

# **Agilent N6430A Series WiMAX™ Protocol Test Software**

## **Installation and Getting Started Guide**



**Agilent Technologies**

# Notices

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## In This Guide...

This guide introduces you to the components of the Agilent N6430A Series WiMAX Protocol Test. It also shows you how to install and configure your Agilent N6430A Series WiMAX Protocol Test Software.

It defines the requirements of your computer(s). It shows you a step-by-step procedure for the installation of the required applications and how to inter-connect the computer(s) and E6651A Test Set.

The Agilent N6430A Series Help is located on Agilent N6430A Series website, where you can also find the operation of the N6431A TTCN-3 environment.

It contains the following Chapters:

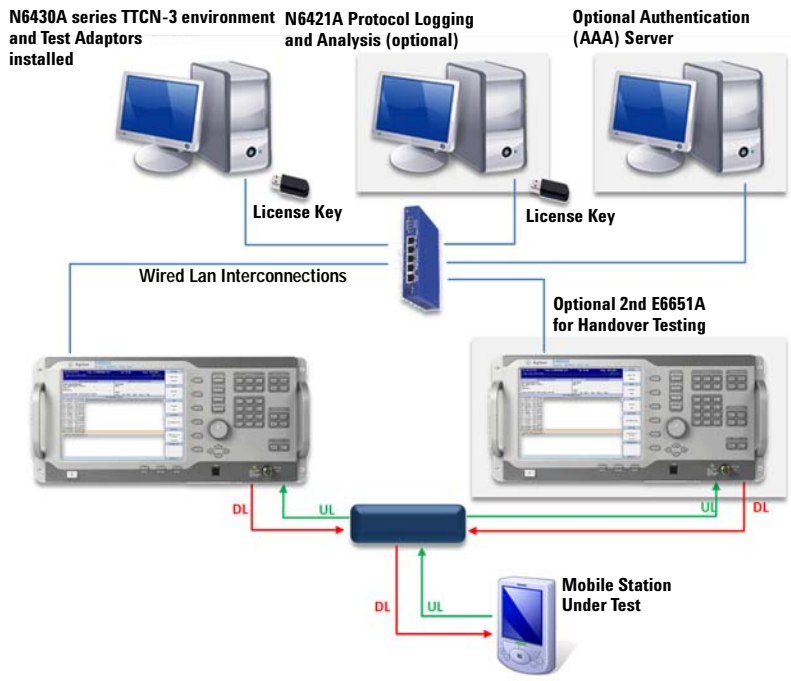
- 1 About the Protocol Test System**
- 2 Installation**
- 3 Additional Information**

## The Agilent N6430A Series WiMAX Protocol Test Overview

An example of the Agilent Mobile WiMAX Protocol Test System is shown in Figure 1. Depending on the configuration purchased, the system includes the N6430A Series WiMAX Protocol Test Software, and one or more E6651A Mobile WiMAX Test Sets.

The N6430A Series software includes the N6431A TTCN-3 Environment, together with N6432A, N6433A, N6434A, N6442A and/or N6443A adaptors depending on the configuration selected. These components allow TTCN-3 Test cases to be executed.

The E6651A contains RF and MAC layer emulation functions. The E6651A can emulate a WiMAX base station or mobile station, providing an RF interface to the user-supplied equipment under test.



**Figure 1** Example WiMAX IUT Protocol Test Implementation

The N6430A Series software provides logging within the TTCN-3 environment. For more detailed MAC/PHY layer protocol logging, it is also possible to connect the Agilent N6421A Protocol Logging and Analysis software to the E6651A.

It is recommended that the N6430A Series software and the N6421A protocol logging application should be loaded and run on separate computers and connected to the E6651A using a private Ethernet network. Separate Ethernet ports can be added to the computers if necessary to provide connection to a public or corporate Ethernet network while maintaining connection to the E6651A.

Many protocol test scenarios can be emulated using a single E6651A. For some handover test scenarios, it may be necessary to emulate more than one WiMAX cell. Additional E6651As can be added to the system and controlled by a single instance of N6430A Series software to build up multi-cell systems.

The currently supported WiMAX protocol testing methodologies require user control of the equipment under test. In the future, the WiMAX standard may expand to enable future revisions of the N6430A Series software to control the equipment under test by means of a standardized Test Interface (TI).





# 1 About the Protocol Test System

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## About the Protocol Test System

This section provides some background to the Agilent implementation of a Protocol Test System. It shows you a block diagram of a Protocol Test System and how that is implemented with the Agilent N6430A Series and N6421A applications, and the E6651A WiMAX Test Set.

### Block Diagram Implementation

The protocol test system block diagram shown in [Figure 2](#) on page 9 is based closely on TTCN-3 (Test and Testing Control Notation version 3) industry standards.

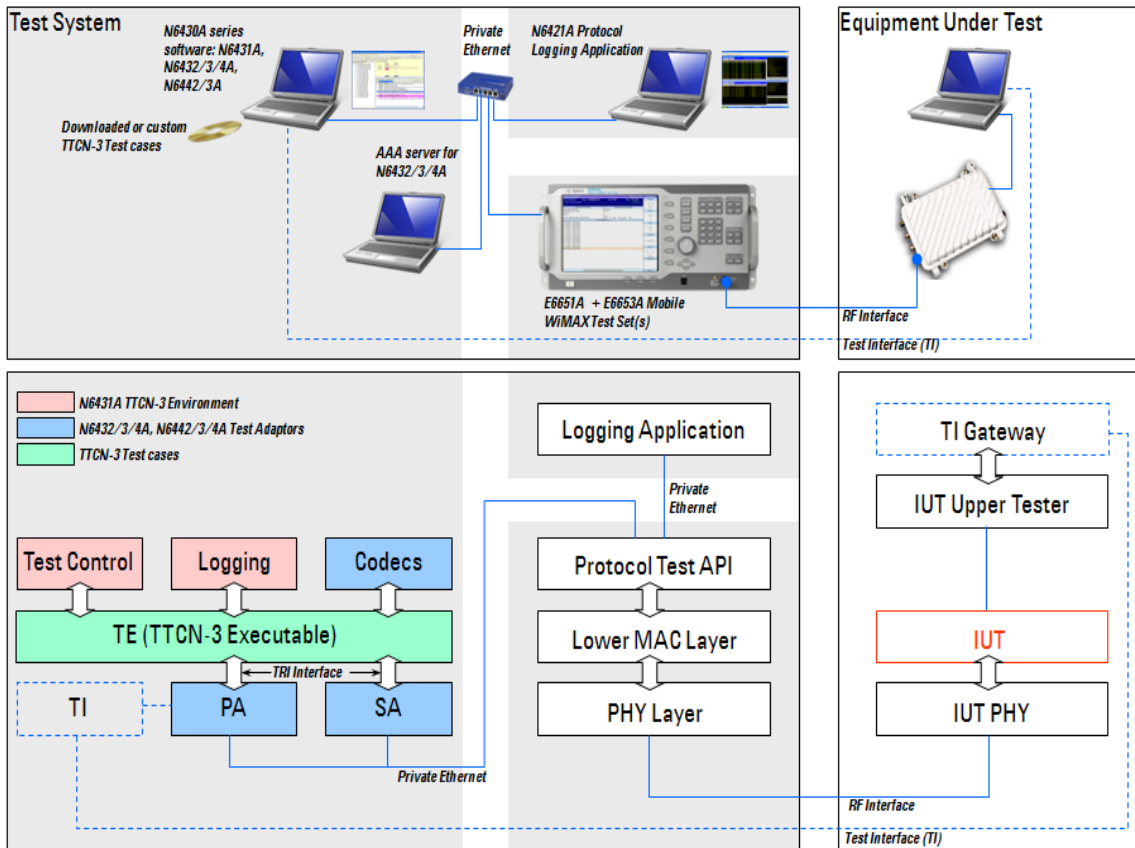
The N6431A TTCN-3 Environment provides a graphic user interface and software framework for other components of the system. The tool enables TTCN-3 test cases to be loaded, edited or created, compiled and executed. It includes logging functions and the ability to automate sequences of tests or campaigns. The N6431A is based on Testing Technologies IST GmbH's TTWorkbench product.

WiMAX PCT/NCT TTCN-3 test cases can be portable from one test platform to another. To enable test case portability, the functions available to a TTCN-3 programmer through the TRI (TTCN-3 Run Time Interface) have been standardized by ETSI and the WiMAX Forum™.

N6432/3A/4A and N6442/3A include adaptors that connect the standardized TRI interface available to programmers to the unique implementations of MAC and PHY contained within the E6651A Mobile WiMAX Test Set. The SA (System Adaptor) provides a message portal to enable TTCN-3 programs to send and receive protocol messages directly to the MAC layer within the E6651A. The PA (Platform Adaptor) provides TTCN-3 programs with a selection of External Functions. External Functions are defined by ETSI and implemented by a combination of unique software components within the PA and the E6651A. N6432/3A/4A and N6442/3A also contain the message coder/decoder

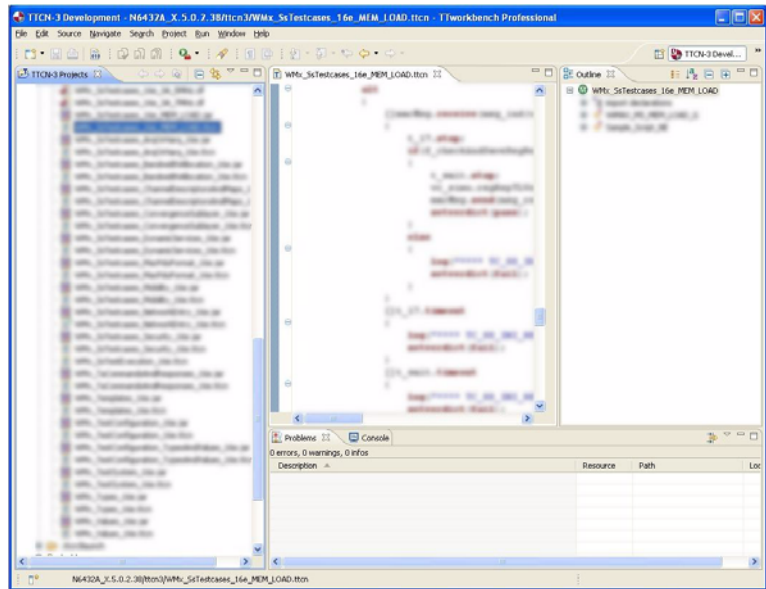


(Codec). The Codec uses information from the IEEE 802.16 standards to encode and decode MAC messages using parameters with values defined within the TTCN-3 test cases to a form that can be utilized directly by the protocol stack within the E6651A.



**Figure 2** Agilent N6430A Series Implementation

Test cases written in the TTCN-3 language are compiled to form the TE (TTCN-3 Executable). WiMAX conformance test cases are created for the WiMAX Forum by ETSI. You can also create your own TTCN-3 test cases.

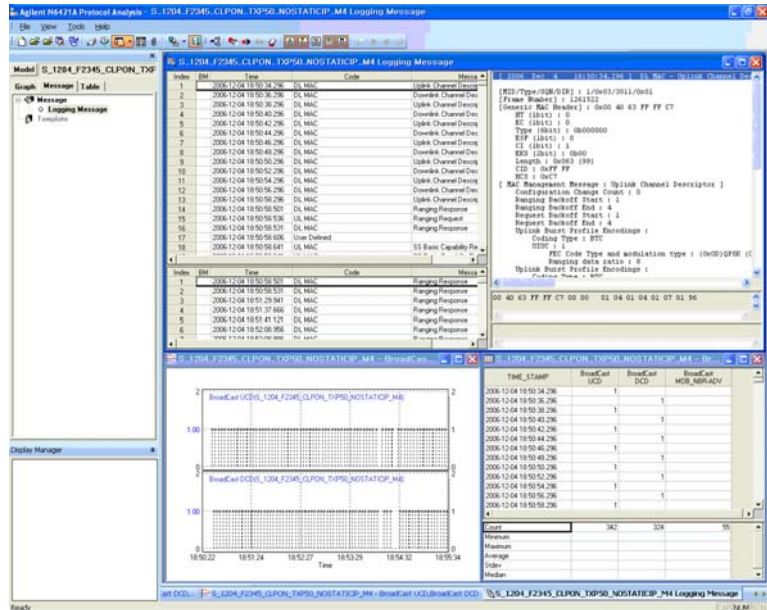


**Figure 3** TTCN-3 Environment

The E6651A Mobile WiMAX Test Set exchanges messages with the SA and PA in the N6430A Series PC-based system using a proprietary protocol carried over a private Ethernet connection. The Test Set contains an implementation of the IEEE 802.16 protocol MAC (Media Access Control) layer and PHY (Physical) layer that includes an RF interface that can be used to connect to the equipment under test. When operated as a stand-alone Test Set, the E6651A MAC layer operates autonomously to emulate a WiMAX base station. When operated in TTCN-3 mode, and connected to the external N6430A Series system, the Test Set's upper MAC is disabled and replaced by the functionality of the TTCN-3 script being executed within the N6430A Series environment. In this mode, the system can emulate either a Mobile Station or a Base Station.

The N6421A Protocol Logging Application can be connected to the E6651A Mobile WiMAX Test Set to capture MAC and PHY message exchange. The Protocol Logging Application

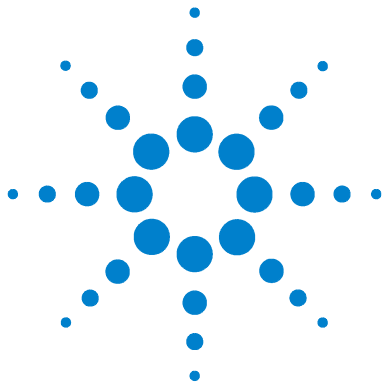
can operate with the E6651A in either a stand-alone configuration, or in configurations where the E6651A is used with the N6430A Series system.



