Site Configuration

The Site Configuration dialog panels are used to configure parameters, which may differ between both sides of the link.

The parameters configured using the Site Configuration dialog panels include (among others):

- System settings
- Air interface - Transmit (Tx) power and antenna
- Network management including VLAN
- Security settings
- Date and time
- Hub or Bridge mode

In addition, the Link Site Configuration panels include several information windows:

- Inventory - link hardware and software model details
- External alarms indicators

The Operations dialog offers a "doorway" to jump into installation mode reverting to factory settings.

The Site Configuration dialog has its own main menu with the following extra functionality:

- Backup configuration parameters to a text file
- Restore configuration from a previously backed up configuration file
- Enable/disable the site ODU buzzer
- Jump back into installation mode keeping current configuration settings

Configuring the Site

Editing the Configuration Parameters by Site

You can edit the configuration parameters for each site individually. The following functions are available from the left side of the dialog box.
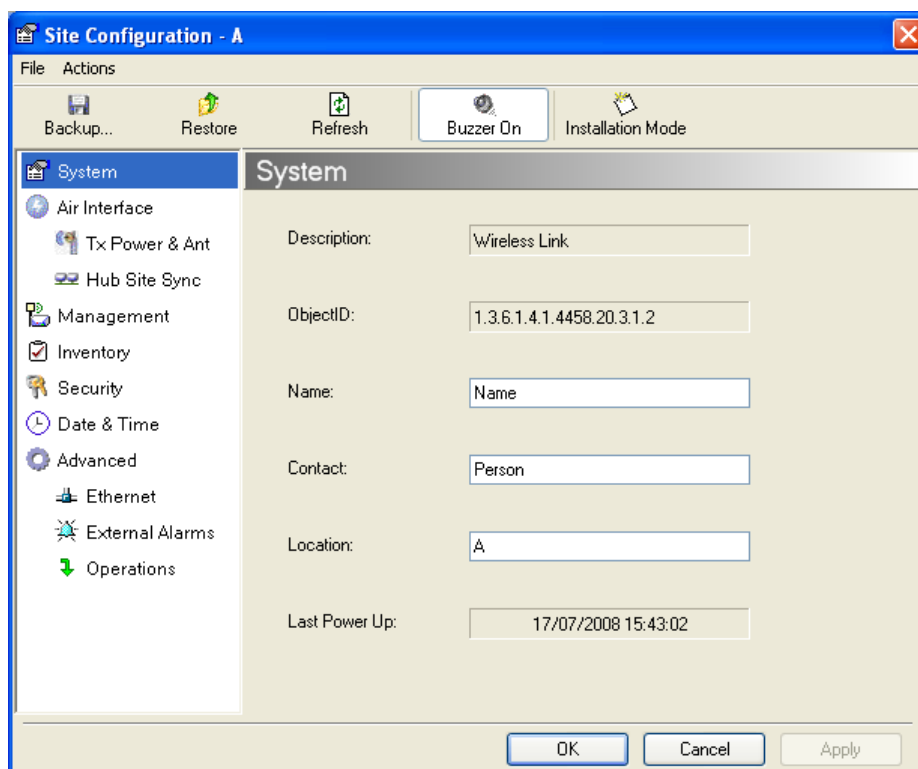
Figure 6-1: Configuration Dialog Box

Functions on the left of the dialog box:

System	Edit the contact person and location details. View the system details
Air Interface	Change the transmit power, cable loss, antenna type and settings
Inventory	View the hardware and software inventory (release numbers, model identification, MAC address)
Management	Configure the IP address, Subnet Mask, Default Gateway, the Trap Destination and VLAN
Security	Change the Community Values and the Link Password
Date and Time	Set the date and time of the link from an NTP servers otherwise
Advanced	Choose Hub or Bridge ODU mode, set the Ethernet ports configuration, set the external alarm inputs, restore factory settings

Functions at the top of the dialog box:

Backup	Save the current configuration to an .ini file
Restore	Restore the link configuration from the .ini file created by the backup

Installation Mode	Return to Installation Mode for the entire link.
	Selecting the Mute check box before clicking the Install Mode button mutes the Beeper.
Mute	Mutes the alignment tone in installation mode. Reactivate the beeper during alignment.

➢**To edit the Configuration Parameters:**

1. Click the required site button on the main tool bar of the RADWIN Manager

   OR

   Click **Configuration** from the main menu and choose a site to configure.

   The Configuration dialog box opens (see **figure 6-1** above).

2. Choose the appropriate item in the left hand list to open a dialog box.

3. Click **Apply** to save changes.

   In subsequent instructions, we will simply say "Choose a site to configure" on the understanding that the foregoing procedure is implied.

Viewing Air Interface Details

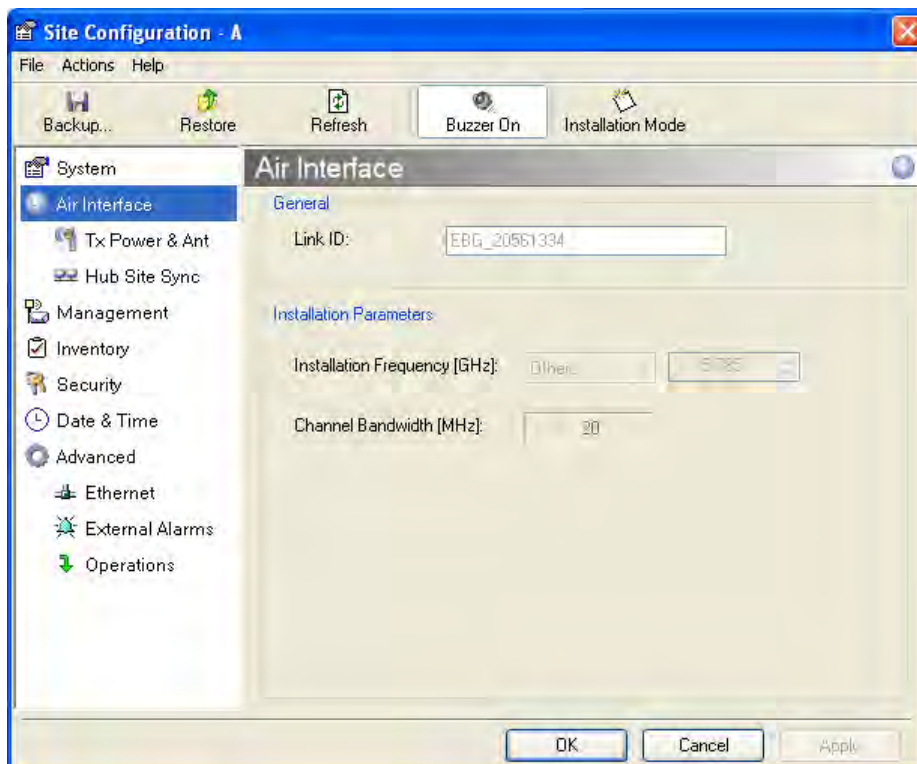Click the Air Interface item in the left hand list. A window similar to the following appears:

Figure 6-2: Air interface details

Changing the Transmit Power

Each site can have a different transmit power level.

➤ **To change the Transmit Power:**

1. Choose a site to configure.

   The Configuration dialog box opens.

2. Choose Air Interface (see **figure 6-3**).

3. Choose the required Transmit (Tx) Power Level.

4. Click **Apply** to save the changes.

Figure 6-3: Changing the Transmit Power

> **Note**
>
> The same considerations apply here as were noted in the Installation procedure on **page 4-23**.

Site Management: IP Address and VLAN

Configuring the ODU Address

Each site must be configured separately, first site A then site B.

➤ **To define the Management Addresses:**

1. Choose a site to configure.

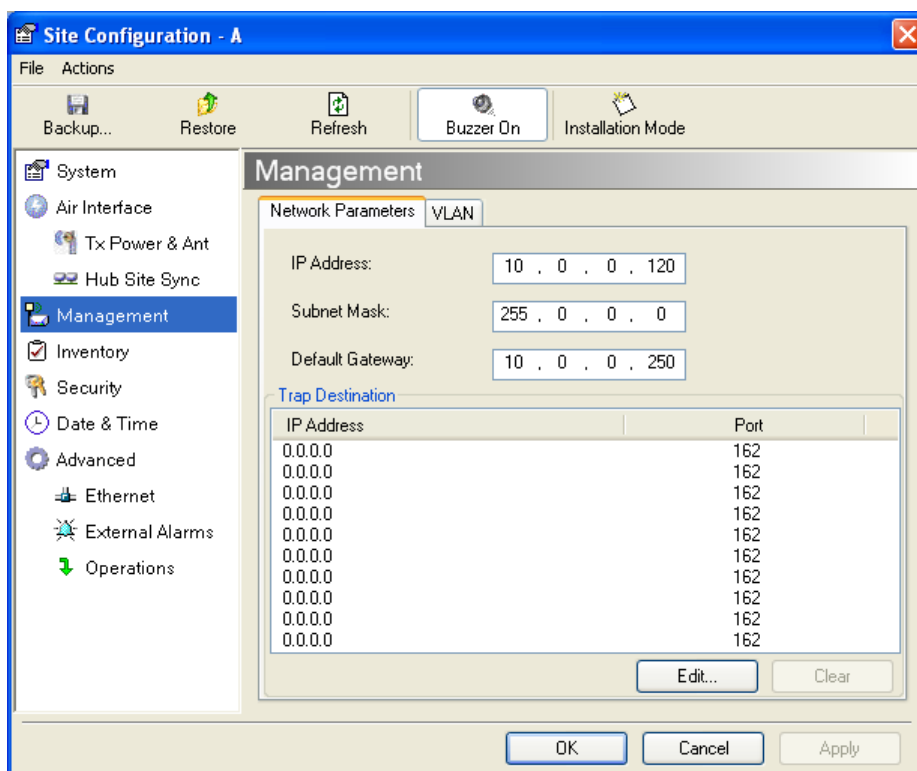The Configuration dialog box opens:

Figure 6-4: Management Addresses - Site Configuration dialog box

5. Choose **Management**.

6. Enter the IP address of the ODU in the IP Address field.

Note

If performing configuration from the RADWIN Manager, the IP address is that entered from the login screen.

7. Enter the Subnet Mask.

8. Enter the Default Gateway.

9. Enter the Trap Destination. This could be the IP address of the managing computer. The events log will be stored at this address.

10. Click **Apply** to save the changes.

Configuring VLAN Settings

VLAN Management enables separation of user traffic from management traffic whenever such separation is required. It is recommended that both sides of the link be configured with different VLAN IDs for management traffic.

➢**To enable VLAN management:**

1. Click **Configuration** from the main menu.

2. Choose a site to configure. If you are configuring both sites, choose site B first.

3. Choose **Management**.

4. Open the **VLAN** tab.

5. Check the **Enabled** box.

6. Enter a VLAN ID. Its value should be between 1 and 4094.

   After entering the VLAN ID, only packets with the specified VLAN ID are processed for management purposes by the ODU. This includes all the protocols supported by the ODU (ICMP, SNMP, TELNET and NTP). The VLAN priority is used for the traffic sent from the ODU to the managing computer. Using VLAN for management traffic affects all types of management connections (local, network and over the air).

7. Enter a Priority number between 0 and 7.

8. Change the VLAN ID and Priority of the managing computer NIC to be the same as those of steps 6 and 7 respectively.
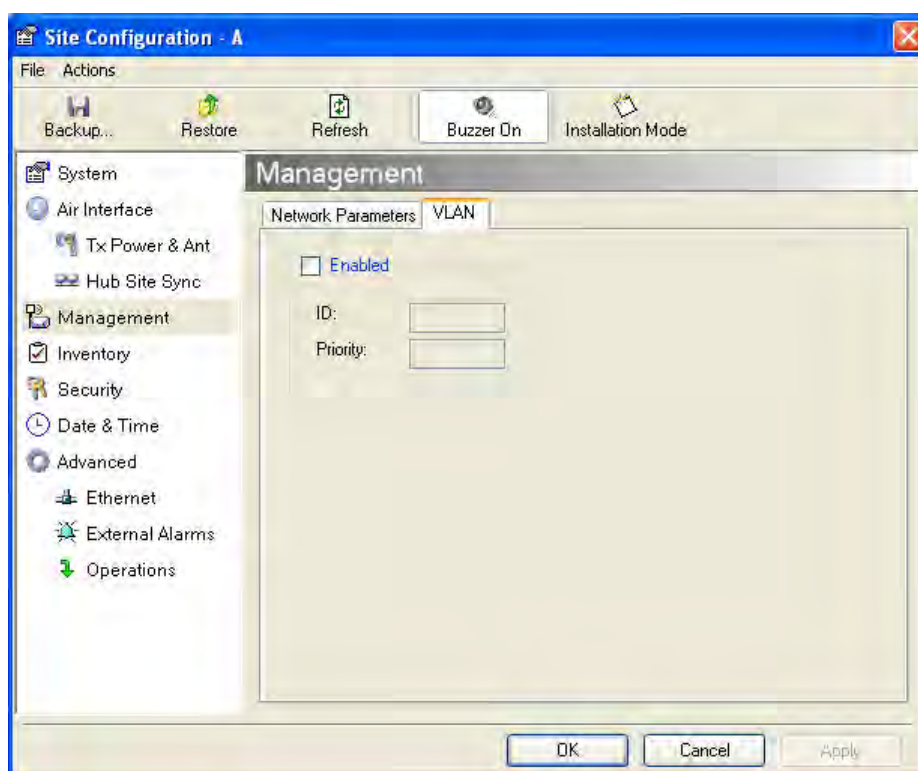
9. Click **Apply** or **OK**.

Figure 6-5: Configuring management traffic VLAN Settings

| ⚠️ **Caution** | Changing this parameter causes the RADWIN Manager to immediately disconnect. To avoid inconvenience, you should verify the change by setting the VLAN only to one ODU, and only after verifying proper management operation, change the other ODU VLAN setting. |

Lost or forgotten VLAN ID

If the VLAN ID is forgotten or there is no VLAN traffic connected to the ODU, then reset the relevant ODU.

During the first two minutes of connection to the ODU uses management packets both with and without VLAN. You may use this period to reconfigure the VLAN ID and priority.

Setting the Date and Time

The ODU maintains a date and time. The date and time should be synchronized with any Network Time Protocol (NTP) version 3 compatible server.

During power-up the ODU attempts to configure the initial date and time using an NTP Server. If the server IP address is not configured or is not reachable, a default time is set.

When configuring the NTP Server IP address, you should also configure the offset from the Universal Coordinated Time (UTC). If there is no server available, you can either set the date and time, or you can set it to use the date and time from the managing computer. Note that manual setting is not recommended since it will be overridden by a reset, power up, or synchronization with an NTP Server.

Note

The NTP uses UDP port 123. If a firewall is configured between the ODU and the NTP Server this port must be opened.

It can take up to 8 minutes for the NTP to synchronize the ODU date and time.

➢ **To set the date and time**

1. Determine the IP address of the NTP server to be used.

2. Test it for connectivity using the command (Windows XP), for example:

   w32tm /stripchart /computer:216.218.192.202

   You should get a continuous response of times, each a few seconds apart.

3. Choose a site to configure.

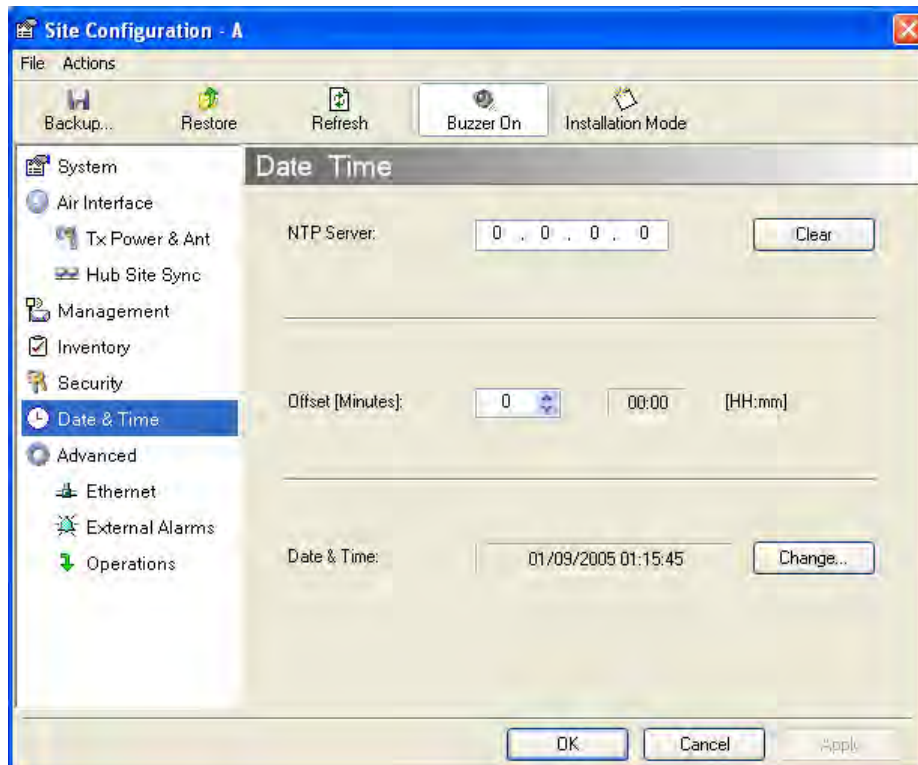   The Configuration dialog box opens.

4. Choose Date & Time:

Figure 6-6: Date and Time Configuration

5. If entering an IP address for the NTP Server, click **Clear**, and then enter the new address.

6. Set your site Offset value in minutes ahead or behind GMT[1].

7. To manually set the date and time, click Change and edit the new values.

Figure 6-7: Change Date and Time

If you used an NTP Server, you will see a window like this:

1. Greenwich Mean Time

Figure 6-8: Date and Time configured from an NTP Server

8. Click **OK** to return to the Configuration dialog.

Ethernet Properties

Configuring the Bridge

Bridge configuration is required in various network topologies, such as pro-
tection (1+1) and ring applications. The bridge configuration parameters
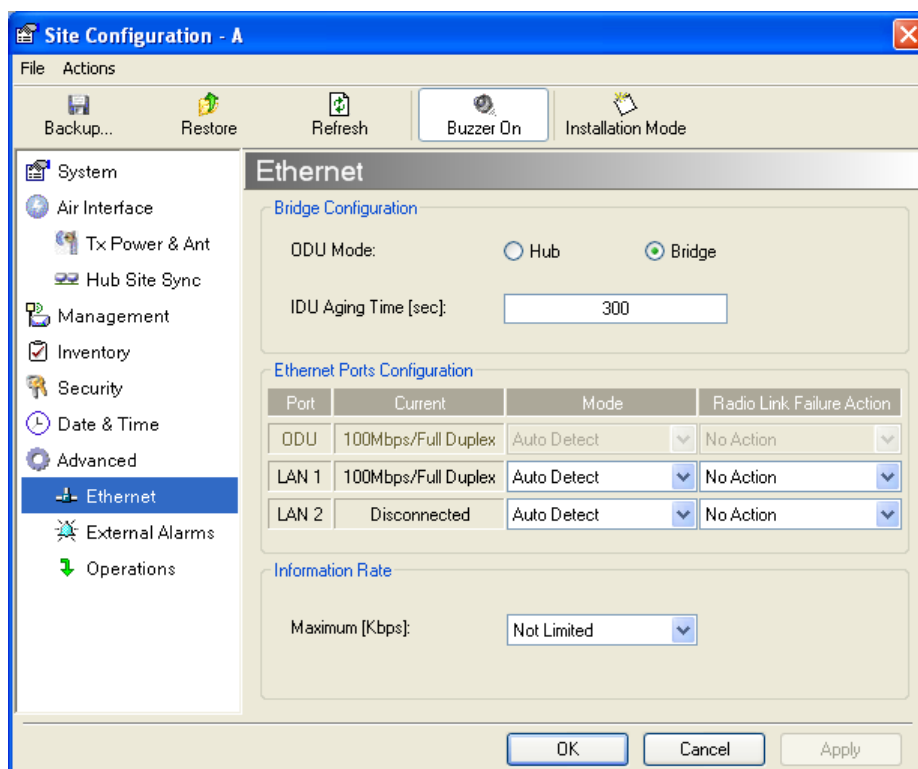are located under the Advanced tab of the Site Configuration dialog box:

Figure 6-9: Bridge Configuration - Site Configuration dialog box

ODU Mode

This parameter controls the ODU mode with two optional values,

- Hub Mode - in Hub mode the ODU transparently forwards all packets over the wireless link.
- Bridge Mode - In Bridge mode the ODU performs both learning and aging, forwarding only relevant packets over the wireless link. The aging time of the ODU is fixed at 300 seconds.

Note

Changing these modes requires system reset.

IDU Aging time

This parameter controls the IDU aging time.

The aging time parameter controls the time after which each MAC address is dropped from the MAC address learning table.

The default value is 300 seconds.

Note

- Any change to these parameters is effective immediately.
- Each side of the link can be configured separately.

The following table shows the appropriate configuration for several common scenarios. Both link sites must be configured with the same parameter:

Table 6-1: ODU mode configuration for common

Scenario	ODU Mode	IDU Aging Time
Standard (Default) Configuration for Ethernet Applications	Bridge	300 sec
Rapid network topology changes where fast aging is required	Hub	1 sec
Ethernet Hub	Hub	N/A
Ethernet Bridge	Bridge	N/A

Configuring Ethernet Ports Mode

The ODU Ethernet port is configured to auto-detect by default and may not be changed.

The ODU Ethernet port mode is configurable for line speed (10/100BaseT) and duplex mode (half or full duplex).

An Auto Detect feature is provided, whereby the line speed and duplex mode are detected automatically using auto-negotiation. Use manual configuration when attached external equipment does not support auto-negotiation. The default setting is Auto Detect.

Caution

You should not reconfigure the port that is used for the managing computer connection, since a wrong configuration can cause a management disconnection or Ethernet services interruption.

➢ **To configure the Ethernet Mode:**

1. From the **Configuration** menu, choose the site to reconfigure.

   The Site Configuration dialog box opens.

2. Click **Advanced | Ethernet**.

3. In the Ethernet Ports Configuration pane, use the drop-down menu to choose the configuration.

4. Click **Apply** to save the changes.

Note

It is possible to close the Ethernet service by disconnecting the Ethernet port.

If you close the port, you may subsequently be unable to access the device. If this should occur, a workaround is as follows:

- Connect the system from the remote site
- Connect via other Ethernet port (of the IDU)
- Power down the equipment and connect immediately after power up (the fastest way is to enter install mode)

Setting the Maximum Information Rate

The maximum Ethernet throughput of the link can be limited. The default setting is Not Limited (see **figure 6-9** above), where the highest information rate available for the link conditions and settings is used.

➢**To limit the Ethernet information rate:**

1. From the **Configuration** menu, choose the site to reconfigure.

2. Click **Advanced | Ethernet**

   The Configuration dialog box opens.

3. In the Information Rate pane, use the drop-down menu to choose the maximum Information Rate.

4. Choose **Other** to define the throughput with 1 Kbps resolution

5. Choose **Not Limited** for the highest information rate possible for the link conditions and settings

6. Click **Apply** to save the changes.

Displaying the Inventory

➢**To view the inventory data**

1. Choose a site from the main menu.

   The Configuration dialog box opens.

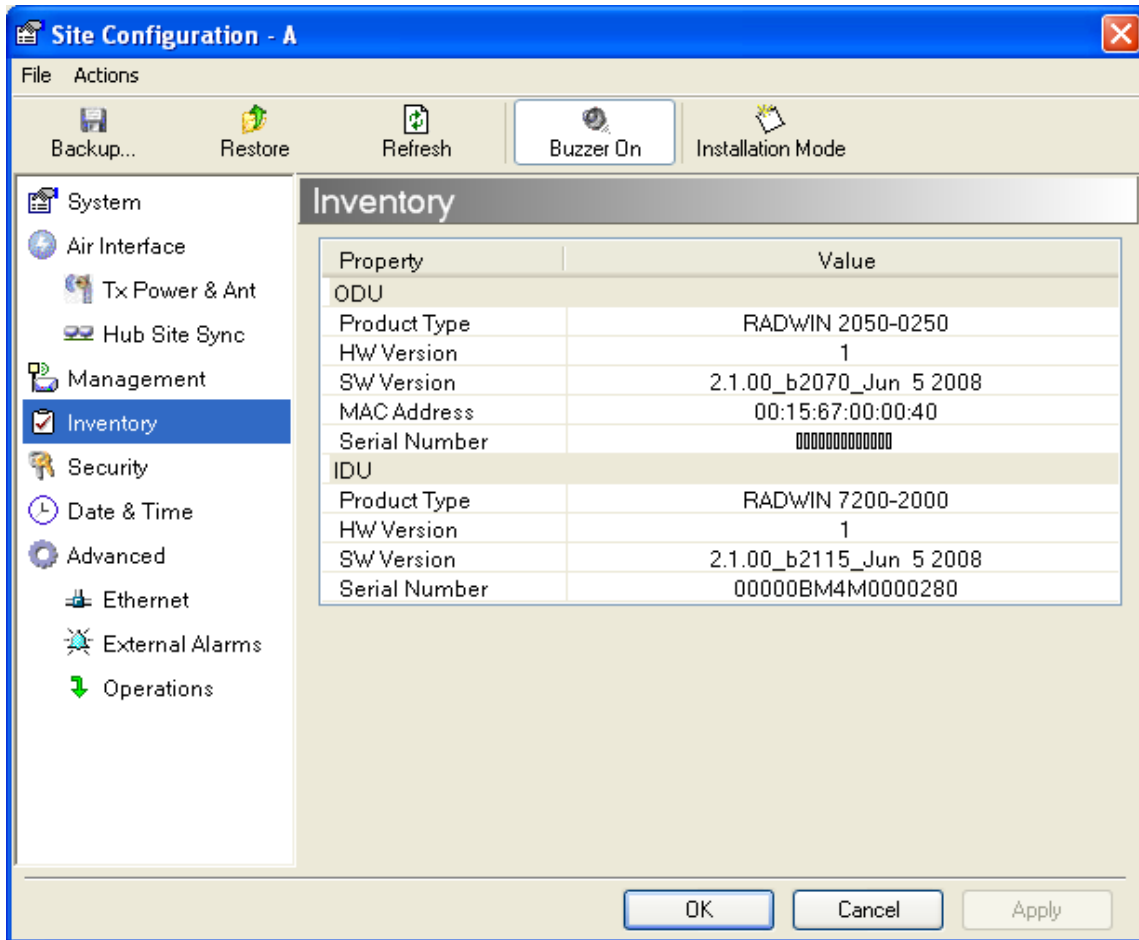2. Choose Inventory (**figure 6-10**).

