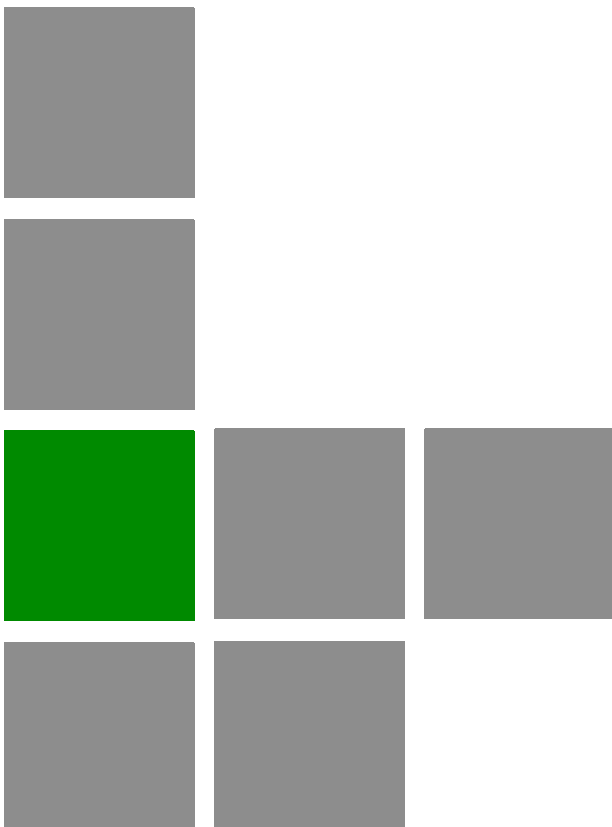


BreezeMAX[®] USB 250



User Manual

Software Version: 1.0
June 2010
P/N 215679

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Federal Communication Commission Interference Statement

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

FCC Caution: Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

IMPORTANT NOTE: FCC Radiation Exposure Statement

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. End users must follow the specific operating instructions for satisfying RF exposure compliance. To maintain compliance with FCC RF exposure compliance requirements, please follow operation instruction as documented in this manual.

This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

SAR compliance has been established in typical laptop computer(s) with USB slot, and product could be used in typical laptop computer with USB slot. Other

application like handheld PC or similar device has not been verified and may not compliance with related RF exposure rule and such use shall be prohibited.

The availability of some specific channels and/or operational frequency bands are country dependent and are firmware programmed at the factory to match the intended destination. The firmware setting is not accessible by the end user.

Industry Canada statement

This device complies with RSS-210 of the Industry Canada Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

IMPORTANT NOTE: Radiation Exposure Statement

This equipment complies with Canada radiation exposure limits set forth for an uncontrolled environment. End users must follow the specific operating instructions for satisfying RF exposure compliance. To maintain compliance with Canada RF exposure compliance requirements, please follow operation instruction as documented in this manual.

This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

Disposal of Electronic and Electrical Waste



Disposal of Electronic and Electrical Waste

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1. About BreezeMAX USB250

The BreezeMAX USB 250 device supports IEEE 802.16e-2005 state of the art Scalable OFDMA based Technology. BreezeMAX USB250 operates on 2.3, 2.5 and 3.5 GHz frequency licensed band. It provides users a seamless broadband wireless access, video streaming at home, office or on the move. To protect information transmitting through wireless network, standard security Sublayer PKMv2 EAP based user authorization/authentication and AES for data encryption are supported.

An easy-to-use Windows-based utility provides the graphic user interface for system/link status, configuration and firmware updates.

1.1 BreezeMAX USB250 Hardware

The BreezeMAX USB250 hardware consists of a USB modem, a USB connector adapter, and Quick Installation Guide.

The following figure shows the BreezeMAX USB250.