**Figure 4** Agilent N6421A Protocol Logging and Analysis

The AAA Server is required for some security related Test cases in the N6432A/3A/4A. The AAA Server and Test System PC exchange information using the RADIUS protocol over the IP connection. TTCN-3 industry terminology collectively describes the N6430A Series and E6651A Mobile WiMAX Test Set as the ‘Lower Tester’. In this context, the protocol IUT (Implementation Under Test) is defined as the MAC protocol component within the Equipment under test (Mobile Station or Base Station). Other components exist within the User Equipment under test to support the testing of the IUT protocol. These include a user interface required to support the execution of some test cases serving as a TTCN-3 ‘Upper Tester’. In the future, the WiMAX Forum will standardize an Ethernet-based connection between the test system and IUT to enable tests to be fully automated.

## **1 About the Protocol Test System**



## 2 Installation

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## Overview

Several software products and components are required to complete the Agilent N6430A Series WiMAX Protocol Test and Development System.

This chapter provides a step-by-step guide to the installation of the N6430A Series software and also shows you how to ensure your Agilent E6651A WiMAX Test Set has the required firmware.

### NOTE

These Installation instructions are for both Mobile and Base Station Test.

## Please Check

Before proceeding, please confirm you have the following:

- Agilent E6651A WiMAX Test Set
- A computer meeting the requirements specified in “[Minimum Computer Requirements - N6430A](#)” on [page 15](#).
- Ethernet hub or switch and LAN cables
- N6431A entitlement certificate for license redemption
- N6432A and/or N6442A Test Adaptor USB license keys
- Entitlement certificate for mobile or base station test developer’s solution, or
- Entitlement certificate for mobile or base station test developer and conformance solution
- For Base Station test only, an entitlement certificate for E6653A is required

(refer to the *Configuration Guide* using the **Options** tab at <http://www.agilent.com/find/pct> for more details of the developer’s, and developer and conformance software suites)

## Minimum Computer Requirements - N6430A

The N6430A Series installation computer should meet the minimum requirements specified for successful operation of the software.

### Requirements

Processing large amounts of time critical data is an inherent requirement of the conformance test system. A high performance desk-top style computer with expansion capacity for additional Network Interface Cards (NIC) or adaptors is recommended.

### Minimum System Requirements

<b>Operating System</b>	Computer running Windows XP.
<b>Communication with Test Set(s)</b>	Ethernet.
<b>RAM (Memory)</b>	Minimum 2 GB RAM.
<b>Processor</b>	3.0 GHz Intel Pentium® or equivalent, dual core preferred.
<b>Disc Space</b>	N6431A TTCN-3 Environment - at least 170 MB Java Runtime Environment - at least 300 MB N6432A/33A/34A/42/43A Test Adaptors - at least 50 MB
<b>NOTE</b>	Consideration for storage space should also be given for subsequent downloaded releases of N6432A/33A/34A/42A/43A updates, development and validated scripts, and all supporting documentation,

### Optional

Additional Network Interface Cards (NIC) or adaptors if connection to public or corporate network is required.

## Minimum Computer Requirements - For Authentication Server (optional)

If an authentication server is part of your test configuration, a Linux operating system such as Ubuntu, and a radius server such as freeRadius are suitable.

### Typical Minimum System Requirements

<b>Operating System</b>	Linux - Redhat 9.x, Ubuntu 8.x
<b>Processor</b>	Intel® Pentium® 2.8GHz or equivalent
<b>Communication</b>	Ethernet.
<b>RAM (Memory)</b>	Minimum 512 MB RAM.
<b>Disc Space</b>	4GB for Linux installation
<b>Network Interface Cards</b>	(NIC) or adaptors for connection to network.

For more detailed requirements and installation instructions, refer to the documentation at <http://www.ubuntu.com>, <http://www.redhat.com>, and <http://freeradius.org>.



## Step 1 - License Redemption

### N6431A TTCN Environment License Redemption

The N6431A TTCN-3 environment software (TTworkbench) is provided through collaboration with Testing Technologies IST GmbH. Agilent provide one option for TTworkbench products:

- N6431A-2FP TTCN-3 Environment Developer - fixed, perpetual license

An entitlement certificate for one of these options is required to redeem your license. License information is required during the installation process.

Entitlement certificates are also required for each of the N6432A, N6433A, N6434A, N6442A, and N6443A product you have purchased.

### Redeeming your Licenses

The license redemption procedure is similar for all products and requires that you have all or some of the following information readily available:

- Installation computer Hostname and LAN adaptor MAC address
- Order Number for your N6431A license

### Determine Hostname and MAC Address

To find the Hostname and MAC address of the LAN adaptor on your computer proceed as follows:

- 1 Click **Start > Run** and enter **cmd** in the **Run** window as shown.

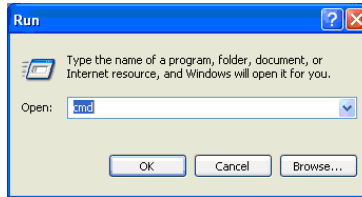


Figure 5 Run Window

- 2 In the command window, enter `ipconfig /all` to list information about your network adaptors, including the Host Name and MAC address (known as the physical address), a 12 digit hexadecimal number.

In the example shown in Figure 6, the host name is “ipsc1046” and the MAC Address is 00-04-76-4E-26-40.

```
C:\WINDOWS\system32\cmd.exe
Host Name . . . . . : ipsc1046
Primary DNS Suffix . . . . . : agilent.com
Node Type . . . . . : Hybrid
IP Routing Enabled. . . . . : No
WINS Proxy Enabled. . . . . : No
DNS Suffix Search List . . . . . : britain.agilent.com
                                     agilent.com
                                     europe.agilent.com
                                     net.europe.agilent.com
                                     ra.europe.agilent.com
                                     cos.agilent.com

Ethernet adapter Local Area Connection:

   Connection-specific DNS Suffix  . : britain.agilent.com
   Description . . . . . : 3Com 10/100 Mini PCI Ethernet Adapte
   Physical Address. . . . . : 00-04-76-4E-26-40
   DHCP Enabled. . . . . : Yes
   Autoconfiguration Enabled . . . . : Yes
   IP Address. . . . . : 156.141.111.43
   Subnet Mask . . . . . : 255.255.240.0
   Default Gateway . . . . . : 156.141.104.1
   DHCP Server . . . . . : 156.141.40.17
   DNS Servers . . . . . : 156.141.40.25
                                     156.141.40.17
   Primary WINS Server . . . . . : 156.141.51.33
   Secondary WINS Server . . . . . : 134.40.34.32
   NetBIOS over Tcpip. . . . . : Disabled
   Lease Obtained. . . . . : 20 September 2007 10:57:40
   Lease Expires . . . . . : 03 October 2007 10:57:49

I:\data>
I:\data>
```

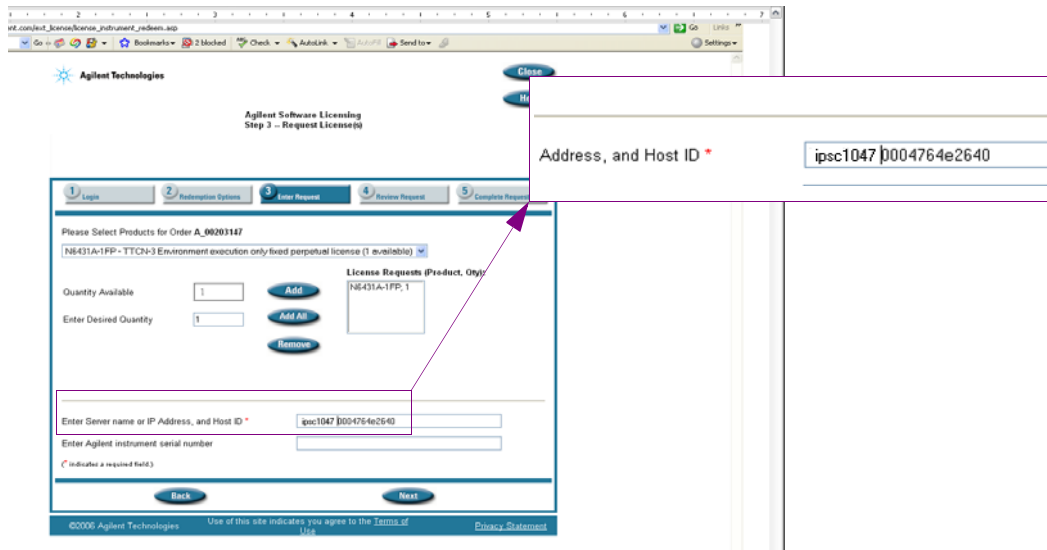
Figure 6 Command Window

- 3 To redeem your license, go to the following web site: <http://www.agilent.com/find/softwarelicense>. Enter your order number and certificate entitlement number. Follow the

on-screen instructions. When prompted, enter your hostname, a single character space, and your 12 digit MAC address with no spaces between the hexadecimal numbers as shown in Figure 7.

## NOTE

An instrument serial number is not required for this type of license. You can leave the instrument serial number field empty.



**Figure 7** Entering Hostname and MAC Address

On completion of this process an e-mail is sent to you with an “**order\_number\_xyz.lic**” attachment. This file is the license file and is required during the installation if the TTCN-3 environment and should be saved to a suitable location.

## NOTE

It is recommended that you save all license files to a convenient but secure location.

### Alternative Process

If you cannot access your e-mail account, you can:

- 1 Complete Steps 1 to 3 as above.
- 2 On the License website, click **Redemption Options**.
- 3 Right click the license file and select **Save As...**
- 4 Save the license file to a suitable location.

### N6432A, N6433A, N6434A, N6442A, and N6443A License Redemption

Entitlement certificates are also required for each of the N6432A, N6433A, N6434A, N6442A, and N6443A product you have purchased.

Repeat the procedure for each required license.

#### Redeeming your Licenses

The license redemption procedure is similar for all products and requires that you have all or some of the following information readily available:

- Order Number for each product license
  - USB license key serial number (for N6432A/N6433A/N6434A or N6442A/N6443A)
- 1 To redeem your licenses, go to the following web site: **<http://www.agilent.com/find/softwarelicense>**.
  - 2 Enter your order number and certificate entitlement number. Follow the on-screen instructions.
  - 3 When prompted, enter your USB license key serial number.

On completion of this process an e-mail is sent to you with an “**order\_number\_xyz.lic**” attachment. This file is the license file and is required during the installation if the TTCN-3 environment and should be saved to a suitable location. An access code for the Agilent N6430A software download site is also supplied. This should be retained for use in subsequent download and update procedures.

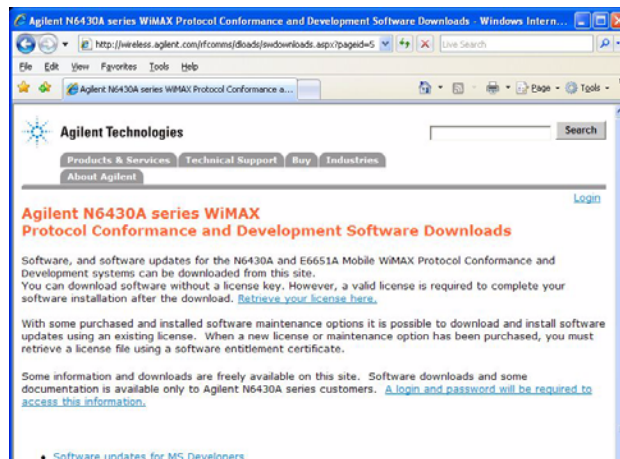
## Step 2 - Determine Required Software Versions

Software, and software updates for the N6430A and E6651A Mobile WiMAX Protocol Conformance and Development systems are released frequently to align with ETSI script releases and validation processes. For successful operation it is important to ensure compatibility between the E6651A Test Set firmware and N6432A/3A/4A and N6442A/3A Test Adaptor is maintained.

Both software (and updates) and compatibility matrices are available from the Agilent WiMAX PCT support web pages at: <http://www.agilent.com/find/pct>

To access the software and release information proceed as follows:

- Procedure**
- 1 Click **Technical Support > Drivers & Software**.
  - 2 Click the **N6430A series WiMAX Protocol Conformance and Development Software Downloads** link to display the software download page:



As stated on this page, you can download the appropriate

software for your application. To complete software installations, a valid license is required. A login and password are also required for some areas. Please refer to the displayed web page for the latest detailed information.

- 3 From the list displayed on the web page, select the topics you require - choose from:

**PCT Software updates for MS Development and Conformance**

(N6432A WiMAX TTCN-3 Test Adaptors)

Accesses links for supported configuration tables, software and updates and installation instructions for MS PCT test developers and conformance testing.

**NCT Software updates for MS Development and Conformance**

(N6434A WiMAX TTCN-3 Test Adaptors)

Accesses links for supported configuration tables, software and updates and installation instructions for MS NCT test developers and conformance testing.

**PC Software updates for BS Development and Conformance**

(N6442A WiMAX TTCN-3 Test Adaptors)

Accesses links for supported configuration tables, software and updates and installation instructions for BS PCT test developers and conformance testing.

**Other Software Updates**

(E6651A WiMAX Test Set, N6431A TTworkbench and other components)

Accesses links for E6651A firmware, N6431A software, and other component updates.

