

WiFi412 Configuration Manual

INSTALLATION INSTR.



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1

INTRODUCTION

The MX-ONE Voice over Wi-Fi (VoWi-Fi) system provides wireless IP-telephony, messaging, and alarm functions to enterprise LANs. Using third-party WLAN products as well as in-house developed hardware and software, the system enables data and voice transmission together with seamless roaming.

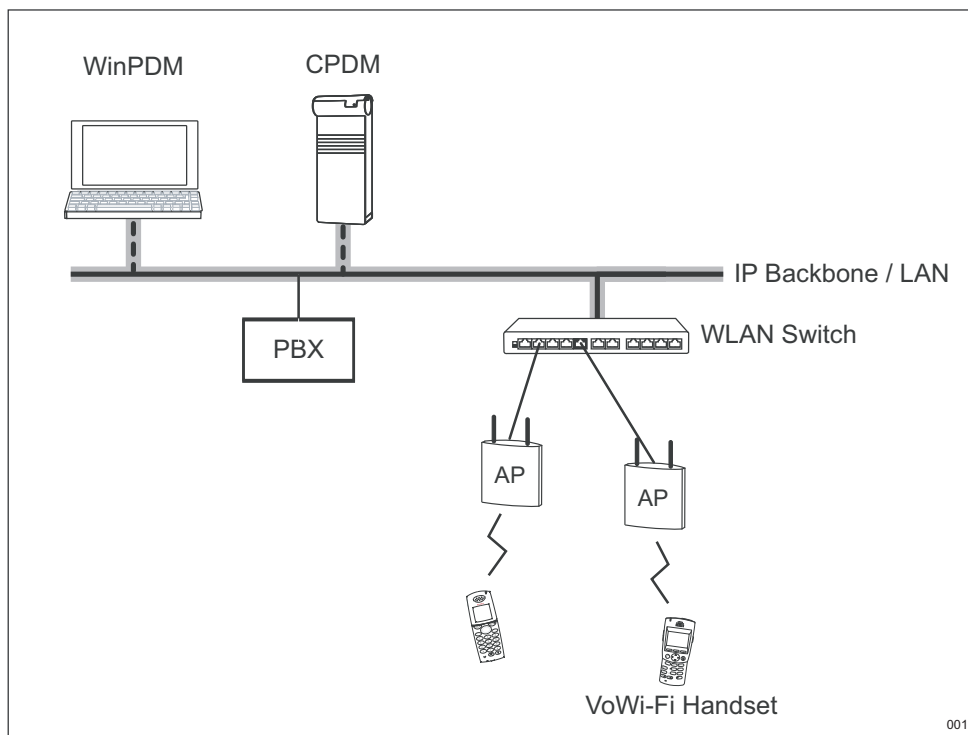


Figure 1: MX-ONE VoWi-Fi System

This document is intended as a guide to installing the WiFi412 Handset in a VoWi-Fi system. It describes the settings needed to make the WiFi412 Handset function in a VoWi-Fi system, and is relevant to the following personnel:

- System Administrator
- Service Technician

It is assumed that the reader of this document has a basic knowledge of the MX-ONE VoWi-Fi system.

1.1

ABBREVIATIONS AND GLOSSARY

For a complete list of abbreviations and a glossary, see the description for *ACRONYMS, ABBREVIATIONS AND GLOSSARY*.

2

PRE-INSTALLATION

Before installing WiFi412 handsets in a VoWi-Fi system, make sure that all the equipment is available. Set up the battery chargers, charge the handset batteries before installation, and have a number plan available for the handsets.

Install the VoWi-Fi system including some or all of the following components (depending on the system configuration):

- **Portable Device Manager (PDM).** The PDM is used for the administration and programming of the WiFi412 Handsets and exists in two versions: the Windows PDM (WinPDM) and the Centralized PDM (CPDM).

For the effective administration of a VoWi-Fi system with several handsets, you are required to have both PDM versions. The WinPDM is only used to allow the handset to access the WLAN system. All other settings and updates are administered through the CPDM.

In small systems, it is possible to administer the system using only the WinPDM. In this case, all settings and updates are administered through the WinPDM using the USB programming device.

- **Dynamic Host Configuration Protocol (DHCP) Server.** A DHCP server allows devices to request and obtain an IP address from a server that has a list of addresses available for assignment. If the WLAN system does not have a DHCP server, a list of static IP addresses is necessary.

2.1

VOWI-FI SYSTEM IP ADDRESSES

Complete the table below with the IP addresses as a way of help when configuring the handsets.

Table 1 VoWi-Fi System IP addresses

Device	IP address	Required
CPDM		Yes
Subnet Mask		Yes
Number plan	N/A	Yes
NTP Server address ⁽¹⁾		
DNS Server address ⁽¹⁾		
Central Phonebook		If used
DHCP range		

(1) Depends on the system configuration.

3 PROGRAMMING THE WIFI412 HANDSET

The following section describes the programming of the WiFi412 Handset. You can program the WiFi412 Handset by using the WinPDM and CPDM.

3.1 WINPDM

The WinPDM is run on a PC. To program the handset using the WinPDM, do as follows:

1. Connect the USB Programming Device to the computer with the USB cable.
2. Start the WinPDM.
3. Place the handset in the USB Programming Device.

For instructions on how to use the WinPDM, refer to the *WinPDM Installation and Operation Manual*.

3.2 CPDM

The CPDM is a Java based client and runs through a web-browser on a PC connected to the LAN. In this case, the handset is programmed over the air.

For instructions on how to use the CPDM, refer to the *CPDM Installation and Operation Manual*.

4

HANDSET INSTALLATION

This section describes the recommended procedures to install several handsets in a large system and a few handsets in a small system. There are several ways to install a handset but the procedures described here guarantee simple maintenance of the system.

The procedures differ depending on the size of the respective systems. For effective administration, use the CPDM, but in small systems, you can administer the handsets using only the WinPDM.

Installation steps in large VoWi-Fi Systems:

1. Create templates in the CPDM: one with network settings and another one with common settings.
2. Create endpoints (handsets) and apply the templates.
3. Create a template with identical network settings in the WinPDM (for the logon of the handsets).

Installation steps in small VoWi-Fi Systems:

1. Create endpoints.
2. Create one template for all the settings in the WinPDM.

4.1

INSTALLATION IN LARGE SYSTEMS

When installing several handsets in a VoWi-Fi system, you are required to have both the CPDM and the WinPDM to make the maintenance and handling of the system as simple as possible.

4.1.1

CREATING A NETWORK TEMPLATE IN THE CPDM

Follow the steps below to create one template that contains only the network settings to prevent the CPDM from restoring the WLAN parameters to default during the first synchronization.

Note: Select only the parameters that are to be changed. If you select all the parameters, the performance of the system will decrease.

