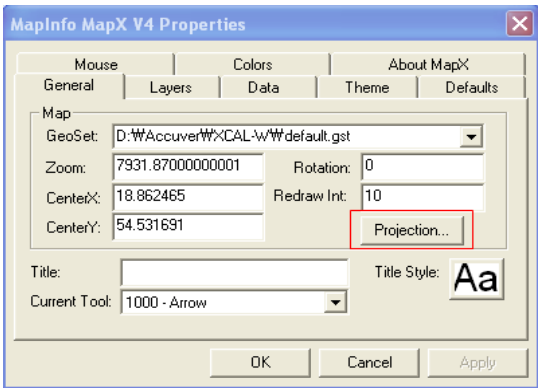


5. Click **OK**.

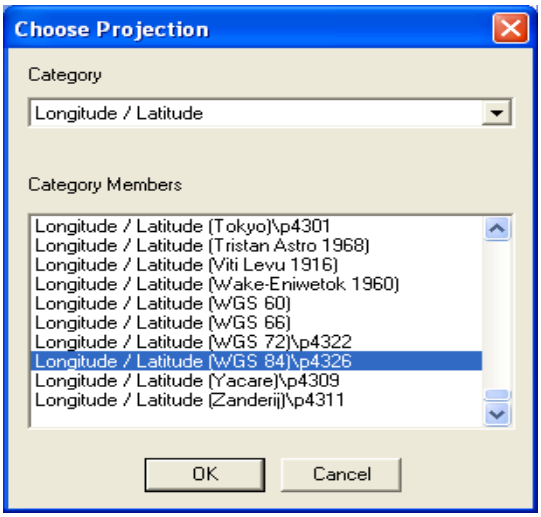
[Configuring Lat/Lon WGS(84)]

XCAL supports projection category of Lat/Lon WGS(84).

1. Select **General** tab in **MapInfoMapX Properties** window.



2. Click **Projection** button, and **Choose Projection** window appears. Select **Lat/Lon WGS(84)**.

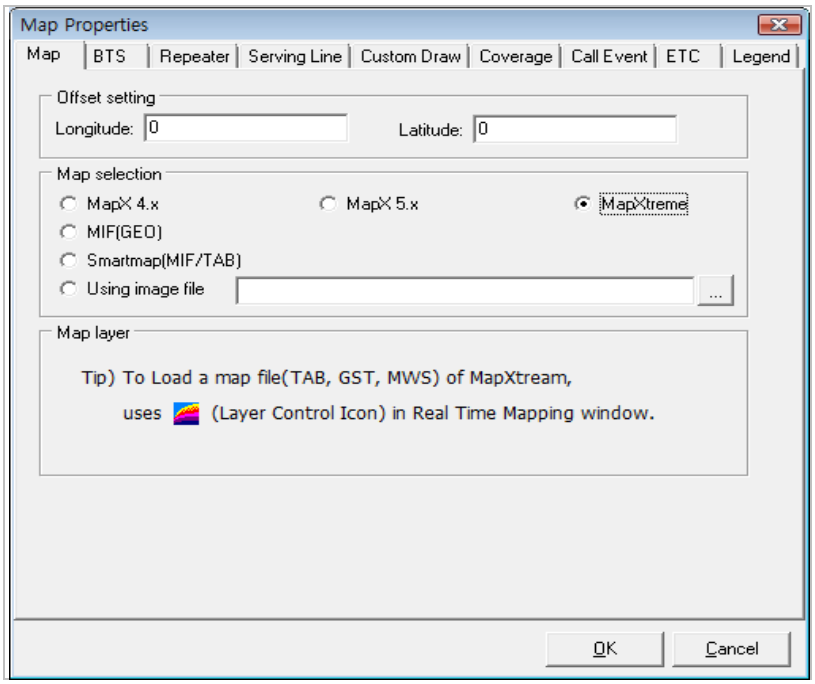


3. Click **OK**.

Configuring for MapXtreme

For MapXtreme engine, map files in *.tab, *.gst, and *.mws format can be imported to XCAL.