**Other Information and Support**

(N6432A WiMAX TTCN-3 Test Adaptors)

Accesses links to other information such as the WiMAX Forum and the ETSI Mantis system.

**NOTE**

It is recommended that you save all downloaded files to a secure location before unpacking any archives.

## Step 3 - Installing the N6431A TTCN-3 Environment

The latest N6431A TTCN-3 Environment installation is available for download from the [www.agilent.com/find/pctdownloads](http://www.agilent.com/find/pctdownloads) website. This website is protected by password. Your unique access code can be found in the e-mail you received containing your N6432A, N6433A, N6434A, N6442A, or N6443A license file.

### NOTE

The Agilent WiMAX MS Protocol Test application uses a specific version of TTworkbench. Even if you already have TTworkbench installed, installation of the N6431A is required.

### Procedure

- 1 Browse to [www.agilent.com/find/pctdownloads](http://www.agilent.com/find/pctdownloads) and select the **Other Software Updates** link.
- 2 Use the access code supplied in the e-mails received following “N6432A, N6433A, N6434A, N6442A, and N6443A License Redemption” on page 20 to access the downloads page.
- 3 Download version 1.1.9.1.2 of the N6431A. The installation file is **setup\_N6431A-2FP\_1.1.9.1.2.exe**.
- 4 When the download is complete, run the downloaded setup file.
- 5 Follow the displayed instructions.
- 6 When prompted by the license window, **Browse** to the “**order\_number\_xyz.lic**” file previously delivered to you by e-mail during the license redemption procedure.

The TTworkbench and N6432A/33A/34A/42A/43A software require the installation of JDK (Java™ SE Development kit). Version 5 Update 14 is installed. The first step in the install process is the installation of the Java™ software.

### NOTE

This installation may add another version of JDK to your Add/Remove Programs if you already have a different version installed. Remove all other version of JDK and JRE before installing the N6431A.

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**7** Click **Next** to continue with the installation.

The installation proceeds by first installing the Java Development environment followed by the TTCN-3 environment.

**8** Click **Finish** to complete the installation.

### Un-installation

If un-installation is required, use **Add or Remove Programs** accessed from the Windows **Control Panel**. Click **Start > Control Panel > Add or Remove Programs**.



## Step 4 - Installing N6432A PCT Mobile Station Test Adaptor (if ordered)

The N6432A PCT Mobile Station Protocol Test Adaptor requires that the N6431A TTCN-3 Environment is installed. If you have not already done so, refer to “[Step 3 - Installing the N6431A TTCN-3 Environment](#)” on page 23

### N6432A Installation Components

The N6432A installation installs the following items on your computer:

- USB License Key driver and utilities (available from the **Start** menu)
- N6432A Protocol Conformance Test Adaptor

### Procedure

- 1 Browse to [www.agilent.com/find/pctdownloads](http://www.agilent.com/find/pctdownloads) and select **Software Updates for MS Developers**.
- 2 Use the access code supplied in the e-mails received from “[N6432A, N6433A, N6434A, N6442A, and N6443A License Redemption](#)” on [page 20](#) to access the downloads page.
- 3 Download the most recent qualified or tested beta version of the N6432A that is supported with the 1.1.9.1.2 version of the N6431A. Refer to the supported configurations document on the N6432A download site. The installation file is **N6432A\_X.5.0.2.59.exe** or later.
- 4 When the download is complete, run the downloaded setup file.

#### NOTE

Before proceeding, please ensure you have your USB license key and redeemed license details available.

- 5 When prompted, enter your details and click to accept the license agreement.

- 6 Follow the displayed instructions.
- 7 One of the first steps of the process is the installation of the SUT (system under test) adaptors. You are asked to confirm the root directory which you would like to use for saving the adaptor software. The default root directory is:  
**C:\Program Files\Agilent\WiMAX MS Protocol Test**

- 8 The program installs the adaptor.

Depending on the purchased products and options, your license enables use of one or both the development and/or conformance releases. The directory structure for the individual releases is as follows:

- **Developer versions** - root\_directory\N6432A Development Releases\N6432A\_A.w.x.y.z
- **Conformance versions** - root\_directory\N6433A Conformance Releases\N6433A\_V.w.x.y.z

### NOTE

The install program only installs a development release.

The releases are numbered as follows:

- A.w.x.y.z releases are qualified developers releases
- X.w.x.y.z releases are pre-qualified developers releases
- V.w.x.y.z releases are WiMAX Forum® validated releases.

- 9 The N6432A install program also installs the drivers for your USB license key. Check the USB License key install box to perform the installation of the Sentinel Protection Installer software.
- 10 Plug in your USB license key and check the installation has worked.
  - If your key shows a green light it is successfully installed.

- If a window showing “**Welcome to the Found New Hardware Wizard**” appears, the installation has not been successful. Un-install and re-install the N6432A software.

### **Uninstallation**

The Agilent N6432A Test Adaptor and Sentinel Protection Installer software can be un-installed using Add/Remove Programs in Windows.

## Step 5 - Installing N6434A NCT Mobile Station Test Adaptor (if ordered)

The N6434A NCT Mobile Station Protocol Test Adaptor requires that the N6431A TTCN-3 Environment is installed. If you have not already done so, refer to “[Step 3 - Installing the N6431A TTCN-3 Environment](#)” on page 23

### N6434A Installation Components

The N6434A installation installs the following items on your computer:

- USB License Key driver and utilities (available from the **Start** menu)
- N6434A Network Conformance Test Adaptor

### Procedure

- 1 Browse to [www.agilent.com/find/pctdownloads](http://www.agilent.com/find/pctdownloads) and select **Software Updates for MS Developers**.
- 2 Use the access code supplied in the e-mails received from “[Step 1- N6432A, N6433A, N6434A, N6442A, and N6443A License Redemption](#)” on page 20 to access the downloads page.
- 3 Download the most recent qualified or tested beta version of the N6434A that is supported with the 1.1.9.1.2 version of the N6431A. Refer to the supported configurations document on the N6434A download site. The installation file is **N6434A\_X.5.1.0.18.exe** or later.
- 4 When the download is complete, run the downloaded setup file.

#### NOTE

Before proceeding, please ensure you have your USB license key and redeemed license details available.

- 5 When prompted, enter your details and click to accept the license agreement.

- 6 Follow the displayed instructions.
- 7 One of the first steps of the process is the installation of the SUT (system under test) adaptors. You are asked to confirm the root directory which you would like to use for saving the adaptor software. The default root directory is:  
C:\Program Files\Agilent\WiMAX MS Network Test

- 8 The program installs the adaptor.

The directory structure for the releases is as follows:

- **Release** - root\_directory\N6434A Releases\  
N6434A\_A.w.x.y.z

- 9 The N6434A install program also installs the drivers for your USB license key. Check the USB License key install box to perform the installation of the Sentinel Protection Installer software.
- 10 Plug in your USB license key and check the installation has worked.
  - If your key shows a green light it is successfully installed.
  - If a window showing “**Welcome to the Found New Hardware Wizard**” appears, the installation has not been successful. Un-install and re-install the N6434A software.

### Uninstallation

The Agilent N6434A Test Adaptor and Sentinel Protection Installer software can be un-installed using Add/Remove Programs in Windows.

## Step 6 - Installing N6442A PCT Base Station Test Adaptor (if ordered)

The N6442A PCT Base Station Protocol Test Adaptor requires that the N6431A TTCN-3 Environment is installed. If you have not already done so, refer to “[Step 3 - Installing the N6431A TTCN-3 Environment](#)” on page 23.

### N6442A Installation Components

The N6442A installation installs the following items on your computer:

- USB License Key driver and utilities (available from the **Start** menu)
- N6442A Protocol Conformance Test Adaptor

### Procedure

- 1 Browse to [www.agilent.com/find/pctdownloads](http://www.agilent.com/find/pctdownloads) and select **Software Updates for BS Developers**.
- 2 Use the access code supplied in the e-mails received from “[License Redemption](#)” to access the downloads page.
- 3 Download the most recent qualified or tested beta version of the N6442A that is supported with the 1.1.9.1.2 version of the N6431A. Refer to the supported configurations document on the N6442A download site. The installation file is **N6442A\_X.5.0.1.64.exe** or later.
- 4 When the download is complete, run the downloaded setup file.

#### NOTE

Before proceeding, please ensure you have your USB license key and redeemed license details available.

- 5 When prompted, enter your details and click to accept the license agreement.
- 6 Follow the displayed instructions.

**7** One of the first steps of the process is the installation of the SUT (system under test) adaptors. You are asked to confirm the root directory which you would like to use for saving the adaptor software. The default root directory is:

C:\Program Files\Agilent\WiMAX BS Protocol Test

**8** The program installs the adaptor.

Depending on the purchased products and options, your license enables use of one or both the development and/or conformance releases. The directory structure for the individual releases is as follows:

- **Developer versions** - root\_directory\N6442A Development Releases\N6442A\_A.w.x.y.z
- **Conformance versions** - root\_directory\N6443A Conformance Releases\N6443A\_V.w.x.y.z

**NOTE**

The install program only installs a development release.

The releases are numbered as follows:

- A.w.x.y.z releases are qualified developers releases
- X.w.x.y.z releases are pre-qualified developers releases
- V.w.x.y.z releases are WiMAX Forum® validated releases.

**9** The N6442A install program also installs the drivers for your USB license key. Check the USB License key install box to perform the installation of the Sentinel Protection Installer software.

**10** Plug in your USB license key and check the installation has worked.

- If your key shows a green light it is successfully installed.
- If a window showing “**Welcome to the Found New Hardware Wizard**” appears, the installation has not been successful. Un-install and re-install the N6442A software.

### **Un-installation**

The Agilent N6442A Test Adaptor and Sentinel Protection Installer software can be un-installed using Add/Remove Programs in Windows.



## Step 7 - Redeem License for Developers' Contract (if ordered)

If, as a developer, you plan to write and compile scripts, you require one of the following license redemption certificates for a software and technical support contract:

3mth: N6432A/42A-1T3; 6mth: N6432A/42A-1T6;

1yr:N6432A/42A-1TY; 2yr:N6432A/42A-2SY; 3yr:N6432A/42A-3SY

### Check Entitlement Status

You can check the current entitlement status of your USB license key using installed utilities found in the **Start** menu. Click **Start > Agilent Mobile WiMAX Test Set > N6430A Series Utilities > Read USB License Key** to view the USB license key contents.

A window similar to that shown in [Figure 8](#) provides the serial number of your USB license key and licenses. The serial number is also printed on the key.



Read License		
Category	Field	Value
Serial Number		50000119
Update Date		17/12/2007
License Expiry Date		N/A(Commercial)
System	MS PCT	
	BS PCT	
	MS NCT	
Application	Developer	
	Conformance	
Contract Expiry Date	Developer Expiry date	
	Conformance Expiry date	
	NCT Expiry date	
Conformance Option	Wave1	
	Wave2	

**Figure 8** USB License Key Reader Display

### Developers' License Redemption

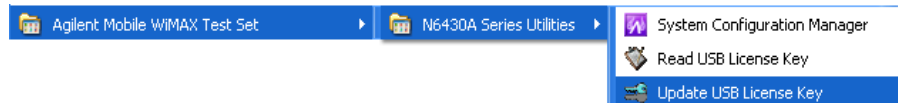
To redeem your License, proceed as follows:

- 1 Go to the following secure web site:  
**<http://www.agilent.com/find/softwarelicense>**.
- 2 Enter your order number and certificate entitlement number.
- 3 Follow the displayed instructions, entering your USB License key serial number when prompted.
- 4 On completion of this process, an E-mail with an order\_number\_identity\_number.lic attachment is sent to you. This is the license file.

#### NOTE

It is recommended that you save all license files to a convenient but secure location. Copy files to **C:\Program Files\Agilent\N6430A Series Utilities\USB License Key Utilities** only when required for updates. Remove the files from the update location afterwards.

- 5 Ensure the USB license key is inserted and click **Start > Agilent Mobile WiMAX Test Set > N6430A Series Utilities > Update USB License Key** to update your entitlement in the USB license key.



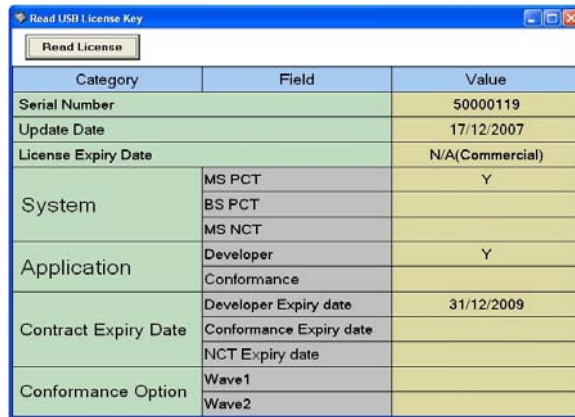
#### NOTE

For Mobile Station test, ensure that only your N6432A License key is in the computer. No other license key should be connected. Likewise, for Base Station test ensure that only the N6442A License key is connected.

- 6 When updated, the USB License Key update window is displayed:



- 7 Click **Start > Agilent Mobile WiMAX Test Set > N6430A Series Utilities > Read USB License Key** to check that you now have entitlement to use the developer's web releases. After updating your USB key, confirm the information is similar to that shown in [Figure 9](#).



The screenshot shows a window titled "Read USB License Key" with a "Read License" button. Below the button is a table with three columns: "Category", "Field", and "Value".