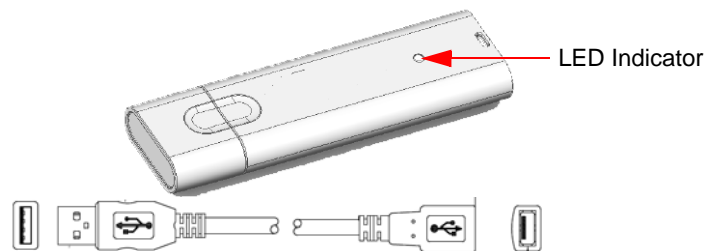


Figure 1: BreezeMAX USB250 Unit and Adapter

1.2 Specifications

1.2.1 Hardware Specifications

System	
CPU	BCSM250, Wave 2
Flash ROM	16MB
Network Interface	
USB	2.0
WiMAX Port	Two Printed Antennas

Standards	
Wireless	IEEE 802.16e-2005
I/O	
DC Power input port	DC +5.0V
LED indicator	WiMAX Link Status

1.2.2 Wireless Specifications

Model	2.3 GHz	2.5 GHz	3.5 GHz
Operating Frequencies	2.302 ~ 2.397 GHz	2.483 ~ 2.687 GHz	3.302~3.597 GHz
Channel Bandwidth	5/10 MHz	5/10 MHz	5/7/10MHz
TX Output Power	<ul style="list-style-type: none"> ■ @25°C: +23 dBm (typical), 16QAM 3/4 with EVM -24dB / FCC spectrum mask ■ @0/40°C: +23 dBm (typical), 16QAM 3/4 with EVM -24dB / FCC spectrum mask 	<ul style="list-style-type: none"> ■ @25°C: +23 dBm (typical), 16QAM 3/4 with EVM -24dB / FCC spectrum mask ■ @0/40°C: +20 dBm (typical), 16QAM 3/4 with EVM -24dB / FCC spectrum mask 	<ul style="list-style-type: none"> ■ @25°C: +23 dBm (typical)' 16QAM 3/4 with EVM -24dB / ETSI spectrum mask ■ @0/40°C: +23 dBm (typical)' 16QAM 3/4 with EVM -24dB / ETSI spectrum mask
Sensitivity (MRC)	Better than mRCT 6dB	Better than mRCT 6dB	Better than mRCT 6dB
Antenna Support Frequency	2302~2397 MHz	2483~2687 MHz	3302~3597 MHz
Radio Type	Dual Receive, Direct Conversion Radio (CMOS), MIMO Rate 1 and Rate 2, Beam Forming		
Modulation	S-OFDMA, MIMO		
Modulation Technique	QPSK, 16QAM, 64QAM		
Network Architectures	WiMAX Forum NRM (Network Reference Model)		
Operating Channels	In Channel Step Size 250KHz		
Transmit Power Dynamic Range	45 dB		
Power Consumption	Below 2.5W		

1.2.3 Dimensions

Length x Width x Height (mm)	93.7mm x 28mm x 10.7mm
Weight	20g

1.2.4 Environmental Specifications

Operating Temperature	0° to +40°C
Storage Temperature	-20° to 60°C
Operating Humidity	max. 90%
Storage Humidity	max. 90%

1.2.5 Standards

Model	Standard	Details
2.3 GHz	CE	Health: EN 62311 (SAR)
		RF: EN 302 326
		EMC: EN 301 489-1 V1.4.1
		Safety: EN 60950-1, 2 nd edition
		Notify Body review (0560)
2.5 GHz	FCC	Health: FCC OET 65C (SAR)
		RF: FCC Part 27M
		EMI: FCC Part 15B
	UL	Safety: UL 60950-1, 2 nd edition
	CE	Health: EN 62311 (SAR)
		Safety: EN 60950-1, 2 nd edition
		RF: ETSI 302544
		Reliability: ETSI 300 019-2-3
		EMC: ETSI 301 489-1 V1.4.1
	Notify Body review (0560)	
3.5 GHz	CE	Health: EN 62311 (SAR)
		RF: EN 302 623
		EMC: EN 301 489-1 V1.4.1
		Safety: EN 60950-1, 2 nd edition
		Notify Body Review (0560)

1.3 LED Indication

Color	Status	Description
Red	On	<ul style="list-style-type: none"> ■ Power on ■ No Network Entry ■ Firmware download complete ■ Driver initialized
Yellow/green	Blinking	WiMAX connected

2. Installation

The following section will guide you through the hardware and software installation.

The software installs drivers on your laptop, which allow you to use the BreezeMAX USB250 just like a regular modem.

2.1 Prerequisites

Before installation, make sure you have a computer with the following:

- A minimum of 64MB available hard disk space
- An available USB 2.0 slot
- Windows XP, Windows 7 or Windows Vista operating system



IMPORTANT

Windows Vista and Windows 7 users must install under Administrator mode for installation to be complete.