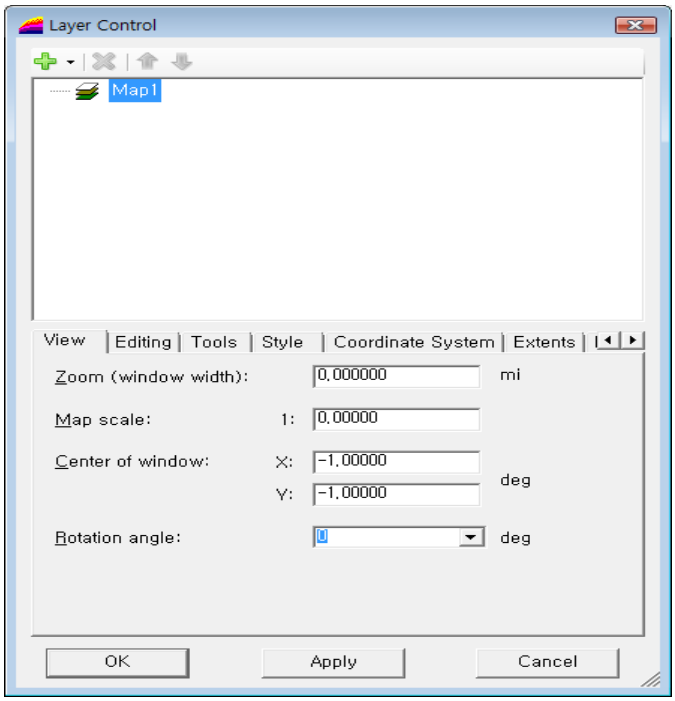
1. In Real Time Mapping window, click **Map Property** icon, and **Map Properties** window appears. Select **Map** tab.



2. Select **MapXtreme** in **Map Selection**.

   Offset setting: Configures offset value for longitude and latitude. Enter value in each entry field.

3. Click **OK**.
4. Re-start (close and open) Real Time Mapping window.
5. To import map files, click **Layer Control**  icon in main Real Time Mapping window.
6. **Layer Control** window appears.



7. Click **Add** button and select a map file.

   Map files in *.tab, *.gst, and *.mws format can be imported to XCAL.

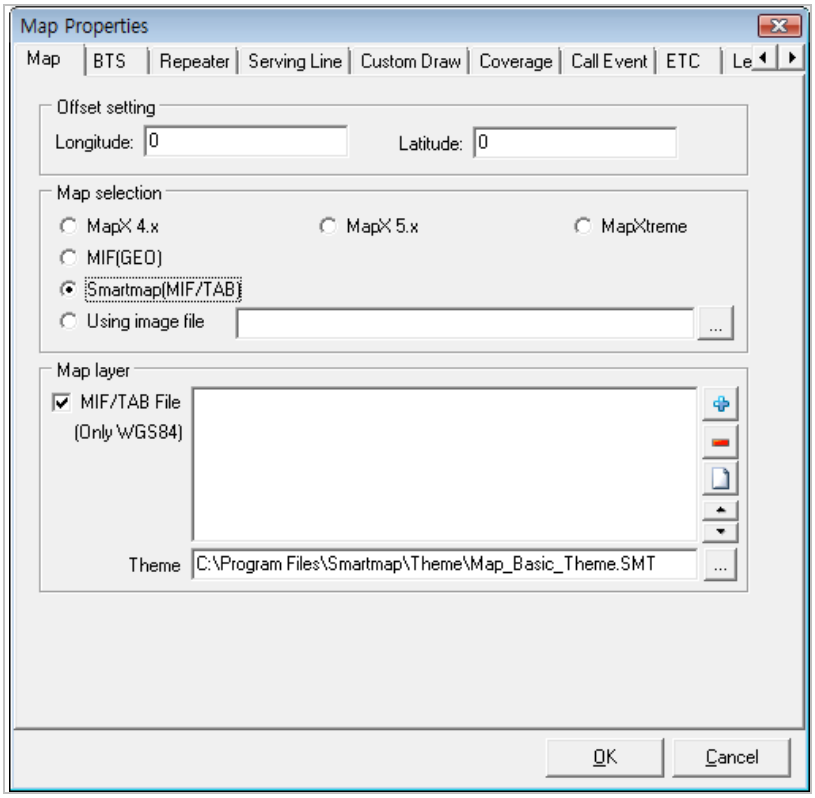
8. Click **OK**.

Configuring for Smart Map

For Smart Map engine, map files in *.mif and *.tab can be imported to XCAL.

Map files in *.mif format with project type of WGS84 should be imported.

1. In Real Time Mapping window, click **Map Property** icon, and **Map Properties** window appears. Select **Map** tab.



2. Select **Smartmap[MIF/TAB]** in **Map Selection**.

   Offset setting: Configures offset value for longitude and latitude. Enter value in each entry field.