Category	Field	Value
Serial Number		50000119
Update Date		17/12/2007
License Expiry Date		N/A(Commercial)
System	MS PCT	Y
	BS PCT	
	MS NCT	
Application	Developer	Y
	Conformance	
Contract Expiry Date	Developer Expiry date	31/12/2009
	Conformance Expiry date	
	NCT Expiry date	
Conformance Option	Wave1	
	Wave2	

**Figure 9** Updated USB License Key Information

Developer's releases are available at <http://www.agilent.com/find/pctdownloads>.

This site is password protected. A unique password is provided to you with your software license e-mail.

## Step 8 - Redeem License for Wave 1 Validated Release and Contract (if ordered)

If, as a conformance tester, you plan to run pre-compiled scripts for conformance testing, you require entitlement certificates for both N6433A-1TP and N6433A-1TY or N6443A-1TP and N6443A-1TY. This entitles you to access the web and use validated conformance releases for a period of 12 months. The licensing of this entitlement is enabled via the USB license key.

### NOTE

Check the download web site (<http://www.agilent.com/find/pctdownloads>) for availability of a validated release before redeeming this license. The password for the website is shown on your entitlement certificate. You do not need to redeem your license until there is a validated release available.

---

### Check Entitlement Status

To check the current entitlement status of your USB license key, click **Start > Agilent Mobile WiMAX Test Set > N6430A Series Utilities > Read USB License Key**.

A window similar to that in Figure 10 shows the serial number of your USB license key. The serial number is also printed on the key.



Read USB License Key		
Read License		
Category	Field	Value
Serial Number		50000119
Update Date		17/12/2007
License Expiry Date		N/A(Commercial)
System	MS PCT	
	BS PCT	
	MS NCT	
Application	Developer	
	Conformance	
Contract Expiry Date	Developer Expiry date	
	Conformance Expiry date	
	NCT Expiry date	
Conformance Option	Wave1	
	Wave2	

**Figure 10** USB License Key Reader Display

### Wave 1 Validated Release License Redemption

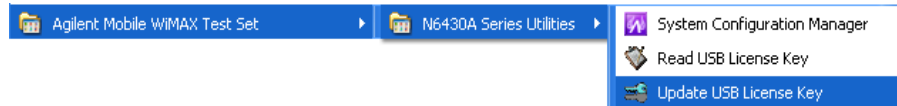
To redeem your License, proceed as follows:

- 1 Go to the following secure web site:  
**<http://www.agilent.com/find/softwarelicense>**.
- 2 Enter your order number and certificate entitlement number.
- 3 Follow the displayed instructions, entering your USB License key serial number when prompted.
- 4 On completion of this process, an E-mail with an order\_number\_identity\_number.lic attachment is sent to you. This is the license file.

#### NOTE

It is recommended that you save all license files to a convenient but secure location. Copy files to **C:\Program Files\Agilent\N6430A Series Utilities\USB License Key Utilities** only when required for updates. Remove the files from the update location afterwards.

- 5 Ensure the USB license key is inserted and click **Start > Agilent Mobile WiMAX Test Set > N6430A Series Utilities > Update USB License Key** to update your entitlement in the USB license key.



### NOTE

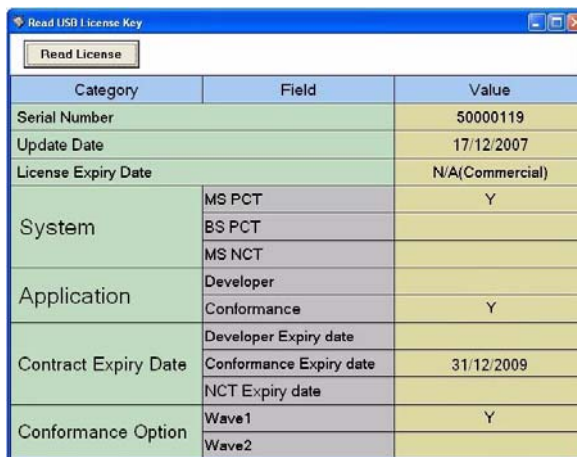
For Mobile Station test, ensure that only your N6432A License key is in the computer. No other license key should be connected. Likewise, for Base Station test ensure that only the N6442A License key is connected.

- 6 When updated, the USB License Key update window is displayed:



- 7 Click **Start > Agilent Mobile WiMAX Test Set > N6430A Series Utilities > Read USB License Key** to check that you now have entitlement to use the validated web releases. After

updating your USB key, confirm the information is similar to that shown in Figure 11.



The screenshot shows a window titled "Read USB License Key" with a "Read License" button. Below the button is a table with three columns: Category, Field, and Value. The table contains the following data:

Category	Field	Value
Serial Number		50000119
Update Date		17/12/2007
License Expiry Date		N/A(Commercial)
System	MS PCT	Y
	BS PCT	
	MS NCT	
Application	Developer	
	Conformance	Y
Contract Expiry Date	Developer Expiry date	
	Conformance Expiry date	31/12/2009
	NCT Expiry date	
Conformance Option	Wave1	Y
	Wave2	

**Figure 11** Updated License Information

Wave 1 Conformance releases are available at <http://www.agilent.com/find/pctdownloads>.

This site is password protected. A unique password is provided to you with your software license e-mail.

## Step 9a - Redeem License for NCT Test Adaptor (if ordered)

The licensing of the NCT Tets Adaptor is enabled via the USB license key.

### NOTE

Check the download web site (<http://www.agilent.com/find/pctdownloads>) for availability of a validated release before redeeming this license. The password for the website is shown on your entitlement certificate. You do not need to redeem your license until there is a validated release available.

### Check Entitlement Status

To check the current entitlement status of your USB license key, click **Start > Agilent Mobile WiMAX Test Set > N6430A Series Utilities > Read USB License Key**.

A window similar to that in [Figure 12](#) shows the serial number of you USB license key. The serial number is also printed on the key.



Read USB License Key		
Read License		
Category	Field	Value
Serial Number		50000119
Update Date		17/12/2007
License Expiry Date		N/A(Commercial)
System	MS PCT	
	BS PCT	
	MS NCT	
Application	Developer	
	Conformance	
Contract Expiry Date	Developer Expiry date	
	Conformance Expiry date	
	NCT Expiry date	
Conformance Option	Wave1	
	Wave2	

**Figure 12** USB License Key Reader Display



## License Redemption

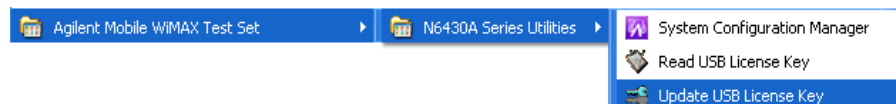
To redeem your License, proceed as follows:

- 1 Go to the following secure web site:  
**<http://www.agilent.com/find/softwarelicense>**.
- 2 Enter your order number and certificate entitlement number.
- 3 Follow the displayed instructions, entering your USB License key serial number when prompted.
- 4 On completion of this process, an E-mail with an order\_number\_identity\_number.lic attachment is sent to you. This is the license file.

### NOTE

It is recommended that you save all license files to a convenient but secure location. Copy files to **C:\Program Files\Agilent\N6430A Series Utilities\USB License Key Utilities** only when required for updates. Remove the files from the update location afterwards.

- 5 Ensure the USB license key is inserted and click **Start > Agilent Mobile WiMAX Test Set > N6430A Series Utilities > Update USB License Key** to update your entitlement in the USB license key.



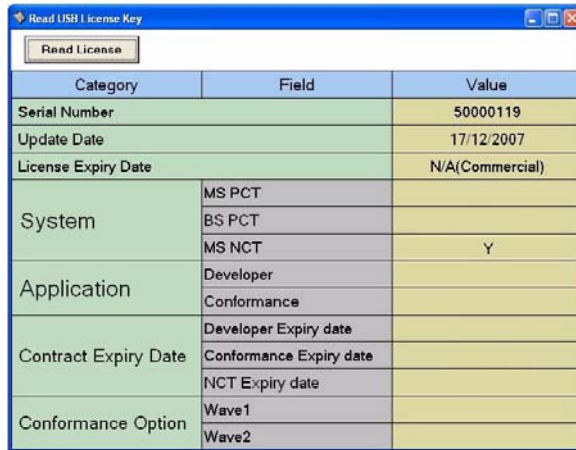
### NOTE

For Mobile Station test, ensure that only your N6432A License key is in the computer. No other license key should be connected. Likewise, for Base Station test ensure that only the N6442A License key is connected.

- 6 When updated, the USB License Key update window is displayed:



- 7 Click **Start > Agilent Mobile WiMAX Test Set > N6430A Series Utilities > Read USB License Key** to check that you now have entitlement to use the validated web releases. After updating your USB key, confirm the information is similar to that shown in [Figure 13](#).



The screenshot shows a window titled "Read USB License Key" with a "Read License" button. Below the button is a table with three columns: "Category", "Field", and "Value".

Category	Field	Value
Serial Number		50000119
Update Date		17/12/2007
License Expiry Date		N/A(Commercial)
System	MS PCT	
	BS PCT	
	MS NCT	Y
Application	Developer	
	Conformance	
Contract Expiry Date	Developer Expiry date	
	Conformance Expiry date	
	NCT Expiry date	
Conformance Option	Wave1	
	Wave2	

**Figure 13** Updated License Information

## Step 9b - Redeem License for NCT Contract (if ordered)

Again, you require one of the following license redemption certificates for a software and technical support contract: 3mth:N6434A-1T3; 6mth:1T6; 1yr:1TY; 2yr:2SY; 3yr:3SY.

### NOTE

Check the download web site (<http://www.agilent.com/find/pctdownloads>) for availability of a validated release before redeeming this license. The password for the website is shown on your entitlement certificate. You do not need to redeem your license until there is a validated release available.

### Check Entitlement Status

To check the current entitlement status of your USB license key, click **Start > Agilent Mobile WiMAX Test Set > N6430A Series Utilities > Read USB License Key**.

A window similar to that in [Figure 14](#) shows the serial number of you USB license key. The serial number is also printed on the key.



Category	Field	Value
Serial Number		50000119
Update Date		17/12/2007
License Expiry Date		N/A(Commercial)
System	MS PCT	
	BS PCT	
	MS NCT	
Application	Developer	
	Conformance	
Contract Expiry Date	Developer Expiry date	
	Conformance Expiry date	
	NCT Expiry date	
Conformance Option	Wave1	
	Wave2	

**Figure 14** USB License Key Reader Display

### Wave 1 Validated Release License Redemption

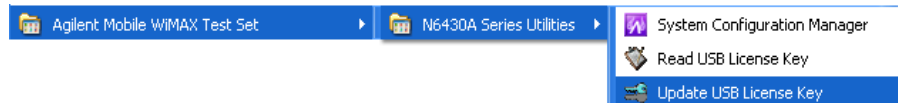
To redeem your License, proceed as follows:

- 1 Go to the following secure web site:  
**<http://www.agilent.com/find/softwarelicense>**.
- 2 Enter your order number and certificate entitlement number.
- 3 Follow the displayed instructions, entering your USB License key serial number when prompted.
- 4 On completion of this process, an E-mail with an order\_number\_identity\_number.lic attachment is sent to you. This is the license file.

**NOTE**

It is recommended that you save all license files to a convenient but secure location. Copy files to **C:\Program Files\Agilent\N6430A Series Utilities\USB License Key Utilities** only when required for updates. Remove the files from the update location afterwards.

- 5 Ensure the USB license key is inserted and click **Start > Agilent Mobile WiMAX Test Set > N6430A Series Utilities > Update USB License Key** to update your entitlement in the USB license key.



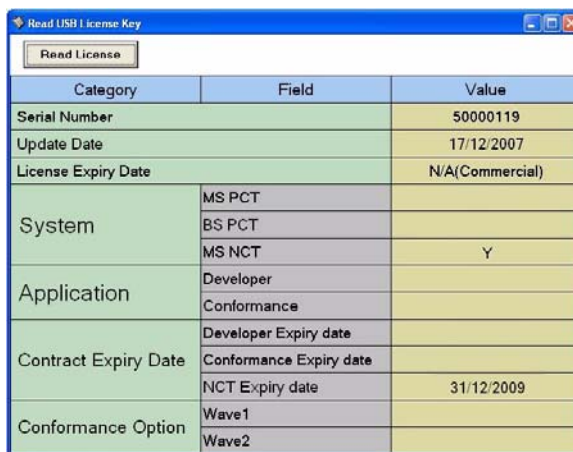
**NOTE**

For Mobile Station test, ensure that only your N6432A License key is in the computer. No other license key should be connected. Likewise, for Base Station test ensure that only the N6442A License key is connected.

- 6 When updated, the USB License Key update window is displayed:



- 7 Click **Start > Agilent Mobile WiMAX Test Set > N6430A Series Utilities > Read USB License Key** to check that you now have entitlement to use the validated web releases. After updating your USB key, confirm the information is similar to that shown in [Figure 15](#).



The screenshot shows a window titled "Read USB License Key" with a "Read License" button. Below the button is a table with three columns: "Category", "Field", and "Value".

Category	Field	Value
Serial Number		50000119
Update Date		17/12/2007
License Expiry Date		N/A(Commercial)
System	MS PCT	
	BS PCT	
	MS NCT	Y
Application	Developer	
	Conformance	
Contract Expiry Date	Developer Expiry date	
	Conformance Expiry date	
	NCT Expiry date	31/12/2009
Conformance Option	Wave1	
	Wave2	

**Figure 15** Updated License Information

## Step 10 - E6651A Test Set Firmware

The E6651A WiMAX Test Set must have a version of firmware installed that supports the N6430A Series applications for both Base and Mobile Station test. Additionally, firmware updates may be essential to meet the requirements of new scripts released in the N6432A/N6442A software updates.