2.2 Installation Procedure



To install BreezeMAX USB:

- 1 Remove the plastic cap and slide the BreezeMAX USB250 into the USB port. The LED indicator turns on if the device is properly inserted.

**NOTE**

Please ignore the “Found new hardware” message.

- 2 A new removable storage “WiMAXCM” is displayed in the Explorer (see [Figure 2](#)). If auto-run is enabled in your PC, the installer is executed automatically. Otherwise, execute the installer manually.



Figure 2: Removable Storage “WiMAXCM”

- 3 The WiMAX Connection Manager Setup Wizard is displayed; Click **Next** to continue.



Figure 3: WiMAX Connection Manager Setup Wizard Window

**NOTE**

To review or make changes at this time, click **Back**. To cancel the installation process, click **Cancel**.

- 4 Select the installation path: Click **Browse** to select a different path from the default or click **Install** to start the installation in the current path.

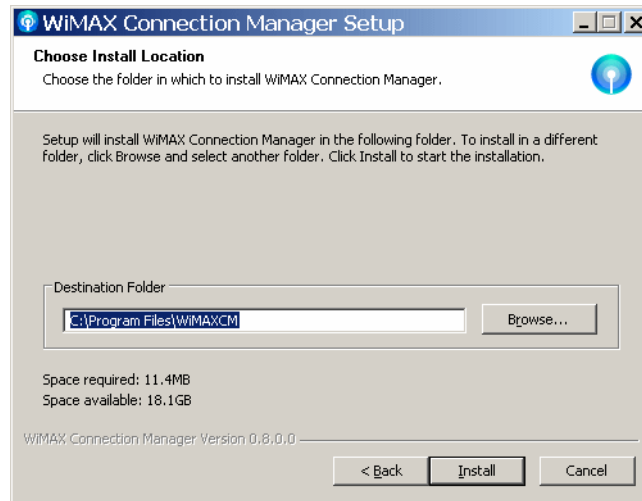


Figure 4: Choose Installation Location Window

- 5 The installation process starts, displaying the status of installed components. The utility and drivers are automatically installed and may take several minutes. Wait for the installation completion.

IMPORTANT



Windows Vista and Windows 7 users, a security screen may prompt you to identify the WCM program. To continue installation, click **Allow**

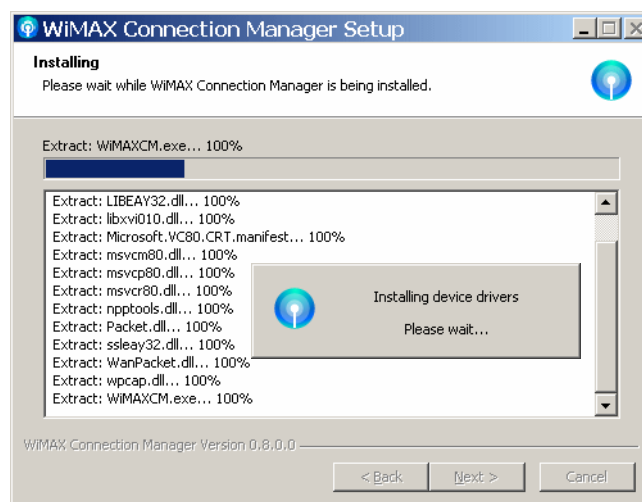


Figure 5: Installation Process

- 6 When the installation is complete, click **Next**.



Figure 6: Installation Complete

- 7 The installation is complete. Click **Finish** to complete the installation and close the wizard.

After installing the WCM, an icon is displayed in your System Tray and the Connection Manager main window opens automatically.



Figure 7: WiMAX Connection Manager

- 8 If necessary, proceed either with [“Settings the WiMAX Connection Manager \(WCM\)” on page 9](#) or [“Viewing Status Details” on page 13](#).

3. Uninstalling the Software

The following section will guide you through the BreezeMAX USB250 software uninstallation procedure.

3.1 Prerequisites

Before proceeding, ensure that your Wireless Connection Manager is closed and the BreezeMAX USB250 is not plugged in to facilitate an easy uninstallation procedure.



IMPORTANT

A reboot will be required after uninstalling the Wireless Connection Manager.