Figure 6-10: Inventory Screen

Security Features

The Security dialog enables you to change the Link Password and the SNMP Communities details:
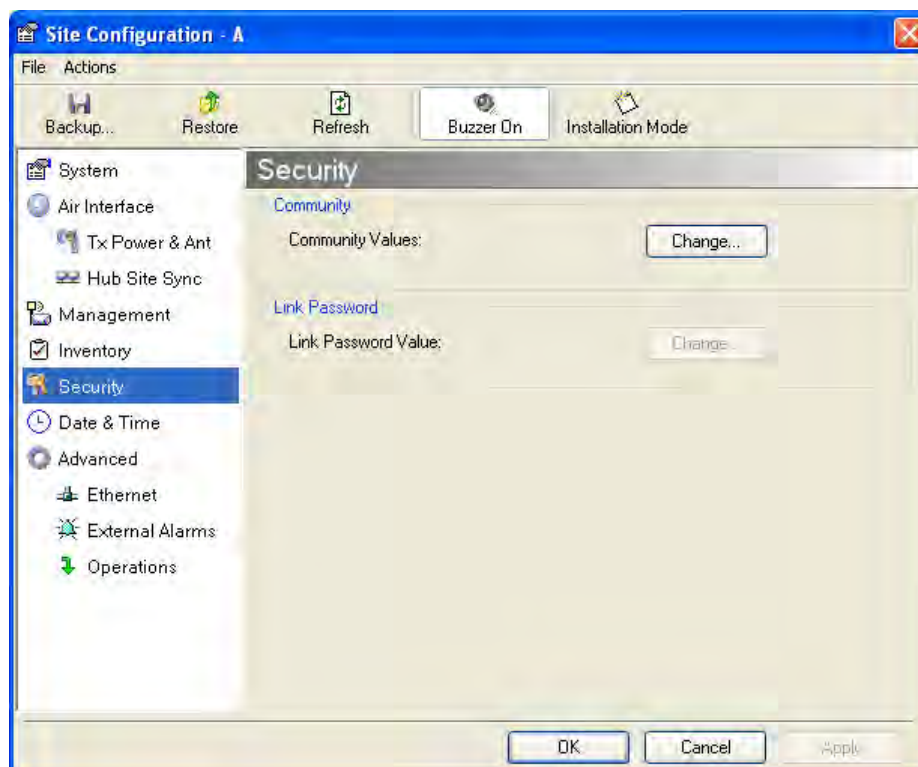
Figure 6-11: Available security features

Changing the Link Password

This item is only available when the link is down. Otherwise, it works the same way as the corresponding item on .

RADWIN Manager Community Strings

The ODU communicates with the application using SNMPv1 protocol. The protocol defines three types of communities:

- Read-Only for retrieving information from the ODU
- Read-Write to configure and control the ODU
- Trap used by the ODU to issue traps.

The Community string must be entered at login. The user must know the password and the correct Community string to gain access to the system. A user may have read-only privileges.

It is not possible to manage the ODU if the read-write or the read Community values are forgotten. A new Community value may be obtained from RADWIN Customer Support for the purpose of setting new Community; the serial number or the MAC address of the ODU must be supplied.

Note The RADWIN Manager uses the Read Community strings **public** for the site Al ODU and **public-remote** for the site B ODU. It uses Write Community strings **netman** for the site A ODU and **netman-remote** for the site B ODU. These are the factory defaults.

The read-write Community strings and read-only Community strings have a minimum of five alphanumeric characters. (**bru1** and **bru4097** are not permitted). Changing the trap Community is optional and is done by clicking the check box.

Editing Community Strings

The Community change dialog box is available from the **Configuration | Security** tab. Both read-write and read-only communities must be defined.

On logging on for the first time, use the following as the current Community:

- For Read-Write Community, use *netman*.
- For Read-Only Community, use *public*.
- For Trap Community, use *public*

➢ **To change a Community string:**

1. From the Configuration dialog box, choose the Security tab.

2. Type the current read-write Community (default is *netman*).

3. Choose the communities to be changed by clicking the check box.

4. Type the new Community string and re-type to confirm.

5. Click **OK** to save.

Figure 6-12: Changing the Community String

Forgotten Community string

If the read-write Community string is unknown, an alternative Community key can be used. The alternative Community key is unique per ODU and can be used only to change the Community strings. The alternative Community key is supplied with the product, and should be kept in a safe place.

If both the read-write Community and the alternative Community key are unavailable, then an alternative Community key can be obtained from RAD-WIN Customer Support using the ODU serial number or MAC address. The serial number is located on the product label. The serial number and the MAC address are displayed in the Site Configuration inventory tab.

When you have the alternative Community key, click the **Forgot Community** button and enter the Alternative Community key (**figure 6-13**). Then change the read-write Community string.
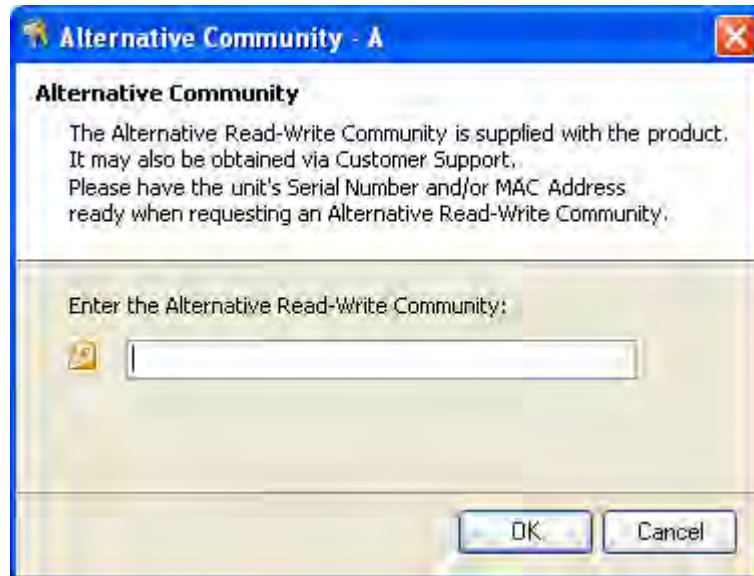
Figure 6-13: Alternative Community Dialog box

Muting the alignment tone

The ODU alignment tone becomes audible as soon as power is supplied, and continues until the ODUs are aligned and the link established.

It is possible to mute the tone during regular operation of the link. It must be enabled when performing the alignment procedure.

➢ **To mute the alignment tone:**

1. Choose a site.

2. The Configuration dialog box opens.

3. In the Configuration dialog box, click the **Buzzer** button. The button toggles between on and off.

   The tone is disabled.

➢ **To restore the alignment tone:**

1. Choose a site.

   The Configuration dialog box opens.

2. In the Configuration dialog box, click the **Buzzer** button. The button toggles from on to off. The tone is enabled.

Setting External Alarm Inputs

The IDU-C has two external alarm inputs and two external alarm outputs in the form of dry-contact relays. The Alarm interface is located on the front panel of the IDU-C and is a 25-pin D-type female connector. see **IDU-C Alarm Connector** on page **B-3**, for wiring specifications and pinout. The user enables or disables each of the alarms and can configure the alarm

description text that appears in the alarm trap. The ODU sends the alarm within less than a second from actual alarm trigger.

➢ **To set the external alarm inputs:**

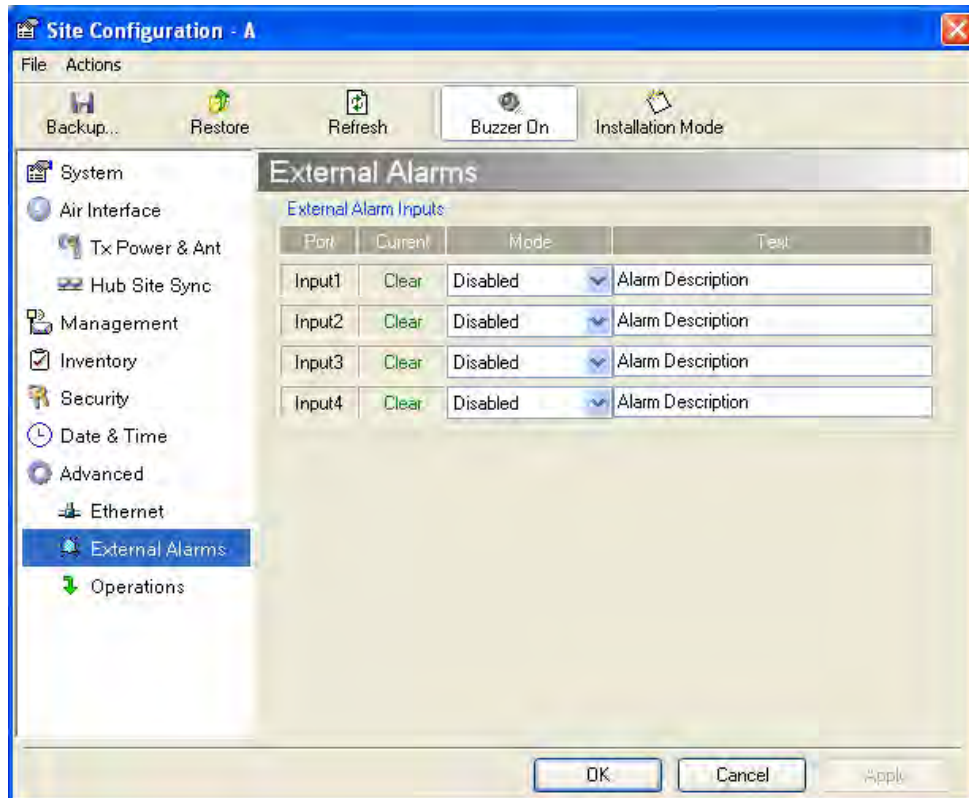1. Open the Site Configuration Alarms configuration by clicking **Configuration | Advanced**.

Figure 6-14: External Alarm Configuration

2. Choose an alarm and set its mode to Enabled or Disabled

3. Enter a description of the alarms in the text field.

4. Click **Apply** to save.

5. Click **OK** to exit from the dialog.

Managing Configuration Files

Backup Configuration to a File

RADWIN Manager allows you to backup configuration parameters of the local and remote units to the managing computer as **.ini** files. Each site is backed up in a separate **.ini** file.

➢ **To save the configuration in a file:**

1. Choose a site to back up.

   The Configuration dialog box opens.

2. Click **Backup**.

3. In the Save As dialog box, indicate in which folder and under what name configuration file is to be saved, and click **Save**.

Restoring a Configuration File

Configuration files (*.**ini**) can be uploaded from the managing computer. Such configuration files can be distributed to other units that use the same configuration.

➢ **To restore a configuration file:**

1. Choose a site to restore (from a previous backup).

   The Configuration dialog box opens.

2. Click **Restore**.

3. From the Open dialog box choose *.**ini** file to upload and click **OK**.

⚠️ *Caution*	Backup files are specific to a site (IDU / ODU pair and Link ID). Do not restore a backup configuration file to a site other than that from which it was originally taken.

Resetting

You may reset the link, preserving the current configuration, or reset to factory defaults.

⚠️ *Caution*	Resetting the link causes service disconnection. **To maintain the connection between the managing computer and the link, first reset Site B.**

➢ **To reset the link preserving current configuration:**

1. From **Maintenance** on the main window, reset the remote unit.

2. From **Maintenance** on the main window, reset the local unit.

➢ **To reset to Factory Defaults**

1. Choose either of the sites.

   The Configuration dialog box opens.

2. Choose **Operations** in the Configuration dialog box.

3. Click the **Restore Defaults** button.

   A message box asking if you want to restore factory default appears.

4. Click the check box if you want to keep the current IP address settings.

5. Click **Yes** to continue.

Configuration with Telnet

A Telnet terminal can be used to configure and monitor the RADWIN 1000/2000/5000.

To start a Telnet session, use **telnet <manager IP>.**

For example, if you run Telnet as follows,

telnet 10.0.0.120

you will be asked for a user name and password.

The login user name/password is identical to the Community strings; Read allows display only, Read/Write allows display and set commands.

Supported Telnet commands are shown in **table 6-2**. Note that some of the commands are model-specific. For example, TDM commands will not apply to Ethernet only and PoE based links.

Table 6-2: Telnet Commands

Command	Explanation
display inventory	Displays ODU product name, Name, Location, hardware and software revisions, uptime, MAC address, IDU product name, IDU software and hardware revisions
display management	Displays IP, Subnet, Gateway, Traps table
display link	Displays State, Link ID, Channel BW, RSS, TSL, Frequency/ACS, DFS, Rate/ARA, Distance
display Ethernet	Displays Bridge Mode, Aging time, Port table (State, Status and action)
display tdm	Displays Clock Mode, Master Clock Mode, Current Clock, Quality[1], TDM table (Line status, Error Blocks)
display ntp	Displays Time, Server and Offset
set ip <ipaddr> <subnetMask> <gateway>	Set the ODU IP address, subnet mask and gateway The user must reset the ODU after the command completion
display PM <interface:AIR,LAN1,LAN2,TDM1, TDM2,TDM3,TDM4> <interval:current,day,month>	Shows the performance monitor tables for each interface according to user defined monitoring intervals
set trap <index:1-10> <ipaddr> <port:0-65535>	Set a specific trap from the traps table (set trap 3 10.0.0.133 162)
set readpw <oldpasswd> <passwd>	Set the read access password (Read Community)
set writepw <oldpasswd> <passwd>	Set the read-write access password (Read-Write Community)
set trappw <oldpasswd> <passwd>	Set the trap Community string
set buzzer <mode:0=OFF,1 =ON>	Toggle the buzzer mode (0 – off, 1 – on)

Table 6-2: Telnet Commands (Continued)

Command	Explanation
set tpc<power:Value between minimal TX power, and maximal TX power>	Set the ODU transmit power. If a wrong value is entered, both min and max values shall be displayed in the error reply
set bridge <mode:0=Bridging OFF,1= Bridging ON >	Set the ODU bridge mode (0 – off, 1 – on)
set name <new name>	Set the name of the link
set location <new location>	Set the name of the location
Set contact <new contact>	Set the name of the site manager
set Ethernet <>port:MNG,LAN1,LAN2> <mode:AUTO,10H,10F,100H,100F,DIS ABLE>	Set the mode and speed of each ethernet port
Reboot	Reset both the IDU and the ODU. The user shall be prompt that the command will reset the card and that he has to reconnect the telnet session after TBD seconds.
Help	Displays the available commands

figure 6-15, below, shows the available Telnet commands via the Help command.

```
Hello admin, welcome to ODU Management CLI!
+---------------------------------------------------------+
   Software Revision      2.1.00_b2070_Jun  5 2008
+---------------------------------------------------------+


admin@10.0.0.120-> Type "help" for help.


admin@10.0.0.120-> help
   display inventory
   display management
   display link
   display ethernet
   display tdm
   display ntp
   display PM <interface:AIR,LAN1,LAN2,TDM1,TDM2,TDM3,TDM4>
            <interval:current,day,month>
   set ip <ipaddr> <subnetMask> <gateway>
   set trap <index:1-10> <ipaddr> <port:1-65535>
   set readpw <writePasswd> <newPasswd>
   set writepw <writePasswd> <newPasswd>
   set trappw <writePasswd> <newPasswd>
   set buzzer <mode:0=OFF,1=ON>
   set tpc <power:Value between minimal TX power, and maximal TX power>
   set bridge <mode:0=Bridging OFF,1=Bridging ON>
   set name <new name>
   set location <new location>
   set contact <new contact>
   set ethernet <port:MNG,LAN1,LAN2> <mode:AUTO,10H,10F,100H,100F,DISABLE>
   reboot
   help


Command "help" finished OK.
```

Figure 6-15: Telnet Management Screen

Monitoring and Diagnostics

The RADWIN Manager application enables you to monitor the link, as well as perform diagnostic operations such as loopback tests.

This chapter covers:

- Retrieving link information
- Link compatibility issues
- Reinstalling and realigning a link
- Performance monitoring
- Troubleshooting
- Replacing an ODU
- Restoring to factory setup

Retrieving Link Information (Get Diagnostics)

The Get Diagnostics feature collects and writes all link and Manager information (from both sites) into a text file. The file information can be used for diagnostics and should be sent to RADWIN Customer Support to speed up assistance.

The following table lists link and system information that can be monitored.

Table 7-1: Get Diagnostics Data and Description

Data	Description
System Data	General information about the system
Link Information	Information about the link properties
Events Log	List of recent system events
Site Configuration	Data about the site parameters
Active Alarms	List of active alarms
Performance Monitor	Network performance data over defined time periods
Monitor	Detailed event data record

➢ **To get diagnostics**

1. On the Help menu, choose **Get Diagnostic Information**.
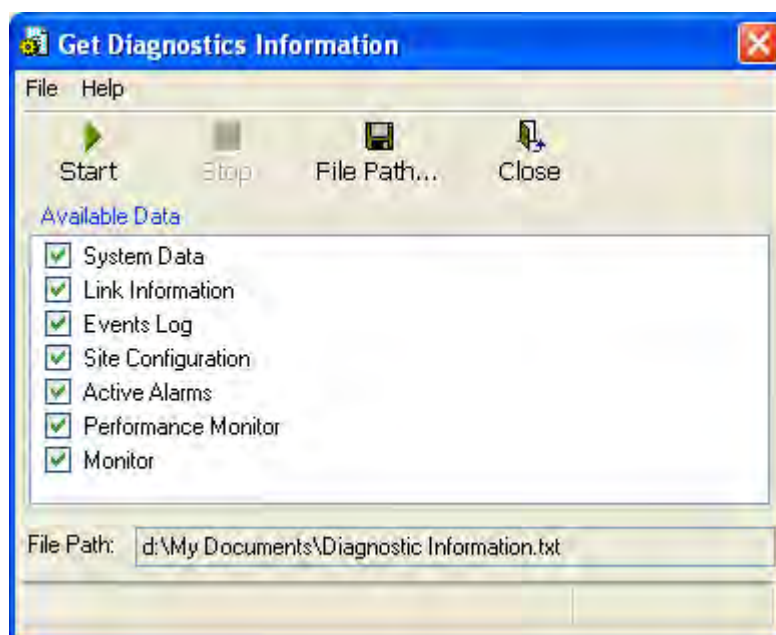
Figure 7-1: Get Diagnostics Dialog Box

2. Select or deselect the data options. If the file is to be sent to RADWIN Customer Support leave all options checked.

3. Click **File Path** to specify the folder in which you want to save the file and then click **Start** to save the information.

   The file is saved in the specified folder as **Diagnostics Information.txt**

Link Compatibility

Link Compatibility indicates the version compatibility using software traps. As new hardware or software is added to existing networks compatibility issues may arise. An incompatibility issue is indicated to the user by a change of color of the Link Status box on the Main Menu screen. Trap messages in the events Log indicate the problems or limitations and suggest upgrades when appropriate.

The following Link Status messages are given:

fullCompatibility - different software versions were detected that are fully compatible. The message indicates that an upgrade is available.

restrictedCompatibility - different software versions were detected that operate correctly. However, new features are not supported

softwareUpgradeRequired - different software versions were detected allowing limited operation. The message is, that a software upgrade required.

versionsIncompatibility - different software versions were detected that are incompatible. You need to perform local upgrades.

Table 7-2: Link Compatibility Trap Messages

Link State	Link State text	Link Status Color	Site Description	Site Desc. Color	Link Status Color
fullCompatibility	Active	**Green**	SW Upgrade Available	Yellow	Green
restrictedCompatibility	Active - SW Version mismatch	**Magenta (Same as authentication error)**	SW Upgrade Recommended	Yellow	Magenta (Same as authentication error)
softwareUpgradeRequired	Active – SW Upgrade Required	**Brown (Major)**	SW Upgrade Required	Yellow	Brown (Major)
versionsIncompatibility	Not Active - SW Upgrade Required	**Red**	Local SW Upgrade Required	Yellow	Red

Reinstalling and Realigning a Link

It may be necessary to reinstall the link if the ODUs need to be realigned.

Note

Activating Install Mode causes both sites to go into install mode, causing disruption in service for approximately fifteen seconds.

➢ **To reinstall the link:**

1. Choose a site.

   The Configuration dialog box opens.

2. In the Configuration dialog box, click the **Install Mode** button.

   A message box asking if you want to enter install mode appears.

3. Click **Yes** to continue.

   The system enters Install mode and the alignment tone becomes audible.

4. Realign the ODUs and start the Installation wizard (see chapter **4**).

The Link Budget Calculator

The Link Budget Calculator is part of the RADWIN Manager software and is found in the Help menu. This useful utility enables you to calculate the expected performance of the wireless link and the possible configurations for a specific link range including antenna size, cable loss and climate conditions. For full details, see appendix **D**.

Performance Monitoring

RADWIN 1000/2000/5000 Performance Monitoring constantly monitors traffic over the radio link and collects statistics data for the air interface and Ethernet ports. It does so continuously, even when the RADWIN Manager is not connected.

Two types of logs are recorded:

- **Monitor Log** that records statistics on traffic rate and radio signal strength.
- **Events Log** that records when the rates fall above or below a predefined threshold.

Both the statistics Monitor log and events log can be saved as TXT files.

The Monitor Log

The Monitor Log records performance statistics for predefined intervals. You can save the monitor log to a text file, as well as display the information in an on-screen report.

Saving the Monitor Log

You can save the recorded Monitor Log statistics to a text file.

➢ **To save the monitor log:**

1. From the **Tools** menu, choose **Preferences**.

   The Preferences dialog box appears:
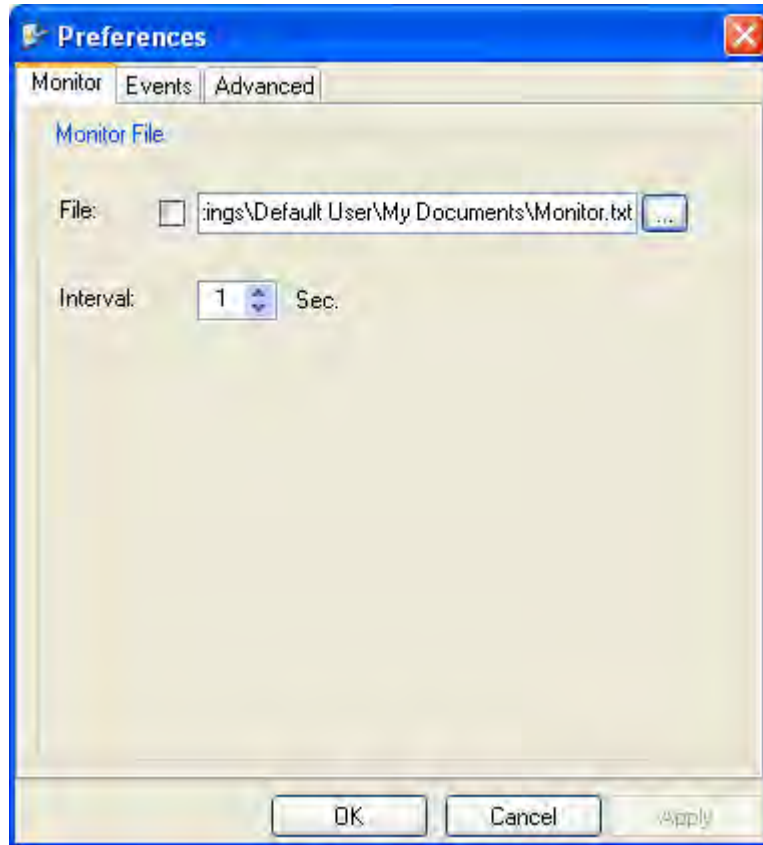
Figure 7-2: Preferences dialog box

2. Click the **Monitor** Tab.

3. Select the file to save.

4. Click the check box to open the file for saving.

5. Click the [···] button and in the Select File dialog box indicate in which folder and under what name the monitor log file is to be saved.

6. Set the time interval for adding data to the file.

7. Click **OK** to save the file.

Viewing Performance Reports

The Performance Monitor Report displays performance views of each of the interfaces[1].