3. To import map file, click the checkbox for **MIF/TAB File** in **Map Layer**, and click **Add**  button.

   Map files in *.mif and *.tab format can be imported to XCAL.

9. Click **OK**.

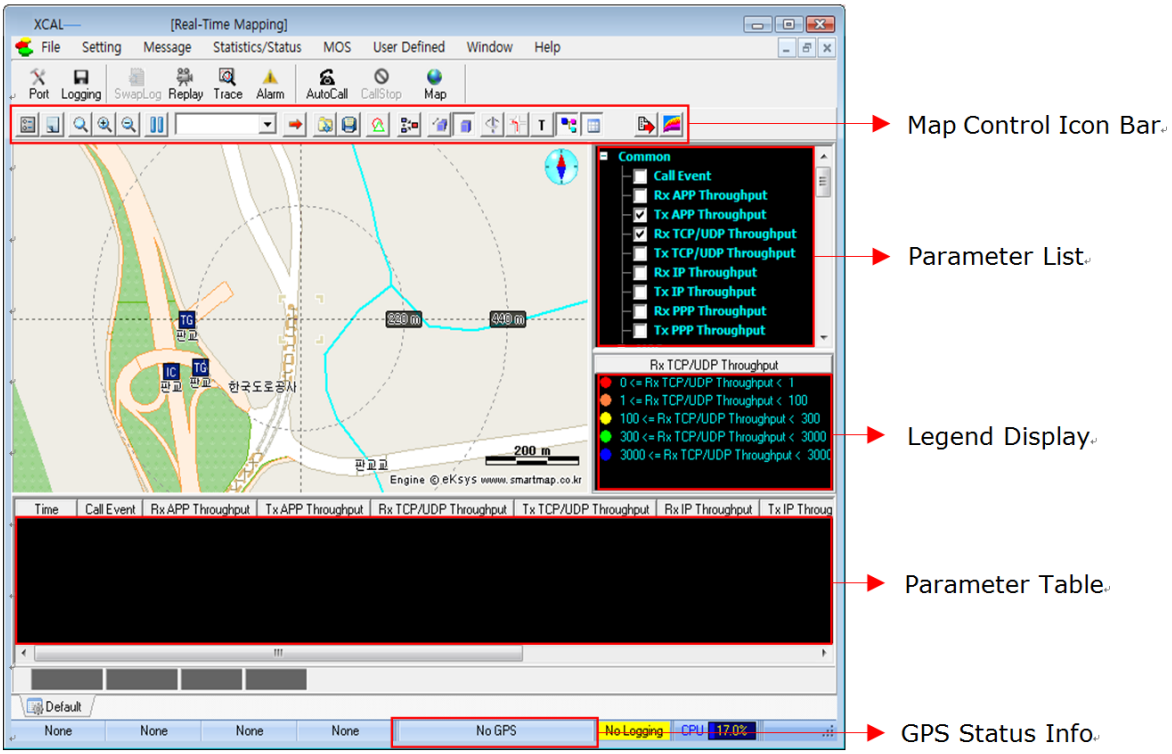
Starting Real Time Mapping Window

This section explains how to open and manage XCAL Real Time Mapping window.

1. To start XCAL real-time map, select main Menu bar – **File** – **Real Time**

Mapping, or click **Map**  icon from Icon bar.

2. Real Time Mapping window appears.

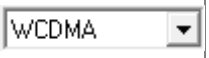


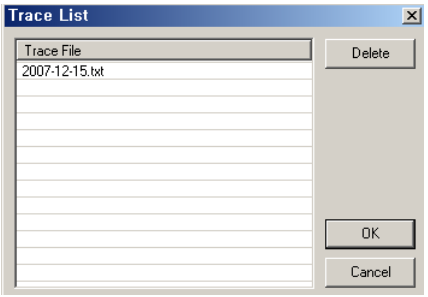
Section	Description
Map Control Icon Bar	Controls overall map options. - Scrolls and zooms in/out the map display. - Selects technologies to display in the map. [**Map Property icon**] - Selects map files by map engine. - Show/hide cell sites. - Manages color legend of BTS, Repeater, Coverage, Serving Line, call events, and etc. For details, see **Map Control Icons**.
Parameter List	Selects parameters to be displayed in the map.
Legend Display	Shows legend color of the selected parameter.
Parameter Table	Shows parameters in Parameter List in table.
GPS Status Info	Shows GPS coordinates (longitude, latitude) and speed of test mobile (km/h).