### NOTE

You should always check the required configuration of software and firmware by referring to the supported configurations matrix linked from the pct-downloads website for each N6430A series application.

### Mobile Station and Base Station test require different firmware

The E6651A WiMAX Test Set is normally configured in Base Station Emulation mode for mobile station test using the N6432A/N6433A/N6434A test adapters.

For Base Station test with the N6442A/N6443A adapters the Test Set must have the E6653A Mobile Station Emulation firmware installed and enabled.

### Mobile Station PCT/NCT Test

### Test Set firmware for N6432A/N6433A/N6434A Test Adaptors

To check the version of the firmware installed on your E6651A, proceed as follows:

- 1 Ensure the Test Set has completed its start up sequence and the WiMAX Application has started.
- 2 Check the version - it is displayed in the Firmware and Profile bar at the base of the display.

E6651A Firmware version later than 5.1.0.11 or 6.3.1.0 is required to support the N6430A Series software.

### Download Firmware (if required)

Please ensure that you check the N6430A Series release notes at [www.agilent.com/find/pctdownloads](http://www.agilent.com/find/pctdownloads) for information about E6651A Test Set firmware requirements. Downloads are available from the same website, [www.agilent.com/find/pctdownloads](http://www.agilent.com/find/pctdownloads).

#### Base Station Test

### Test Set firmware for N6442A/N6443A Test Adaptors

To enable Mobile Station Emulation, an E6653A-1FP license must be redeemed and installed in the E6651A Test Set. E6653A Mobile Station Emulation firmware must also be installed in the Test Set and enabled.

### E6653A-1FP License Redemption

To redeem your License, proceed as follows:

- 1 Go to the following secure web site:  
<http://www.agilent.com/find/softwarelicense>.
- 2 Enter your order number and certificate entitlement number.
- 3 Follow the displayed instructions, entering your E6651A serial number when prompted. The serial number can be found on the rear panel label or from the Service Screen on firmware versions 5.3.1.0 or 6.3.1.0 or later.
- 4 On completion of this process, an E-mail with an order\_number\_identity\_number.lic attachment is sent to you. This is the license file.

#### NOTE

It is recommended that you save all license files to a convenient but secure location.

### E6653A-1FP License Installation

To install the License in the E6651A proceed as follows:

- 1 On a USB flash memory stick, create a folder called **setup.inno** as the root directory.
- 2 Copy the license file to the **setup.inno** folder on the memory stick.
- 3 In the **setup.inno** folder, rename the license file as **license.lic**.
- 4 Ensure you have E6651A firmware version 5.3.3.0, 6.3.3.0, or later installed in your E6651A Test Set. (Refer to [step 2 on page 46](#).)
- 5 Insert the memory stick into one of the USB ports on your E6651A.
- 6 On the E6651A, press the **System** key followed by the **Service** key and select **Update License** from the softkey menu. Navigating to a second page of softkeys in the **System** menu may be required to access the **Service** key.
- 7 Wait approximately 10 seconds for the license to be installed successfully before installing the E6653A Mobile Station emulation firmware.

### E6653A Mobile Station Emulation Firmware Installation

Install the E6653A firmware as follows:

- 1 Go to the following secure web site:  
<http://www.agilent.com/find/pctdownloads> and select **Other Software Updates**.
- 2 Use the access code supplied in the e-mails received from “N6432A, N6433A, N6434A, N6442A, and N6443A License Redemption” to access the downloads page.
- 3 Download required version of E6653A firmware. Refer to the supported configuration matrix document on the N6442A download site.
- 4 When the download is complete, browse to the “E6651A Software update procedure” located in the **Other Information**



**and Support** section of the <http://www.agilent.com/find/pctdownloads> website to find the procedure to install the E6653A in the E6651A Test Set.

**NOTE**

Before proceeding, please ensure you have your USB license key and redeemed license details available.

---

## Step 11 - Connecting the System

For operation with the N6430A Series applications the E6651A and application host computer must be connected via an Ethernet hub or switch.

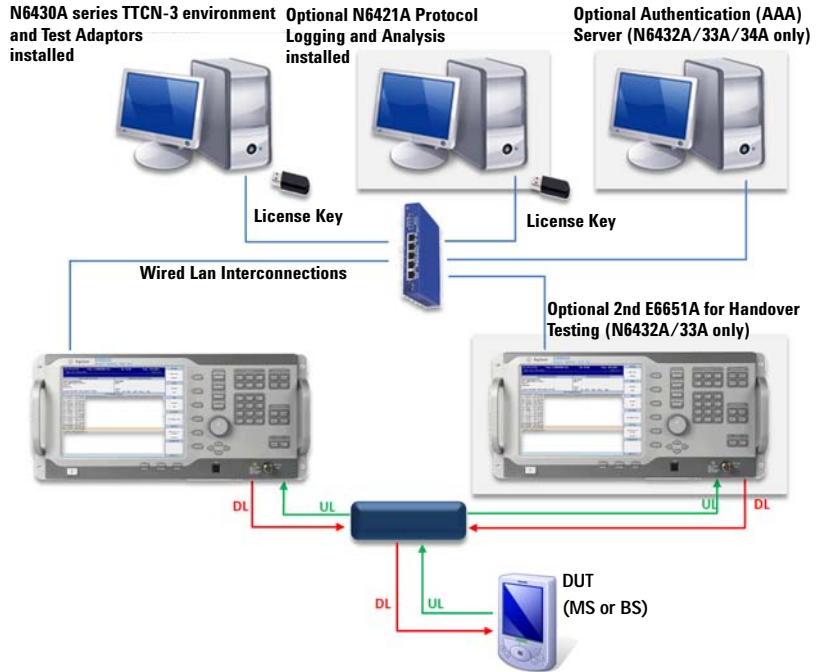


Figure 16 Example Interconnection

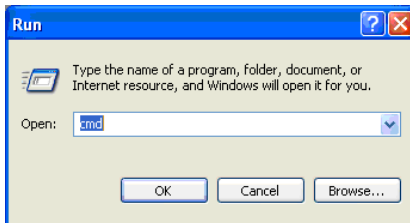
## Procedure

Before connecting the set-up, check and configure the IP address of your computer. Settings are required as follows:

- IP Address: **10.253.18.111**
- Subnet mask: **255.255.0.0**

You can check the IP address details on your PC by opening a command window.

1 Click **Start > Run** and enter **cmd** at the prompt.



**Figure 17** Run Window

2 In the command window, enter: **ipconfig**

```

C:\WINDOWS\system32\cmd.exe
C:\>ipconfig

Windows IP Configuration

Ethernet adapter Wireless Network Connection:

    Media State . . . . . : Media disconnected
Ethernet adapter Local Area Connection:

    Connection-specific DNS Suffix  . : 
    IP Address . . . . . : 10.253.18.111
    Subnet Mask . . . . . : 255.255.0.0
    Default Gateway . . . . . : 

Ethernet adapter {8BC0BE43-0A27-4406-AA9E-6467AF78CEDA}:

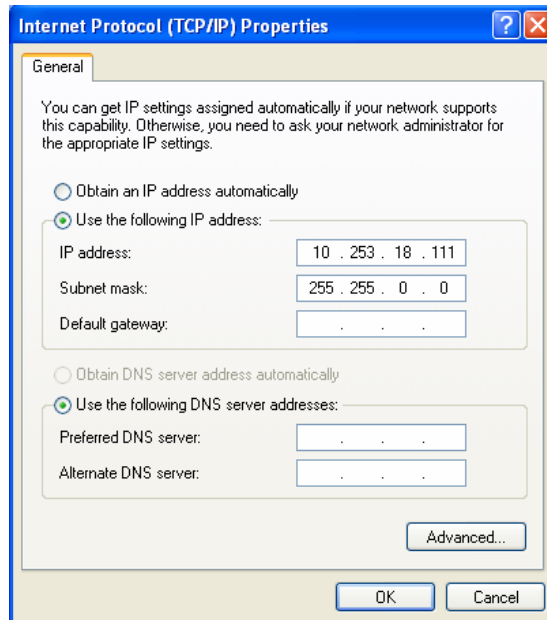
    Connection-specific DNS Suffix  . : 
    IP Address . . . . . : 0.0.0.0
    Subnet Mask . . . . . : 0.0.0.0
    Default Gateway . . . . . : 

C:\>

```

**Figure 18** IP Address and Subnet Mask Check

- 3 If the IP settings are not as defined at the beginning of the procedure, change them by clicking **Start > Control Panel > Network Connections**.
- 4 Right click on your **Local Area Connection** and select **Properties**.
- 5 Scroll down to find and click to highlight **Internet protocol (TCP/IP)**
- 6 Click the **Properties** button.
- 7 Check “**Use the following IP address**” and enter the numbers shown in [Figure 18](#).



**Figure 19** IP Address and Subnet Mask Entry

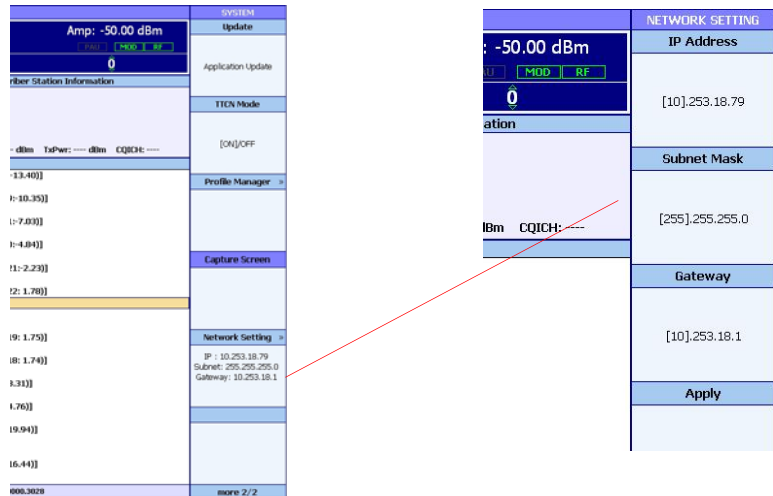
- 8 Connect the E6651A to your PC using [Figure 16](#) on page 50 for guidance.

### NOTE

Note this must be done to set the IP address in the E6651A.

### E6651A Test Set LAN Settings

9 Check the IP address on your E6651A by pressing **System, More 2/2**. The IP address and subnet mask values are displayed in the **Network Setting** field.



**Figure 20** Test Set IP Address and Subnet Mask

10 The following LAN settings are required:

- **IP Address - 10.253.18.79**
- **Subnet mask - 255.255.0.0**
- **Target BSE for Handover Testing Address-10.253.18.179**  
(for N6432A/33A only)

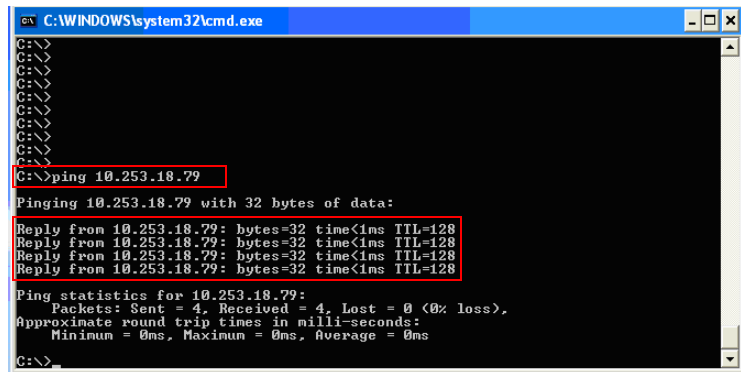
11 If you need to change the settings, proceed as follows:

- a Press the **Network Setting** softkey.
- b Press the softkey associated with the parameter you need to change.
- c Use the **numeric keys** to enter the required value and press **Enter**.
- d Use the **Arrow** keys to select the next value to be changed and repeat the previous steps.
- e When you have configured all the settings press **Apply**.

### Check the Connection

- 12 Check the connection by opening a command prompt window on the computer connected to the E6651A Test Set - click **Start > Run** and type **cmd** into the **Run Window**.
- 13 Enter **ping 10.253.18.79** at the command prompt (and **ping 10.253.18.179** for the second E6651A if required).