➤ **To obtain performance monitoring reports:**

1. From the main menu, choose **Tools | Performance Monitoring Report ...**

You are presented with the following window:

---

1. Ethernet performance is not collected from PoE devices.
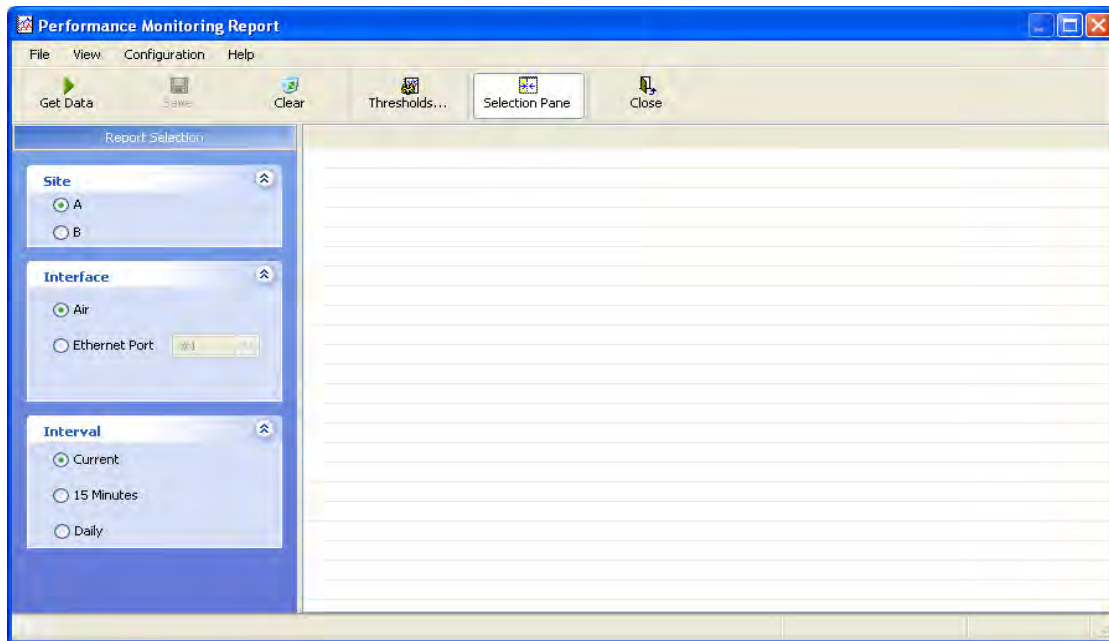
Figure 7-3: Basic Performance Monitoring Report

2. Choose a report type from the left panel and click the **Get Data** toolbar button. For example, if you choose Site A, Air and Current, you will be offered a report looking like this:
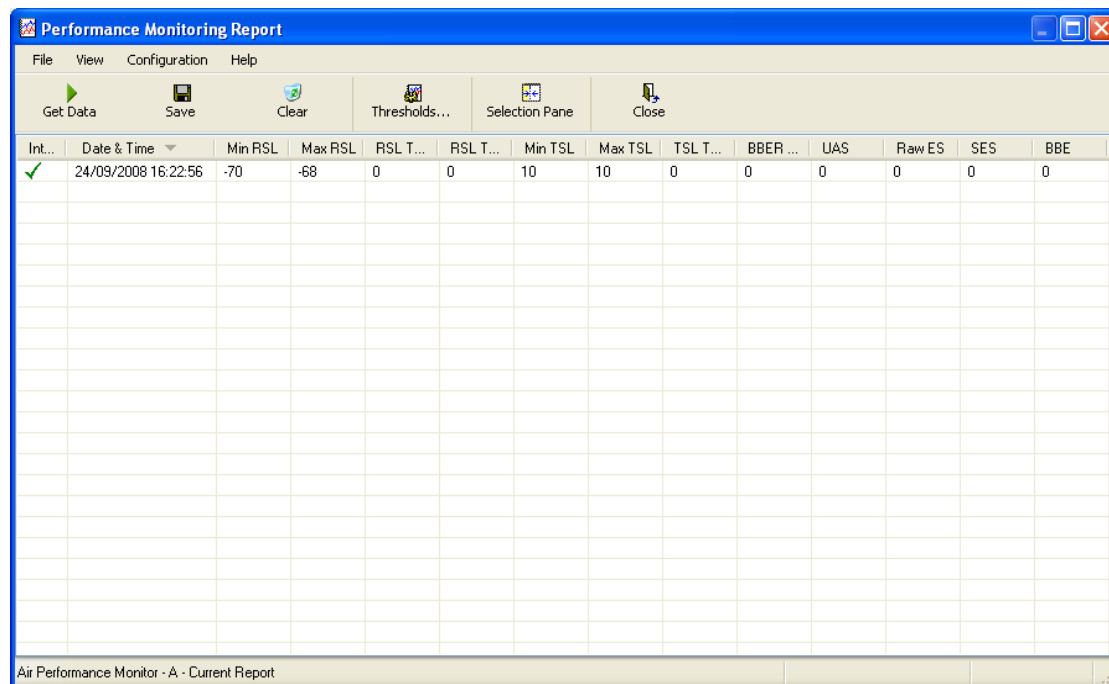
Figure 7-4: A typical Performance Monitoring Report

You can click the **Selection Pane** icon to toggle the side panel on or off.

The other reports look similar. Here is a detailed description of the reports and their fields:

Several performance data occurrences are collected for each of the interfaces (ES, SES, and UAS), as well as Specific data per Interface type (e.g., TX and RX bytes for Ethernet). For the Air Interface, user defined thresholds data are collected. Refer to **table 7-3** and **table 7-4**, in **Performance Monitoring Report Toolbar** below.

Data is collected and selectively displayed based on three time intervals as selected by the **Interval** radio buttons:

- Current (t=0)
- 15 minutes Intervals
- Daily

Table 7-3: Explanation of performance data

Data type	Reported Value	Explanation
Generic PM Data	UAS – Unavailable Seconds	Seconds in which the interface was out of service.
	ES – Errored Seconds	The number of seconds in which there was at least one error block. Note that the notation of an error block is different per interface.
	SES – Severe Errored Seconds	The number of seconds in which the service quality was low (the quality is different per type of interface and determined by the BBER threshold per interface).
	BBE – Background Block Error	The number of errored blocks in an interval.
	Integrity	A flag indicating that the data was valid. Note that the Performance Monitoring data is not valid if not all the values were stored (e.g., due to clock changes within the interval or power up reset).
Air Interface PM Data	Max RSL	The maximum of the receive signal level (measured in dBm).
	Min RSL	The minimum of the receive signal level (measured in dBm).
	Max TSL	The maximum of the transmit signal level (measured in dBm).
	Min TSL	The minimum of the transmit signal level (measured in dBm).
	RSL Threshold 1	The number of seconds in which the RSL was below the specified threshold.
	RSL Threshold 2	The number of seconds in which the RSL was below the specified threshold.
	TSL Threshold	The number of seconds in which the RSL was above the specified threshold.
	BBER Threshold	The BBER Threshold value counts the number of seconds in which the Background Block Error Ratio (BBER) exceeded the specified threshold.
Ethernet Interface PM Data	Received Bytes	The number of Megabytes received at the specified port within the interval
	Transmitted Bytes	The number of Megabytes transmitted at the specified port within the interval.

Performance Monitoring Report Toolbar

You can use the toolbar to perform the actions described in the following table:

Table 7-4: Action of the toolbar buttons

Command Button	Action
Get Data	Gathers current performance monitoring data.
Save	Save current performance monitoring data to a file
Clear	Clear current performance monitoring data.
Thresholds	Set Air Interface Thresholds
Close	Closes the active alarm window.

Setting Air Interface Thresholds

Use the Thresholds button on the Monitoring Performance Report toolbar to set the Air Interface Thresholds:

Figure 7-5: Threshold configuration dialog box

BBER Threshold

This parameter counts the seconds during which the radio performance is below a user specified threshold. The threshold is measured as a percentage. The threshold can be set from 0.1% up to 50%.

For links with Ethernet only service, 8% threshold is recommended. If there are no problems during the interval, then for that threshold, the recommended BBER value should be 0. Since the system provides a lossless Ethernet service, there is throughput degradation in case of interference. The degradation is proportional to the BBER.

RSL Threshold

RSL Threshold can also be used as an indicator of problems in the radio channel. You can check the RSS by from the Link Budget Calculator results

during installation. A value of -5dB from the current RSS is recommended as a threshold.

The Events Log

The Events Log records system failures, loss of synchronization, loss of signal, compatibility problems and other fault conditions and events.

Alarms (traps) are displayed in the Events Log in the lower panel of the main window. The Events Log may be saved as a text file.

The Events Log includes the following fields:

⇒ Sequential number (ID)

⇒ Date and time stamp

⇒ Message

⇒ Trap source

⇒ IP address of the ODU that initiated alarm.

For complete information about traps and alarms see appendix **G**, **MIB Reference**, **table G-3**.

The events are displayed in the Events Log in the lower part of the RADWIN Manager main window:
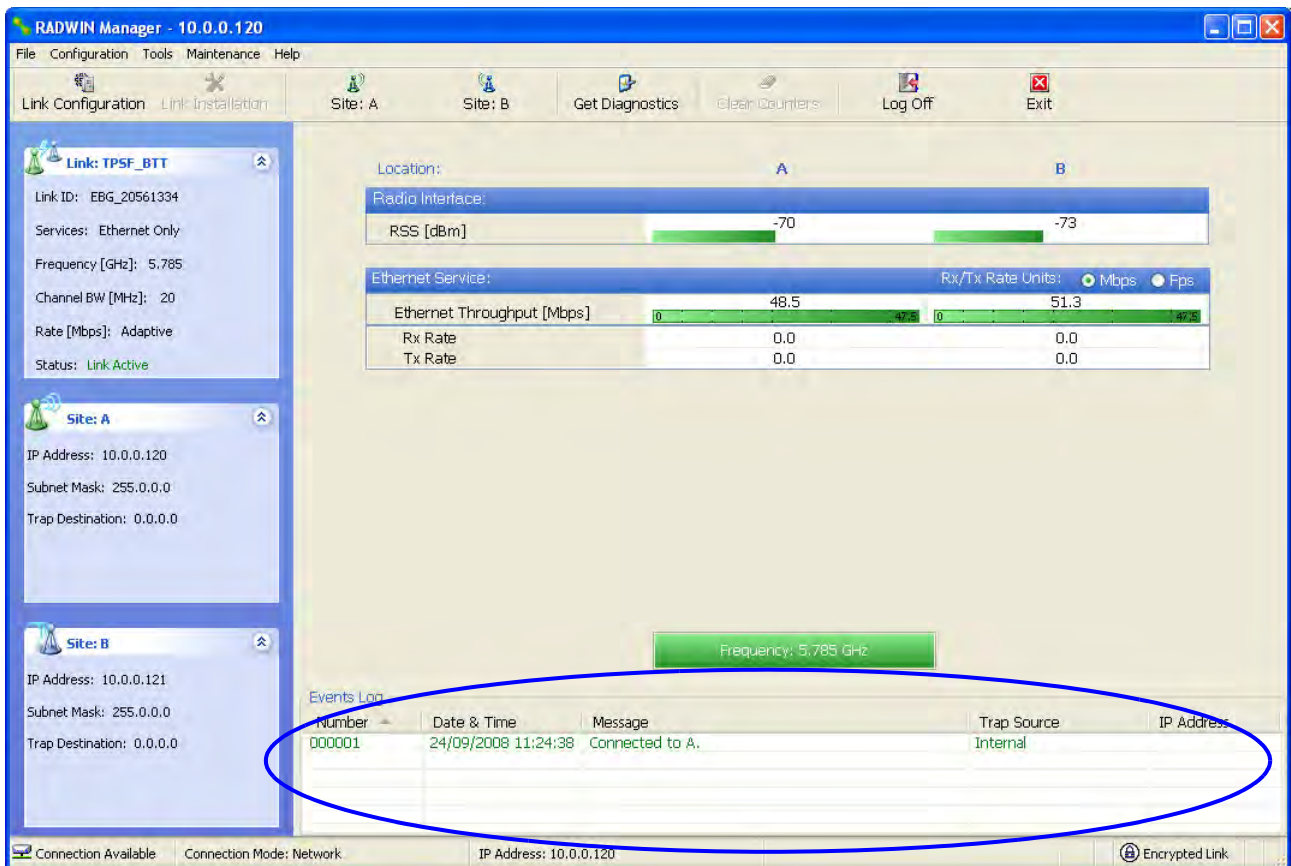
Figure 7-6: Events Log Display

RADWIN Manager Traps

The RADWIN Manager application issues traps to indicate various events, displayed in the Wvents Log.

Table 7-5: RADWIN Manager Trap Messages

Trap Message	Severity	Remarks
Error loading trap catcher. Port 162 is already in use.	Warning	NMS will not catch any traps from target, some other application has grabbed this port
Device unreachable!	Error	Check connectivity to target
Connected to <site_name>	Information	
<site_name> Site will be reset.	Information	
Restore Factory Default Settings in process on Site <site_name>	Information	
Factory Settings: The process was not finished due to connection issues.	Warning	Factory setting failed due to connectivity problem to target
Reset: The process was not finished due to connection issues.	Warning	Factory setting failed due to connectivity problem to target - Target will not be reset
Cannot Write to Monitor file. There is not enough space on the disk.	Warning	Free some space on disk and retry
Windows Error: <error_ID>. Cannot Write to Monitor file.	Warning	Operating System error
TDM Counters were cleared for both sides	Information	
Identical IP addresses at <local_site_name> and <remote_site_name>	Warning	Set up a different IP to each site
The Product is not identified at the <local_site_name> site.	Warning	NMS is incompatible with the target release
The Product is not identified at the <remote_site_name> site.	Warning	
The Product is not identified at both sites.	Warning	
Product Not Identified!	Warning	
The Manager identified a newer ODU release at the <remote_site_name> site.	Warning	ODU release is newer than NMS release. Wizards are not available. NMS will be used just for monitoring. Upgrade the NMS. (You will get this message as a pop up)
The Manager identified a newer ODU release at both sites.	Warning	

Table 7-5: RADWIN Manager Trap Messages

Trap Message	Severity	Remarks
The Manager identified a newer ODU release at the <local_site_name> site.	Warning	
Newer Version identified at the <local_site_name> site.	Warning	ODU release is newer than NMS release. Wizards are not available. NMS will be used just for monitoring. Upgrade the NMS
Newer Version identified at the <remote_site_name> site.	Warning	
Newer Version Identified!	Warning	

Setting the Events Preferences

You can define a color for the traps to be displayed in the Event Log window, according to the severity of the event. The severity is predefined.

➢ **To set the trap color:**

1. From the **Tools** menu, choose **Preferences**.

   The Preferences dialog box appears.

2. Click the **Events** Tab:
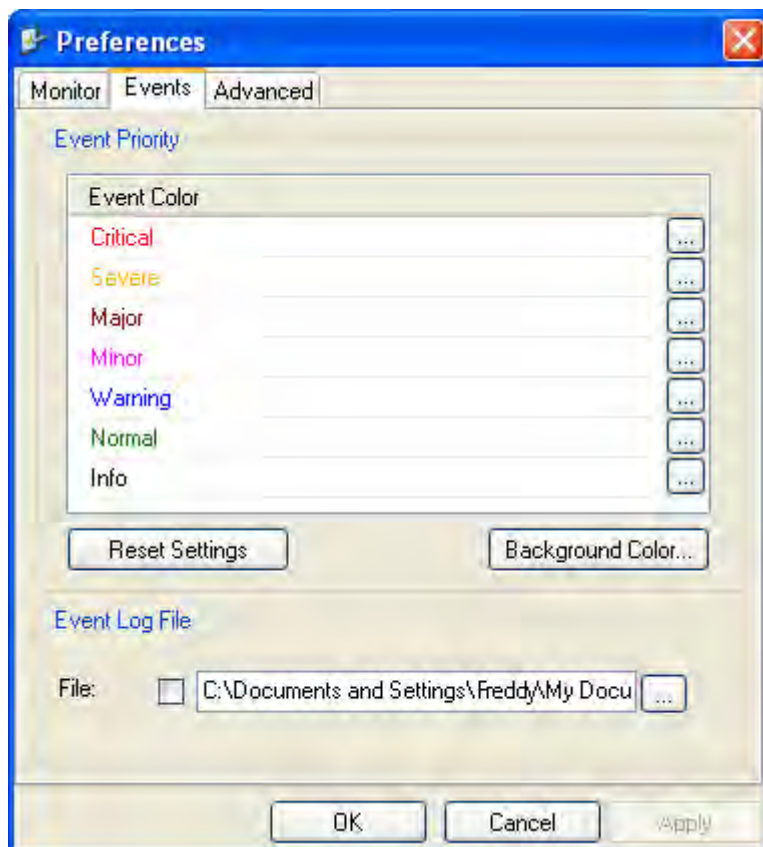
Figure 7-7: Preferences dialog box

3. Select the event type and click on the [...] button.

   A color chart opens.

4. Select the desired color.

5. Repeat for all of the event types.

➤**To set the trap background color:**

• Click **Background Color** to change the text background.

➤**To reset the event colors:**

• Click **Reset Settings** to return to the default color settings.

Saving the Events Log

You can save recorded events in an Events Log text file. New alarms are automatically added to the text file, as they enter the Events Log.

➤**To save the Events Log:**

1. From the Tools menu, choose **Preferences**.

   The Preferences dialog box appears

2. Click the **Events** Tab.

3. Select the file to save.

4. Click the check box to open the file for saving.

Click the [...] button and in the Select File dialog box indicate in which folder and under what name the Events Log file is to be saved, and click OK.

Note

> To store the Events Log, first define the IP address, subnet mask, default gateway and trap address of the managing computer (see **Configuring the ODU Address** on **page 6-4** for details).

Reverting Alarm Messages

Alarm messages can be reverted to their default values by choosing the **Advanced** tab from the Preferences dialog:
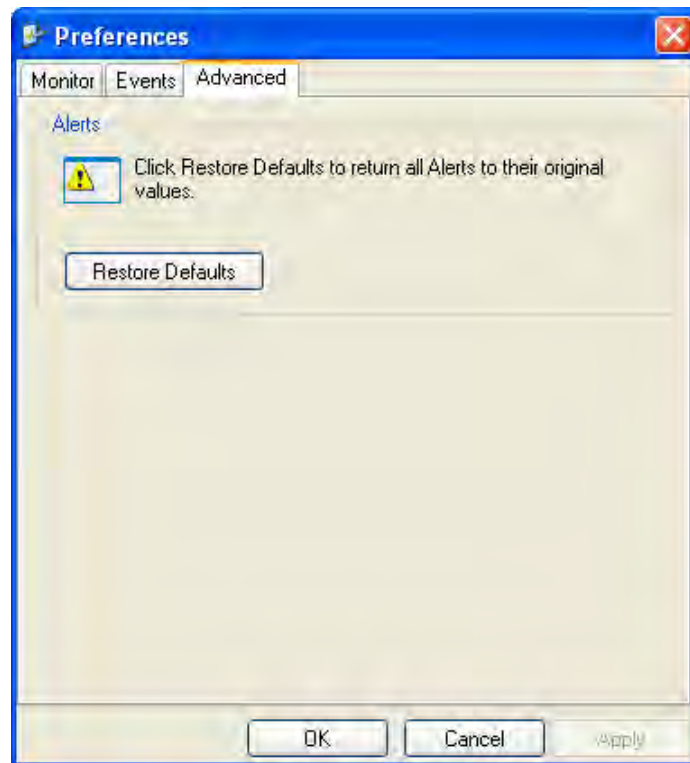
Just click the **Restore Defaults** button, followed by **OK**.

Active Alarms

Upon setting a trap destination, applicable events are reported as active alarms to the user. The active alarms are saved and can be viewed in the Active Alarms window.

➢ **To view summary of saved alarms:**

• From the Tools menu, choose Active Alarm Summary.

The Active Alarms Summary window opens:
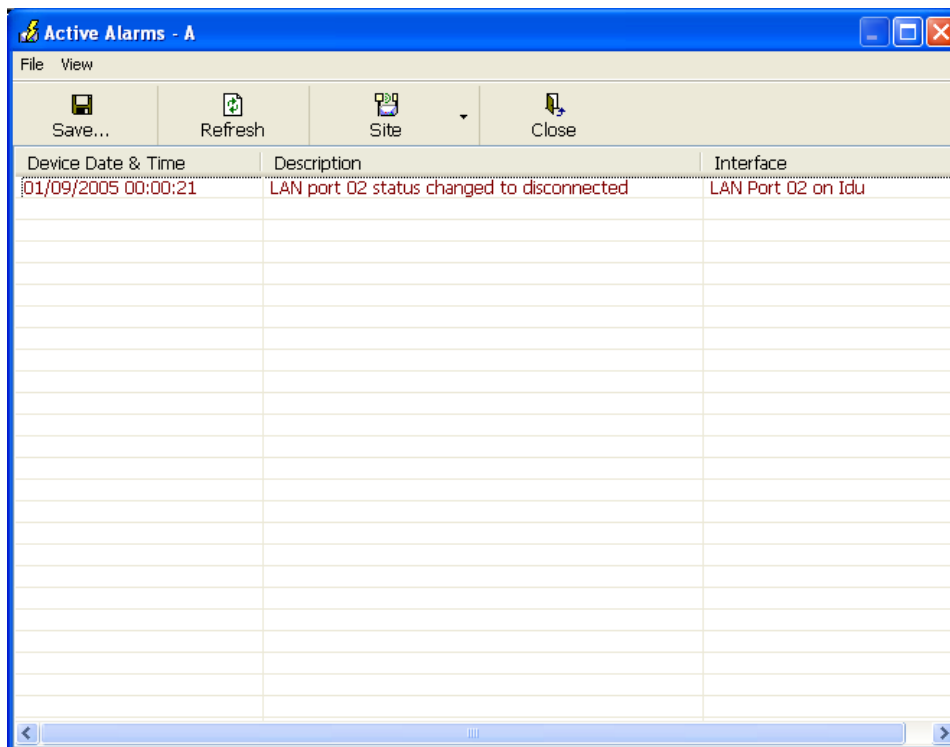
Figure 7-8: Active Alarms Summary

The following table provides an explanation of the command buttons

Table 7-6: Active Alarms command buttons

Command	Action
Save	Saves the alarms in CSV or text format for further analysis.
Refresh	Reads the alarms from the ODU.
Site	Selects site for the active alarms.
Close	Closes the active alarm window.

Remote Power Fail Indication

Remote power fail indication indicates to one side that the other side has had a power failure. The failed site sends a final trap indication about the power loss just before powering off.

A "Dying-Gasp" circuit identifies the power failure at a minimum interval of 20 milliseconds before the ODU or IDU powers off. During that interval a message notifying the power failure is sent to Site B. Alarm output number 4 indicates power failure at Site B.

Troubleshooting

Use the following table to troubleshoot LED fault indications:

Table 7-7: LED fault indicators

LED	Status	Remedy
PWR	Off	Check that AC adapter is connected to the IDU-E and the AC power outlet.
IDU	Orange	Check that the IDU/ODU cable is properly wired and connected.
ODU	Red	Check that the IDU/ODU cable is properly wired and connected.
AIR I/F	Orange	Complete the installation procedure from the management software.
	Red	Check the ODU Antenna alignment. Check that the radio configuration of both site A and site B units are the same (channel and Link ID).
SVC	Off	

Use the following table to troubleshoot faults in the system:.

Table 7-8: Troubleshooting

Symptom	Remedy
No power	Ensure that power is connected to the IDU.
	Ensure that the ODU cable is properly wired and connected.
No signal	Complete the installation procedure from the RADWIN Manager
	Check the ODU alignment. Check that the radio configuration of both site A and site B units are the same (channel and Link ID.
Weak signal received	Check the ODU alignment, reconfigure the link.
	Check the alignment tone sounds the Best Signal sequence.

Replacing an ODU

Prior to any action ensure that both ODUs have the same software version. You can see this on the inventory panels for each site.

For Site A, click **Site A | Inventory** and note the ODU software version. Repeat this for Site B using **Site B | Inventory**.

If either ODU has an old software version, perform a software upgrade. It is important to configure the new ODU exactly the same as the old ODU to avoid configuration mismatches, which will disrupt the link.

An ODU may be reconfigured in several ways.

- **Use the backup Configuration**

    If a backup of the configuration is available, restore that configuration using **Site A| Restore**.

- **Manual Configuration**

  The new ODU can be configured manually according to the link configuration. Remember to use the same settings for Link ID, channels, link password, IP addresses, and names.

Restoring Factory Setup

➤ **To restore factory setup:**

1. Set the remaining ODUs back to the factory setup by using the **Site A |Advanced** option.

2. Activate the second ODU and carry out a new Installation.

Online Help

Online help can be accessed from the Help menu on the main screen of the RADWIN 1000/2000/5000 Manager.
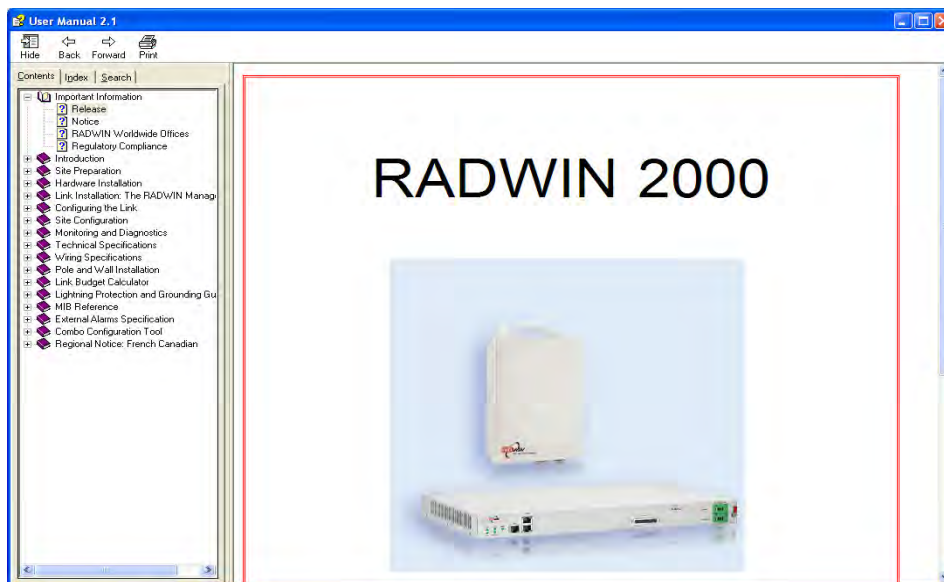
Figure 7-9: Online Help for RADWIN 1000/2000/5000

Customer Support

Customer support for this product can be obtained from the local VAR, Integrator or distributor from whom it was purchased.

For further information, please contact the RADWIN 1000/2000/5000 distributor nearest to you or one of RADWIN's offices worldwide (see **RADWIN Worldwide Offices** at the beginning of this manual).