3. Select checkboxes for parameters from the Parameter List to graphically display in the map. Corresponding parameter data is displayed in map and Parameter Table in real-time.
4. Use Map Control Icons to control and manage measurement data display properties, and etc.

Map Control Icons

Map Control Icons section includes map basic controls (scrolling, zooming in and out, removing data, selecting technologies to show in the map) along with specialized map control icon of Map Property (selecting map file by map engine, showing/hiding BTS, Repeater, coverage, call events, serving lines, and etc.)

Icon Name	Icon Image	Description
Map Property		Selects map files by map engine, shows/hides cell sites, manages color legend of BTS, Repeater, Coverage, Serving Line, call events, and etc.
Clear		Removes all data displayed in the map.
File Scale		Places center of the map to the current location.
Zoom In/Out		Zooms in/out the map.
Pause		Pauses measurement data displayed on the map in real time.
Technology		Selects a technology.
Trace		Shows measurement route of existing logging file in the map by extracting from an existing logging file. Able to measure data chasing in the existing test route.
Map Mark Open/Save		Saves/Imports mark information displayed on map.

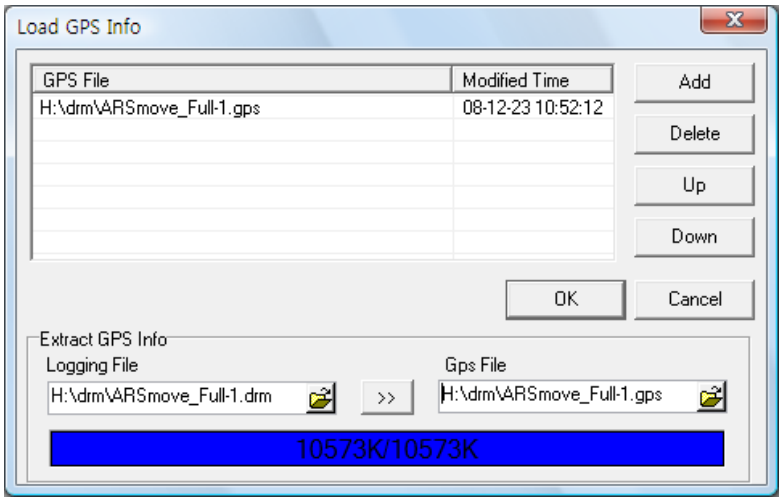
Icon Name	Icon Image	Description
Map Mark Show / Hide		Shows/Hides mark information display on map.
Bird View		Displays map from an elevated view.
3D Building		Displays buildings on the map in three dimention.
Rotate		Rotates map and change location.
Tracking Head		Displays the direction of the map toward north.
Trace		Saves GPS information in txt format automatically. Display measurement route by using txt file. Able to remove txt file by using **Delete** button. 
Parameter Tree		Displays parameter tree on the right. 
Parameter Tree		Displays parameter tree on the bottom.

Icon Name	Icon Image	Description
		
Export		Exports current map file in *.bmp, *.kml, *.gif, *.jpg, and *.mif. Map file exported in *.kml format can be imported to Google Earth.
Layer Control		Imports and configures map file of MapXtreme and SmartMap.

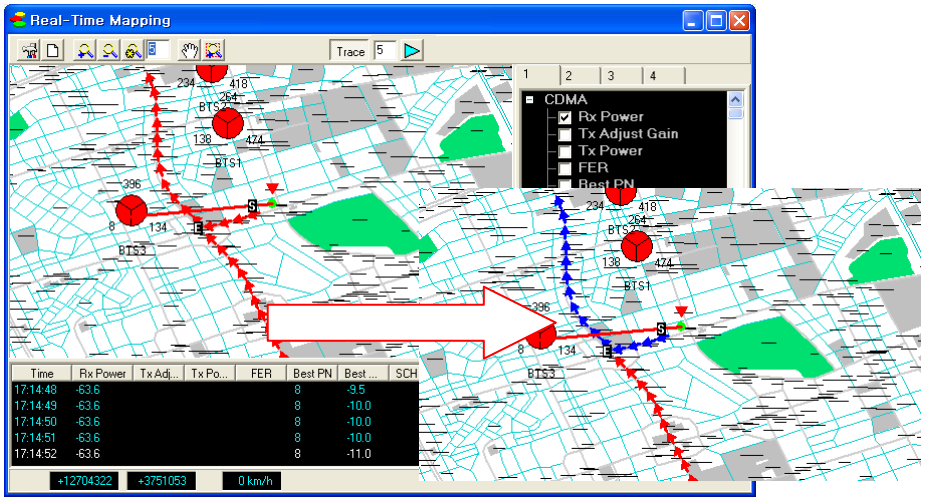
Using Trace Icon

Trace icon helps to extract GPS data from existing log file and display them on real time mapping window. It enables testing along the existing test route.