1. Open the CPDM.
2. Create a template with the network parameters:
 - Extended Service Set Identifier (ESSID)
 - WLAN settings

Note: All the required system settings for the WLAN, for example, Security mode and Encryption type.

- CPDM IP address
3. Save the network template in the CPDM using a descriptive name.

4.1.2 CREATING A COMMON TEMPLATE IN THE CPDM

Follow the steps below to create another template with the common settings, excluding the network settings, applicable to all handsets. This template contains, for example, hidden menu items in the display, certain levels of ring signals, and vibrators.

Note: Select only the parameters that are to be changed. If you select all the parameters, the performance of the system will decrease.

1. Open the CPDM.
2. Create a template with the specific parameters. For more information, see 6 Configuring the WiFi412 Handset on page 12.
3. Save the template in the CPDM using a descriptive name.

4.1.3 CREATING ENDPOINTS IN THE CPDM

Follow the steps below to create a range of endpoints (phone numbers) and apply the templates previously created in the CPDM.

1. Open the CPDM.
2. Add a range of endpoints.
3. Apply the network settings template to the selected handsets.
4. Apply the common settings template to the selected handsets.
5. Close the CPDM.

Note: The parameter version of the template must be equal to or less than the selected parameter version.

4.1.4 CREATING A TEMPLATE WITH THE INITIAL HANDSET CONFIGURATION IN THE WINPDM

The handsets are activated using the WinPDM. Follow the steps below to create a template with the basic network settings. This template is only used the first time the handset logs on to the VoWi-Fi System. After login, the settings in the handset are changed according to the templates in the CPDM.

Note: The parameters in this template must be identical to the parameters in the network template created in the CPDM.

1. Open the WinPDM.
2. Create a template with the following network parameters:
 - ESSID
 - WLAN settings

Note: All the required system settings for the WLAN, for example, Security mode and Encryption type.

- CPDM IP address
3. Save the template in the WinPDM.
 4. Put the handset in the USB programming device.
 5. Run the temporary template.

6. Remove the handset. The handset is restarted and **Remote Upgrade** is displayed.
7. Enter the user name and leave the password blank to log in to the system. Repeat steps 4–7 for all the handsets.

4.2

INSTALLATION IN SMALL SYSTEMS

In a small VoWi-Fi system, it is not mandatory to have a CPDM installed. The administration can be handled via the WinPDM only.

In this case, the synchronization is not handled automatically by the system. Each handset must be placed in the USB programming device connected to the administrator's computer.

Tip: Create a template containing both network settings and common settings.

The steps to install handsets in a small system are as follows:

1. Open the WinPDM.
2. Create an endpoint or a range of endpoints. (Not needed if the endpoints are created in a CPDM.)
3. Create a template containing at least the following:
 - ESSID
 - WLAN settings

Note: All the required system settings for the WLAN, for example, Security mode and Encryption type.

- (CPDM IP address)
 - Protocol
 - SIP proxy IP address
4. Save the template.
 5. Put the handset in the USB programming device.
 6. Apply the template previously created.
 7. Remove the handset. The handset is restarted and **Remote Upgrade** is displayed.
 8. Enter the user name and leave the password blank to log in to the system. Repeat steps 4–7 for all handsets.

5 SYSTEM MAINTENANCE

In an existing VoWi-Fi System, it is important to be able to replace and add new, and exchange faulty handsets. The recommended procedure is to use a temporary template with the basic network settings, created in the WinPDM, for login, and apply the templates created in the CPDM.

Tip: Perform steps 2-4 in 5.1 Replacing a Handset in a VoWi-Fi System on page 9 or 5.2 Adding a Handset to a VoWi-Fi System on page 9 for a couple of spare handsets.

Switch off the handsets when **User name** and **Password** are displayed. When, for example, a handset needs to be replaced, just switch on a handset and enter the number. The individual settings are automatically downloaded to the new handset.

It is also important to be able to upgrade the system parameters and security settings in the handsets. Do these upgrades in the CPDM.

5.1 REPLACING A HANDSET IN A VOWI-FI SYSTEM

To replace a handset in a VoWi-Fi System, do as follows:

1. Open the WinPDM.
2. Put the handset in the USB programming device.
3. Run the template with the basic network settings containing:
 - ESSID
 - WLAN settings

Note: All the required system settings for the WLAN, for example, Security mode and Encryption type.

- CPDM IP address
4. Remove the handset from the USB programming device.
 5. Enter the user name and leave the password blank.
 6. Press **Log on**. The handset is automatically updated from the CPDM and restarted.

5.2 ADDING A HANDSET TO A VOWI-FI SYSTEM

To add a handset to a VoWi-Fi System, do as follows:

1. Open the WinPDM.
2. Create an endpoint or a range of endpoints in CPDM.
3. Put the handset in the USB programming device.
4. Run the **basic template** containing:
 - ESSID
 - WLAN settings

Note: All the required system settings for the WLAN, for example, Security mode and Encryption type.

- CPDM IP address
5. Remove the handset from the USB programming device.
 6. Apply the network settings template to the selected handsets.
 7. Apply the common settings template to the selected handsets.
 8. Enter the user name and leave the password blank.
 9. Press **Log on**. The handset is automatically updated from the CPDM and restarted.

5.3

UPDATING THE SYSTEM PARAMETERS

This section describes the general procedure for changing or updating the system parameters. The update starts when the handset is idle and will not interrupt an ongoing call.

Note: Select only the parameters that are to be changed. If all the parameters are selected, the performance of the system will decrease.

1. Open the CPDM.
2. Create a new template with **only** those parameters that will be changed.
3. Select the handsets that you want to update and apply the template. The handsets are automatically updated from the CPDM and restarted.

5.4

PERFORMING A SECURITY UPGRADE

This section describes how to perform an update or change of the WLAN password/authentication.

Tip: Leave one access point with the old configuration to allow switched off handsets to receive the updates.

1. Open the CPDM.
2. Create a new template with the new security settings.
 - Security mode

Note: All the required settings for the WLAN, for example, user name, password, regulatory domain, and so on.

- Encryption type

Note: All the required settings for the WLAN, for example, user name, password, regulatory domain, and so on.

3. Apply the new template to the handsets. The handsets are automatically updated from the CPDM and restarted.

Note: At this time, the handsets have no access to the WLAN system.

4. Change the security settings for the access points. The handsets are now able to access the WLAN.

5.5 USING SHARED PHONES IN THE VOWI-FI SYSTEM

A shared handset changes its identity and settings depending on the user name entered when the handset logs in. All the personal settings and the local phonebook will be downloaded from the CPDM.

CPDM is required for enabling the shared phones feature.

The handset must be configured to be a shared phone. For more information, see 6.6.4 Phone Mode on page 18.