3.2 Uninstallation Procedure



To uninstall BreezeMAX USB:

- 1 Navigate to Start > Programs > WCM and click **Uninstall**.
- 2 You are prompted to verify the process. Click **Yes** to proceed.
- 3 The Windows Installer removes the WCM software from your system.

4. Using Your BreezeMAX USB250

Your BreezeMAX USB250 comes with an easy-to-use graphic user interface. The following chapter provides information for login and connecting to your WiMAX account.



IMPORTANT

Menu screens are subject to change and may differ from the actual working sample.

4.1 Prerequisites

Before you can connect to your network, make sure you have the following:

- WiMAX account information as supplied by your service provider.
- Required software installed from the unit (as described above).
- BreezeMAX USB250 inserted (with or without the USB cable adapter).

4.2 Settings the WiMAX Connection Manager (WCM)

This chapter describes the general settings available for users, including basic settings and authentication.



To configure general settings:

- 1 In the main WCM window click **Settings**. The Settings page is displayed, containing the Basic and Authentication tabs .

NOTE



The Basic tab may contain Language selection, depending on your configuration.

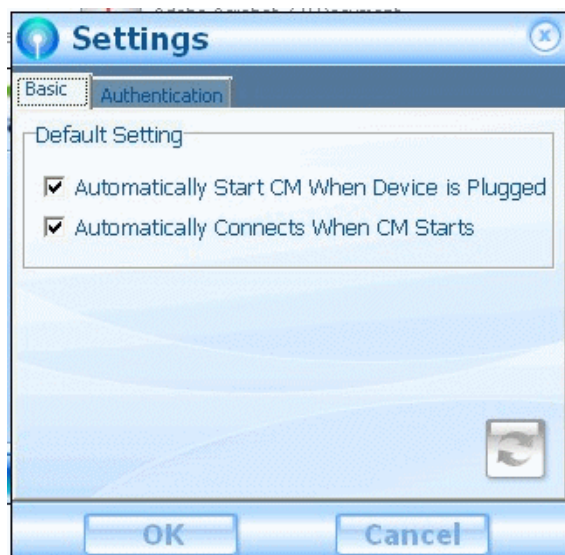



Figure 8: Setting Page: Basic Tab

- 2 In the **Basic** tab select or deselect the following and click **OK**:
 - » Automatically Start CM when Device is Plugged: If it is enabled, WiMAX Connection Manager starts automatically when the USB250 is plugged into the PC. (Default: Enabled)
 - » Automatically Connects When CM Starts: If it is enabled, WiMAX Connection Manager tries to connect to WiMAX network automatically when it starts. (Default: Enabled)
 - » Language (if enabled for display): select the language (default: English).
- 3 To initiate SW Upgrade procedure, click the Update button . Refer to [“Software Upgrade” on page 17](#).
- 4 In the **Authentication** tab (see [Figure 9](#)) specify the following and click **OK**:
 - » Method: Select one of the following WiMAX security method:
 - ◇ None - authentication is disabled
 - ◇ EAP-TTLS/MS-CHAPv2 (default) - Extensible Authentication Protocol-Tunneled Transport Layer Security, supporting the Microsoft version of the Challenge-handshake authentication protocol, version 2.
 - ◇ EAP-TLS - Extensible Authentication Protocol Transport Layer Security (not supported in current release).
 - » User Identity: Enter the user name supplied by the service provider (Default: CPEMACaddr@WiMAX.com).
 - » User Password: Enter the user password supplied by the service provider. (Default: quickynikynyoky).
 - » Realm: Enter the WiMAX domain for EAP used by Supplicant (Default: WiMAX.com).

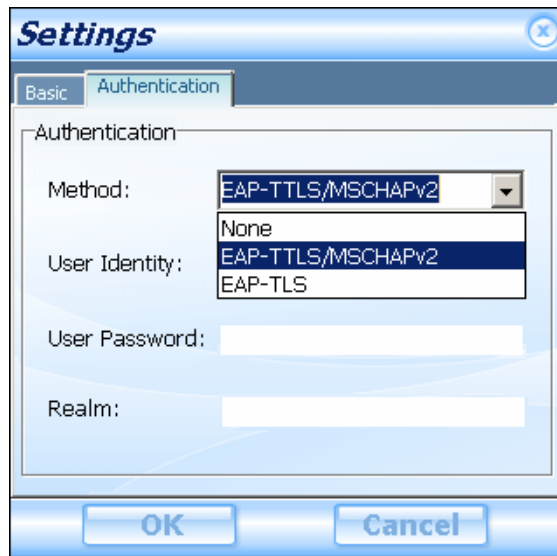


Figure 9: Settings: Authentication Tab

Your USB is now ready to connect to the WiMAX network.