1. Select **Enable Trace**  icon in **Real Time Mapping** window.
2. **Load GPS Info** window appears.



3. Click **Open** icon from **Extract GPS Info** – **Logging File**. Select logging file to extract GPS information.
4. Click **Open** icon from **Extract GPS Info** – **Gps File**. Select GPS export path.
5. Click >> icon to create a file with GPS information.
   The status bar shows its progress.
6. Repeat step 3 and 4 to extract GPS information from more than one logging files.
7. Click **Add** button. The converted GPS file is added to **GPS File** list.
8. Click **OK**.
9. Loaded GPS route is displayed with red line in **Real Time Mapping** window. Confirm start and end point of the route.

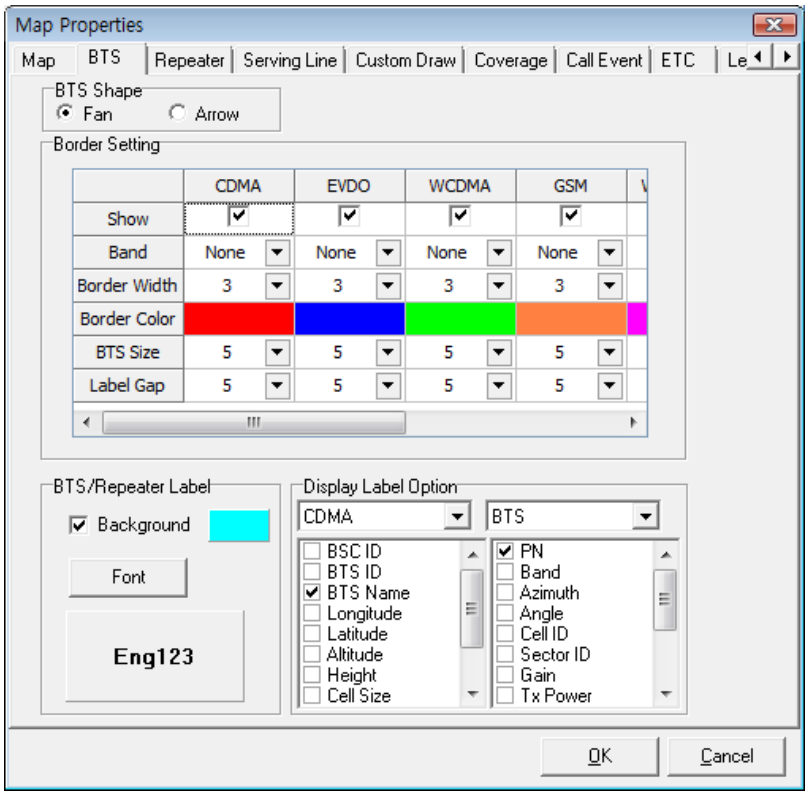


Displaying BTS / Repeater / Serving Line / Coverage

Map Layer Property icon in Map Control Icon bar enables show/hide BTS, Repeater, coverage, call events, serving lines, and etc.

1. Click **Map Layer Property**  icon.

2. **Map Properties** window appears.