<div align="right">**Appendix A**</div>

Technical Specifications

Configuration

Architecture	ODU: Outdoor Unit with Integrated Antenna or Connector-ized for External Antenna IDU: Indoor Unit for service interfaces or PoE device for Ethernet only
IDU to ODU Interface	Outdoor CAT-5e cable; Maximum cable length: 100 m

Radio

Capacity	Up to 270Mbps at 40MHz channel bandwidth in the 5.3/5.4 IC and 5.8 GHz spectrum bands Up to 130Mbps at 20MHz channel bandwidth in the 3.5/3.6 GHz spectrum bands
Range	Up to 120 km / 75 miles

Channel Bandwidth	5, 10, and 20 MHz 40 MHz in the 5.3/5.4 IC and 5.8 GHz spectrum bands

	Band	Regulations
Frequency Bands	5.725 – 5.850 GHz	FCC / IC
	5.725 – 5.825 GHz	FCC(UNII)/IC
	5.250 – 5.350 GHz (excluding 40 MHz channel bandwidth and 6dBi antenna assembly gain)	FCC
	5.250 – 5.350 GHz (including 40 MHz channel bandwidth and 6dBi antenna assembly gain)	IC
	5.470 – 5.725 GHz (excluding 40 MHz channel bandwidth and 6dBi antenna assembly gain)	FCC
	5.470 – 5.725 GHz (including 40 MHz channel bandwidth and 6dBi antenna assembly gain)	IC
	4.940 – 4.990 GHz	FCC
	2.400 – 2.4835 GHz	
	3.650 – 3.700 GHz	
	3.475 – 3.650 GHz	IC

Band	Max Tx Power	Antenna
5.725 – 5.850 GHz	29.95 dBm	28 dBi Dish
	29.95 dBm	24 dBi Integral Flat
	29.95 dBm	23 dBi External Flat
	23 dBm	14 dBi External Flat
	20 dBm	16.5 dBi External Flat
	28 dBm	8 dBi assembly

Band	Max Tx Power	Antenna
5.250 – 5.350 GHz	1.9 dBm	28 dBi Dish
	6.5 dBm	23.5 dBi Integral Flat
	7.5 dBm	22.5 dBi External Flat
	23.5dBm	6 dBi assembly
	7.4 dBm	14 dBi External Flat
	7.4 dBm	15.5 dBi External Flat
	23.5 dBm	6 dBi assembly
5.470 – 5.725 GHz	1.6 dBm	28 dBi Dish
	6.3 dBm	23.5 dBi Integral Flat
	7.3 dBm	22.5 dBi External Flat
	23.7 dBm	6 dBi assembly
	7.2 dBm	14 dBi External Flat
	7.2 dBm	16.5 dBi External Flat
	23.7 dBm	6 dBi assembly
5.725 – 5.825 GHz	23.8 dBm	28 dBi Dish
	26.4 dBm	22.5 dBi Integral Flat
	26.4 dBm	23.5 dBi External Flat
	29.4 dBm	6 dBi assembly
	24.4 dBm	14 dBi External Flat
	24 dBm	16.5 dBi External Flat
	29.3 dBm	6 dBi assembly
4.940 – 4.990 GHz	31 dBm	21 dBi Integral Flat
		21 dBi External Flat
		28 dBi Dish
		14 dBi External Flat
		15 dBi External Flat
2.400 – 2.4835 GHz	25.5 dBm**(*)**	20 dBi External Flat
	25.5 dBm**(*)**	17.5 dBi Integral Flat
	23.7 dBm	20 dBi External Flat
	23.7 dBm	17.5 dBi Integral Flat
3.475 – 3.650 GHz	26 dBm	21 dBi Integral Flat
		22 dBi External Flat
		24 dBi Dish
		13 dBi External Flat

Band	Max Tx Power	Antenna
3.650 – 3.700 GHz	26 dBm	13.5 dBi assembly
		13 dBi External Flat
	20 dBm	21 dBi Integral Flat
		22 dBi External Flat
	17 dBm	24 dBi Dish
	24 dBm	17 dBi assembly

(*) Relevant for RADWIN 1000 RW-1020-0150 / RADWIN 2000 RW-2020-0150 models only

Channel Bandwidth	5, 10, and 20 MHz, (10MHz not supported in the 5.8 GHz band)
Radio Modulation	2x2 MIMO-OFDM (BPSK/QPSK/16QAM/64QAM)
Adaptive Modulation & Coding	Supported
Automatic Channel Selection	Supported
Radio Regulation	FCC 47 CFR Part 15 Subpart C, E, Part 90 Subpart Y, Z IC (Canada) RSS-210, RSS-111, RSS-192, RSS-197
Duplex Technology	TDD
Error Correction	FEC k = 1/2, 2/3, 3/4, 5/6
Encryption	AES 128

Rate – Single Antenna [Mbps]	6.5	13	19.5	26	39	52	58.5	65
Rate – Single Antenna in the 5.8 GHz spectrum band [Mbps]	13.5	27	40.5	54	81	108	121.5	135
Rate – Dual Antenna [Mbps]	13	26	39	52	78	104	117	130
Rate –Dual Antenna in the 5.8 GHz spectrum band [Mbps]	27	54	81	108	162	216	243	270
Modulation	BPSK	QPSK		16QAM		64QAM		
FEC [k=]	1/2	1/2	3/4	1/2	3/4	2/3	3/4	5/6
Max Tx Power [dBm]	25			24	21	19	18	
Sensitivity (dBm) @BER <10e-11 (20MHz)	-88	-86	-83	-81	-80	-72	-70	-67

Ethernet Interface

Throughput	Up to 270Mbps in the 5.3/5.4 IC and 5.8 GHz spectrum bands
Number of Ethernet ports	IDU-C and E: 2; PoE Device: 1
Type	10/100BaseT with Auto-Negotiation (IEEE 802.3u)
Framing/Coding	IEEE 802.3
Line Impedance	100 Ω
VLAN Support	Transparent
Connector	RJ-45
Maximum Frame Size	2048 Bytes
Bridge	Layer 2, self-learning of up to 2047 MAC addresses (IEEE 802.1Q), hub/Bridge selectable mode
Latency	3 msec (typical)

Management

Management Application	RADWIN Manager
Protocol	SNMP and Telnet

Mechanical

Dimensions	ODU with Integrated Antenna: 37.1/14.84(W) x 37.1/14.84(H) x 9.00/3.6(D) cm/in; 3.5 kg / 7 lbs
	ODU Connectorized: 18.0/7.2(W) x 27.0/10.8(H) x 5.5/2.2(D) cm/in; 1.5 kg / 3.0 lbs
	IDU-C: 43.6/17.2(W) x 4.5/1.7(H) x 21/8.3(D) cm; 1.5 kg / 3.3 lbs
	IDU-E: 22/8.7(W) x 4.4/1.7(H) x 17/6.7(D) cm/in; 0.5 Kg / 1.1 lbs

Power

Power Feeding	Dual feeding, -20 to -60 VDC (AC/DC converter is available)
Power Consumption	< 35 W (IDU+ODU)

Environmental

Operating Temperatures	ODU: -35°C to +60°C / -31°F to +140°F
	IDU-C: 0°C to +50°C / 32°F to +122°F
	IDU-E: -5°C to 45°C / 32°F to 122°F
Humidity	ODU: Up to 100% non-condensing, IP67
	IDU: 90% non-condensing

Safety

FCC/IC (cTUVus)	UL 60950-1, CAN/CSA 60950-1 C22.2
ETSI	EN/IEC 60950-1

EMC

FCC	CFR47 Class B, Part15, Subpart B
ETSI	EN 300 386 (2005), EN 301 489-1 (2001), EN 301 489-4 (2002)
CAN/CSA-CEI/IEC	CISPR 22-02
AS/NZS	CISPR 22:2002

Air Interface

RADWIN 1000/2000/5000 is available in several different frequency band ranges that comply with ETSI, FCC and IC regulations.

The RADWIN 1000 RW-1020-0150 / RADWIN 2000 RW-2020-0150 is available only in the 2.4GHz frequency band range that complies with FCC and IC regulations.

The RADWIN 1000 3GHz Band / RADWIN 2000 3GHz Band / RADWIN 5000 3GHz Band support the 3.5 / 3.6 GHz frequency bands and comply with FCC and IC regulations.

Wiring Specifications

ODU-IDU Cable

The ODU-IDU cable is shielded/outdoor class CAT-5e, 4 twisted-pair 24 AWG terminated with RJ-45 connectors on both ends. A cable gland on the ODU side provides hermetic sealing.

The following table shows the connector pinout:

Table B-1: ODU-IDU Connector Pinout

Function	Color	IDU RJ-45	ODU RJ-45
Ethernet (RxN)	White/Green	1 twisted	1
Ethernet (RxT)	Green	2 pair	2
Ethernet (TxT)	White/Orange	3 twisted	3
Ethernet (TxN)	Orange	6 pair	6
Power (+)	Blue	4 twisted	4
Power (+)	White/Blue	5 pair	5
Power ()	White/Brown	7 twisted	7
Power (−)	Brown	8 pair	8

User Port Connectors

LAN Port

The LAN 10/100BaseT interface terminates in an 8-pin RJ-45 connector, wired in accordance to **table B-2**.

Table B-2: Fast Ethernet Connector Pinout

Pin	Signal	Function
1	TD (+)	Transmit Data (positive)
2	TD (−)	Transmit Data (negative)
3	RD (+)	Receive Data (positive)
6	RD (−)	Receive Data (negative)

IDU-C Alarm Connector

The IDU-C Alarm interface is a 25 pin D type female connector. Its pinout is listed in **table B-3**.

Table B-3: IDU-C Alarm Connector (Dry-Contact)

I/O	Description	Pin
Input 1	Positive	14
Input 1	Negative	15
Input 2	Positive	16
Input 2	Negative	17
Input 3	Positive	18
Input 3	Negative	19
Input 4	Positive	20
Input 4	Negative	21
Output 1	Normally Open	1
Output 1	Common	2
Output 1	Normally Closed	3
Output 2	Normally Open	4
Output 2	Common	5
Output 2	Normally Closed	6
Output 3	Normally Open	7
Output 3	Common	8
Output 3	Normally Closed	9
Output 4	Normally Open	10
Output 4	Common	11
Output 4	Normally Closed	12

The following diagram describes how to connect external input and output alarms.

> • Use an external current limit resistor to limit the current at the output relays to 1 Ampere. Such resistor is not required if the equipment connected to the IDU supports current limiting to 1 Amp.
>
> • The voltage of the input alarm must be within the range of -10 to -50 VDC.

Note
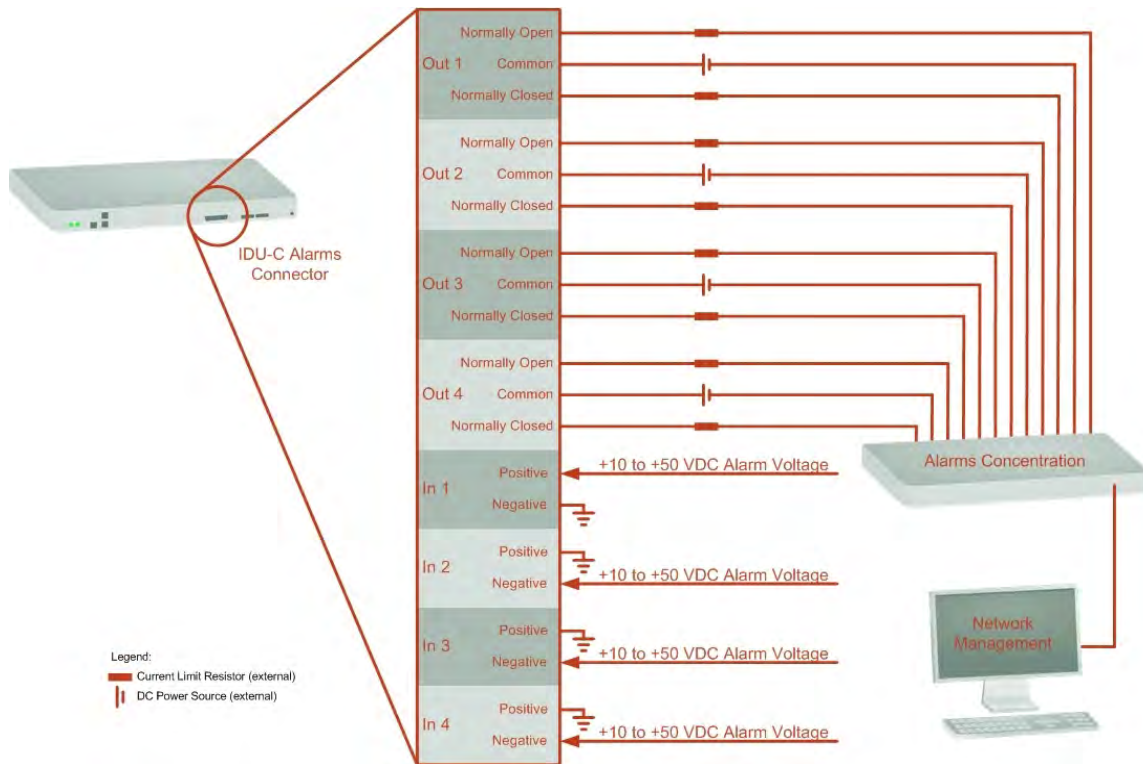
Figure B-1: Example for connecting the alarm connector

DC Power Terminal

Table B-4: Terminal Block 3-pin -48VDC

Function	Pin
+	Right
Chassis	Center
–	Left

Appendix C

Pole and Wall Installation

ODU Mounting Kit Contents

Table C-1: Bill of Materials: ODU mounting kit

Item	Qty
Large Clamp (see **figure C-1**)	1
Small Clamp (see **figure C-2**)	1
Arm (see **figure C-3**)	1
Screw hex head M8x40	4
Screw hex head M8x70	2
Washer flat M8	4
Washer spring M8	3
M8 Nuts	2
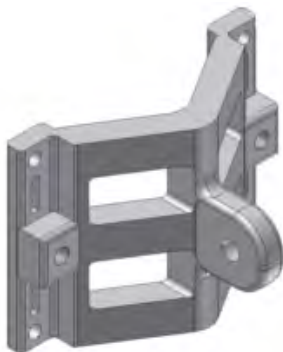
Figure C-1: Large Clamp   *Figure C-2: Small Clamp*   *Figure C-3: Arm*
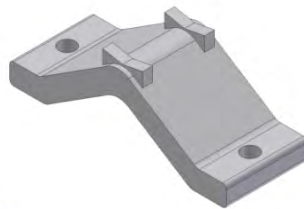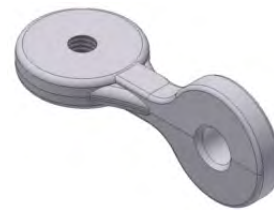
Mounting RADWIN 1000/2000/5000 on a pole

Installation Kit

ITEM	DESCRIPTION	QTY
1	Clamp	1
2	Screw hex head M8x40	1
3	Washer flat M8	4
4	Washer spring M8	3
5	Nut M8	1
6	Clamp	1
7	Screw hex head M8x40 (for 1 3/4" dia mast)	2
8	Screw hex head M8x70 (for greater size of mast)	2

STEP 1

Attach item 1 to the base (mate knurled surfaces) using items 2 ,3 ,4 ,5 as shown Use tightening torque of 24 N/m.

STEP 2

Tighten the antenna to the mast , using item 6, screws, and washers items 7 ,3 ,4 as shown. Use tightening torque of 14 N/m.

Figure C-4: Mounting on a pole

Mounting RADWIN 1000/2000/5000 on a Wall

Figure C-5: Mounting on a Wall

Mounting an External Antenna

Optional external antennas can be mounted on a pole. The external mounting kit varies according to the specific antenna.

Link Budget Calculator

Overview

The Link Budget Calculator is a utility for calculating the expected performance of the RADWIN 1000/2000/5000 wireless link and the possible configurations for a specific link range.

The utility allows you to calculate the expected RSS of the link, and find the type of services and their effective throughput as a function of the link range and deployment conditions.

User Input

You are required to enter or choose the following parameters. Depending on the product, some of the parameters have a default value that cannot be changed.

- Product (or Regulation and Band)
- Channel Bandwidth (fixed to 20 MHz for RADWIN 1000/2000/5000)
- Tx Power (maximum Tx power per modulation is validated)
- Antenna Type (cannot be changed for ODU with integrated antenna)
- Antenna Gain per site (cannot be changed for integrated antenna)
- Cable Loss per site (cannot be changed for integrated antenna)
- Required Fade Margin
- Rate (and Adaptive check box)
- Service Type (Ethernet Only for RADWIN 1000/2000/5000 version 2.1)
- Required Range

Link Budget Calculator Internal Data

For each product (or Regulation and Band) the calculator stores the following data required for link budget calculations:

- Maximum Transmit power (per modulation)
- Receiver Sensitivity (per modulation) for Ethernet service and for TDM services at various BER

- Maximum linear input power (used to calculate minimum distance)
- Antenna gain and cable loss for ODU with integrated antenna
- Available Channel Bandwidths

Calculations

EIRP

$$EIRP = TxPower + AntennaGain_{SiteA} - CableLoss_{SiteA}$$

Expected RSS and Fade Margin

$$ExpectedRSS = EIRP - PathLoss + AntennaGain_{SiteB} - CableLoss_{SiteB}$$

where:

Site A is the transmitting site

Site B is the receiving site

PathLoss is calculated according to the free space model,

$$PathLoss = 32.45 + 20 \times \log_{10}(frequency_{MHz}) + 20 \times \log_{10}(RequiredRange_{Km})$$

$$ExpectedFadeM\arg in = Sensitivity - ExpectedRSS$$

where Sensitivity is dependent on air-rate.

Min and Max Range

MinRange is the shortest range for which
$ExpectedRSS \leq MaxInputPower$ per air-rate.

MaxRange (with Adaptive checked) is the largest range for which
$ExpectedRSS \geq Sensitivity$, at the highest air-rate for which this relationship is true. In a link with adaptive rate this will be the actual behavior.

MaxRange (for a given air-rate) is the largest range for which
$ExpectedRSS \geq Sensitivity + RequiredFadeM\arg in$.

Service

The Ethernet throughput is calculated according to internal product algorithms.

Availability

The Service Availability calculation is based on the Vigants Barnett method which predicts the downtime probability based on a climate factor (C factor).

$$Availability = 6 \times 10^{-7} \times Cfactor \times frequency_{GHz} \times (RequiredRange_{KM})^3$$
$$\times 10^{\frac{-ExpectedFadeM\arg in}{10}}$$

Antenna Height

The recommended antenna height required for line of sight is calculated as the sum the Fresnel zone height and the boresight height. See **About the Fresnel Zone** below.

The Fresnel zone height is calculated as:

$$0.6 \times \sqrt{\frac{\frac{300}{frequency_{GHz}} \times \left[\frac{ExpectedRange}{2}\right]^2}{\frac{ExpectedRange}{2} + \frac{ExpectedRange}{2}}}$$

The boresight clearance height is calculated as:

$$\sqrt{R^2_{Maean} + \left[\frac{ExpectedRange}{2}\right]^2} - R_{Maean}$$

where $R_{Mean} = 6367.4425 Km$.

Running the Link Budget Calculator

The Link Budget Calculator is supplied on the RADWIN Manager CD. It may be run stand-alone from the CD or from the RADWIN Manager application.

➢ **To run the Link Budget Calculator from the CD:**

1. Insert the RADWIN Manager CD into the drive on the managing computer. In the window which opens, click the Link Budget Calculator option.

2. If the CD autorun application does not start by itself, then point your browser to

    Z:\RADWIN\Setup\DATA\Link Budget Calculator.htm

    where Z should be replaced with your own CD drive name.

➢ **To run the Link Budget Calculator from the RADWIN Manager:**

• Choose **Help | Link Budget Calculator** from the main menu of the RADWIN Manager as in the following figure:
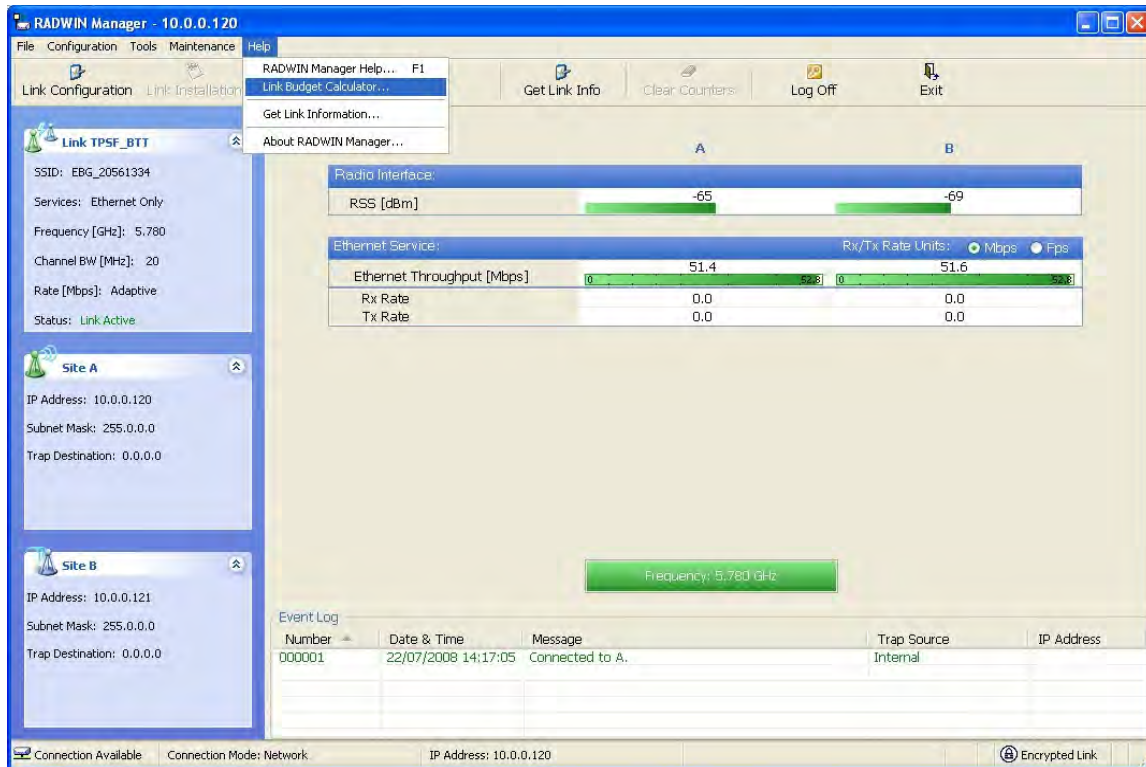
Figure D-1: Accessing the Link Budget Calculator

However invoked, your browser displays the following page:

Figure D-2: Link Budget Screen

- Microsoft Internet Explorer users may see a warning message like this:
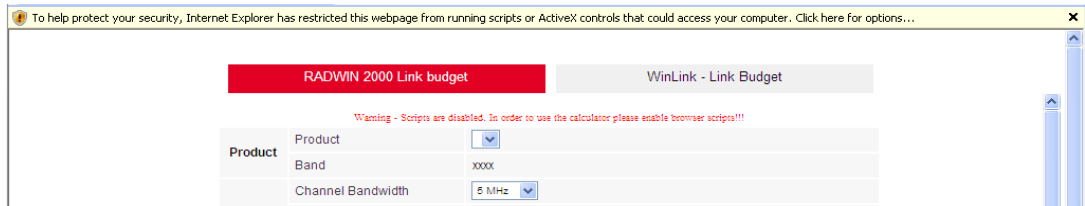
Click the yellow bar and follow the instructions to allow blocked content.

- Mozilla FireFox and Google Chrome users may see a warning message like this:
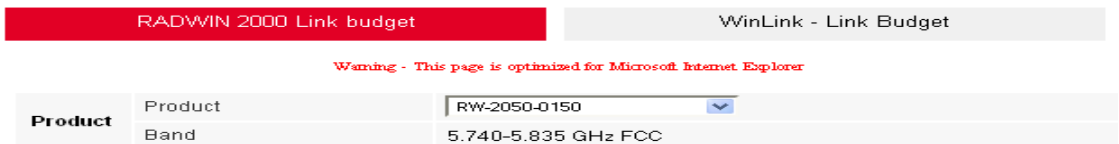
You may ignore it and continue.

➤ **To use the Link Budget Calculator for RADWIN 1000/2000/5000:**

1. Choose a product from the drop-down list (or choose a Regulation and Band):

Figure D-3: Product selector

2. Enter the radio details. Note that Rate is chosen from a drop-down list:

Figure D-4: Rate selector

The **Rate** shown, defines the air-interface rate in Mbps. The system operates in TDD mode and has the overhead of the air-interface protoco.l Thus, the Ethernet actual throughput is provided by the **Ethernet Rate**.

For a given air-rate, Ethernet throughput will decrease with increasing range due to propagation delay.

The Fade margin is the minimum required for LOS conditions. For degraded link conditions, a larger Fade margin should be used.

The EIRP is given in dBm and Watts.

3. If the required range between the two link sites is known, you may enter it directly. Alternatively, you may enter the latitude and longitude of each site in the link, in which case the distance between them will be calculated and displayed.

Figure D-5: Calculation of distance from site coordinates

4. Located to the right of the green Coordinates button is a dropdown list of Climactic C Factor values.

Figure D-6: Climactic C Factors

For help about what these mean, click the **?** button to the right of the list in **figure D-6**.