4.3 Connecting to the WiMAX Network

This section describes how to connect to WiMAX network with proper configurations.



To connect to WiMAX network:

- 1 Navigate to Start > Programs > WiMAX Connection Manager

If "Automatically Connects When CM Starts" is enabled, a blue button with dynamic background is displayed and CM will try to connect any available WiMAX base station (BS).



Figure 10: CM Main Window: WiMAX Connecting

If “Automatically Connects When CM Starts” is disabled, click the orange button to start the connection.



Figure 11: CM Main Window: WiMAX Disconnected

4.4 Operation Verification

To verify proper operation of the unit, examine the LED indicator.

To verify data connectivity, from the end-user's PC or from a portable PC connected to the unit, connect to a known internet site (e.g www.Alvarion.com).

When connected to WiMAX network, a small blue button with several concentric circles is displayed (see [Figure 12](#)). The orange concentric circles represent WiMAX signal strength.

IMPORTANT



In the event that signal strength is low, tilting the USB device while attached to the USB Connector adapter may improve signal strength and quality. Adjusting the USB device position may also improve signal quality.

To disconnect from the network, click the blue circle.

An Error message is displayed when the CPE does not find a base station.

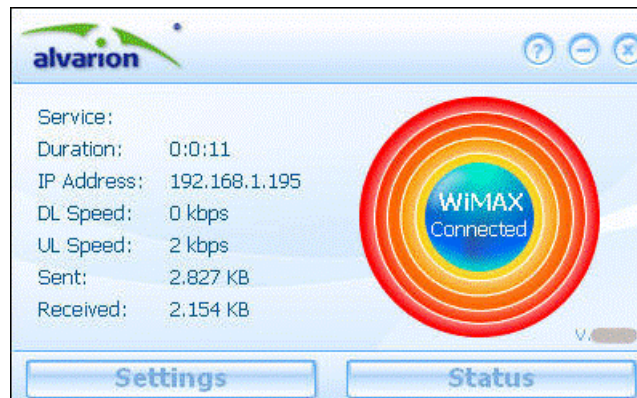


Figure 12: CM Main Window: WiMAX Connected

Some basic information is also shown in this window, which includes:

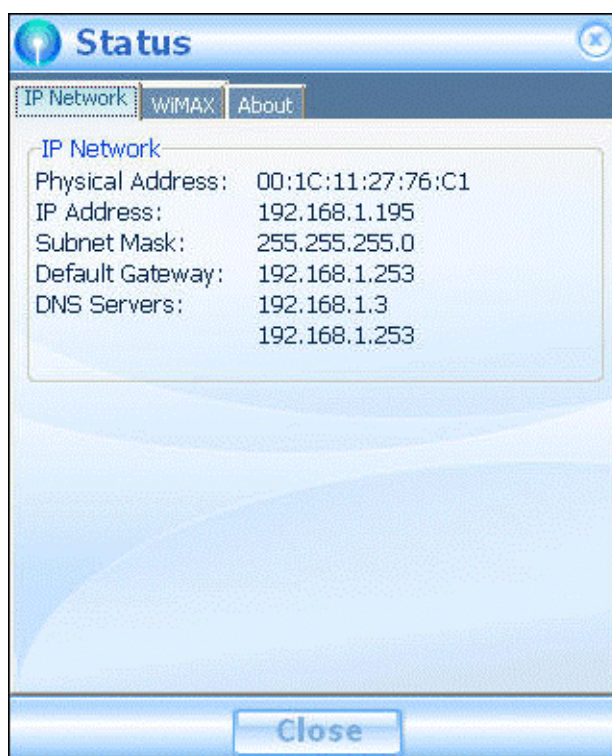
- Service: Network service provider (NSP) name. The Service parameter is hidden if WCM cannot obtain the operator's name via NSP discovery.
- Duration: Time (HH:MM:SEC) during which there is connection to WiMAX
- IP Address: Address of the WiMAX server
- DL Speed: Downlink speed in kbps
- UL Speed: Uplink speed in kbps
- Sent: Data sent in KB/MB/GB
- Received: Data received in KB/MB/GB

4.5 Viewing Status Details

In addition to the basic information that appears in the main window, you can view detailed information on the various device parameters.