3. Select a tab to show/hide in the map, and configure map display options.

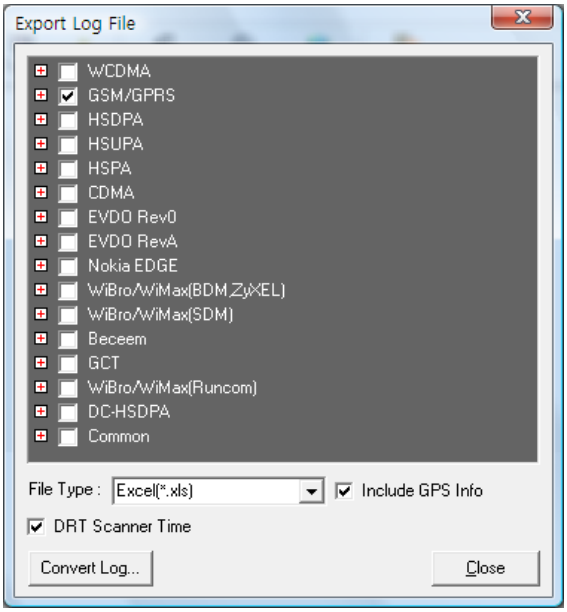
Tab	Description
BTS	To show BTS icon in the map, selects the checkbox for **Show** for each technology column. Configures BTS shape, color, size, and etc.
Repeater	To show Repeater icon in the map, selects the checkbox for **Show Repeater.** Configures link, label, and etc of repeater.
Serving Line	To show serving line in the map, selects the checkbox for **Show** for Active, Candidate, Neighbor Set respectively. Configures colors according to technology type and Ec/Io or RSSI threshold range.
Coverage	Configures colors of BTS coverage line for each range.

Exporting Logging Data

XCAP supports to export logging data of selected parameters to file in xls, csv, txt format.

1. Select Menu bar – **File** – **Export Log File**.
2. **Export Log File** window appears.

   NOTE: Parameter list shown in **Export Log File** window may vary depenidng on products.



Export Log File window

3. Select parameters you want to export to a file.

4. Define export options.

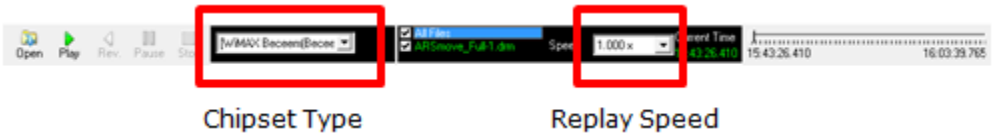
Option	Description
File Type	Select export file type (xls, csv, txt).
Include GPS Info	Include GPS information in export file.

5. Click **Close**.

Replaying Measurement

XCAP enables you to replay existing logging file during drive test.

1. Select Menu bar – **File** – **Replay**, or click on **Replay**  icon from Icon bar.
2. **Open** window appears. Select a logging file you want to replay, and click **Open**.
3. Replay Control bar appears.



Replay Control bar

4. Select chipset type of mobile station and replay speed.

Icon	Description
Open	Open existing logging file.
Play	Start or resume replay.
Rev.	Reverse replay.

Icon	Description
Pause	Pause replay.
Stop	Stop replay.
Chip type	Select chipset type.
Speed	Control replay speed (0.5x, 1.0x, 2.0x, etc.).
Current Time	Show replay process time.
Time bar	Show replay status.

5. Click **Play** icon to start replay.

Accuver

Regional offices

Hong Kong (Head Office)

Accuver APAC
Unit 206, 2/F., No. 8 Science Park West Avenue
Hong Kong Science Park
Shatin, NT, HONG KONG

Tel : +852 2210 7004
Fax : +852 2210 7017

Email enquiries:
sales.apac@accuver.com
support.apac@accuver.com

www.accuver.com

United Kingdom

Accuver EMEA
Suite Two I/F
Congress House
14 Lyon Road, Harrow
Middlesex, HA1 2EN

Tel: +44 20 8863 1118
Fax: +44 20 8863 1688

Email enquiries:
sales.emea@accuver.com
support.emea@accuver.com

www.accuver.com

Japan

Accuver Japan
8F ATT
(Akasaka Twin Tower)
Main Tower 2-17-22
Akasaka, Minato-ku
Tokyo, 107-0052 Japan

Tel : +81 3 5545 8031

Email enquiries:
sales@accuver.jp

www.accuver.com

Korea

Innowireless Co Ltd
3/F, First-Building
PanGyo-Sevenventurevalley
2-development, 633
Sampyeoung-Dong
Bundang-Gu, Seongnam-Si
Gyeounggi-Do, 463-400
KOREA

Tel : +82 31 788 1700

Email enquiries:
sales@accuver.com

www.innowireless.co.kr

USA

Accuver Americas
500 N. Central Expressway
Suite 210 Plano
TX, 75074, USA

Tel : +1 469 241 6100
Fax : +1 469 241 6199

Email enquiries:
sales.usa@accuver.com
support.usa@accuver.com

www.accuver.com