A handset in personal mode uses a shared password (empty or specific) from the CPDM.

5.6 UPGRADING THE TEMPLATE

The upgrading procedure of the template's definition version is described in the applicable CPDM or WinPDM Installation and Operation Manual.

5.7 CREATING A CONFIGURATION BACKUP

It is important to have a backup of the configuration in the handsets and on the site.

The backup procedure is described in the applicable CPDM or WinPDM Installation and Operation Manual.

6

CONFIGURING THE WiFi412 HANDSET

The VoWi-Fi handset requires some settings to function in the VoWi-Fi System. All the settings are done in the PDM.

This section describes the available settings for the handset.

For more information, refer to the CPDM or WinPDM Online Help or the applicable CPDM or WinPDM Installation and Operation Manual.

6.1

WEB ADMINISTRATION PAGE

The web administration page for the handset makes it possible to download an alarm license or an upgrade software, view statistics, and troubleshoot the VoWi-Fi System.

The default user name and password for an administrator are as follows:

- User name: **admin**
- Password: **changeme**

To change the user name and the password, do the following:

1. Select **DEVICE > GENERAL**.
2. Enter the user name in the *Administration user name* text field.
3. Enter the password in the *Administration password* text field.

6.2

SYSTEM SELECTION

The handset can switch between four different system configurations. A handset belongs to four different WLANs but only to one SIP Proxy. System A is the default and used throughout this manual. To select System A, do the following:

1. Select **DEVICE > USER**.
2. Select **A** in the *Active System* drop-down list.

6.3

IP SETTINGS

The IP settings can be configured in two ways:

- Automatic IP settings, which means that the handset receives an IP address from a DHCP server.
- Static IP settings, which means that the IP addresses have to be entered manually.

6.3.1

AUTOMATIC IP SETTINGS

To configure Automatic IP settings, do as follows:

1. Select **SYSTEM > A**.
2. Select **Enable** in the *DHCP mode* drop-down list. The Phone IP address, the Subnet mask, and the Default Gateway are automatically set up.

6.3.2 STATIC IP SETTINGS

To configure Static IP settings, do as follows:

1. Select **SYSTEM > A**.
2. Select **Disable** in the *DHCP mode* drop-down list.
3. Enter the IP address to the handset in the *Phone IP address* field.
4. Enter the Subnet mask in the *Subnet mask* field.
5. Enter the IP address to the Default Gateway in the *Default Gateway* field.

6.4 NETWORK SETTINGS

6.4.1 ESSID

The ESSID is the name of the network the handset associates with. To set the ESSID, do the following:

1. Select **SYSTEM > A**.
2. Enter the system ESSID in the *ESSID* field.

6.4.2 WORLD MODE REGULATORY DOMAIN

There is a set of regional rules for the ISM 2.4GHz frequency band that the handset complies with. The preferred setting is **World mode (802.11d)**, where the handset listens before transmitting. Also, the WLAN infrastructure must support this feature.

To choose the right setting, do the following:

1. Select **SYSTEM > A**.
2. In the *World mode regulatory domain* drop-down list, select one of the following:
 - World mode (802.11d)
 - USA
 - Canada
 - ETSI
 - Spain
 - France

6.4.3 VOICE POWER SAVE MODE

The Voice power save mode is used during calls. Choose **ACTIVE** to obtain optimal voice quality. U-APSD and PS_POLL use less power but are more sensitive to network disturbances.

If supported by the infrastructure, **U-APSD** is the preferred choice. U-APSD quadruples the talking time as compared to the *ACTIVE* mode.

To select the right Voice power save mode, do as follows:

1. Select **SYSTEM > A**.

2. Select one of following in the *Voice power save mode* drop-down list.
 - ACTIVE
 - U-APSD
 - PS_POLL

6.4.4

802.11 B/G CHANNELS

This section describes how to choose which 802.11b/g channels to use. Use the default value. If set to **All**, all the channels are scanned for access points, which decreases the performance of the WLAN.

To choose a 802.11b/g channel, do as follows:

1. Select **SYSTEM > A**.
2. Select one of following in the *802.11b/g channels* drop-down list:
 - 1, 6, 11
 - All

6.4.5

TRANSMIT GRATUITOUS ARP

Some systems require that a gratuitous Address Resolution Protocol (ARP) reply be sent in order to update the ARP table in the other devices in the network. Enable the Transmit gratuitous ARP if your system requires a reply to be sent when roaming.

To send a gratuitous ARP reply, do the following:

1. Select **SYSTEM > A**.
2. Select **Enable** in the *Gratuitous ARP* drop-down list.

6.4.6

TRANSMISSION POWER

This is the transmission power the handset will use when transmitting data to the WLAN system. If **Automatic** is used, the transmission power is adapted according to 802.11h, CCX, or the possible maximum.

To select the transmission power you want your handset to use, do the following:

1. Select **SYSTEM > A**.
2. Select one of the following in the *Transmission power* drop-down list.
 - Automatic
 - 0 dBm
 - 5 dBm
 - 11 dBm
 - 14 dBm
 - Max (20 dBm)

6.4.7

IP DSCP FOR VOICE AND SIGNALING

The Differentiated Services Code Point (DSCP) defines which value to use for the outgoing voice and signaling traffic. The DSCP value is used for the *Quality of Service*

(QoS) on the LAN. The settings in the handset must agree with the settings in the system, otherwise it will result in bad voice quality.

1. Select **SYSTEM > A**.
2. Select one of the following in the *IP DSCP for voice* or the *IP DSCP for signaling* drop-down list.
 - 0x38 (56) - Class selector 7
 - 0x30 (48) - Class selector 6
 - 0x2E (46) - Expedited Forwarding
 - 0x28 (40) - Class selector 5
 - 0x20 (32) - Class selector 4
 - 0x1A (26) - Assured forwarding 31
 - 0x18 (24) - Class selector 3
 - 0x10 (16) - Class selector 2
 - 0x08 (8) - Class selector 1
 - 0x00 (0) - Default 0

6.4.8

TSPEC CALL ADMISSION CONTROL

Defines whether Call Admission Control via Wi-Fi Multimedia (WMM) Traffic Specifications (TSPECs) will be used on the WLAN.

To decide whether to use Call Admission Control, do as follows:

1. Select **SYSTEM > A**.
2. Select one of the following in the *TSPEC Call Admission Control* drop-down list:
 - Disable - Call Admission Control will not be used.
 - Auto enable - Call Admission Control will be used if Call Admission Control is mandatory for the WLAN infrastructure.

Note: The WLAN infrastructure must support the use of TSPECs.

- Force enable - Call Admission Control will always be used.

Note: The WLAN infrastructure must support the use of TSPECs.