Figure D-7: Climactic C Factor description

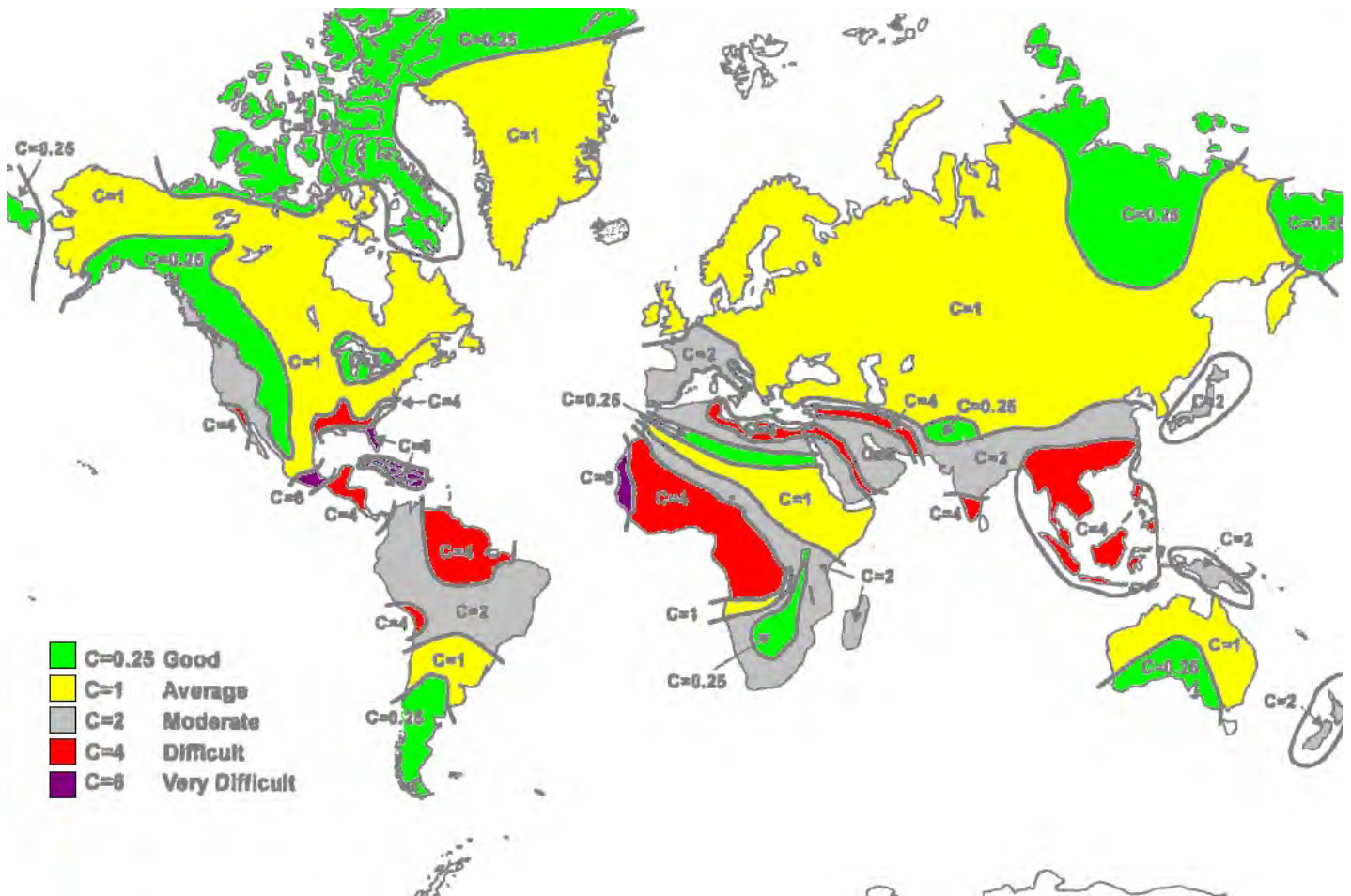In **figure D-8** we display a map of the world showing C Factor contours:

Figure D-8: World map showing C Factor contours

5. Click **Calculate** to obtain the required performance estimate.

Placing the cursor in any other calculated field will also update the calculated results.

The Expected Performance parameters are calculated and displayed:

- **Expected RSS** - the expected RSS that the RADWIN Manager shows when the RADWIN 1000/2000/5000 ODUs are optimally aligned

- **Ethernet Rate** - maximum throughput available for the chosen parameter combination

- **Antenna height for LOS** – the minimum antenna height required for line-of-sight operation. It is the sum of the height required for boresight clearance due to the earth's curvature plus the height required to clear the Fresnel zone

If the expected performance is not suitable for your application, try different parameters and repeat the calculation.

About the Fresnel Zone

The Fresnel zone (pronounced "frA-nel", with a silent "s") is an elliptically shaped conical zone of electromagnetic energy that propagates from the transmitting antenna to the receiving antenna. It is always widest in the middle of the path between the two antennas.
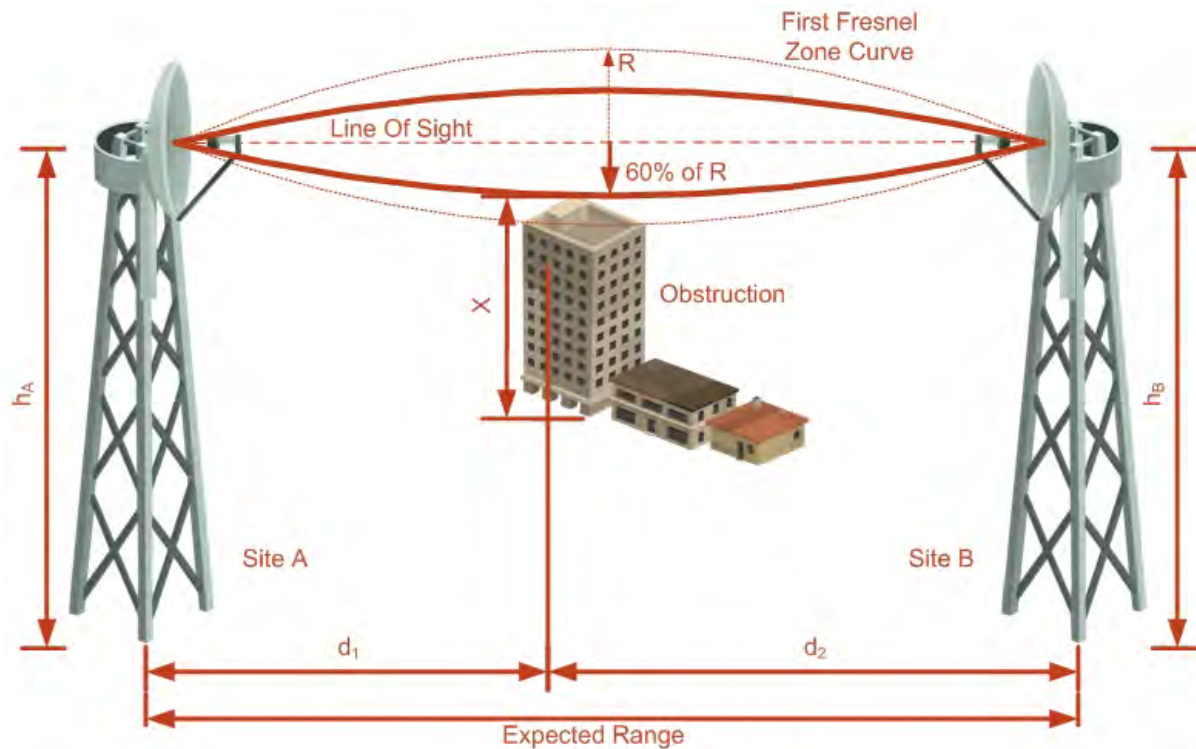

Figure D-9: Fresnel zone

Fresnel loss is the path loss occurring from multi-path reflections from reflective surfaces such as water, and intervening obstacles such as buildings or mountain peaks within the Fresnel zone.

Radio links should be designed to accommodate obstructions and atmospheric conditions, weather conditions, large bodies of water, and other reflectors and absorbers of electromagnetic energy.

The Fresnel zone provides us with a way to calculate the amount of clearance that a wireless wave needs from an obstacle to ensure that the obstacle does not attenuate the signal.

There are infinitely many Fresnel zones located coaxially around the center of the direct wave. The outer boundary of the first Fresnel zone is defined as the combined path length of all paths, which are half wavelength (1/2 λ) of the frequency transmitted longer than the direct path. If the total path distance is one wavelength (1 λ) longer than the direct path, then the outer boundary is said to be two Fresnel zones. Odd number Fresnel zones reinforce the direct wave path signal; even number Fresnel zones cancel the direct wave path signal.

The amount of the Fresnel zone clearance is determined by the wavelength of the signal, the path length, and the distance to the obstacle. For reliability, point-to-point links are designed to have at least 60% of the first Fresnel zone clear to avoid significant attenuation.

The concept of the Fresnel zone is shown in **figure D-9** above. The top of the obstruction does not extend far into the Fresnel zone, leaving 60% of the Fresnel zone clear; therefore, the signal is not significantly attenuated.

For more about Fresnel zone, see **http://en.wikipedia.org/wiki/ Fresnel_zone**.

Appendix E

Lightning Protection and Grounding Guidelines

Meticulous implementation of the guidelines in this appendix will provide best protection against electric shock and lightning.

![Warning]
Warning

100% protection is neither implied nor possible.

![Note]
Note

This appendix is at best a guide. The actual degree of lightning protection required depends on local conditions and regulations.

The RADWIN 1000/2000/5000™ Lightning protection system consists of the following components:

- Grounding for the antenna coax cable
- Grounding for each IDU and ODU
- External Primary Surge Suppressor units and grounding for the out-door cable
- Internal ESD protection circuits over the Power/Telecom lines

Grounding for Antenna Cable

A Grounding Kit must be connected to the coax antenna cable and reliably grounded as shown in Figure X. The grounding kit is an Andrew Type 223158-2 (**www.andrew.com**). See **figure E-1** below.
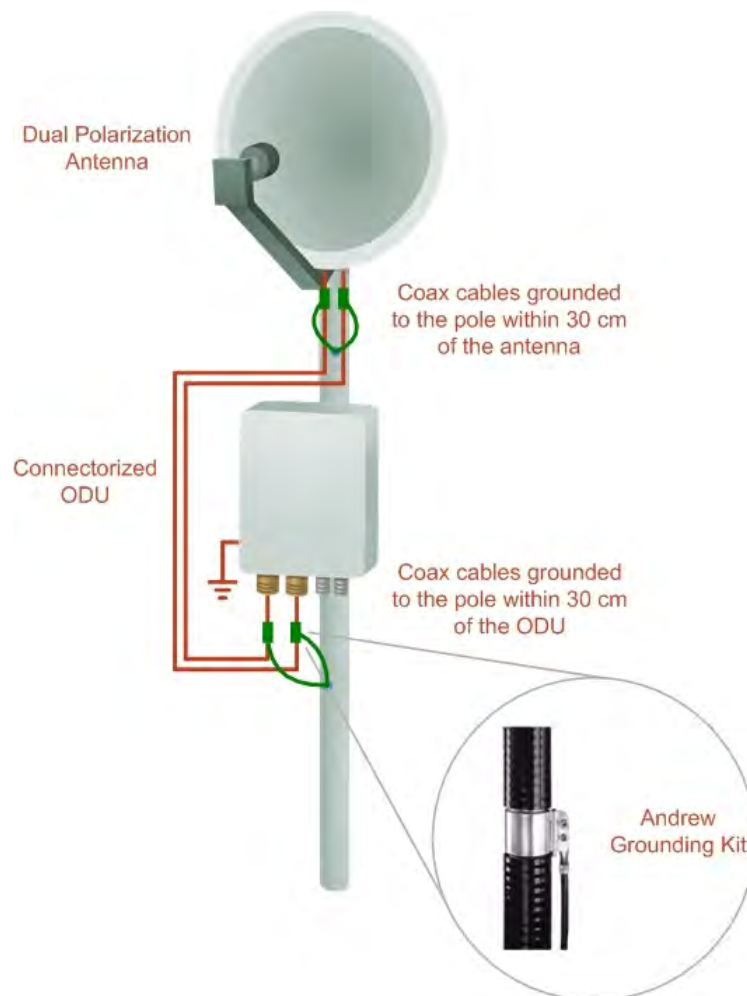
Figure E-1: Grounding antenna cables

Grounding for Indoor/Outdoor Units

ODU Grounding

RADWIN 1000/2000/5000™ uses a Shielded CAT-5e cable to interconnect the Outdoor (ODU) and Indoor (IDU) units.

However, this shielding does not provide a good Lightning Discharge path, since it can not tolerate the high Lightning Current surges.

To provide an alternate Lightning Discharge path, the ODU and antenna grounding posts should be connected to ground point by a 10 AWG short copper wire.

The device should be permanently connected to ground.

IDU Grounding

The IDUs grounding post should be connected to the internal ground point, using a grounding wire of at least 10 AWG. The grounding wire should be connected to a grounding rod or the building grounding system.

The device should be permanently connected to ground.

External Lightning Surge Suppressors and Grounding

A Grounding Kit and Surge Arrestor Unit must be located near the ODU and properly grounded as illustrated in **figure E-2** and **figure E-3** below:
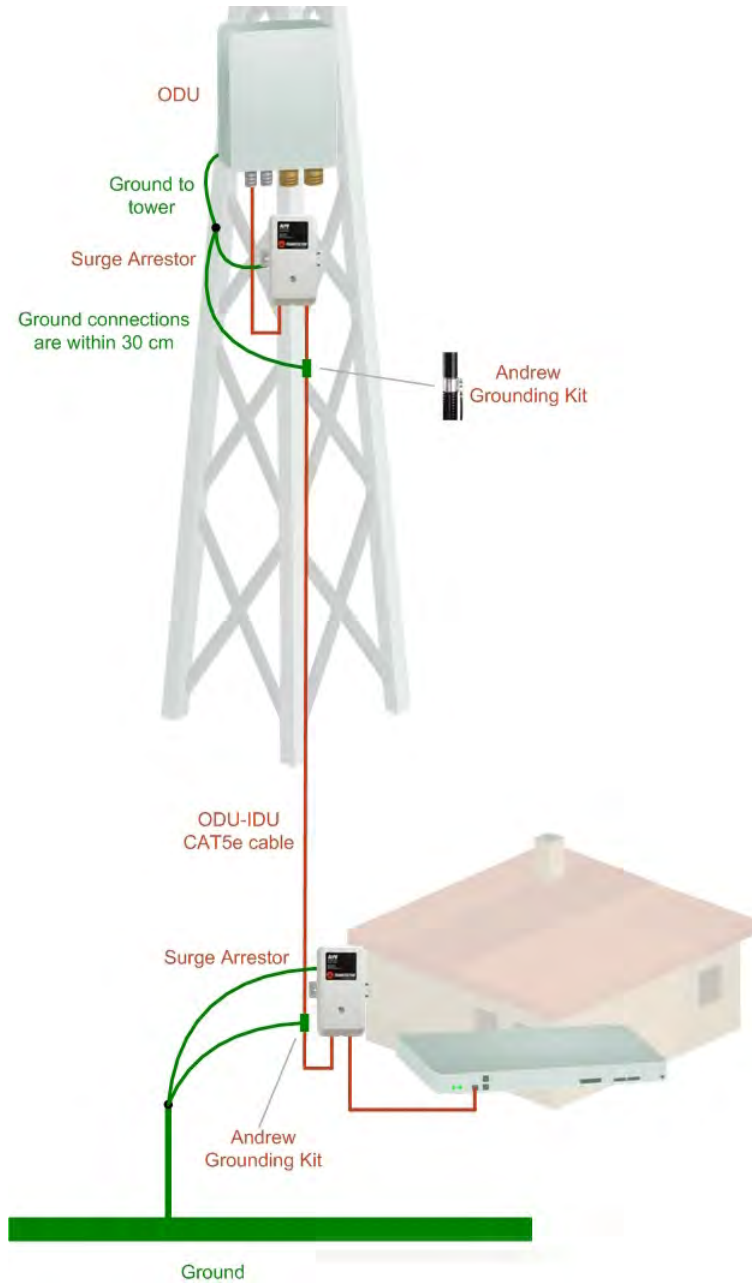

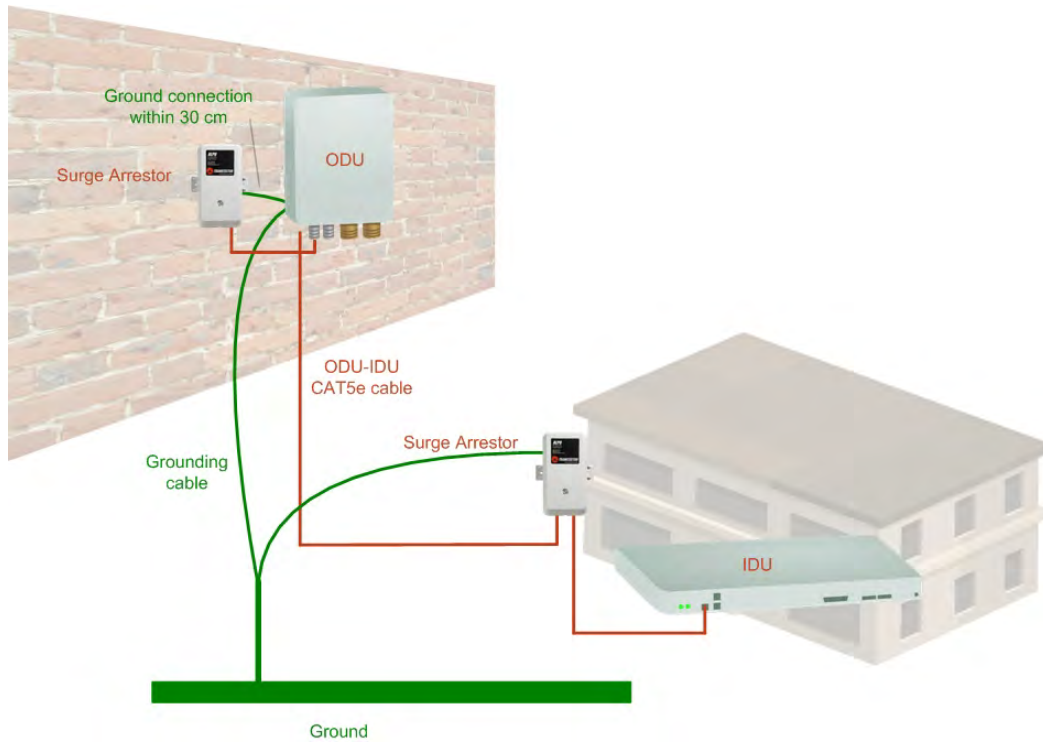*Figure E-2: Grounding a typical pole installation*

Figure E-3: Grounding a typical wall installation

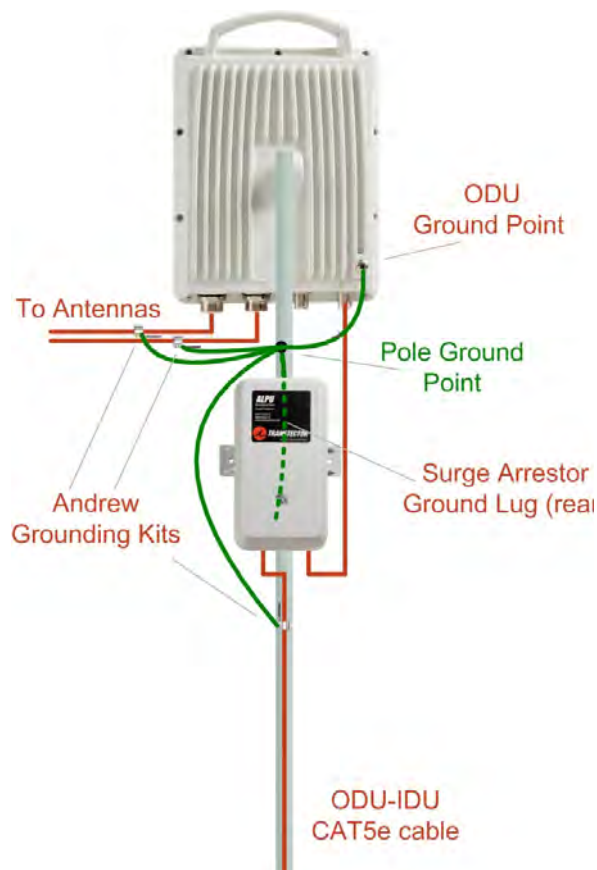The next figure shows a close-up of the rear of grounded ODU:

Figure E-4: ODU Surge Suppressor and grounding

The Transtector protection circuits shown in **figure E-5** below, utilize silicon avalanche diode technology. The unit consists of an outdoor rated NEMA 3R type enclosure with easy mounting flanges, ground stud attachment and easy wiring.

The ALPU-POE features RJ-45 protection circuits for the ODU-IDU data pairs (pins 1,2 & 3,6) and DC power (pins 4,5 & 6,7 with the pairs bonded).

The unit is designed to be wall mounted. An optional set of bracket is available to allow a wide range of pole mount applications. A dedicated ground stud is provided inside the unit that must be bonded to the nearest grounding system (or Master Ground bar) for proper surge protection.

The system wiring is installed with RJ-45 type connectors that can feed directly into the chassis without having to cut, splice or route through awkward strain relief holes.

Figure E-5: Transtector's Surge Suppressor

➢**To mount the lightning protection devices:**

1. Mount the device as close to the ODU as possible. Mount the unit so that the cable connectors are at the bottom (to prevent water from penetrating), with the strain reliefs facing the ground.

2. Remove the cover by unscrewing the front of the unit.

3. Mount the unit to an outside surface using the two mounting holes.

4. Connect the ODU-IDU cable using the RJ-45 jack.

5. Connect one cable between the ODU and the suppressor using an RJ-45 jack.

6. Connect the suppressor's ground stud to a grounding point. Use the appropriate wire gauge and type, keeping the wire as short as possible, less than 1m (3'), between the stud and the site grounding point.

7. Replace the cover.

Note

There may also be regulatory requirements to cross bond the ODU-IDU CAT-5e cable at regular intervals up the mast. This may be as frequent as every 10 meters (33 feet).

A second Surge Arrestor Unit should be mounted at the building entry point and must be grounded, as shown in **figure E-3** above.

➢ **To mount the lightning protection at the building entry point:**

1. Mount the device outside the building, located as near as possible to the entrance of the CAT-5e ODU-IDU cable. Mount the unit so that the cable connectors are at the bottom (to prevent water from penetrating), with the strain reliefs facing the ground.

2. Remove the cover by unscrewing the front of the unit.

3. Mount the unit to an outside surface using the two mounting holes.

4. Connect the ODU-IDU cable using the RJ-45 jack.

5. Connect one cable between the IDU and the suppressor using an RJ-45 jack.

6. Connect the suppressor's ground stud to a grounding point. Use the appropriate wire gauge and type, keeping the wire as short as possible, less than 1m (3'), between the stud and the site grounding point.
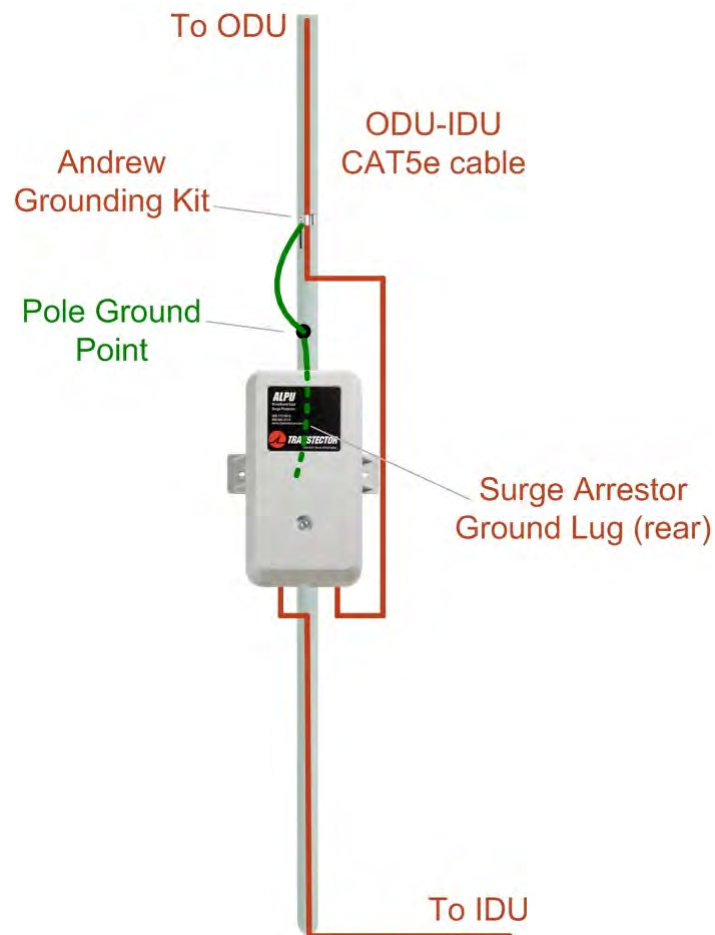
7. Replace the cover

Figure E-6: Surge Suppressor and grounding at building entry point

Internal ESD Protection circuits

RADWIN 1000/2000/5000™ is designed to meet the ETSI/FCC/Aus/NZ/CSA EMC and Safety requirements. To fulfill these requirements, the system's Telecom lines at the ODU/IDU are Transformer-isolated and include internal ESD (Electro-Static-Discharge) Protection circuits.

FCC/IC DFS Installation Procedure

FCC/IC 5.4/5.3 GHz Links: Background

The FCC/IC regulation for 5.4/5.3 GHz allows unlicensed wireless data equipment, provided that it does not interrupt radar services. If radar activity is detected, the equipment must automatically change frequency channel. This feature is termed Dynamic Frequency Selection (DFS). According to the standard, a channel with active radar is prohibited from use for 30 minutes. Before using a channel for transmission, the radio equipment must probe it for radar signals for a period of 60 seconds.

Note

The FCC/IC regulations for 5.4 GHz band requires the frequency range 5600 – 5650 MHz to be banned from use. The FCC regulation for 5.4 GHz band requires that within 35 km radius from any (Terminal Doppler Weather Radars) TDWR location the frequency range 5570 – 5680 MHz shall be banned from use.

Follow the instructions in the last section of this chapter.