**To view status details:**

- 1 In the main window click **Status**. The Status page is displayed, showing the IP Network tab.
- 2 To view various parameters, select the appropriate tab:
 - The IP Network tab includes:
 - » Physical Address
 - » IP Address - WAN IP address. For DHCP mode - IP address acquired on the WAN interface is displayed. Otherwise it is 0.0.0.0
 - » Subnet Mask
 - » Default Gateway - Gateway IP address
 - » DNS Servers - Domain Name System servers IP address(es)

**Figure 13: Status - IP Network Tab**

- The WiMAX tab includes:
 - » State - The status of the device, including “Init”, “Ready”, “Scan”, “Network Entry”, “Operational”, and “Idle”.
 - » Session Duration - Time of device function (hours:minutes:seconds)
 - » Temperature - Unit’s current temperature
 - » Base Station ID - Base Station ID number (e.g. 00:01:21:00:03:5A)
 - » Center Frequency - The middle frequency of the bandwidth of a channel.
 - » Bandwidth
 - » RSSI - Currently received signal strength indication
 - » CINR - Carrier to Interference-plus-Noise Ratio [in decibels (dB)]
 - » TX Power - Transmission power
 - » Downlink Rate - Rate (kbytes per second) of downlink transmitted bytes
 - » Uplink Rate - Rate (kbytes per second) of uplink transmitted bytes
 - » Byte Sent - Total number of transmitted bytes
 - » Byte Received - Total number of received bytes

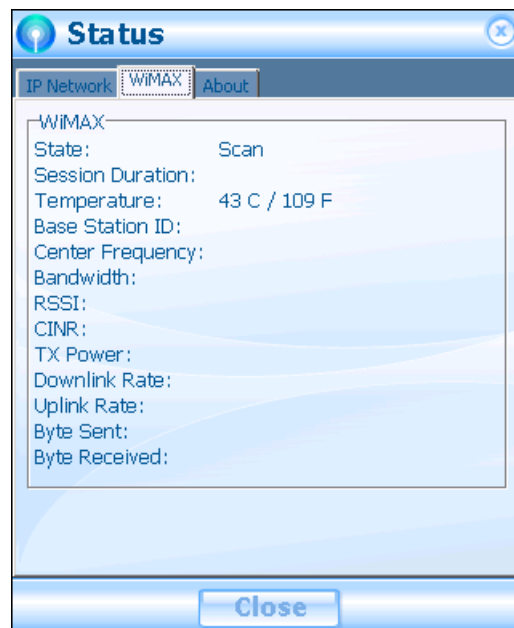


Figure 14: Status - WiMAX Tab

- The About tab includes
 - » Product Name
 - » Product Version
 - » Driver Version
 - » Firmware Version
 - » Copyright
 - » URL

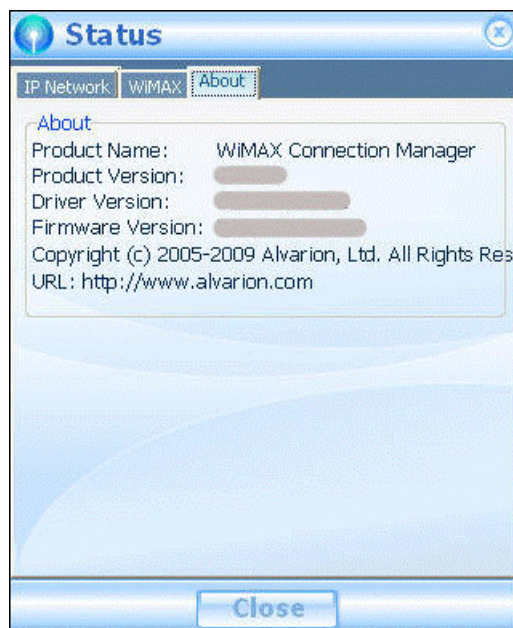


Figure 15: Status - About Tab

4.6 Software Upgrade

This section describes how to update your wireless connection manager.



NOTE

Software upgrade availability is dependent on your service provider.



To upgrade the software found in your BreezeMAX USB 250 device:

- 1 When a new version is available, the following message is displayed, allowing you to choose if to install the new update or not.