6.5

SECURITY SETTINGS

The WLAN system can be configured to use various encryption or authentication schemes, or both. The use of extensive encryption and authentication schemes may cause incidents of dropped speech during handover due to the time needed to process the authentication.

6.5.1

OPEN WITH OR WITHOUT WEP ENCRYPTION

To select **OPEN** as the security mode, do the following:

1. Select **SYSTEM > A**.
2. Select **OPEN** in the *Security mode* drop-down list.

3. Select **NONE**, **Wired Equivalent Privacy (WEP)64**, or **WEP128** in the *Encryption type* drop-down list.
4. If WEP64 or WEP128 encryption is used, select **WEP key X** in the *WEP transmit key* drop-down list.
5. Enter the WEP key X (in hexadecimal format) for the WLAN in the *WEP key X* field.

Note: The *WEP transmit key* decides which key the handset uses for the transsion.

6.5.2

WPA-PSK

To select WPA-PSK as the security mode, do the following:

1. Select **SYSTEM > A**.
2. Select **WPA-PSK** in the *Security mode* drop-down list.
3. Select **TKIP** or **AES-CCMP** in the *Encryption type* drop-down list.
4. Enter the passphrase for WPA-PSK in the *WPA-PSK passphrase* field.

Note: AES-CCMP can be used but is not supported by all systems.

6.5.3

WPA2-PSK

To select WPA2-PSK as the security mode, do the following:

1. Select **SYSTEM > A**.
2. Select **WPA2-PSK** in the *Security mode* drop-down list.
3. Select **AES-CCMP** in the *Encryption type* drop-down list.
4. Enter the passphrase for WPA-PSK in the *WPA-PSK passphrase* field.

6.5.4

802.1X WITH LEAP

To select LEAP as the authentication method, do the following:

1. Select **SYSTEM > A**.
2. Select **LEAP** in the **Security mode** drop-down list.
3. Select **WEP64**, **WEP128**, or **TKIP** in the *Encryption type* drop-down list.
4. Enter the user name for EAP authentication in the *EAP authentication user name* field.
5. Enter the password for EAP authentication in the *EAP authentication password* field.

6.5.5

802.1X WITH PEAP-MSCHAPV2

To select PEAP-MSCHAPv2 as the authentication method, do the following:

1. Select **SYSTEM > A**.
2. Select **PEAP-MSCHAPv2** in the *Security mode* drop-down list.
3. Select **TKIP** or **AES-CCMP** in the *Encryption type* drop-down list.

4. Enter the user name for EAP authentication in the *EAP authentication user name* field.
5. Enter the password for EAP authentication in the *EAP authentication password* field.

6.5.6

802.1X WITH EAP-MD5

EAP does not generate any encryption key material. To select EAP-MD5 as the authentication method, do the following:

1. Select **SYSTEM > A**.
2. Select **EAP-MD5** in the *Security mode* drop-down list.
3. Select **NONE**, **WEP64**, or **WEP128** in the *Encryption type* drop-down list.
4. Enter the user name for EAP authentication in the *EAP authentication user name* field.
5. Enter the password for EAP authentication in the *EAP authentication password* field.
6. If either WEP64 or WEP128 encryption is used, select **WEP key X** in the *WEP transmit key* drop-down list.
7. Enter the WEP key X (in hexadecimal format) for the WLAN in the *WEP key X* field.

Note: The *WEP transmit key* decides which key the handset uses for the transmission.

6.5.7

ADVANCED SECURITY MODE

The advanced security mode is only used when it is necessary to have full flexibility of the configuration. Use the predefined settings in the *Security mode* drop-down list.

Note: Advanced parameters have effect only if **Advanced** is selected as the preferred security mode.

To select the advanced security mode, do as follows:

1. Select **SYSTEM > A**.
2. Select **Advanced** in the *Security mode* drop-down list. The following advanced items are enabled:
 - Advanced: Network association
 - Advanced: Network authentication
 - Advanced: EAP type
 - Advanced: Inner EAP type

6.6

HANDSET SETTINGS

This section describes the specific settings for the handset, which the user can later change.

6.6.1 AUTOMATIC KEY LOCK

The automatic key lock is activated when the handset is inactive. To activate it, do the following:

1. Select **DEVICE > USER**.
2. Select **Enable** in the *Automatic key lock* drop-down list.

6.6.2 ROTATING NEW MESSAGE

If activated, new messages are displayed 180° rotated. To enable the setting, do the following:

1. Select **DEVICE > USER**.
2. Select **Enable** in the *Rotate new message* drop-down list.

6.6.3 VIBRATING DURING CALL

This setting defines how the vibrating function will work when a message arrives during a call. To select how the vibrating will work, do as follows:

1. Select **DEVICE > GENERAL**.
2. Select one of the following in the *Vibrate during call* drop-down list:
 - Never vibrate
 - Vibrate only on urgency messages
 - Always vibrate

6.6.4 PHONE MODE

This setting defines if the handset is personal or shared. The default setting is **Personal**, but if **Shared** is selected, the handset can be used by several users. A shared phone requires a CPDM. To select the phone mode to be used, do as follows:

1. Select **DEVICE > GENERAL**.
2. Select **Personal** or **Shared** in the *Phone mode* drop-down list.

6.6.5 HEADSET MODEL

To select the headset model to be used, do the following:

1. Select **AUDIO > GENERAL**.
2. Select the applicable item in the drop-down list:
 - Mic on boom
 - Mic protection
 - Mic on cable

Stop! Do not select **Ear protection** unless a Peltor headset is used.

6.6.6

HANDSET VOLUME

To select the volumes for the different audio signals in the handset, do as follows:

1. Select **AUDIO > VOLUME**.
2. Select the applicable volume item in the drop-down list:
 - Beep volume
 - Hands-free volume
 - Headset volume
 - Handset volume
3. Select **Enable** in the *Persistent volume* drop-down list to automatically store volume changes in the handset for future calls.

6.6.7

PROGRAM A HOT KEY

A hot key is activated by pressing a preprogrammed button, **0 - 9**, for more than one second. This function is used, for example, to change a profile, send a message, or make a phone call to a specific number. To activate a hot key, do the following:

1. Select **HOT KEY** and any key number (0-9).
2. Enter the function name in the *Hot key name* text field.
3. Enter the applicable index in the *Hot key index* text field. Index parameters are used with the following *Hot key functions*:
 - Shortcut
 - Presence
 - Push-to-Talk (PTT)
 - Change profile

Refer to the help text in the PDM for valid indexes.

4. Select one of the following *Hot key functions*:
 - Disable
 - Change profile
 - Phone call
 - Presence

Note: If the activity ID is changed in the Presence Management system, the value for the *Hot key index* in the VoWi-Fi handset needs to be reprogrammed.