RADWIN radio products support DFS as well as ACS.

An immediate consequence of the FCC/IC regulation for 5.4/5.3 GHz is that the standard method of link installation using a single default fixed installation channel, cannot be used.

Instead of the installation procedure of Chapter 4, a **link activation** method is used. The ODUs do not transmit until they are both configured and in place. An activation button may be found by navigating to **Site:Location|Air Interface.**

The ODUs are either supplied from the factory ready for use at 5.4 GHz or 5.3 GHz FCC/IC or alternatively, they can be set up for these bands using the RADWIN Manager.

Note

The following procedure is generic to all relevant RADWIN radio products. What you see on your running RADWIN Manager may differ in some details from the screen captures used to illustrate this chapter.

FCC/IC 5.4/5.3 GHz Link Activation

➤ **To Activate a FCC/IC 5.4/5.3 GHz Link:**

1. Install RADWIN Manager software as usual.

2. Connect the PC to the IDU-ODU pair to be used as the local site.

3. Run the RADWIN Manager and log in as Installer. You will see the following window:
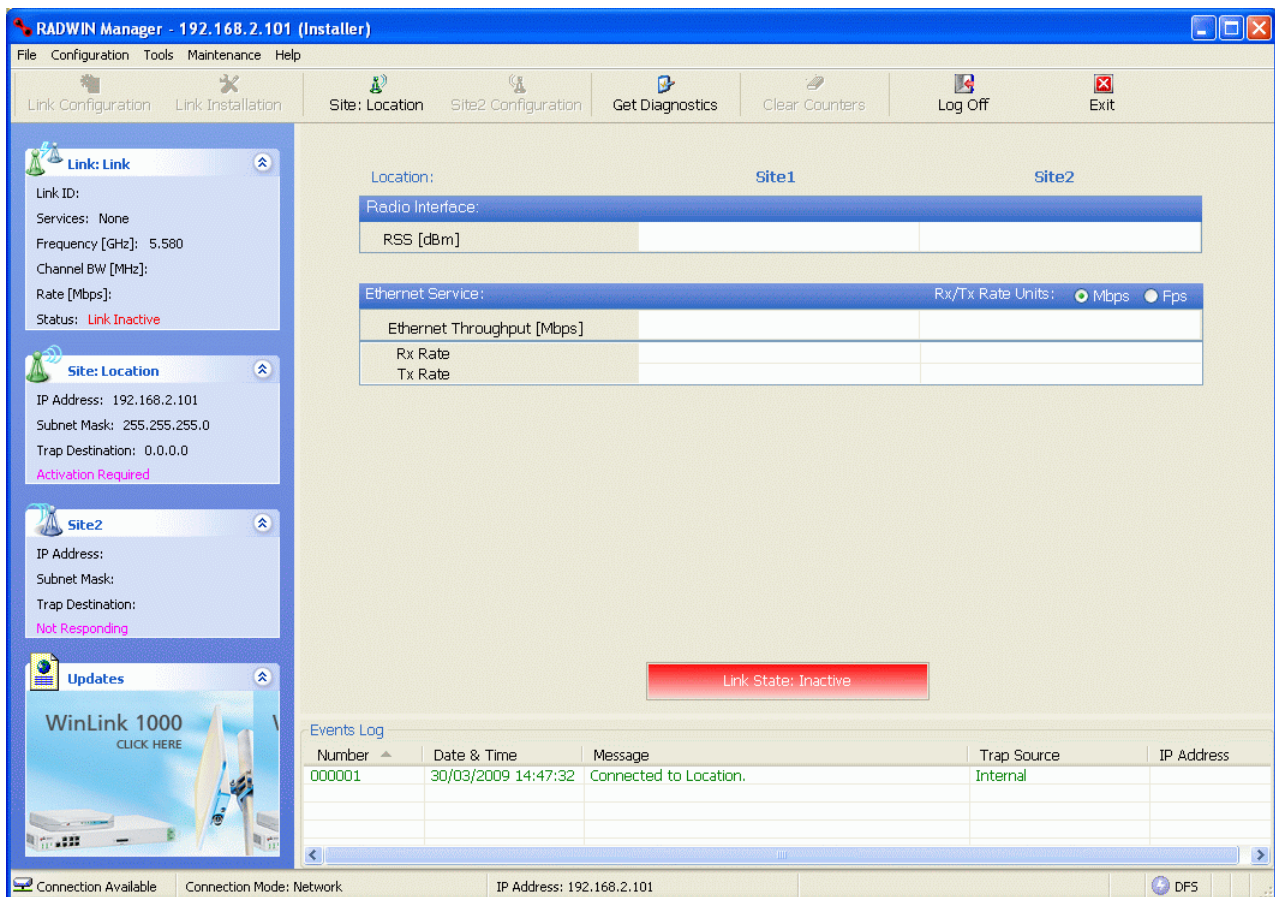

Figure F-1: Activating an ODU - Inactive link

When the Manager Main Screen is displayed it appears with the Link Status label red and showing Inactive.

4. Click **Site:Location | Air Interface** for the logged in site.
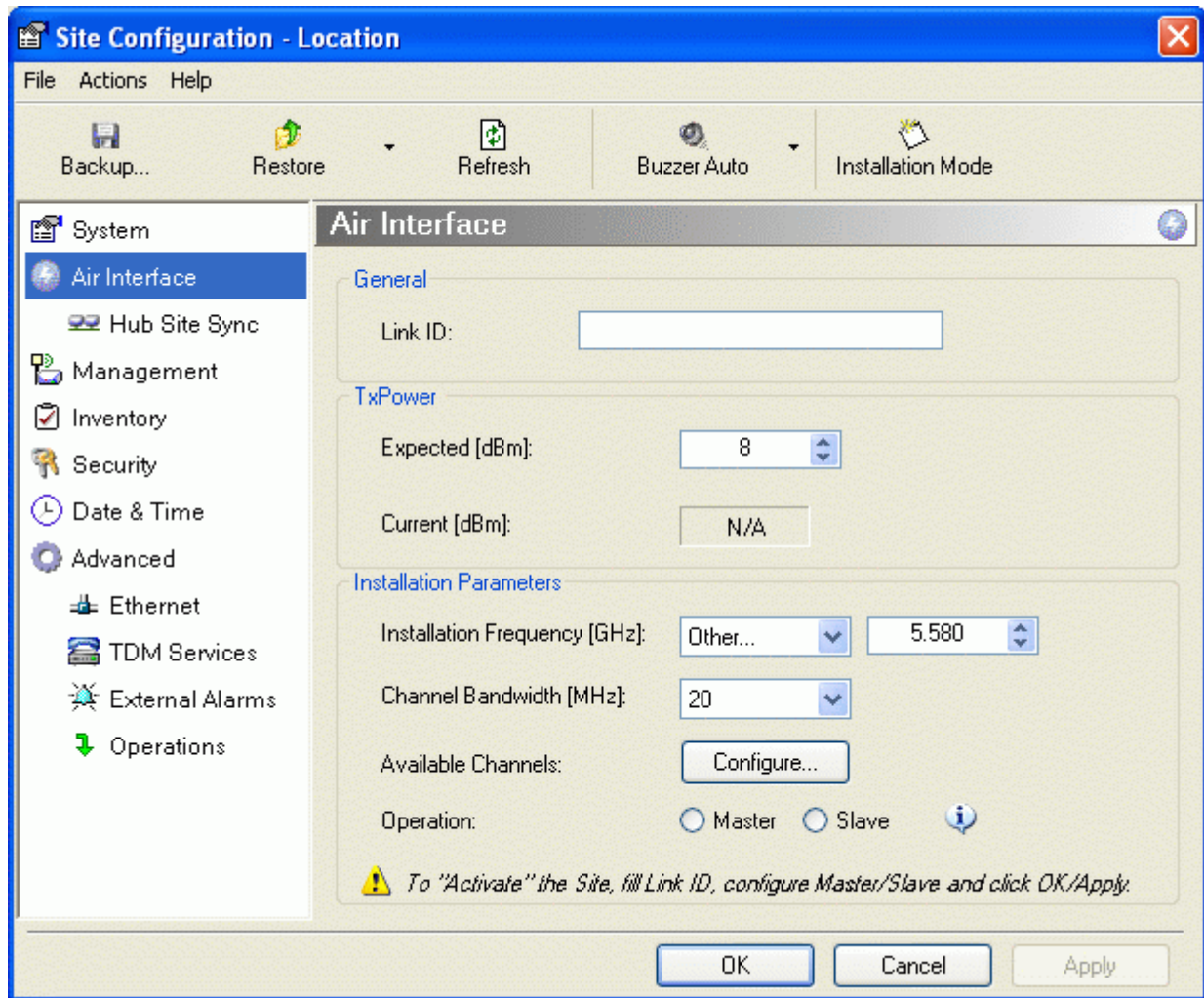
5. The Air Interface dialog box opens:

Figure F-2: Air Interface dialog box

6. Enter the Link ID and note it for use with the second site of the link.

7. Check the **Master** radio button.

8. Click **OK.** The following window appears:
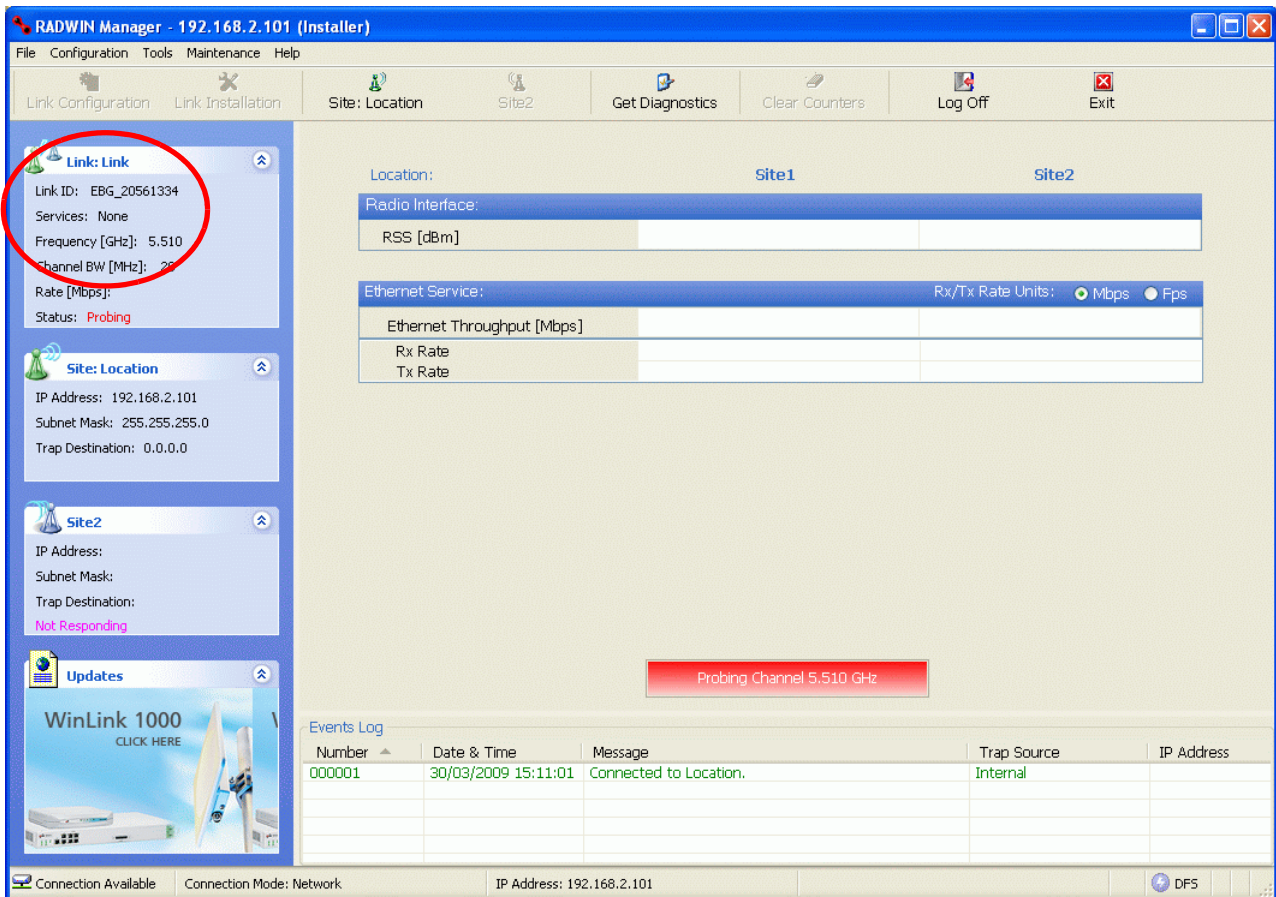
Figure F-3: The local ODU after activation - Probing

Notice that the Link ID is shown in the Link details pane (circled).

9. Repeat the above procedure for the remote ODU, ensuring that in the Air Interface window, that you enter exactly the same Link ID, but this time that you check the **Slave** radio button.

If both ODUs are powered up, after a minute or so a link will be established. If you are still connected to the remote site (from the previous steps), the window of **figure F-3** will look like this:

Figure F-4: Both sites activated and awaiting configuration

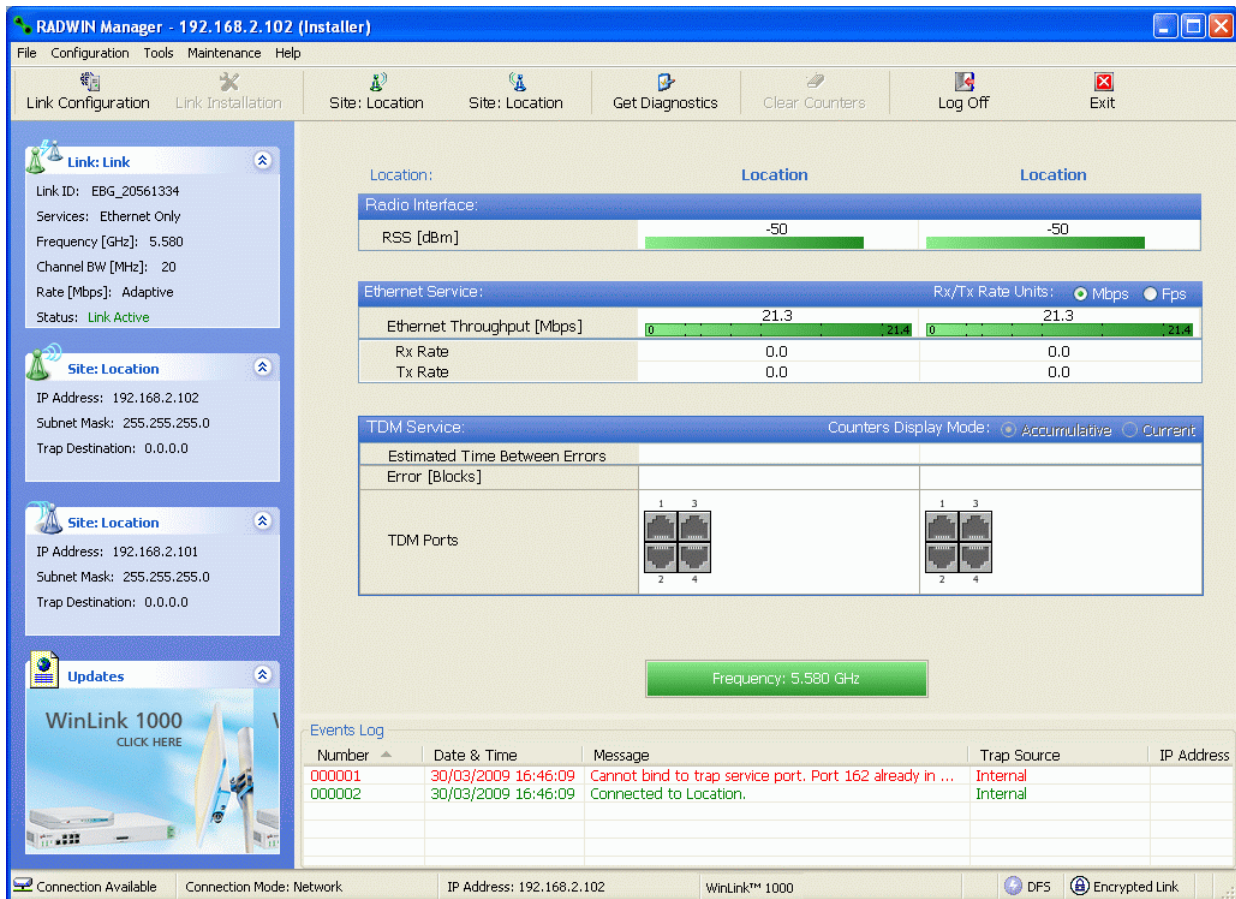# FCC/IC 5.4/5.3 GHz Link Configuration

The Configuration procedure may be carried out from either site using the Configuration wizard as shown in **Chapter 5**.

Note

Both sites in a FCC/IC 5.4/5.3 GHz Link must be configured identically.

The only difference is in the Channel Settings window:
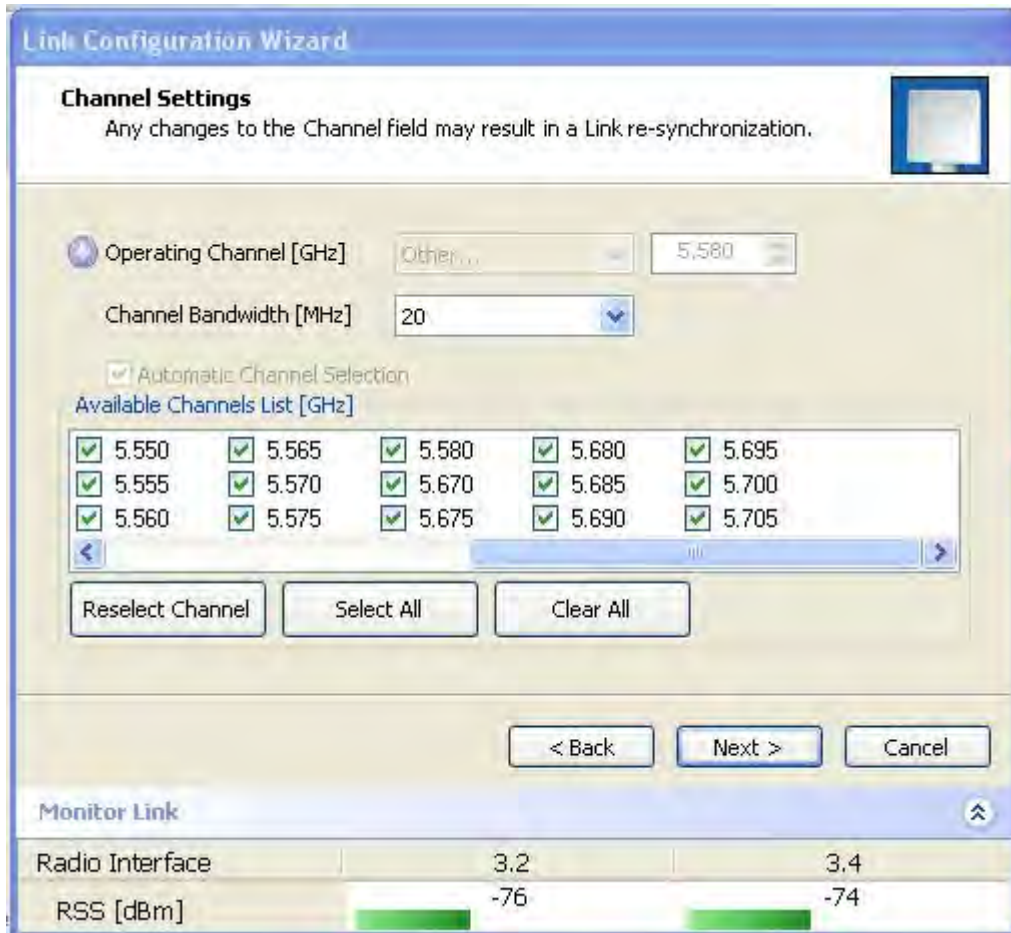
Figure F-5: Channel Select dialog box - ACS permanently enabled

![Note hand icon] **Note**

ACS cannot be disabled.

Upon completion of the wizard, the Site configuration dialogs can be used in the usual way. Once operational, the RADWIN Manager window is the same as for other radio equipment models.

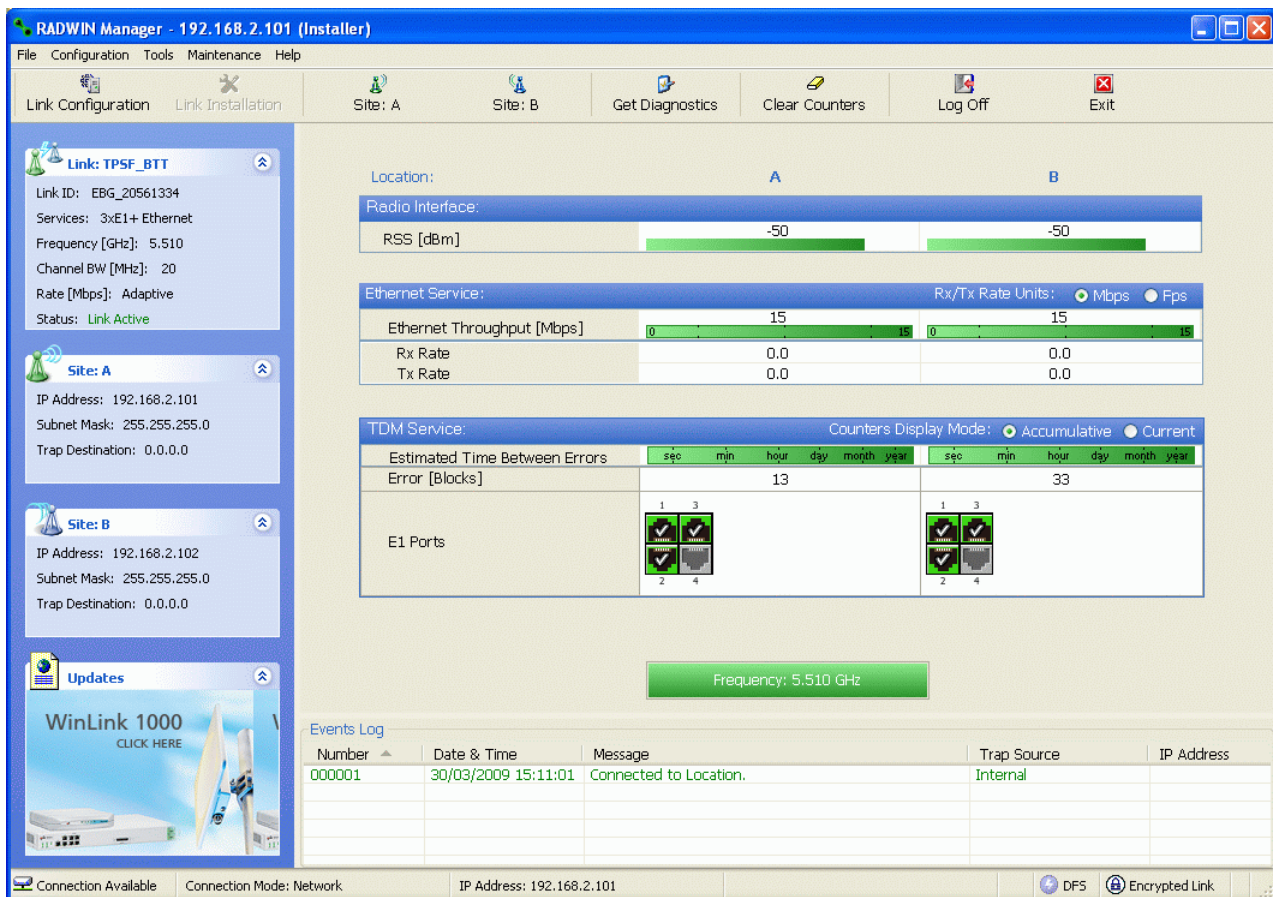Here is the RADWIN Manager main window upon completion of the wizard:

Figure F-6: FCC/IC 5.4/5.3 GHz operational

FCC 5.4GHz Device Registration

The FCC requires that devices installed within 35 km of any TDWR location should be registered in the voluntary WISPA sponsored database.

The FCC has published a TDWR Location Information table that lists the exact location of all TDWR towers (see **table F-1** at the end of the chapter).

1. When installing a 5.4 GHz device define your exact location (latitude and longitude)

2. Use the TDWR Location Information table to determine if the distance between the device and any TDWR tower is less than 35 km.

3. If the distance is less than 35 km then register the device in the voluntary WISPA sponsored database (following section)

4. Disable the frequencies between 5570 – 5680 MHz from the available channels list.

5. The frequency range between 5.600 to 5.650 GHz is not included in the available channels list.

Registering the Device

➢ **To register a device:**

1. Enter the website http://www.spectrumbridge.com/udia/home.aspx and follow the instructions.

   At your first entry into the site, you will be required to register as a user:

2. Click the **User Registration** button to enter the registration page.

3. Fill in the registration page and click **Register**.

4. To complete device registration enter the Register Device tab as shown:

You are offered this:

5. Fill in the required information in the preceding web page and click the
Register Device button.

TDWR Table

The following table contains the latitude and longitude locations of Terminal Doppler Weather Radars (TDWR). Use this table to determine if the Master or Client device installed is within 35 km radius of a TDWR location. If one of the installed devices is within 35 km radius of any TDWR location then disable all frequencies between 5570 – 5680 MHz from the available channels list.