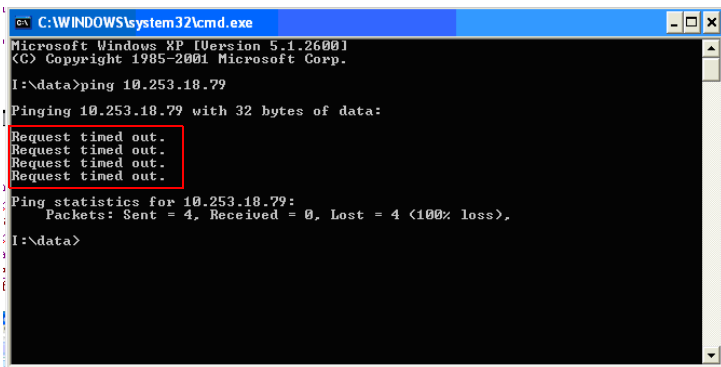
Confirm lines displayed starting with the text **-Reply from 10.253.18.79** as shown in [Figure 21](#). Your computer and E6651A's network settings have been configured correctly and your computer can transfer packets to the E6651A successfully.



```
C:\WINDOWS\system32\cmd.exe
C:\>
C:\>
C:\>
C:\>
C:\>
C:\>
C:\>
C:\>
C:\>
C:\>ping 10.253.18.79
Pinging 10.253.18.79 with 32 bytes of data:
Reply from 10.253.18.79: bytes=32 time<1ms TTL=128
Reply from 10.253.18.79: bytes=32 time<1ms TTL=128
Reply from 10.253.18.79: bytes=32 time<1ms TTL=128
Reply from 10.253.18.79: bytes=32 time<1ms TTL=128
Ping statistics for 10.253.18.79:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 0ms, Average = 0ms
C:\>
```

**Figure 21** Successful Ping Command and Return

If the computer and Test Set LAN configurations are incorrect, the Ping command results in a time out.



```
C:\WINDOWS\system32\cmd.exe
Microsoft Windows XP [Version 5.1.2600]
(C) Copyright 1985-2001 Microsoft Corp.

I:\data>ping 10.253.18.79
Pinging 10.253.18.79 with 32 bytes of data:
Request timed out.
Request timed out.
Request timed out.
Request timed out.

Ping statistics for 10.253.18.79:
    Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),

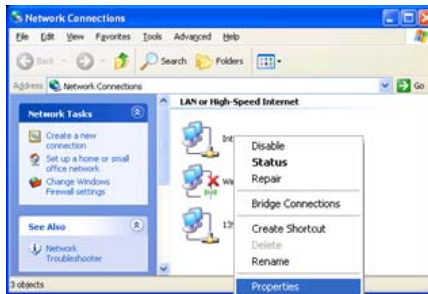
I:\data>
```

**Figure 22** Ping Time-out

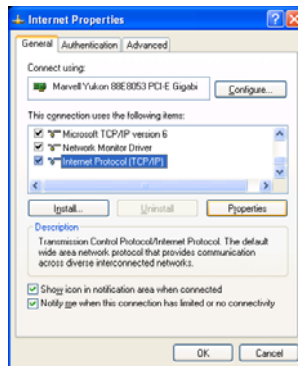
## Step 12 - Integrating the N6421A Protocol Logging and Analysis Application

### System Configuration Manager

- 1 On the N6421A installation computer, click **Control Panel > Network Connections**.

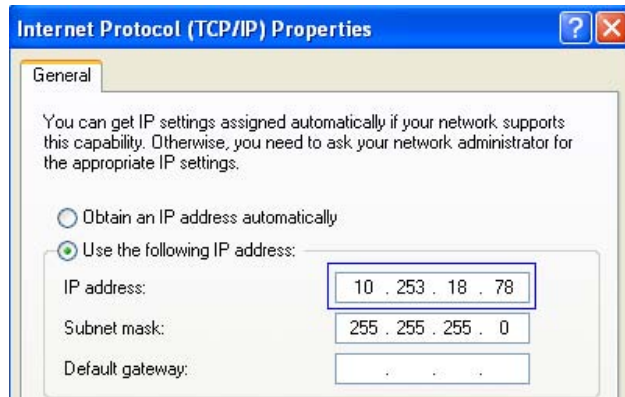


- 2 Right-click the required connection to display the Properties.

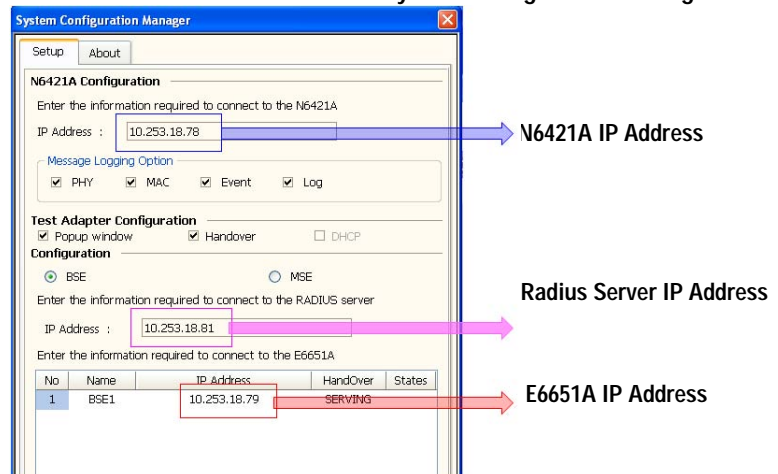




**3** Highlight **Internet Protocol (TCP/IP)** and click **Properties**.



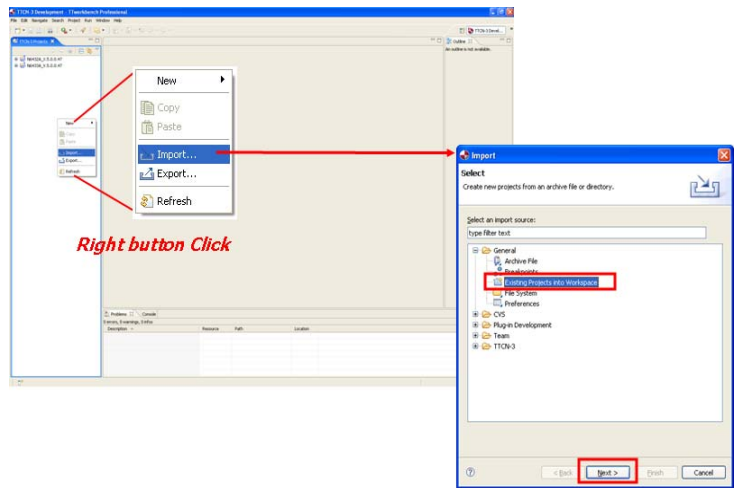
**4** On the N6430A Series installation computer click **Start > All Programs > Agilent Mobile WiMAX Test Set > N6430A Series Utilities > System Configuration Manager** to open the following window. Ensure the IP address displayed in [step 3](#) matches the N6421A IP address on System Configuration Manager.



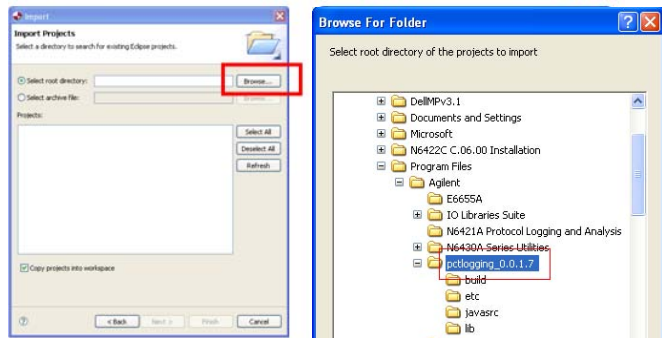
**5** Open the N6421A Protocol Logging application and click **File, Port Open**. Double click to edit the IP Address if it is incorrect.

### Import PCT Message Logging into the TTCN-3 Environment

- 1 In the TTCN-3 Workbench application right-click in the TTCN-3 Projects window, select **Import...** and select **Existing Projects into Workspace**.

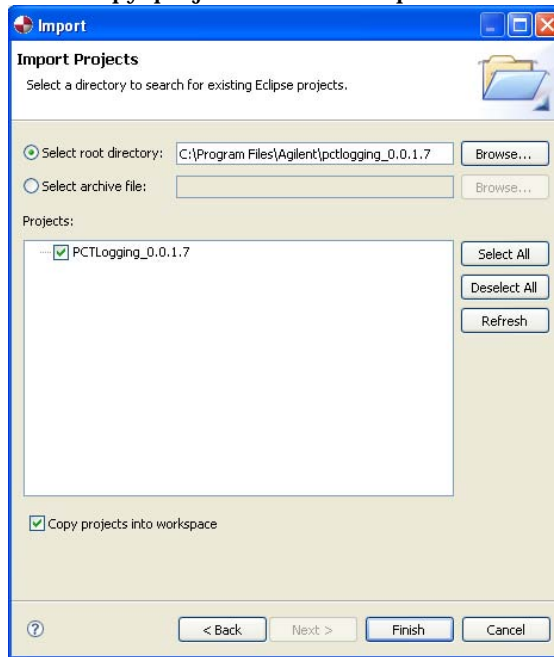


- 2 Click on **Next**, then **Browse** to open the Browse window.

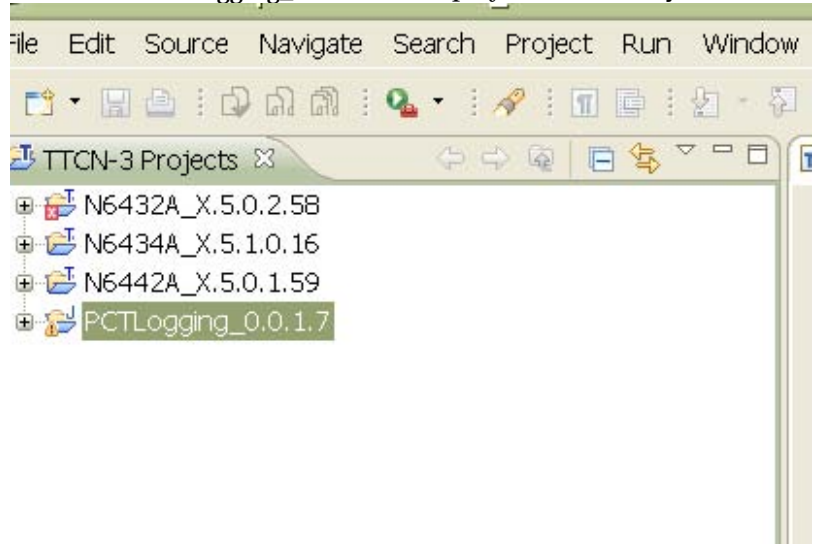


- 3 Locate and highlight the latest PCT Logging plugin directory. (Default **C:\Program Files\Agilent\PCTLogging\_0.0.1.7**). Click **OK**.

- 4 Confirm the path has been selected in **Import Projects** window, tick "Copy projects into workspace" checkbox, then click **Finish**.

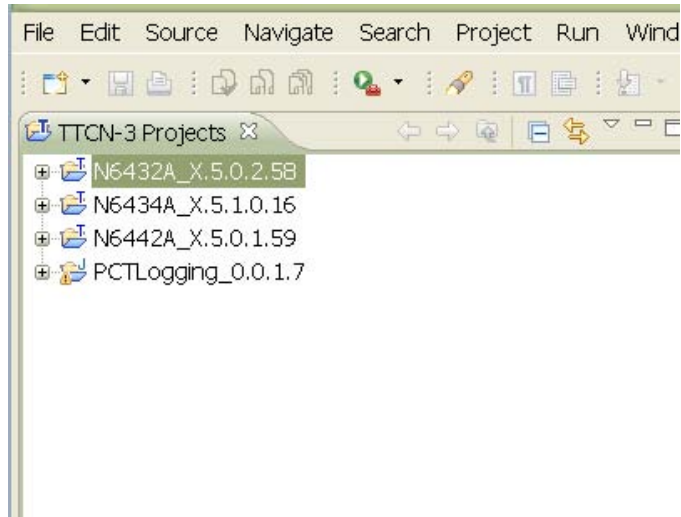


- 5 Confirm **PCTLogging\_0.0.1.7** is displayed in the **Projects** list.

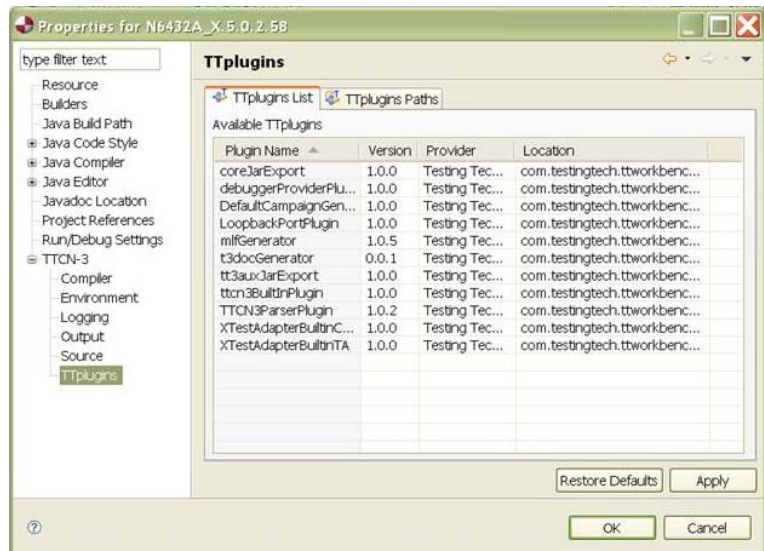


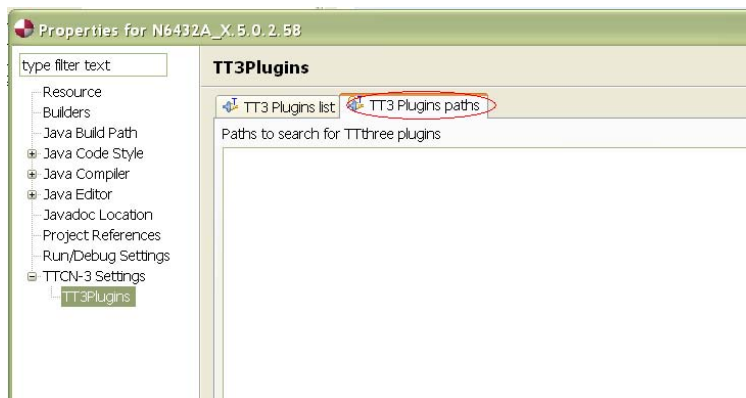
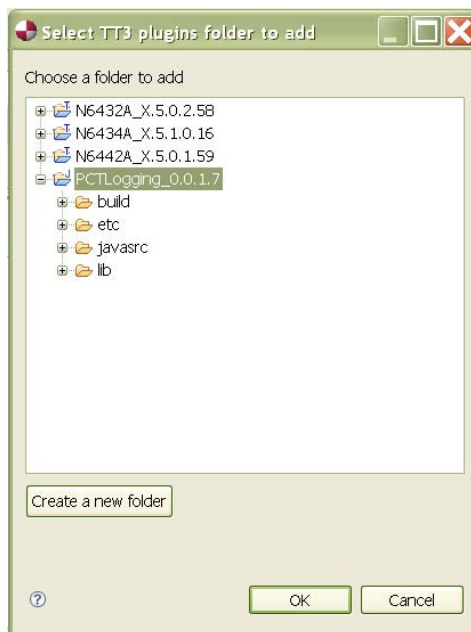
Add the PCT Logging plug-in to your project.