- PTT
 - Send data
 - Send data with prefix
 - Send message
 - Shortcut
5. Enter the user data in the *Hot key user data* text field if applicable. For more information, refer to the help text in the PDM.
 6. Continue and repeat the procedure for assigning functions to the other hot keys.

6.7

MESSAGING

Messaging is provided through the CPDM and is described in *CPDM Installation and Operation Manual*.

6.7.1

IP ADDRESS TO THE CPDM

The CPDM handles all the communication between the VoWi-Fi System and the CPDM. It is required when using the CPDM.

To enter the IP address of the CPDM, do as follows:

1. Select **DEVICE > UNITE**.
2. Enter the IP address of the CPDM in the *CPDM IP address* text field. If left empty, no messaging or alarm functions will be available.

6.7.2

ADDITIONAL SETTINGS FOR THE CPDM

By entering the following additional settings to the CPDM, you can send messages from a web browser to a handset, handle messages to groups, send simple messages from handset to handset (and to groups), search for telephone numbers in a central database (on a PC), have a central phonebook on the CPDM (not PC-based), and have absence handling in the system. To enter the settings, do the following:

1. Select **DEVICE > UNITE**.
2. Enter the number that is registered for the user in the CPDM in the *CPDM phone number* text field.
3. Enter the password in the *CPDM phone password* text field.
4. Enter the number of retransmissions in the *Message retransmit limit* text field.
5. Enter the number to the central phonebook directory in the *Central phonebook number* text field to be able to launch a search from the handset.

6.7.3

MESSAGE SETTINGS

The time to display a new message is defined by the following two parameters: *Show message time* and *Time to read message*.

If the *Time to read message* parameter is set to > 0, this parameter will decide how long each message is displayed and how the messages received simultaneously are sorted according to priority. If *Time to read message* is set to zero, the *Show message time* parameter decides how long each message is displayed.

Note: If *Time to read message* is set to zero, the messages are not sorted according to priority.

To specify the message settings, do as follows:

1. Select **UI > SETTINGS**.
2. Set the time for how long each new message will be displayed in the *Show message time* text field.
3. Set the time between showing new messages received simultaneously in the *Time to read message* text field.
4. Select **Small** or **Medium** text size in the *Message text size* drop-down list.

6.7.4

UNREAD MESSAGE REMINDER

The user receives a reminder for unread messages in the handset. To set the Unread message reminder, do as follows:

1. Select **DEVICE > GENERAL**.
2. Select **Enable** in the *Unread message reminder* drop-down list to activate the reminder.
3. Enter the reminder interval in the *Message reminder interval* text field.

6.8

TELEPHONY

The following parameters are required and can be set for the basic telephony settings:

1. Select **DEVICE > USER**.
2. Enter the endpoint number in the *Endpoint number* field.
3. Enter the endpoint ID in the *Endpoint ID* text field.
4. Select **PROTOCOL > GENERAL**.
5. Select **SIP** in the *VoIP Protocol* drop-down list.

6.8.1

PROTOCOL

The protocol is a set of standard rules for data traffic required for the sending of information over a communication channel. The communication protocol follows certain rules so that the system works properly. The SIP Proxy IP Address must be manually entered. To see the applicable settings for the SIP protocol, do as follows:

1. Select **PROTOCOL > SIP**.
2. The following settings are applicable for the SIP protocol:
 - SIP proxy IP address
 - Secondary SIP proxy IP address
 - SIP proxy listening port
 - SIP proxy ID
 - SIP proxy password
 - Sending the Dual Tone Multi Frequency (DTMF) using either RFC 2833 or SIP INFO. This parameter defines which path the DTMF signaling will take. If set to **RFC 2833**, the DTMF signaling will be sent in the Real-time Transport Protocol (RTP) stream, that is, from handset to handset. If set to **SIP INFO**, the DTMF signaling will be sent using SIP signaling, that is, via the Private Branch Exchange (PBX).
 - Hold type. It defines the type of hold to send when the handset puts a call on hold. The selection depends on what type of hold the PBX supports. For more information about what type of hold the PBX supports, refer to the applicable documentation for the PBX.

6.8.2

CODEC

A codec encodes a stream or signal for transmission. Codecs are often used in streaming media applications. To select the applicable codec, do as follows:

1. Select **PROTOCOL > GENERAL**.
2. Select the applicable codec in the *Codec configuration* drop-down list. Choose from the following:
 - G.711 A-law
 - G.711 u-law
 - G.729
 - G.729A

6.8.3

VOICE MAIL NUMBER

To specify the number to the voice mail box, if included in the system, do the following:

1. Select **DEVICE > GENERAL**.
2. Enter the number to the voice mail in the *Voice mail number* text field.

6.8.4

MESSAGE CENTER NUMBER

To specify the number to the server for Message Waiting Indication (MWI), if included in the system, do the following:

1. Select **DEVICE > MESSAGEC**.
2. Enter the number to the server in the *Message Center number* text field.
3. Select **Disable** in the *Voice mail call clears MWI* drop-down list to deactivate MWI in the Message center when calling the defined voice mail number.

6.8.5

MAX NUMBER OF CALL COMPLETIONS

To specify the maximum number of calls to be handled by the handset at the same time before the handset is considered busy, do as follows:

1. Select **DEVICE > GENERAL**.
2. Enter the number of calls in the *Max number of call completions* drop-down list.

6.8.6

DIALING PAUSE TIME

By adding a **P** to a phone number, a pause is added and will be activated when dialing. To define for how long, do the following:

1. Select **DEVICE > GENERAL**.
2. Enter pause time in seconds (1-3) in the *Dial pause time* text field.

6.8.7

DIRECT OFF HOOK FROM CHARGER

The handset will automatically answer a call when removed from the charger. To enable the function, do as follows:

1. Select **DEVICE > USER**.
2. Select **Enable** in the *Direct off hook from charger* drop-down list.

6.8.8

REPLACE CALL REJECTED WITH USER BUSY

Replace Call Rejected with User Busy is used if the system does not support *Call rejected*. To enable it, do as follows:

1. Select **DEVICE > GENERAL**.
2. Select **Enable** in the *Replace Call Rejected with User Busy* drop-down list.

6.8.9

IN CALL SOFT KEY

This function appears in the display above the right soft key when a call is connected. To set the function, do the following:

1. Select **UI > IN CALL SOFT KEY**.
2. Enter a name in the *In call soft key name* text field.
3. Select one of the following in the *In call soft key action* drop-down list:
 - Disabled
 - Transfer to new call (blind transfer)
 - New call (put active on hold)
 - Hold
 - Menu
 - Transfer (to held call)
 - Conference
 - Switch
 - Retrieve

6.9

LOCAL SETTINGS

This section includes the settings suitable for a specific region or country.