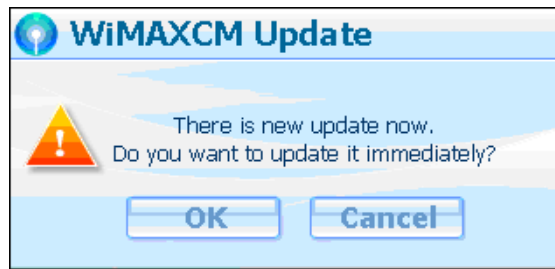


Figure 16: WiMAXCM Update

- 2 To update immediately, click **OK**; the management application closes and the installation starts automatically. Click **Next** to confirm each step of the installation. When the new software is installed, the management application restarts.

To continue running the existing version of the application click Cancel. The new firmware image remains in *C:\Program Files\WiMAXCM\oma\temp* folder, but it will not be installed automatically the next time the WCM is restarted.

To install the update after choosing Cancel, manually run the installer from the location mentioned above.

5. Maintenance and Troubleshooting

The following section provides information for hardware and software related questions or troubleshooting issues.

Q Are there any special requirements for notebook computers?

A Yes, there are two special requirements for notebook computers:

- An available USB 2.0 slot is required.
- Power supply support of $5V \pm 5\%$ is required.

Q What's the correct way to install the client software?

A The operating system detects the new hardware and guides you to install the new driver step by step.

Q Can I take out the USB device without removing it through the operating system?

A Although the USB device supports hot swap, please remove it by undocking it through your operating system first.

Q What operating system does the client utility support?

- A The client utility currently supports Windows XP, Windows 7 and Windows Vista.
- Q My device failed to connect after I inserted my USB device. What can I do at this time?
- A Take out the USB adapter at this time and reinsert it in the USB slot. When your device is detected the main screen appears.
- Q I have followed the procedures in the user manual, why can't I access the Internet?
- A Please make sure the USB adapter has been activated successfully. In addition, contact your operator for detailed settings.
- Q I click connect but I cannot log in to my account?
- A Please verify your account UserID and Password and ensure they are correct. Enter the account information and try again.
- Q My account information is correct, but I'm still not able to log in.
- A Signal reception might be a factor. Situate your computer in a location with good air link quality, and attempt to connect again.

6. Glossary

This section details terms used in this manual.

Authentication	The process to verify the identity of a client requesting network access. IEEE 802.11 specifies two forms of authentication: open system and shared key.
BS	Base Station
Channel Allocation Priority Level (CAPL)	CAPL scan list is defined by the customer provisioned list. There are some parameters with CAPL scan: NAPID, priority and RefID. NAPID is used to filter some BS if the NAPID is not matched. Priority is the customer defined priority scan order. Higher priority will be scanned first. RefID is a result of mapping from IDs into a scan list from the channel plan.
Extensible Authentication Protocol (EAP)	An authentication protocol used to authenticate network clients. EAP is combined with IEEE 802.1X port authentication and a RADIUS authentication server to provide “mutual authentication” between a client, the access point, and the a RADIUS server.
EAP-Transport Layer Security (EAP-TLS)	A cryptographic protocol that provides secure communications on the Internet for web browsing, e-mail, Internet faxing, instant messaging and other data transfers.
EAP-Tunneled Transport Layer Security (EAP-TTLS)	An EAP protocol that extends TLS.
Handover	The WiMAX Handover mechanism was defined to maintain uninterrupted user communication session during their movement from one location to another.
IEEE 802.16e	A standard that provides mobile broadband wireless access using Scalable Orthogonal Frequency Division Multiple Access (SOFDMA).
MSCHAPV2 (MS-CHAP. v2)	Microsoft version of the Challenge-handshake authentication protocol, version 2. MS-CHAPv2 provides mutual authentication between peers by adding a peer challenge upon the Response packet and an authenticator response on the Success packet.

mRCT	Mobile Radio Conformance Test
Network Access Point (NAP)	Network exchange point equipped with large-scale switching facilities and serving as a connection point between individual Internet Service Providers
Open Mobile Alliance (OMA)	OMA DM (device Management) is a protocol specified by Open Mobile Alliance (OMA) for Device Management purposes, by the Device Management Working Group and the Data Synchronization (DS) Working Group. The communication protocol is a request-response protocol.