- 6 Highlight the required project in the Projects list. Right click and scroll to **Properties**.

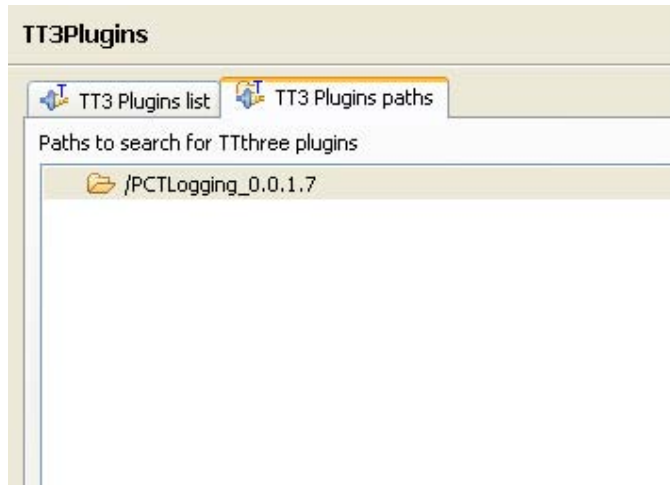


- 7 In the **Properties** window, highlight **TTCN-3** and select **TT3 plugins** on the left side folder tree.

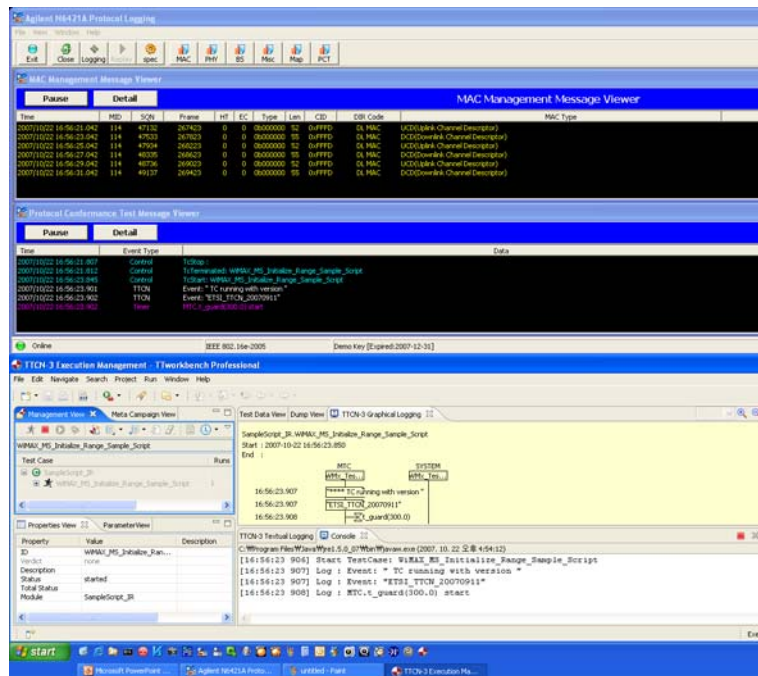


**8 Select the TT3 Plugins paths tab.****9 Click Add Folder..., select PCTLogging\_0.0.1.7 and click OK.**

10 Confirm the PCT Logging folder is displayed and click **OK**.

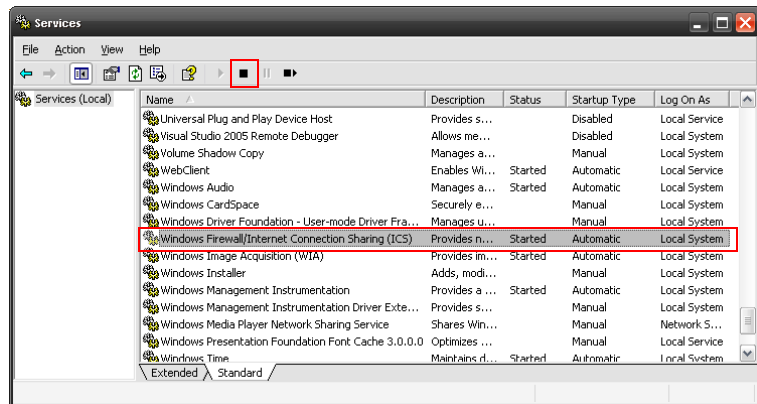


11 Confirm the PCT Logging operates correctly. Open N6421A and select "PCT" view. Execute a PCT or NCT test case and check that the PCT view in N6421A shows logging from TTworkbench.



## Final Steps


- 12 The Firewall in your computer must be disabled. You can do this by pressing:  
**Start > Control Panel > Administrative Tools > Services** to display the **Services** window.



- 13 Select **Windows Firewall/Internet Connection Sharing** and click the **Stop** button in the Tool Bar.

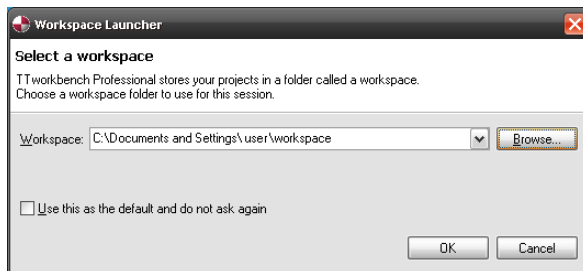
## Step 13 - Start and Configure the Workbench Application

To check your installation, start and configure the TT Workbench application, proceed as follows:

- 1 Insert your N6432A or N6442A USB License Key in your computer.
- 1 Double click the TTworkbench icon  on your desktop.
- 2 The TTworkbench **Workspace Launcher** window asks you for a path to use as the workspace folder.

### NOTE

The workspace folder is used by the Workbench application. It is recommended that you create folders for each test adapter release, for example N6432A\_X.5.0.2.57.



**Figure 23** Workspace Launcher

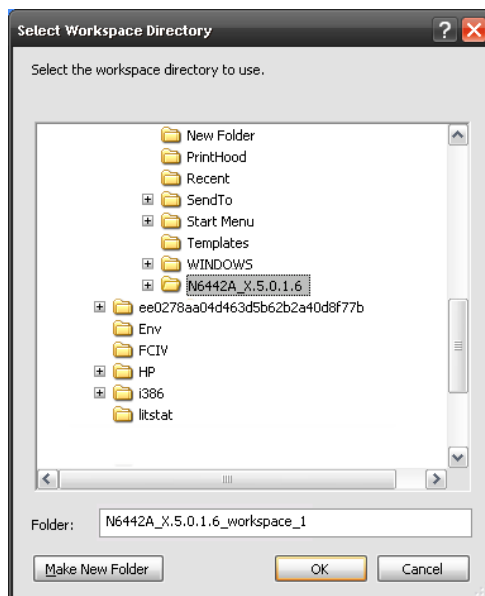
- 3 Click **Browse...** to open the Select Workspace Directory window.
- 4 Navigate to and highlight **C:\Documents and Settings\\workspace** and click **Make New Folder**
- 5 Enter the required folder name, for example: **N6432A\_X.5.0.2.57**



**CAUTION**

Attention is required when creating workspace folders. It is strongly recommended that you use the paths and folders shown in this procedure. **DO NOT** select the installation folders of the test adaptors as the workspace.

---



**Figure 24** Adding a New Workspace Folder Example

6 Click OK to continue.

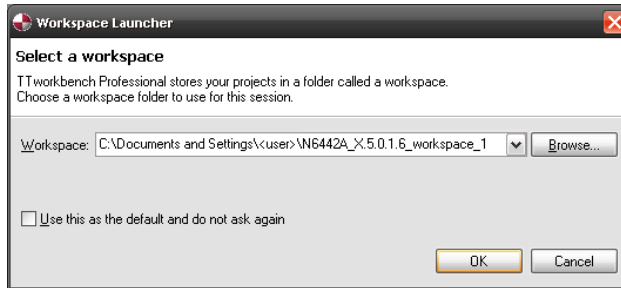


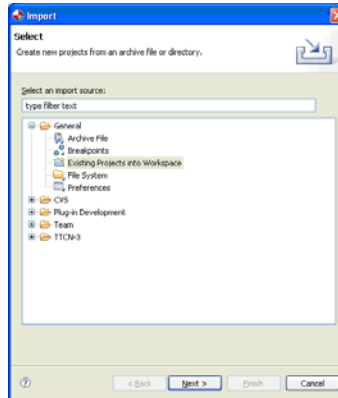
Figure 25 New Workspace Selected

7 The TTworkbench application starts and displays a welcome screen.



Figure 26 Wokbench Welcome Window

- 8 Click on **File > Import > General** (double-click to expand this icon) > **Existing Projects into Workspace > Next**.



### For N6432A/N6433A PCT Mobile Station protocol test

- 1 Browse to find the directory for installed release. For example, the N6432A:- **c:\Program Files\Agilent\WiMAX MS Protocol Test\N6432A Development Releases \N6432A\_X.5.0.2.59** (Note this is not the TestingTech Workbench workspace directory, but the location of the N6432A software when installed in [“Step 4 - Installing N6432A PCT Mobile Station Test Adaptor \(if ordered\)”](#) on page 25).
- 2 Check **Copy projects into workspace**.
- 3 Click **Finish**.

### For N6434A NCT Mobile Station protocol test

- 1 Browse to find the directory for installed release. For example, the N6434A:- **c:\Program Files\Agilent\WiMAX MS Network Test\N6434A Releases \N6434A\_X.5.1.0.18** (Note this is not the TestingTech Workbench workspace directory, but the location of the N6434A software when installed in [“Step 5 - Installing N6434A NCT Mobile Station Test Adaptor \(if ordered\)”](#) on page 28).
- 2 Check **Copy projects into workspace**.
- 3 Click **Finish**.

### For N6442A/N6443A PCT Base Station protocol test

- 1 Browse to find the directory for installed release. For example, the N6442A:- **c:\Program Files\Agilent\WiMAX BS Protocol Test\N6442A Development Releases \N6442A\_A.5.0.1.64**  
(Note this is not the TT workspace directory, but the location of the N6442A software when installed in “[Step 6 - Installing N6442A PCT Base Station Test Adaptor \(if ordered\)](#)” on page 30).
- 2 Check **Copy projects into workspace**.
- 3 Click **Finish**.

### Connect to the DUT

Prior to running the test case, you should connect your DUT to the E6651A Test Set and ensure you complete the following:

- 1 Load the correct profile for your DUT (The profile manager is located under the Test Set **system** menu).
- 2 Establish an RF connection between your DUT and the Test Set.
- 3 Turn both the RF power and modulation ON.

**Base Station Test Only**

- 4 For N6442A and N6443A Base Station test only:
  - a Ensure that the Base Station under test is operating
  - b Press **Frequency** and adjust the frequency of the E6651A Test Set to match the frequency of the BS under test
  - c Press **Mode > Mobile Station Emulator**
  - d Press **Emulator Start**
  - e Press **Amplitude** and adjust the Test Set source amplitude to be within range of the input power level requirements of the BS under test
  - f Adjust the receiver attenuation until the “**SYNC**” field displays “**3**” and the “**Frame Error**” field shows “**0**”