6.9.1

SETTING THE TIME AND DATE

To set the time and date, do the following:

1. Select **DEVICE > GENERAL**.
2. Select the applicable time zone in the *Time zone* drop-down list.
3. Enter the address to the time server in the *NTP server* text field. If not set, the Gatekeeper/SIP proxy address is used.
4. Select **UI > SETTINGS**.
5. Select the applicable time format in the *Time display format* drop-down list where:
 - H = Hour

- M = Minute
6. Select the applicable date format in the *Date display format* drop-down list where:
 - Y = Year
 - M = Month
 - D = Day

6.9.2 SELECTING THE DEFAULT LANGUAGE

This setting defines the default operating language for the handset, which the user can later change. To select the default language, do the following:

1. Select **UI > SETTINGS**.
2. Select **Language** in the *Language* drop-down list.

6.9.3 DIALING TONE PATTERN

This setting defines which tone pattern to use when dialing. To select the appropriate *Dialing tone pattern*, do as follows:

1. Select **AUDIO > GENERAL**.
2. Select the applicable region in the *Dialing tone pattern* drop-down list.

6.10 DISPLAY

6.10.1 USER DISPLAY TEXT

This setting defines the text to be shown in the display in idle mode instead of the endpoint ID. If nothing is entered in this text field, the endpoint ID will be shown. To enter a text, do as follows:

1. Select **DEVICE > USER**.
2. Enter the text in the *User display* text field.

6.10.2 LCD CONTRAST

It sets the contrast in the display. To set the *LCD contrast*, do the following:

1. Select **DEVICE > GENERAL**.
2. Select a contrast value in the *LCD Contrast* drop-down list.

6.10.3 BACKLIGHT TIMEOUT

It indicates the number of seconds before the backlight is turned off. To set the backlight timeout, do as follows:

1. Select **DEVICE > GENERAL**.

2. Enter the number of seconds before the backlight is turned off in the *Backlight timeout* text field.

6.10.4

IDLE TIMEOUT

To set the number of seconds before the handset returns to idle mode, do as follows

1. Select **UI > SETTINGS**.
2. Enter the number of seconds before the handset returns to idle mode in the *Idle Timeout* field.

6.10.5

HIDING MENU ITEMS

To hide or show a menu item, do the following:

1. Select **UI > MENUITEM**.
2. Select **Hide** or **Show** for the applicable menu item in the drop-down list. The following items can be hidden:
 - Alert signals
 - Audio volumes
 - Soft keys
 - Hot keys
 - General
 - Phone lock
 - Select system
 - Information
 - Contacts
 - Services
 - Call list
 - Profiles

6.11

DISABLING FUNCTIONS IN THE HANDSET

To disable a function, do the following:

1. Select **UI > DISABLE**.
2. Select **Enable** or **Disable** for the applicable menu item in the drop-down list. The following are possible:
 - Edit hot key
 - Delete messages
 - Administration of service
 - Edit profile
 - Change profile
 - Administration of the local phonebook

6.12

SHORTCUT FUNCTION KEYS

To set the *Shortcut function keys*, do the following:

1. Select **UI > SETTINGS**
2. Select the applicable function in the drop-down list. The following functions can be set:
 - Shortcut Function Key Up (default: Open Message list)
 - Shortcut Function Key Down (default: Open Call list)
 - Shortcut Function Key Left (default: Open Menu)
 - Shortcut Function Key Right (default: Open Menu)

6.13

CONFIGURING PROFILES

Several profiles are available for the user. Settings as different ring signals and alarms can be set. The profiles are configured via the PDM.

6.13.1

ENTERING A PROFILE NAME

To enter a profile name, do the following:

1. In the applicable profile, select **DATA**.
2. Enter a name to identify the profile in the *Profile name* text field.
3. Select **Visible** in the drop-down list to activate this profile.

6.13.2

EDITING PROFILE SETTINGS

To edit the profile settings, do the following:

1. In the applicable profile, select **SETTINGS**.
2. Select the type of signal in the applicable drop-down list:
 - Internal ring signal
 - External ring signal
 - Callback ring signal
3. Select **Silent** or **Level 1-5** in the *Ring volume* drop-down list.
4. Enable or disable the following functions:
 - Vibrator
 - Silent mode
 - Manual absent
 - Key beep
5. Select how to answer a call in the *Answer mode* drop-down list:
 - Ordinary
 - Auto
 - Loud

- Auto loud

6.13.3

SOFT KEY CONFIGURATION

Three soft keys can be configured for each profile. To configure a soft key, do the following:

1. In the applicable profile, select **SOFT KEY X**.
2. Enter the name of the soft key in the *Soft key name* text field.
3. Enter the applicable index in the *Soft key index* text field. The index parameters are used with the following *Soft key functions*:
 - Shortcut
 - Presence
 - PTT
 - Change profile

Refer to the help text in the PDM for valid indexes.

4. Select the applicable function in the *Soft key function* drop-down list:
 - Disable - no function is used.
 - Default
 - Shortcut
 - Phone call
 - Presence

Note: If the activity ID is changed in the Presence Management system, the value for the Soft key index in the VoWi-Fi handset needs to be reprogrammed.

- PTT
 - Send data
 - Send data with prefix
 - Send message
 - Change profile
5. Enter the user data in the *Soft key user data* text field if applicable. For more information, refer to the help text in the PDM.
 6. Repeat the procedure to configure additional soft keys for the selected profile.

6.13.4

DIVERSIONS

Calls can be diverted to other phone numbers, for example, when busy. To divert a call, do as follows:

1. In the applicable profile, select **DIVERSIONS**.
2. Activate a diversion by selecting **Enable** in the applicable diversion drop-down lists. The following diversions are possible:
 - *Activate diversions for all calls*
 - *Activate diversions on user busy*

- *Activate no answer diversions*
3. Enter the diversion number in the applicable *Diversion number* text field.

6.14

ACTIVE PROFILE

This setting defines the default profile. To set it, do as follows:

1. Select **UI > SETTINGS**.
2. Select the applicable profile in the *Active profile* drop-down list:
 - Normal
 - In charger
 - Profile2
 - Profile3
 - Profile4
 - Profile5
 - Profile6
 - Profile7
 - Profile8
 - Profile9

6.15

PROGRAMMING A SERVICE

A service is activated from the service menu in the handset. To program a service, do as follows:

1. Select **SERVICE >** and a service number (0-9).
2. Enter the name of the service in the *Service name* text field.
3. Enter the applicable index in the *Service index* text field. Refer to the help text in the PDM for valid indexes.
4. Select one of the following in the *Service function* drop-down list:
 - Disable
 - Phone call
 - Presence

Note: If the activity ID is changed in the Presence Management system, the value for the Service index in the VoWi-Fi handset needs to be reprogrammed.