Table F-1: Latitude and longitude locations of TDWRs

STATE	CITY	LONGITUDE	LATITUDE	FREQUENCY	TERRAIN ELEVATION (MSL) [ft]	ANTENNA HEIGHT ABOVE TERRAIN [ft]
AZ	PHOENIX	W 112 09 46	N 33 25 14	5610 MHz	1024	64
CO	DENVER	W 104 31 35	N 39 43 39	5615 MHz	5643	64
FL	FT LAUDERDALE	W 080 20 39	N 26 08 36	5645 MHz	7	113
FL	MIAMI	W 080 29 28	N 25 45 27	5605 MHz	10	113
FL	ORLANDO	W 081 19 33	N 28 20 37	5640 MHz	72	97
FL	TAMPA	W 082 31 04	N 27 51 35	5620 MHz	14	80
FL	WEST PALM BEACH	W 080 16 23	N 26 41 17	5615 MHz	20	113
GA	ATLANTA	W 084 15 44	N 33 38 48	5615 MHz	962	113
IL	MCCOOK	W 087 51 31	N 41 47 50	5615 MHz	646	97
IL	CRESTWOOD	W 087 43 47	N 41 39 05	5645 MHz	663	113
IN	INDIANAPOLIS	W 086 26 08	N 39 38 14	5605 MHz	751	97
KS	WICHITA	W 097 26 13	N 37 30 26	5603 MHz	1270	80
KY	COVINGTON CINCINNATI	W 084 34 48	N 38 53 53	5610 MHz	942	97
KY	LOUISVILLE	W 085 36 38	N 38 02 45	5646 MHz	617	113
LA	NEW ORLEANS	W 090 24 11	N 30 01 18	5645 MHz	2	97
MA	BOSTON	W 070 56 01	N 42 09 30	5610 MHz	151	113
MD	BRANDYWINE	W 076 50 42	N 38 41 43	5635 MHz	233	113
MD	BENFIELD	W 076 37 48	N 39 05 23	5645 MHz	184	113
MD	CLINTON	W 076 57 43	N 38 45 32	5615 MHz	249	97
MI	DETROIT	W 083 30 54	N 42 06 40	5615 MHz	656	113
MN	MINNEAPOLIS	W 092 55 58	N 44 52 17	5610 MHz	1040	80
MO	KANSAS CITY	W 094 44 31	N 39 29 55	5605 MHz	1040	64
MO	SAINT LOUIS	W 090 29 21	N 38 48 20	5610 MHz	551	97
MS	DESOTO COUNTY	W 089 59 33	N 34 53 45	5610 MHz	371	113
NC	CHARLOTTE	W 080 53 06	N 35 20 14	5608 MHz	757	113
NC	RALEIGH DURHAM	W 078 41 50	N 36 00 07	5647 MHz	400	113
NJ	WOODBRIDGE	W 074 16 13	N 40 35 37	5620 MHz	19	113
NJ	PENNSAUKEN	W 075 04 12	N 39 56 57	5610 MHz	39	113

Table F-1: Latitude and longitude locations of TDWRs (Continued)

STATE	CITY	LONGITUDE	LATITUDE	FREQUENCY	TERRAIN ELEVATION (MSL) [ft]	ANTENNA HEIGHT ABOVE TERRAIN [ft]
NV	LAS VEGAS	W 115 00 26	N 36 08 37	5645 MHz	1995	64
NY	FLOYD BENNETT FIELD	W 073 52 49	N 40 35 20	5647 MHz	8	97
OH	DAYTON	W 084 07 23	N 40 01 19	5640 MHz	922	97
OH	CLEVELAND	W 082 00 28	N 41 17 23	5645 MHz	817	113
OH	COLUMBUS	W 082 42 55	N 40 00 20	5605 MHz	1037	113
OK	AERO. CTR TDWR #1	W 097 37 31	N 35 24 19	5610 MHz	1285	80
OK	AERO. CTR TDWR #2	W 097 37 43	N 35 23 34	5620 MHz	1293	97
OK	TULSA	W 095 49 34	N 36 04 14	5605 MHz	712	113
OK	OKLAHOMA CITY	W 097 30 36	N 35 16 34	5603 MHz	1195	64
PA	HANOVER	W 080 29 10	N 40 30 05	5615 MHz	1266	113
PR	SAN JUAN	W 066 10 46	N 18 28 26	5610 MHz	59	113
TN	NASHVILLE	W 086 39 42	N 35 58 47	5605 MHz	722	97
TX	HOUSTON INTERCONTL	W 095 34 01	N 30 03 54	5605 MHz	154	97
TX	PEARLAND	W 095 14 30	N 29 30 59	5645 MHz	36	80
TX	DALLAS LOVE FIELD	W 096 58 06	N 32 55 33	5608 MHz	541	80
TX	LEWISVILLE DFW	W 096 55 05	N 33 03 53	5640 MHz	554	31
UT	SALT LAKE CITY	W 111 55 47	N 40 58 02	5610 MHz	4219	80
VA	LEESBURG	W 077 31 46	N 39 05 02	5605 MHz	361	113
WI	MILWAUKEE	W 088 02 47	N 42 49 10	5603 MHz	820	113

MIB Reference

Introduction

About the MIB

The RADWIN MIB is a set of APIs that enables external applications to control RADWIN equipment.

The MIB is divided into public and a private API groups:

- **Public**: RFC-1213 (MIB II) variables, RFC-1214 (MIB II) System and Interfaces sections
- **Private**: Controlled by RADWIN and supplements the public group.

This appendix describes the public and private MIB used by RADWIN.

Terminology

The following terms are used in this appendix.

Term	Meaning
MIB	Management Information Base
API	Application Programming Interface
SNMP	Simple Network Management Protocol

In addition, the MIB uses internally, the older notions of **Local site** and **Remote site** where this manual would use site A and site B.

To avoid burdening the reader, this appendix will follow the MIB usage.

Interface API

Control Method

The RADWIN Manager application provides all the means to configure and monitor a RADWIN 1000/2000/5000 link, communicating with the SNMP agent in each ODU. Each SNMP agent contains data on each of the IDUs

and ODUs in the link. Both agents communicate with each other over the air using a proprietary protocol.

Note

Each ODU has a single MAC address and a single IP address.

To control and configure the device using the MIB, you should adhere to the following rules:

- The connection for control and configuration is to the local site, over any SNMP/UDP/IP network.
- All Parameters should be consistent between both of the ODUs. Note that inconsistency of air parameters can break the air connection. To correct air parameters inconsistency you must reconfigure each of the ODUs.
- Common practice is to configure the remote site first and then to configure the local site.
- For some of the configuration parameters additional action must be taken before the new value is loaded. Please refer to the operation in the parameters description.
- Some of the MIB parameters values are product dependent. It is strongly recommend using the RADWIN Manager Application for changing these values. Setting wrong values may cause indeterminate results.

Community String

To control a link, all SNMP requests should go to the local site IP address.

The RADWIN Manager uses the Read Community strings **public** for the local ODU and **public-remote** for the remote ODU. It uses Write Community strings **netman** for the local ODU and **netman-remote** for the remote ODU. These are the factory defaults.

Private MIB Structure

The sections in the private RADWIN MIB and its location in the MIB tree are shown in **figure G-1** below:
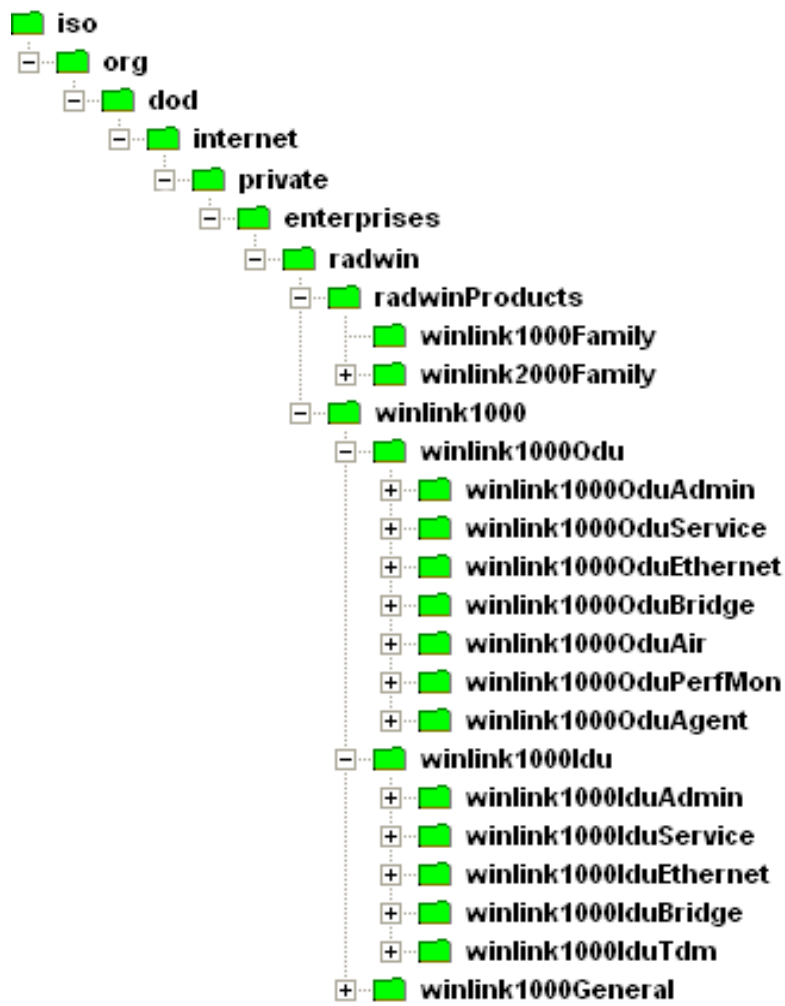
Figure G-1: Top Level Sections of the private MIB

The products MIB section contains the definition of the Object IDs for the two form factors of the ODU, Integrated Antenna and Connectorized (referred in the MIB as **external antenna**):

The ODU MIB contains the sections: Admin, Service, Ethernet, Bridge, Air, PerfMon and Agent.

The IDU MIB contains the sections: Admin, Service, Ethernet, Bridge and TDM.

The general MIB include a single generic parameter that is used by all traps as a trap description parameter.

MIB Parameters

The following section describes all of the MIB parameters. The MIB parameters follow the following naming convention:

<winlink1000><Section 1>…<Section n><Parameter Name>

For each of the configuration and control parameters (parameters with read-write access), the "Description" column describes when the new value is effective. It is recommended that you perform the appropriate action to make the values affective immediately after any change. Where a change is required on both sides of the link, it is recommended that you change both sides of the link first and then perform the action.

Supported Variables from the RFC 1213 MIB

Table G-1: Supported RFC 1213 Variables (Sheet 1 of 2)

Name	OID	Type	Access	Description
ifIndex	.1.3.6.1.2.1.2.2.1.1.x[a]	Integer	RO	A unique value for each interface.Its value ranges between 1 and the value of ifNumber.The value for each interface must remain constant at least from one re-initialization of the entity's network management system to the next re-initialization.
ifDescr	.1.3.6.1.2.1.2.2.1.2	DisplayString	RO	A textual string containing information about the interface.This string should include the name of the manufacturer, the product name and the version of the hardware interface.
ifType	.1.3.6.1.2.1.2.2.1.3	Integer	RO	The type of interface, distinguished according to the physical/link protocol(s) immediately `below' the network layer in the protocol stack.
ifSpeed	.1.3.6.1.2.1.2.2.1.5	Gauge	RO	An estimate of the interface's current bandwidth in bits per second.For interfaces which do not vary in bandwidth or for those where no accurate estimation can be made, this object should ontain the nominal bandwidth.
ifPhysAddress	.1.3.6.1.2.1.2.2.1.6	Phys-Address	RO	The interface's address at the protocol layer immediately `below' the network layer in the protocol stack. For interfaces which do not have such an address (e.g., a serial line), this object should contain an octet string of zero length.
ifAdminStatus	.1.3.6.1.2.1.2.2.1.7	Integer	RW	The desired state of the interface. The testing(3) state indicates that no operational packets can be passed.
ifOperStatus	.1.3.6.1.2.1.2.2.1.8	Integer	RO	The current operational state of the interface. The testing(3) state indicates that no operational packets can be passed.
ifInOctets	.1.3.6.1.2.1.2.2.1.10.x	Counter	RO	The total number of octets received on the interface, including framing characters.
ifInUcastPkts	.1.3.6.1.2.1.2.2.1.11.x	Counter	RO	The number of subnetwork-unicast packets delivered to a higher-layer protocol.
ifInNUcastPkts	.1.3.6.1.2.1.2.2.1.12.x	Counter	RO	The number of non-unicast (i.e., subnetwork-broadcast or subnetwork-multicast) packets delivered to a higher-layer protocol.

Table G-1: Supported RFC 1213 Variables (Sheet 2 of 2)

Name	OID	Type	Access	Description
ifInErrors	.1.3.6.1.2.1.2.2.1.14.x	Counter	RO	The number of inbound packets that contained errors preventing them from being deliverable to a higher-layer protocol.
ifOutOctets	.1.3.6.1.2.1.2.2.1.16.x	Counter	RO	The total number of octets transmitted out of the interface, including framing characters.
ifOutUcastPkts	.1.3.6.1.2.1.2.2.1.17.x	Counter	RO	The total number of packets that higher-level protocols requested be transmitted to a subnetwork-unicast address, including those that were discarded or not sent.
ifOutNUcastPkts	.1.3.6.1.2.1.2.2.1.18.x	Counter	RO	The total number of packets that higher-level protocols requested be transmitted to a non-unicast (i.e., a subnetwork-broadcast or subnetwork-multicast) address, including those that were discarded or not sent.

a. x is the interface ID

MIB Parameters

Table G-2: Private MIB Parameters (Sheet 1 of 14)

Name	OID	Type	Access	Description
winlink1000OduAdmProductType	1.3.6.1.4.1.4458.1000.1.1.1	DisplayString	RO	ODU configuration description.
winlink1000OduAdmHwRev	1.3.6.1.4.1.4458.1000.1.1.2	DisplayString	RO	ODU Hardware Version.
winlink1000OduAdmSwRev	1.3.6.1.4.1.4458.1000.1.1.3	DisplayString	RO	ODU Software Version.
winlink1000OduAdmLinkName	1.3.6.1.4.1.4458.1000.1.1.4	DisplayString	RW	Link Name. A change is effective immediately.
winlink1000OduAdmResetCmd	1.3.6.1.4.1.4458.1000.1.1.5	Integer	RW	Reset Command. A set command with a value of 3 will cause a device reset. The read value is always 0.
winlink1000OduAdmAddres	1.3.6.1.4.1.4458.1000.1.1.6	IpAddress	RW	ODU IP address. A change is effective after reset. The parameter is kept for backward compatibility. Using the alternative parameter: winlink1000OduAdmIpParamsCnfg is recommended.
winlink1000OduAdmMask	1.3.6.1.4.1.4458.1000.1.1.7	IpAddress	RW	ODU Subnet Mask. A change is effective after reset. The parameter is kept for backward compatibility. Using the alternative parameter: winlink1000OduAdmIpParamsCnfg is recommended.
winlink1000OduAdmGateway	1.3.6.1.4.1.4458.1000.1.1.8	IpAddress	RW	ODU default gateway. A change is effective after reset. The parameter is kept for backward compatibility. Using the alternative parameter: winlink1000OduAdmIpParamsCnfg is recommended.
winlink1000OduAdmBroadcast	1.3.6.1.4.1.4458.1000.1.1.10	Integer	RW	This parameter is reserved for the Manager application provided with the product.
winlink1000OduAdmHostsTable			N/A	Trap destinations table. Each trap destination is defined by an IP address and a UDP port. Up to 10 addresses can be configured.
winlink1000OduAdmHostsEntry			N/A	Trap destinations table entry.
winlink1000OduAdmHostsIndex			RO	Trap destinations table index.
winlink1000OduAdmHostsIp	1.3.6.1.4.1.4458.1000.1.1.12.1.2	IpAddress	RW	Trap destination IP address. A change is effective immediately.

Table G-2: Private MIB Parameters (Sheet 2 of 14)

Name	OID	Type	Access	Description
winlink1000OduAdmHostsPort	1.3.6.1.4.1.4458.1000.1.1.12.1.3	Integer	RW	UDP port of the trap destination. A change is effective immediately.
winlink1000OduBuzzerAdminState	1.3.6.1.4.1.4458.1000.1.1.13	Integer	RW	This parameter controls the activation of the buzzer while the unit is in install mode. A change is effective immediately. The valid values are: disabled (0) enabled (1).
winlink1000OduProductId	1.3.6.1.4.1.4458.1000.1.1.14	DisplayString	RO	This parameter is reserved for the Manager application provided with the product.
winlink1000OduReadCommunity	1.3.6.1.4.1.4458.1000.1.1.15	DisplayString	RW	Read Community String. This parameter always returns ***** when retrieving its value. It is used by the Manager application to change the Read Community String. The SNMP agent accepts only encrypted values.
winlink1000OduReadWriteCommunity	1.3.6.1.4.1.4458.1000.1.1.16	DisplayString	RW	Read/Write Community String. This parameter always returns ***** when retrieving its value. It is used by the Manager application to change the Read/Write Community String. The SNMP agent accepts only encrypted values.
winlink1000OduTrapCommunity	1.3.6.1.4.1.4458.1000.1.1.17	DisplayString	RW	Trap Community String. This parameter is used by the Manager application to change the Trap Community String. The SNMP agent accepts only encrypted values.
winlink1000OduAdmSnmpAgentVersion	1.3.6.1.4.1.4458.1000.1.1.18	Integer	RO	Major version of the SNMP agent.
winlink1000OduAdmRemoteSiteName	1.3.6.1.4.1.4458.1000.1.1.19	DisplayString	RO	Remote site name. Returns the same value as sysLocation parameter of the remote site.
winlink1000OduAdmSnmpAgentMinorVersion	1.3.6.1.4.1.4458.1000.1.1.20	Integer	RO	Minor version of the SNMP agent.
winlink1000OduAdmLinkPassword	1.3.6.1.4.1.4458.1000.1.1.21	DisplayString	RW	Link Password. This parameter always returns ***** when retrieving its value. It is used by the Manager application to change the Link Password. The SNMP agent accepts only encrypted values.
winlink1000OduAdmSiteLinkPassword	1.3.6.1.4.1.4458.1000.1.1.22	DisplayString	RW	Site Link Password. This parameter always returns ***** when retrieving its value. It is used by the Manager application to change the Link Password of the site. The SNMP agent accepts only encrypted values.
winlink1000OduAdmDefaultPassword	1.3.6.1.4.1.4458.1000.1.1.23	Integer	RO	This parameter indicates if the current Link Password is the default password.
winlink1000OduAdmConnectionType	1.3.6.1.4.1.4458.1000.1.1.24	Integer	RO	This parameter indicates if the Manager application is connected to the local ODU or to the remote ODU over the air. A value of 'unknown' indicates community string mismatch.
winlink1000OduAdmBackToFactorySettingsCmd	1.3.6.1.4.1.4458.1000.1.1.25	Integer	RW	Back to factory settings Command. A change is effective after reset. The read value is always 0.
winlink1000OduAdmIpParamsCnfg	1.3.6.1.4.1.4458.1000.1.1.26	DisplayString	RW	ODU IP address Configuration. The format is: <IP_Address>|<Subnet_Mask>|<Default_Gateway>|
winlink1000OduAdmVlanID	1.3.6.1.4.1.4458.1000.1.1.27	Integer	RW	VLAN ID. Valid values are 1 to 4094. Initial value is 0 meaning VLAN unaware.
winlink1000OduAdmVlanPriority	1.3.6.1.4.1.4458.1000.1.1.28	Integer	RW	VLAN Priority. 0 is lowest priority 7 is highest priority.
winlink1000OduAdmSN	1.3.6.1.4.1.4458.1000.1.1.29	DisplayString	RO	IDU Serial Number
winlink1000OduSrvMode	1.3.6.1.4.1.4458.1000.1.2.1	Integer	RW	System mode. The only value that can be set is installMode; normalMode reserved to the Manager application provided with the product. A change is effective after link re-synchronization.

Table G-2: Private MIB Parameters (Sheet 3 of 14)

Name	OID	Type	Access	Description
winlink1000OduSrvBridging	1.3.6.1.4.1.4458.1000.1.2.3	Integer	RO	Bridging Mode. Valid values are: disabled (0) enabled (1).
winlink1000OduEthernetRemainingRate	1.3.6.1.4.1.4458.1000.1.3.1	Integer	RO	Current Ethernet bandwidth in bps.
winlink1000OduEthernetIfTable			N/A	ODU Ethernet Interface table.
winlink1000OduEthernetIfEntry			N/A	ODU Ethernet Interface table entry.
winlink1000OduEthernetIfIndex	1.3.6.1.4.1.4458.1000.1.3.2.1.1	Integer	RO	ODU Ethernet Interface Index.
winlink1000OduEthernetIfAddress	1.3.6.1.4.1.4458.1000.1.3.2.1.5	DisplayString	RO	ODU MAC address.
winlink1000OduEthernetIfAdminStatus	1.3.6.1.4.1.4458.1000.1.3.2.1.6	Integer	RW	Required state of the interface.
winlink1000OduEthernetIfOperStatus	1.3.6.1.4.1.4458.1000.1.3.2.1.7	Integer	RO	Current operational state of the interface.
winlink1000OduEthernetIfFailAction	1.3.6.1.4.1.4458.1000.1.3.2.1.8	Integer	RW	Failure action of the interface.
winlink1000OduEthernetNumOfPorts	1.3.6.1.4.1.4458.1000.1.3.3	Integer	RO	Number of ODU network interfaces.
winlink1000OduBridgeBasePortTable			N/A	ODU Bridge Ports table.
winlink1000OduBridgeBasePortEntry			N/A	ODU Bridge Ports table entry.
winlink1000OduBridgeBasePortIndex			RO	ODU Bridge Port Number.
winlink1000OduBridgeBaseIfIndex			RO	IfIndex corresponding to ODU Bridge port.
winlink1000OduBridgeTpMode	1.3.6.1.4.1.4458.1000.1.4.4.101	Integer	RW	ODU bridge mode. A change is effective after reset. Valid values: hubMode (0) bridgeMode (1).
winlink1000OduBridgeTpPortTable			N/A	ODU Transparent Bridge Ports table.
winlink1000OduBridgeTpPortEntry			N/A	ODU Transparent Bridge Ports table entry.
winlink1000OduBridgeTpPortIndex			RO	ODU Transparent Bridge Port Number.
winlink1000OduBridgeTpPortInFrames	1.3.6.1.4.1.4458.1000.1.4.4.3.1.3	Counter	RO	Number of frames received by this port.
winlink1000OduBridgeTpPortOutFrames	1.3.6.1.4.1.4458.1000.1.4.4.3.1.4	Counter	RO	Number of frames transmitted by this port.
winlink1000OduBridgeTpPortInBytes	1.3.6.1.4.1.4458.1000.1.4.4.3.1.101	Counter	RO	Number of bytes received by this port.
winlink1000OduBridgeTpPortOutBytes	1.3.6.1.4.1.4458.1000.1.4.4.3.1.102	Counter	RO	Number of bytes transmitted by this port.
winlink1000OduAirFreq	1.3.6.1.4.1.4458.1000.1.5.1	Integer	RW	Installation Center Frequency. Valid values are product dependent. A change is effective after link re-synchronization.
winlink1000OduAirDesiredRate	1.3.6.1.4.1.4458.1000.1.5.2	Integer	RW	Deprecated parameter actual behavior is read-only. Required Air Rate. For Channel Bandwidth of 20 10 5 MHz divide the value by 1 2 4 respectively.
winlink1000OduAirSSID	1.3.6.1.4.1.4458.1000.1.5.3	DisplayString	RW	Reserved for the Manager application provided with the product.
winlink1000OduAirTxPower	1.3.6.1.4.1.4458.1000.1.5.4	Integer	RW	Required Transmit power in dBm . This is a nominal value while the actual transmit power includes additional attenuation. The min and max values are product specific. A change is effective immediately.
winlink1000OduAirSesState	1.3.6.1.4.1.4458.1000.1.5.5	Integer	RO	Current Link State. The value is active (3) during normal operation.
winlink1000OduAirMstrSlv	1.3.6.1.4.1.4458.1000.1.5.6	Integer	RO	This parameter indicates if the device was automatically selected into the radio link master or slave. The value is undefined if there is no link.
winlink1000OduAirResync	1.3.6.1.4.1.4458.1000.1.5.8	Integer	RW	Setting this parameter to 1 will cause the link to restart the synchronization process.
winlink1000OduAirRxPower	1.3.6.1.4.1.4458.1000.1.5.9.1	Integer	RO	Received Signal Strength in dBm.
winlink1000OduAirTotalFrames	1.3.6.1.4.1.4458.1000.1.5.9.2	Counter	RO	Total Number of received radio frames.
winlink1000OduAirBadFrames	1.3.6.1.4.1.4458.1000.1.5.9.3	Counter	RO	Total number of received radio frames with CRC error.
winlink1000OduAirCurrentRate	1.3.6.1.4.1.4458.1000.1.5.9.4	Integer	RO	Deprecated parameter. Actual rate of the air interface in Mbps. For Channel Bandwidth of 20 10 5 MHz divide the value by 1 2 4 respectively.