E6651A Mobile WPMAX Test Set		SYSTEM																
MS EMULATOR Freq: 3.520000000 GHz Att: 30 dB Amp: -40.00 dBm		Test Mode																
Attenuation 30 dB		SA/SC/ [SA+SC]																
<table border="1"> <thead> <tr> <th>Subscriber Station Information</th> <th>Base Station Information</th> </tr> </thead> <tbody> <tr> <td>Counter: 63423</td> <td>UL QUEUE : HD, TD, CD, R:1024, B:1024</td> </tr> <tr> <td>SWR: 3 ( FREQ: 2 PSEB: 0 )</td> <td>DL QUEUE : H2:546, T2:546, C0, R0:192, B0:192</td> </tr> <tr> <td>TIME-DL3, UL1, FC1, EC2:1, TT:1</td> <td>DL Burst Loss Count : 215</td> </tr> <tr> <td>Frame Number: 13097059</td> <td>Freq. Offset : -45B</td> </tr> <tr> <td>Frame Error: 0 ( FCH: 0, DLMAP: 0, ULMAP: 0, UNLOCK: 0 )</td> <td>STATE : Ready</td> </tr> <tr> <td>PRF: 0.0000%</td> <td>CINR : 28.83 dB RSSI : -23.05 dBm</td> </tr> <tr> <td>SYSTEM:THR 29173, Fpga1:200, Dsp1:200, Dsp2:200, LT:1(ms)</td> <td></td> </tr> </tbody> </table>		Subscriber Station Information	Base Station Information	Counter: 63423	UL QUEUE : HD, TD, CD, R:1024, B:1024	SWR: 3 ( FREQ: 2 PSEB: 0 )	DL QUEUE : H2:546, T2:546, C0, R0:192, B0:192	TIME-DL3, UL1, FC1, EC2:1, TT:1	DL Burst Loss Count : 215	Frame Number: 13097059	Freq. Offset : -45B	Frame Error: 0 ( FCH: 0, DLMAP: 0, ULMAP: 0, UNLOCK: 0 )	STATE : Ready	PRF: 0.0000%	CINR : 28.83 dB RSSI : -23.05 dBm	SYSTEM:THR 29173, Fpga1:200, Dsp1:200, Dsp2:200, LT:1(ms)		Clock Source
Subscriber Station Information	Base Station Information																	
Counter: 63423	UL QUEUE : HD, TD, CD, R:1024, B:1024																	
SWR: 3 ( FREQ: 2 PSEB: 0 )	DL QUEUE : H2:546, T2:546, C0, R0:192, B0:192																	
TIME-DL3, UL1, FC1, EC2:1, TT:1	DL Burst Loss Count : 215																	
Frame Number: 13097059	Freq. Offset : -45B																	
Frame Error: 0 ( FCH: 0, DLMAP: 0, ULMAP: 0, UNLOCK: 0 )	STATE : Ready																	
PRF: 0.0000%	CINR : 28.83 dB RSSI : -23.05 dBm																	
SYSTEM:THR 29173, Fpga1:200, Dsp1:200, Dsp2:200, LT:1(ms)																		
MAC Message Process		[Int]/Ext																
23:59:25.107 INDC7:SEE :: << DCI-MSG :: CID: FFD :: (BSID: 313131303135, TIG: 206, RIG: 160, FREQ: 3520000)		Trigger																
23:59:25.107 INDC7:SEE :: << DCI-MSG :: CID: FFD :: (IM: 16, PRD: 16, PWR: 16, MO: 16, PE: 2)																		
		Capture Screen																
		RF Config																
		Ext. Trigger																
E6651A ver. 6.0.0.53 [ MSE: 10942 ] s: C520.0631.2641-0932.3540.0957		more 2/3																

- g If desired, verify correct RF parameters by pressing **Mode > Mobile Station Emulator > Emulator Connect** to perform network entry
- h Press **Mode > Mobile Station Emulator > Emulator Disconnect**

**Both MS and BS Test**

- 5 For both MS and BS Test, turn TTCN mode ON (located under the Test Set **system** menu).

### For N6432A/N6433A PCT Mobile Station Test

- 1 Click the **Go to the workbench** icon.
- 2 Within the TTworkbench development perspective, expand the N6432A release directory, and then expand the ttcn3 directory.
- 3 Double click the **WMx\_SsTestcases\_16e\_3A\_10MHZ.clf** file.

#### NOTE

Use the appropriate CLF file for the profile of the IUT.

---

### For N6434A NCT Mobile Station Test

- 1 Click the **Go to the workbench** icon.
- 2 Within the TTworkbench development perspective, expand the N6434A release directory, and then expand the ttcn3 directory.
- 3 Double click the **WMx\_NCT\_Testcases\_3A\_10MHZ.clf** file.

#### NOTE

Use the appropriate CLF file for the profile of the IUT.

---

### For N6442A/N6443A PCT Base Station Test

- 1 Click the **Go to the workbench** icon.
- 2 Within the TTworkbench development perspective, expand the N6442A release directory, and then expand the ttcn3 directory.
- 3 Double click the **WMx\_BsTestcases\_16e\_3A\_10MHZ.clf**.

#### NOTE

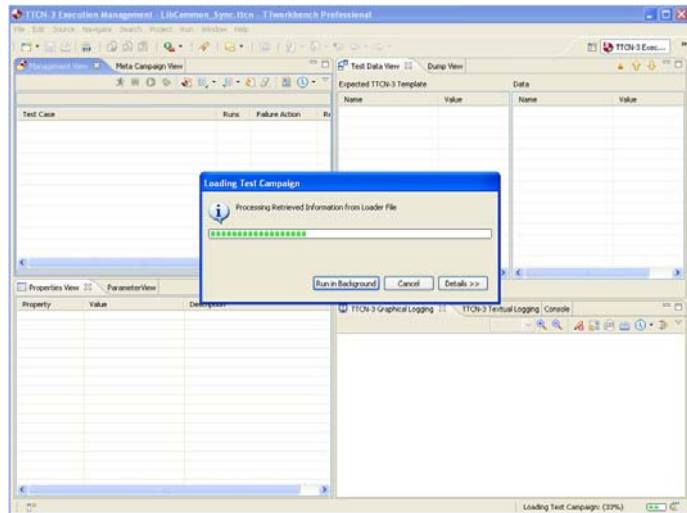
Use the appropriate CLF file for the profile of the IUT.

---

#### Both MS and BS Test

The TTworkbench application now changes to the execution pane and starts loading the test campaign (this may require a few minutes). During this process

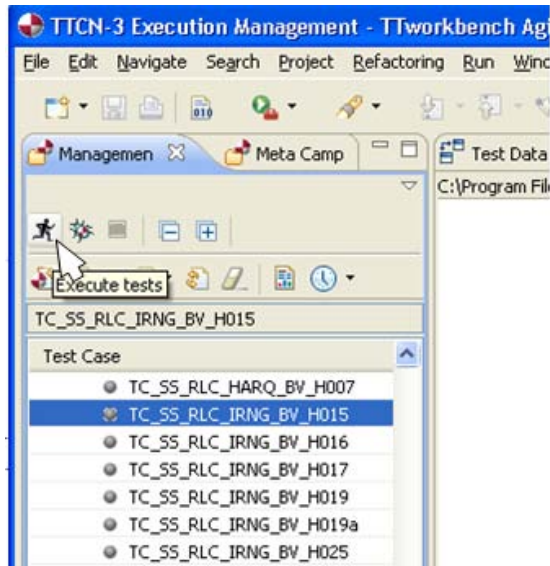
warnings are displayed if either you have failed to correctly connect with the E6651A or you have licensing issues.



When the test campaign is fully loaded it is listed in the test case window. Expand on the campaign to see the actual test cases included in the release. Each release contains the WiMAX PCT/NCT Test Cases, as well as special MEMLOAD test cases to improve real-time performance for the first execution of test cases. Run the appropriate MEMLOAD tests each time a CLF (campaign file) is loaded:

N6432A/33A	WiMAX_MS_MEM_LOAD	WiMAX_MS_MEM_LOAD_PKM
	WiMAX_MS_MEM_LOAD_HO ( if performing GHF Testcases with dual E6651A)	
N6442A	WiMAX_BS_MEM_LOAD	
N6434A	WiMAX_MS_MEM_LOAD	TC_MS_SEC_MEM_LOAD

4 You can now run one of the simple test cases. To do this, click on the **TC\_SS\_RLC\_IRNG\_BV\_H015** test case (for N6432A), **TC\_SS\_RLC\_IRNG\_BV\_H015** (for N6442A), **TC\_MS\_DHCP\_BV\_H000** (for N6434A, set MS IP settings to DHCP) then click on the script running man at the top left corner of the management view.



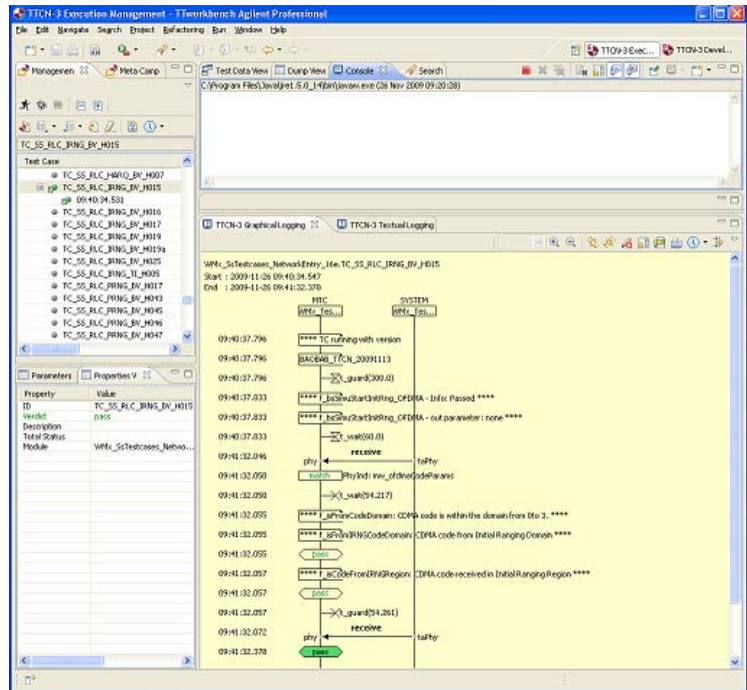
**Figure 27** Run Test

- 5 After running the script, a screen similar to that below is displayed. This shows that the script has executed, and passed, with a graphical log of the message exchange in the lower right hand corner.

Software updates for both Developer and conformance customers are available at [www.agilent.com/find/pctdownloads](http://www.agilent.com/find/pctdownloads). To access the software releases, you need to enter the password which is included in your license redemption E-mail. Each release is provided as an .exe installation file which operates in the same way as the test adaptor install described in “Step 4 - Installing N6432A PCT Mobile Station Test Adaptor (if ordered)” on page 25, or “Step 6 - Installing N6442A PCT Base Station Test Adaptor (if ordered)” on



page 30.



In addition, provided with each release is information about the TRI external functions and WiMAX TLVs (Type/Length/Value) which are supported. When you download the zip archive please extract all files into a directory on your PC. This creates a directory with all of the T3 docs and allows you to view details regarding the external functions. Winzip is the recommended tool to extract files from this release information

In addition, the web site also provides links for firmware updates, TTWorkbench downloads and downloads for the N6421A Protocol Logging and Analysis software.

## **2 Installation**



### 3 Additional Information

Responsibilities of the Customer	76
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## Responsibilities of the Customer

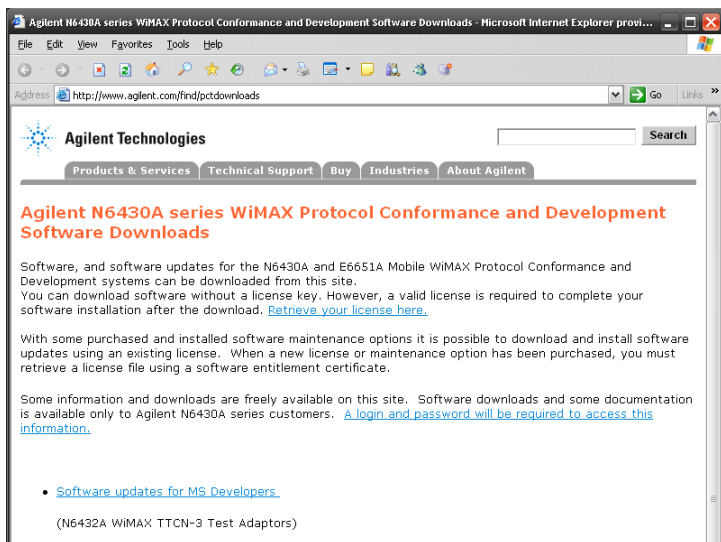
The customer shall provide:

- Access to the products during the specified periods of coverage to perform maintenance
- Adequate working space around the products for servicing by Agilent personnel.
- Access to and use of all information and facilities determined necessary by Agilent to service and/or maintain the products. (Insofar as these items may contain proprietary or classified information, the customer shall assume full responsibility for safeguarding and protection from wrongful use.)
- Routine operator maintenance and cleaning as specified in the Agilent Operating and Service Manuals.
- Consumables such as replacement fuses, etc.

## The Agilent N6430A Series Support Web Site

Refer to the Agilent N6430A Series WiMAX Protocol Conformance Test website, [www.agilent.com/find/pctdownloads](http://www.agilent.com/find/pctdownloads) for:

- License retrieval.
- Software updates.
- Installation Notes.
- Release Notes.
- E6651A Test Set firmware updates.
- Links to additional web sites such as ETSI Mantis system and the WiMAX Forum.



**Figure 28** Agilent N6430A Series website

### NOTE

Some information and downloads are freely available on this site. Software downloads and some documentation are available only to Agilent N6430A Series customers. A login and password is required to access this information. For login information please refer to the e-mail containing your license file(s).

## Agilent Sales and Service Offices

In any correspondence or telephone conversations, refer to the Test Set by its model number and full serial number. With this information, the Agilent representative can quickly determine whether your unit is still within its warranty period.

<b>UNITED STATES</b>	Agilent Technologies (tel) 1 800 829 4444
<b>CANADA</b>	Agilent Technologies Canada Inc. Test & Measurement (tel) 1 877 894 4414
<b>EUROPE</b>	Agilent Technologies Test & Measurement European Marketing Organization (tel) (31 20) 547 2000
<b>JAPAN</b>	Agilent Technologies Japan Ltd. (tel) (81) 426 56 7832 (fax) (81) 426 56 7840
<b>LATIN AMERICA</b>	Agilent Technologies Latin America Region Headquarters, USA (tel) (305) 267 4245 (fax) (305) 267 4286
<b>AUSTRALIA and NEW ZEALAND</b>	Agilent Technologies Australia Pty Ltd. (tel) 1-800 629 4852 (Australia) (fax) (61 3) 9272 0749 (Australia) (tel) 0-800 738 378 (New Zealand) (fax) (64 4) 802 6881 (New Zealand)
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