- PTT
 - Send data
 - Send data with prefix
 - Send message
5. Enter the user data in the *Service user data* text field if applicable. For more information, refer to the help text in the PDM.

6.16

PRESENCE MANAGEMENT (CMG)

To be able to configure the presence management, you must know the following:

- The IP address to the Presence Management system (CMG)
- The user name and password used in the Presence Management system for each handset

For more information about the presence management, refer to the *Single Mode Wi-Fi Feature Description* or *WiFi412 Cordless Telephone for MX-ONE User Guide*.

To configure the presence management, do as follows:

1. Select **PRESENCE > COMMON** and choose the applicable system in the *Presence Management system* drop-down list.
2. Select **PRESENCE >** and the *Presence Management system* selected in the previous step.
3. Enter the IP address to the Presence Management system in the *IP address* text field.
4. Enter the number of the port that the Presence Management system will listen to in the *Listening port* text field.
5. Enter the user name in the *User name* text field.
6. Enter the password in the *Password* text field.

The function **Presence** is added to the menu (under **Settings**) but it can also be assigned to a Soft key, Hot key, or Service.

6.17

PTT GROUP CALL

The PTT group call requires external PTT equipment not provided by Mitel.

To be able to configure a PTT session, you must know the following:

- The group number to the PTT group (defined in the CPDM)
- The phone number to the conference bridge

For more information about the PTT function, refer to the *Single Mode Wi-Fi Feature Description* or *WiFi412 Cordless Telephone for MX-ONE User Guide*.

Note: If Music on Hold (MOH) is used in the system, it may effect an ongoing PTT group call. If someone in the group conference answers another incoming call, MOH will be played for the whole group.

To configure a PTT session, do as follows:

1. Select **PTT > PTT X**.
2. Enter a name to identify the PTT session in the *Session name* text field.
3. Enter the number to the PTT conference group in the *Group number* text field.
4. Enter a text to be shown in the display during the PTT session in the *Display* text field.
5. Select the indication of the PTT session in the *PTT session signal* drop-down list.
6. Enter the phone number to the conference bridge in the *Conference number* text field.
7. Select the answer mode for the PTT session in the *Answer mode* drop-down list.

8. Select the speaker mode for the PTT session in the *Speaker mode* drop-down list.

The function must be assigned to a Soft key, Hot key, or Service.

7

USING THE WIFI412 HANDSET TO VERIFY THE VOWI-FI SYSTEM DEPLOYMENT

Aastra recommends that you do site surveys with the built-in tools in the VoWi-Fi handset. This provides a solid measurement of the radio frequency (RF) environment based on the radio of the handset. Other wireless analyzers may be used to provide additional assistance during a site survey.

7.1

SCANNING THE CHANNELS

To be able to use the site survey functions in the VoWi-Fi Handset, it must be configured correctly.

The default configuration for the handset is to use channels 1, 6, and 11. If the handset is intended for site survey use, scanning all the channels will be limited to 1, 6, and 11. The result is stored in the handset in a table with maximum 16 entries. The table is upgraded regularly, starting with scanning channel 1, then 6, and finally 11. In between, the handset is in sleeping mode. The handset consults this table when making roaming decisions.

To enable the scanning of all the channels, set the parameter **802.11b/g channels** to **All**. It is strongly recommended to set the handset back to **1, 6, 11** when in normal use.

The *World mode regulatory domain* will also affect which channels may be used. To scan channels 1-11, configure the handset so that the **World mode regulatory domain** parameter is set to **USA**. If the scanning of channels 12 and 13 is also of interest, use the value **European Telecommunications Standards Institute (ETSI)**.

There are three ways to scan channels:

- Scan all channels
- Scan a specific channel
- Scan for unknown systems

7.1.1

SCANNING ALL CHANNELS

To get a list of the channels in the ESSID found during the scan, do as follows:

1. Key in ***#77#** on the handset to access the site survey menu.
2. Select **Scan all channels**.
3. Select the ESSID to display its associated APs.
4. Select an AP to display information, such as ESSID, Media Access Control (MAC) address, or QoS.

7.1.2

SCANNING A SPECIFIC CHANNEL

To get a list of all the APs found on a particular channel in the specified ESSID, do as follows:

1. Key in ***#77#** on the handset to access the site survey menu.
2. Enter the channel number to scan.

3. Select an AP to display information, such as ESSID, MAC address, or QoS.

7.1.3

SCANNING FOR AN UNKNOWN SYSTEM

To get a list of all the existing ESSIDs found during the scan, do as follows:

1. Create an ESSID that does **not** exist.
2. Enter a descriptive system name.
3. Make sure the handset is personal.
4. Select the previously created system in the handset. **No system** is displayed.
5. Key in ***#77#** on the handset to access the site survey menu.
6. Select **Scan all channels** to list all the ESSIDs available.
7. Select the applicable ESSID to display its associated APs.
8. Select an AP to display information, such as ESSID, MAC address, or QoS.

7.2

RANGE BEEP

The range beep function enables a beep to be played whenever the handset experiences a filtered field strength below the configured value (default -70 dBm) from the currently associated AP. Since the value is filtered, sudden drops in field strength caused by the environment, for example, walking through a door into a room, will be delayed, thus, it is important to walk slowly through the site to cover all weak spots.

7.2.1

CONFIGURABLE ROAMING THRESHOLD

Since the roaming threshold of the handset is set to the same value as the range beep (-70 dBm), each roam will cause a small period of beeping. In the site survey menu, you can change the roaming/low RSSI threshold. This is useful if a specific area is designed to have different coverage level than -70 dBm.

In normal operation, the handset uses -70 dBm. It is very important to change this value back to -70 dBm (or simply reboot the handset) before validating the rest of the system. To set the roaming threshold, do the following:

1. Key in ***#77#** on the handset to access the site survey menu.
2. Select **Range level**.
3. Enter the new threshold and press **Set**.

7.2.2

RANGING BEEP ON A CONFIGURABLE ROAMING THRESHOLD

A beep is played when the signal goes below the selected threshold. To enable or disable this function, do as follows:

1. Key in ***#77#** on the handset to access the site survey menu.
2. Enable or disable the *Range beep* checkbox.

8 TROUBLESHOOTING

8.1 DISPLAY INFORMATION AND SYMPTOMS IN THE VOWI-FI HANDSET

8.1.1 NO SYSTEM

When the WiFi412 shows **No system**, it cannot find the wireless infrastructure with the settings matching those configured in the handset.

To solve the problem, try the following:

- Check the ESSID. The ESSID configured in the handset must be identical to the ESSID configured in the system infrastructure.
- Check the security settings. The security settings, that is, authentication and encryption, must match the settings in the system infrastructure.
- Check for 802.11d multi regulatory domain settings. The VoWi-Fi handset versions 1.1.0 – 1.1.15 must be able to detect in which country it is located to be able to use the correct channel and transmission power settings. Later versions have a parameter specifying whether to use 802.11d. This is provided by the infrastructure according to the 802.11d standard.
- Check which channels are used. By default, the VoWi-Fi handset uses channels 1, 6, and 11. If the infrastructure is configured to use any other channel, change it to use only 1, 6, and 11, as this is the recommended setting.
- Check that the correct system (A, B, C, or D) setting is selected.

8.1.2 NO ACCESS

When the handset shows **No access**, it has found and associated with the WLAN (a wireless network with the configured ESSID and the correct security settings), but it cannot connect to either the SIP Proxy or the messaging gateway (CPDM).

To solve the problem, try the following:

- Check if the handset has an IP address by entering the **System information** screen. If it does not, check the Wired Equivalent Privacy (WEP) key, if used, or the Wi-Fi Protected Access (WPA) or WPA2 passphrase.
- If using WEP, double-check the key to find out if the handset has no IP address. If you have a wireless sniffer, configure it to the correct key and try to decode packets both from and to the handset.
- Check the SIP Proxy address. Try to ping the proxy from another wireless client.
- Check the CPDM address. Try to ping the CPDM from another wireless client.

8.1.3 VOICE ONLY

When the handset shows **Voice only**, it is configured to use both a SIP Proxy and an CPDM, but has lost contact with the CPDM.

To solve the problem, try the following:

- Check the CPDM address. Try to ping the CPDM from another wireless client.

- Remove the WiFi412 from the WinPDM stand-alone programming device. When connected to the WinPDM through a USB, the handset cannot connect to the CPDM and may show **Voice only**.
- If messaging is not used in the system, verify that the CPDM address is configured to 0.0.0.0.

8.1.4

MESSAGING ONLY

When the handset shows **Messaging only**, it is configured to use both a SIP Proxy and a CPDM, but has lost contact with the proxy.

To solve the problem, try the following:

- Check the SIP Proxy address. Try to ping the proxy from another wireless client.
- Try to send a message. The idle connection check interval to the CPDM is much longer than to the proxy. Sometimes, when all the network connection is lost, the handset will show **Messaging only** for quite a long time, because it discovers it has lost connection to the proxy much faster than it discovers the loss of connection to the CPDM. In this case, the WiFi412 will eventually change to **No access**.
- Check the Endpoint number and the Endpoint ID. If both are configured, they **MUST** match each other. Try clearing one of them.

8.1.5

VOICE QUALITY IS BAD

To solve the problem, try the following:

- Check if the QoS is working in both directions. Voice traffic is to be prioritized on both the LAN and the WLAN.
- Connect to other phones (wired, analog, or external) to determine if it is the other end that may cause bad quality.
- Do a site survey and check for areas with under- or over-coverage and other interfering 802.11 systems.
- Do a network performance test to ensure the wired LAN/backbone has adequate capacity.
- Use a spectrum analyzer and look for non 802.11 interference.

8.1.6

BATTERY LIFE IS BAD

To solve the problem, try the following:

- Check **Beacon interval** and **Delivery Traffic Indication Message (DTIM)** settings in the AP.
- Verify the coverage. Low signal strength will make the handset constantly search for other APs, thereby consuming more power.
- Use a sniffer and check the amount of the broadcast traffic that is transmitted on the WLAN.
- Check if the correct models of the chargers are used.
- Verify with another battery.
- If the system is supposed to use U-APSD for voice calls, check the voice power save mode parameter in the PDM.

8.1.7

CONNECTED CALL BUT NO SOUND OR ONE WAY SOUND

To solve the problem, try the following:

- Write down the IP address of the handset. Turn the handset off and ping the IP address. If something is found, the problem is an IP address conflict.
- Check if the handsets are muted.
- Use a headset to eliminate bad speakers and microphones.

8.2

QUICK ACCESS TO THE BASIC SETTINGS OF THE VOWI-FI HANDSET

To identify some basic settings, enter the following codes in the handset:

Table 2 Codes to Basic Settings

Setting	Code
IP address	*#46#
MAC address	*#46#
Software version	*#46#
Current ESSID	*#46# or *#76#
Current ESSID	*#76#
Current ESSID	*#76#
Current channel	*#76#
Site survey functions	*#77#
Currently used transmission speed	A Hot key or Soft key can be programmed as a short-cut for Network statistics.
Total transmission failures	A Hot key or Soft key can be programmed as a short-cut for Network statistics.

The following basic settings are shown on the web administration page for the handset. For more information, refer to 8.3 Accessing the Web Administration Page for the Handset on page 36.

Table 3 Basic Settings on the Web Administration Page for the Handset

Setting	Path
Software version	System setup/Info
MAC address	System setup/Info
SNTP server address	System setup/Info
IP address	System setup/Detailed info
Subnet mask	System setup/Detailed info
Default gateway	System setup/Detailed info
SIP proxy IP address	System setup/Detailed info

8.3

ACCESSING THE WEB ADMINISTRATION PAGE FOR THE HANDSET

Enter the IP address of the handset in the address bar in the web browser to access the web administration page for the handset.

9 UPGRADING THE SOFTWARE

The procedure for upgrading the WiFi412 handset with new software is described in the applicable CPDM or WinPDM Installation and Operation Manual.

Note: The handset will always use the latest downloaded software at startup, but, as described below, it can be set to use another version.

9.1 RECAPTURING THE EARLIER SOFTWARE

The handset stores two software versions, which makes it possible to make the handset jump back to the earlier software, if necessary.

Note: The handset must be switched off to be able to load the earlier software.

To load the earlier software, do as follows:

1. Press and hold keys **7** and **8**, and press the On/Off key at the same time. The handset loads the earlier software and will keep it as long as it is not restarted.

10

RELATED DOCUMENTS

Table 4 Related Documents

<i>Single Mode Wi-Fi System Description</i>	47/1551-ANF 901 43 Uen
<i>Single Mode Wi-Fi Feature Description</i>	48/1551-ANF 901 43 Uen
<i>Single Mode Wi-Fi System Planning</i>	49/1551-ANF 901 43 Uen
<i>VoWi-Fi Shared Phones Feature Description</i>	50/1551-ANF 901 43 Uen
<i>WiFi412 Cordless Telephone for MX-ONE User Guide</i>	1553-EN/LZT103 070
<i>WiFi412 Configuration Manual</i>	18/1531-ANF 901 43 Uen
<i>CPDM Installation and Operation Manual</i>	19/1531-ANF 901 43 Uen
<i>WinPDM Installation and Operation Manual</i>	12/1531-ANF 901 43 Uen
<i>ELISE2 Installation Guide</i>	17/1531-ANF 901 43 Uen