Table G-2: Private MIB Parameters (Sheet 4 of 14)

Name	OID	Type	Access	Description
winlink1000OduAirCurrentRateIdx	1.3.6.1.4.1.4458.1000.1.5.9.5	Integer	RO	Index of current air rate.
winlink1000OduAirTxPower36	1.3.6.1.4.1.4458.1000.1.5.10	Integer	RW	Deprecated parameter. Actual behavior is read-only.
winlink1000OduAirTxPower48	1.3.6.1.4.1.4458.1000.1.5.11	Integer	RW	Deprecated parameter. Actual behavior is read-only.
winlink1000OduAirCurrentTxPower	1.3.6.1.4.1.4458.1000.1.5.12	Integer	RO	Current Transmit Power in dBm. This is a nominal value while the actual transmit power includes additional attenuation.
winlink1000OduAirMinFrequency	1.3.6.1.4.1.4458.1000.1.5.13	Integer	RO	Minimum center frequency in MHz.
winlink1000OduAirMaxFrequency	1.3.6.1.4.1.4458.1000.1.5.14	Integer	RO	Maximum center frequency in MHz.
winlink1000OduAirFreqResolution	1.3.6.1.4.1.4458.1000.1.5.15	Integer	RO	Center Frequency resolution. Measured in MHz if value < 100 otherwise in KHz.
winlink1000OduAirCurrentFreq	1.3.6.1.4.1.4458.1000.1.5.16	Integer	RO	Current Center Frequency. Measured in MHz if center frequency resolution value < 100 otherwise in KHz.
winlink1000OduAirNumberOfChannels	1.3.6.1.4.1.4458.1000.1.5.17	Integer	RO	Number of channels that can be used.
winlink1000OduAirChannelsTable			N/A	Table of channels used by automatic channels selection (ACS).
winlink1000OduAirChannelsEntry			N/A	ACS channels table entry.
winlink1000OduAirChannelsIndex	1.3.6.1.4.1.4458.1000.1.5.18.1.1	Integer	RO	Channel Index.
winlink1000OduAirChannelsFrequency	1.3.6.1.4.1.4458.1000.1.5.18.1.2	Integer	RO	Channel frequency in MHz.
winlink1000OduAirChannelsOperState	1.3.6.1.4.1.4458.1000.1.5.18.1.3	Integer	RW	Channel state. Can be set by the user. Automatic Channel Selection uses channels that are AirChannelsOperState enabled and AirChannelsAvail enabled. A change is effective after link re-synchronization. Valid values: disabled (0) enabled (1).
winlink1000OduAirChannelsAvail	1.3.6.1.4.1.4458.1000.1.5.18.1.4	Integer	RO	Channel state. Product specific and cannot be changed by the user. Automatic Channel Selection uses channels that are AirChannelsOperState enabled and AirChannelsAvail enabled. Valid values: disabled (0) enabled (1).
winlink1000OduAirDfsState	1.3.6.1.4.1.4458.1000.1.5.19	Integer	RO	Radar detection state. Valid values: disabled (0) enabled (1).
winlink1000OduAirAutoChannelSelectionState	1.3.6.1.4.1.4458.1000.1.5.20	Integer	RO	Deprecated parameter. Indicating Automatic Channel Selection availability at current channel bandwidth. Valid values: disabled (0) enabled (1).
winlink1000OduAirEnableTxPower	1.3.6.1.4.1.4458.1000.1.5.21	Integer	RO	Indicating Transmit power configuration enabled or disabled.
winlink1000OduAirMinTxPower	1.3.6.1.4.1.4458.1000.1.5.22	Integer	RO	Minimum Transmit power in dBm.
winlink1000OduAirMaxTxPowerTable			N/A	Table of Maximum transmit power per air rate in dBm.
winlink1000OduAirMaxTxPowerEntry			N/A	Maximum Transmit power table entry.
winlink1000OduAirMaxTxPowerIndex	1.3.6.1.4.1.4458.1000.1.5.23.1.1	Integer	RO	Air interface rate index.
winlink1000OduAirMaxTxPower	1.3.6.1.4.1.4458.1000.1.5.23.1.2	Integer	RO	Maximum Transmit power in dBm.
winlink1000OduAirChannelBandwidth	1.3.6.1.4.1.4458.1000.1.5.24	Integer	RW	Channel bandwidth in KHz. A change is effective after reset.
winlink1000OduAirChannelBWTable			N/A	Channel Bandwidths table.
winlink1000OduAirChannelBWEntry			N/A	Channel Bandwidth table entry.
winlink1000OduAirChannelBWIndex	1.3.6.1.4.1.4458.1000.1.5.25.1.1	Integer	RO	Channel Bandwidth index.
winlink1000OduAirChannelBWAvail	1.3.6.1.4.1.4458.1000.1.5.25.1.2	Integer	RO	Channel Bandwidth availability product specific. Options are: Not supported supported with manual channel selection supported with Automatic Channel Selection.

Table G-2: Private MIB Parameters (Sheet 5 of 14)

Name	OID	Type	Access	Description
winlink1000OduAirRFD	1.3.6.1.4.1.4458.1000.1.5.26	Integer	RO	Current radio frame duration in microseconds.
winlink1000OduAirRatesTable			N/A	Air Rate indexes table for current channel bandwidth.
winlink1000OduAirRatesEntry			N/A	Air Rate indexes table entry.
winlink1000OduAirRatesIndex	1.3.6.1.4.1.4458.1000.1.5.27.1.1	Integer	RO	Air Rate index.
winlink1000OduAirRatesAvail	1.3.6.1.4.1.4458.1000.1.5.27.1.2	Integer	RO	Air Rate availability depending on air interface conditions.
winlink1000OduAirDesiredRateIdx	1.3.6.1.4.1.4458.1000.1.5.28	Integer	RW	Required Air Rate index. 0 reserved for Adaptive Rate. A change is effective immediately after Set operation to the master side while the link is up.
winlink1000OduAirLinkDistance	1.3.6.1.4.1.4458.1000.1.5.29	Integer	RO	Link distance in meters. A value of -1 indicates an illegal value and is also used when a link is not established.
winlink1000OduAirLinkWorkingMode	1.3.6.1.4.1.4458.1000.1.5.30	Integer	RO	Link working mode as a result of comparing versions of both sides of the link. Possible modes are: Unknown - no link Normal - versions on both sides are identical with full compatibility with restricted compatibility or versions on both sides are different with software upgrade or versions incompatibility.
winlink1000OduAirMajorLinkIfVersion	1.3.6.1.4.1.4458.1000.1.5.31	Integer	RO	Major link interface version
winlink1000OduAirMinorLinkIfVersion	1.3.6.1.4.1.4458.1000.1.5.32	Integer	RO	Minor link interface version
winlink1000OduAirHssDesiredOpState	1.3.6.1.4.1.4458.1000.1.5.40.1	Integer	RW	Required Hub Site Synchronization operating state.
winlink1000OduAirHssCurrentOpState	1.3.6.1.4.1.4458.1000.1.5.40.2	Integer	RO	Current Hub Site Synchronization operating state.
winlink1000OduAirHssSyncStatus	1.3.6.1.4.1.4458.1000.1.5.40.3	Integer	RO	Hub Site Synchronization sync status.
winlink1000OduAirHssExtPulseStatus	1.3.6.1.4.1.4458.1000.1.5.40.4	Integer	RO	Hub Site Synchronization external pulse detection status.
winlink1000OduAirHssExtPulseType	1.3.6.1.4.1.4458.1000.1.5.40.5	Integer	RO	Hub Site Synchronization external pulse type.
winlink1000OduAirHssDesiredExtPulseType	1.3.6.1.4.1.4458.1000.1.5.40.6	Integer	RW	Hub Site Synchronization required external pulse type. Valid values for read write: {typeA(2) typeB(3) typeC(4) typeD(5)}. Valid value for read only: {notApplicable(1)}.
winlink1000OduAirHssRfpTable			N/A	ODU Radio Frame Patterns (RFP) Table.
winlink1000OduAirHssRfpEntry			N/A	ODU RFP Table entry.
winlink1000OduAirHssRfpIndex	1.3.6.1.4.1.4458.1000.1.5.40.7.1.1	Integer	RO	ODU RFP Table index. The index represent the Radio Frame Pattern: typeA(2) typeB(3) typeC(4) typeD(5).
winlink1000OduAirHssRfpEthChannelBW5MHz	1.3.6.1.4.1.4458.1000.1.5.40.7.1.2	Integer	RO	Represents the compatibility of Ethernet service under Channel BW of 5MHz in the specific Radio Frame Pattern.
winlink1000OduAirHssRfpTdmChannelBW5MHz	1.3.6.1.4.1.4458.1000.1.5.40.7.1.3	Integer	RO	Represents the compatibility of TDM service under Channel BW of 5MHz in the specific Radio Frame Pattern.
winlink1000OduAirHssRfpEthChannelBW10MHz	1.3.6.1.4.1.4458.1000.1.5.40.7.1.4	Integer	RO	Represents the compatibility of Ethernet service under Channel BW of 10MHz in the specific Radio Frame Pattern.
winlink1000OduAirHssRfpTdmChannelBW10MHz	1.3.6.1.4.1.4458.1000.1.5.40.7.1.5	Integer	RO	Represents the compatibility of TDM service under Channel BW of 10MHz in the specific Radio Frame Pattern.
winlink1000OduAirHssRfpEthChannelBW20MHz	1.3.6.1.4.1.4458.1000.1.5.40.7.1.6	Integer	RO	Represents the compatibility of Ethernet service under Channel BW of 20MHz in the specific Radio Frame Pattern.
winlink1000OduAirHssRfpTdmChannelBW20MHz	1.3.6.1.4.1.4458.1000.1.5.40.7.1.7	Integer	RO	Represents the compatibility of TDM service under Channel BW of 20MHz in the specific Radio Frame Pattern.

Table G-2: Private MIB Parameters (Sheet 6 of 14)

Name	OID	Type	Access	Description
winlink1000OduAirLockRemote	1.3.6.1.4.1.4458.1000.1.5.41	Integer	RW	This parameter enables locking the link with a specific ODU. The following values can be set: Unlock (default) - The ODU is not locked on a specific remote ODU. Unlock can only be performed when the link is not connected. Lock - The ODU is locked on a specific remote ODU. Lock can only be performed when the link is active.
winlink1000OduAirAntennaGain	1.3.6.1.4.1.4458.1000.1.5.42	Integer	RW	Current Antenna Gain in 0.1 dBi resolution. User defined value in case of external antenna. Legal range: MinAntennaGain<AntennaGain<MaxAntennaGain .
winlink1000OduAirFeederLoss	1.3.6.1.4.1.4458.1000.1.5.43	Integer	RW	Current Feeder Loss in 0.1 dBm resolution. User defined value in case of external antenna.
winlink1000OduAirMaxAntennaGain	1.3.6.1.4.1.4458.1000.1.5.44	Integer	RO	Maximum allowed Antenna Gain in 0.1 dBi resolution.
winlink1000OduAirMinAntennaGain	1.3.6.1.4.1.4458.1000.1.5.45	Integer	RO	Minimum allowed Antenna Gain in 0.1 dBi resolution.
winlink1000OduAirMaxEIRP	1.3.6.1.4.1.4458.1000.1.5.46	Integer	RO	Maximum EIRP value as defined by regulation in 0.1 dBm resolution.
winlink1000OduAirAntennaGainConfigSupport	1.3.6.1.4.1.4458.1000.1.5.47	Integer	RO	Antenna Gain Configurability options are product specific: supported not supported.
winlink1000OduAirAntennaType	1.3.6.1.4.1.4458.1000.1.5.48	Integer	RW	External Antenna Type: Monopolar or Bipolar.
winlink1000OduAirRssBalance	1.3.6.1.4.1.4458.1000.1.5.49	Integer	RO	RSS balance. Relation between RSS in radio 1 and RSS in radio 2.
winlink1000OduAirTotalTxPower	1.3.6.1.4.1.4458.1000.1.5.50	Integer	RO	Total Transmit Power in dBm. This is a nominal value While the actual transmit power includes additional attenuation.
winlink1000OduPerfMonCurrTable			N/A	This table defines/keeps the counters of the current 15 min interval.
winlink1000OduPerfMonCurrEntry			N/A	This is an entry in the Current Interval Table.
winlink1000OduPerfMonCurrUAS	1.3.6.1.4.1.4458.1000.1.6.1.1.1	Gauge	RO	The current number of Unavailable Seconds starting from the present 15 minutes period.
winlink1000OduPerfMonCurrES	1.3.6.1.4.1.4458.1000.1.6.1.1.2	Gauge	RO	Current number of Errored Seconds starting from the present 15 minutes period.
winlink1000OduPerfMonCurrSES	1.3.6.1.4.1.4458.1000.1.6.1.1.3	Gauge	RO	Current number of Severely Errored Seconds starting from the present 15 minutes period.
winlink1000OduPerfMonCurrBBE	1.3.6.1.4.1.4458.1000.1.6.1.1.4	Gauge	RO	Current number of Background Block Errors starting from the present 15 minutes period.
winlink1000OduPerfMonCurrIntegrity	1.3.6.1.4.1.4458.1000.1.6.1.1.5	Integer	RO	Indicates the integrity of the entry.
winlink1000OduPerfMonIntervalTable			N/A	This table defines/keeps the counters of the current 15 min interval.
winlink1000OduPerfMonIntervalEntry			N/A	This is an entry in the Interval Table.
winlink1000OduPerfMonIntervalIdx			RO	This table is indexed per interval number. Each interval is of 15 minutes and the oldest is 96.
winlink1000OduPerfMonIntervalUAS			RO	The current number of Unavailable Seconds per interval.
winlink1000OduPerfMonIntervalES			RO	Current number of Errored Seconds per interval.
winlink1000OduPerfMonIntervalSES			RO	Current number of Severely Errored Seconds per interval.
winlink1000OduPerfMonIntervalBBE			RO	Current number of Background Block Errors per interval.
winlink1000OduPerfMonIntervalIntegrity			RO	Indicates the integrity of the entry per interval.

Table G-2: Private MIB Parameters (Sheet 7 of 14)

Name	OID	Type	Access	Description
winlink1000OduPerfMonDayTable			N/A	This table defines/keeps the counters of the current 15 min interval.
winlink1000OduPerfMonDayEntry			N/A	This is an entry in the Days Table.
winlink1000OduPerfMonDayIdx			RO	This table is indexed per interval number. Each interval is of 24 hours and the oldest is 30.
winlink1000OduPerfMonDayUAS			RO	The current number of Unavailable Seconds per interval of 24 hours.
winlink1000OduPerfMonDayES			RO	Current number of Errored Seconds per interval of 24 hours.
winlink1000OduPerfMonDaySES			RO	Current number of Severely Errored Seconds per interval of 24 hours.
winlink1000OduPerfMonDayBBE			RO	Current number of Background Block Errors per interval of 24 hours.
winlink1000OduPerfMonDayIntegrity			RO	Indicates the integrity of the entry per interval of 24 hours.
winlink1000OduPerfMonAirCurrTable			N/A	This table defines/keeps the counters of the current 15 min interval.
winlink1000OduPerfMonAirCurrEntry			N/A	This is an entry in the Current Interval Table.
winlink1000OduPerfMonAirCurrMinRSL	1.3.6.1.4.1.4458.1000.1.6.4.1.1	Integer	RO	Current Min Received Level Reference starting from the present 15 minutes period.
winlink1000OduPerfMonAirCurrMaxRSL	1.3.6.1.4.1.4458.1000.1.6.4.1.2	Integer	RO	Current Max Received Level Reference starting from the present 15 minutes period.
winlink1000OduPerfMonAirCurrRSLThresh1Exceed	1.3.6.1.4.1.4458.1000.1.6.4.1.3	Gauge	RO	Number of seconds Receive Signal Level exceeded the RSL1 threshold in the last 15 minutes.
winlink1000OduPerfMonAirCurrRSLThresh2Exceed	1.3.6.1.4.1.4458.1000.1.6.4.1.4	Gauge	RO	Number of seconds Receive Signal Level exceeded the RSL2 threshold in the last 15 minutes.
winlink1000OduPerfMonAirCurrMinTSL	1.3.6.1.4.1.4458.1000.1.6.4.1.5	Integer	RO	Current Min Transmit Signal Level starting from the present 15 minutes period.
winlink1000OduPerfMonAirCurrMaxTSL	1.3.6.1.4.1.4458.1000.1.6.4.1.6	Integer	RO	Current Max Transmit Signal Level starting from the present 15 minutes period.
winlink1000OduPerfMonAirCurrTSLThresh1Exceed	1.3.6.1.4.1.4458.1000.1.6.4.1.7	Gauge	RO	Number of seconds Transmit Signal Level exceeded the TSL1 threshold in the last 15 minutes.
winlink1000OduPerfMonAirCurrBBERThresh1Exceed	1.3.6.1.4.1.4458.1000.1.6.4.1.8	Gauge	RO	Number of seconds Background Block Error Ratio exceeded the BBER1 threshold in the last 15 minutes.
winlink1000OduPerfMonAirIntervalTable			N/A	This table defines/keeps the counters of the current 15 min interval.
winlink1000OduPerfMonAirIntervalEntry			N/A	This is an entry in the Interval Table.
winlink1000OduPerfMonAirIntervalIdx			RO	This table is indexed per interval number. Each interval is of 15 minutes and the oldest is 96.
winlink1000OduPerfMonAirIntervalMinRSL			RO	Current Min Received Level Reference per interval.
winlink1000OduPerfMonAirIntervalMaxRSL			RO	Current Max Received Level Reference per interval.
winlink1000OduPerfMonAirIntervalRSLThresh1Exceed			RO	Number of seconds Receive Signal Level exceeded the RSL1 threshold per interval.
winlink1000OduPerfMonAirIntervalRSLThresh2Exceed				Number of seconds Receive Signal Level exceeded the RSL2 threshold ACCESS read-only per interval.
winlink1000OduPerfMonAirIntervalMinTSL			RO	Current Min Transmit Signal Level per interval.

Table G-2: Private MIB Parameters (Sheet 8 of 14)

Name	OID	Type	Access	Description
winlink1000OduPerfMonAirIntervalMaxTSL			RO	Current Max Transmit Signal Level per interval.
winlink1000OduPerfMonAirIntervalTSLThresh1Exceed			RO	Number of seconds Transmit Signal Level exceeded the TSL1 threshold per interval.
winlink1000OduPerfMonAirIntervalBBERThresh1Exceed			RO	Number of seconds Background Block Error Ratio exceeded the BBER1 threshold per interval.
winlink1000OduPerfMonAirDayTable			N/A	This table defines/keeps the counters of the current 15 min interval.
winlink1000OduPerfMonAirDayEntry			N/A	This is an entry in the Days Table.
winlink1000OduPerfMonAirDayIdx			RO	This table is indexed per Day number. Each Day is of 15 minutes and the oldest is 96.
winlink1000OduPerfMonAirDayMinRSL			RO	Current Min Received Level Reference per Day.
winlink1000OduPerfMonAirDayMaxRSL			RO	Current Max Received Level Reference per Day.
winlink1000OduPerfMonAirDayRSLThresh1Exceed			RO	Number of seconds Receive Signal Level exceeded the RSL1 threshold per Day.
winlink1000OduPerfMonAirDayRSLThresh2Exceed			RO	Number of seconds Receive Signal Level exceeded the RSL2 threshold per Day.
winlink1000OduPerfMonAirDayMinTSL			RO	Current Min Transmit Signal Level per Day.
winlink1000OduPerfMonAirDayMaxTSL			RO	Current Max Transmit Signal Level per Day.
winlink1000OduPerfMonAirDayTSLThresh1Exceed			RO	Number of seconds Transmit Signal Level exceeded the TSL1 threshold per Day.
winlink1000OduPerfMonAirDayBBERThresh1Exceed			RO	Number of seconds Background Block Error Ratio exceeded the BBER1 threshold per Day.
winlink1000OduPerfMonEthCurrTable			N/A	This table defines/keeps the counters of the current 15 min interval.
winlink1000OduPerfMonEthCurrEntry			N/A	This is an entry in the Current Interval Table.
winlink1000OduPerfMonEthCurrRxMBytes	1.3.6.1.4.1.4458.1000.1.6.7.1.1	Gauge	RO	Current RX Mega Bytes starting from the present 15 minutes period.
winlink1000OduPerfMonEthCurrTxMBytes	1.3.6.1.4.1.4458.1000.1.6.7.1.2	Gauge	RO	Current Transmit Mega Bytes starting from the present 15 minutes period.
winlink1000OduPerfMonEthIntervalTable			N/A	This table defines/keeps the counters of the current 15 min interval.
winlink1000OduPerfMonEthIntervalEntry			N/A	This is an entry in the Interval Table.
winlink1000OduPerfMonEthIntervalIdx			RO	This table is indexed per interval number. Each interval is of 15 minutes and the oldest is 96.
winlink1000OduPerfMonEthIntervalRxMBytes			RO	Current RX Mega Bytes per interval.
winlink1000OduPerfMonEthIntervalTxMBytes			RO	Current Transmit Mega Bytes per interval.
winlink1000OduPerfMonEthDayTable			N/A	This table defines/keeps the counters of the current 15 min interval.
winlink1000OduPerfMonEthDayEntry			N/A	This is an entry in the Days Table.
winlink1000OduPerfMonEthDayIdx			RO	This table is indexed per Day number. Each Day is of 15 minutes and the oldest is 96.
winlink1000OduPerfMonEthDayRxMBytes			RO	Current RX Mega Bytes per day.
winlink1000OduPerfMonEthDayTxMBytes			RO	Current Transmit Mega Bytes per day.
winlink1000OduPerfMonTdmCurrTable			N/A	This table defines/keeps the counters of the current 15 min interval.
winlink1000OduPerfMonTdmCurrEntry			N/A	This is an entry in the Current Interval Table.

Table G-2: Private MIB Parameters (Sheet 9 of 14)

Name	OID	Type	Access	Description
winlink1000OduPerfMonTdmCurrActiveSeconds			RO	Parameter indicating whether the TDM service was active. Under TDM backup link the parameter indicates whether the backup link was active.
winlink1000OduPerfMonTdmIntervalTable			N/A	This table defines/keeps the counters of the current 15 min interval.
winlink1000OduPerfMonTdmIntervalEntry			N/A	This is an entry in the Interval Table.
winlink1000OduPerfMonTdmIntervalIdx			RO	This table is indexed per interval number. Each interval is of 15 minutes and the oldest is 96.
winlink1000OduPerfMonTdmIntervalActiveSeconds			RO	Parameter indicating whether the TDM service was active. Under TDM backup link the parameter indicates whether the backup link was active.
winlink1000OduPerfMonTdmDayTable			N/A	This table defines/keeps the counters of the current 15 min interval.
winlink1000OduPerfMonTdmDayEntry			N/A	This is an entry in the Days Table.
winlink1000OduPerfMonTdmDayIdx			RO	This table is indexed per Day number. Each Day is of 15 minutes and the oldest is 96.
winlink1000OduPerfMonTdmDayActiveSeconds			RO	Parameter indicating whether the TDM service was active. Under TDM backup link the parameter indicates whether the backup link was active.
winlink1000OduPerfMonTxThresh1	1.3.6.1.4.1.4458.1000.1.6.20	Integer	RW	When the Transmit power exceeds this threshold a performance monitoring TSL1 counter is incremented.
winlink1000OduPerfMonRxThresh1	1.3.6.1.4.1.4458.1000.1.6.21	Integer	RW	When the RX power exceeds this threshold a performance monitoring RSL1 counter is incremented.
winlink1000OduPerfMonRxThresh2	1.3.6.1.4.1.4458.1000.1.6.22	Integer	RW	When the RX power exceeds this threshold a performance monitoring RSL2 counter is incremented.
winlink1000OduPerfMonBBERThresh1	1.3.6.1.4.1.4458.1000.1.6.23	Integer	RW	When the BBER exceeds this threshold a performance monitoring BBER counter is incremented. The units are 1/10 of a percent.
winlink1000OduAgnGenAddTrapExt	1.3.6.1.4.1.4458.1000.1.7.1.1	Integer	RW	If 'yes' is chosen the ifIndex Unit Severity Time_T and Alarm Id from the winlink1000OduAgnCurrAlarmTable will be bind to the end of each private trap.
winlink1000OduAgnNTPCfgTimeServerIP	1.3.6.1.4.1.4458.1000.1.7.2.1	IpAddress	RW	IP address of the server from which the current time is loaded.
winlink1000OduAgnNTPCfgTimeOffsetFromUTC	1.3.6.1.4.1.4458.1000.1.7.2.2	Integer	RW	Offset from Coordinated Universal Time (minutes). Possible values: -1440..1440.

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Name	OID	Type	Access	Description
winlink1000OduAgnRealTimeAndDate	1.3.6.1.4.1.4458.1000.1.7.2.3	OctetString	RW	This parameter specifies the real time and date Format 'YYYY-MM-DD HH:MM:SS' (Hexadecimal). A date-time specification: field octets contents range ------ ------- ----------- -------- 1 1-2 year 0..65536 2 3 month 1..12 3 4 day 1.. 31 4 5 hour 0..23 5 6 minutes 0..59 6 7 seconds 0..60 (use 60 for leap-second) 7 8 deci-seconds 0..9 For example Tuesday May 26 1992 at 1:30:15 PM EDT would be displayed as: 07 c8 05 1a 0d 1e 0f 00 (1992 -5 -26 13:30:15)
winlink1000OduAgnCurrAlarmLastChange	1.3.6.1.4.1.4458.1000.1.7.3.1	Integer	RO	This counter is initialized to 0 after a device reset and is incremented upon each change in the winlink1000OduAgnCurrAlarmTable (either an addition or removal of an entry).
winlink1000OduAgnCurrAlarmTable			N/A	This table includes the currently active alarms. When a RAISED trap is sent an alarm entry is added to the table. When a CLEAR trap is sent the entry is removed.
winlink1000OduAgnCurrAlarmEntry			N/A	Entry containing the details of a currently RAISED trap.
winlink1000OduAgnCurrAlarmCounter			RO	A running counter of active alarms. The counter is incremented for every new RAISED trap. It is cleared after a device reset.
winlink1000OduAgnCurrAlarmSeverity			RO	Current Alarm severity.
winlink1000OduAgnCurrAlarmId			RO	Unique Alarm Identifier (combines alarm type and interface). The same AlarmId is used for RAISED and CLEARED alarms.
winlink1000OduAgnCurrAlarmIfIndex			RO	Interface Index where the alarm occurred. Alarms that are not associated with a specific interface will have the following value: 65535.
winlink1000OduAgnCurrAlarmUnit			RO	Unit associated with the alarm.
winlink1000OduAgnCurrAlarmTrapID			RO	ID of the raised trap that was sent when this alarm was raised.
winlink1000OduAgnCurrAlarmTimeT			RO	Timestamp of this alarm. This number is in seconds from Midnight January 1st 1970.
winlink1000OduAgnCurrAlarmText			RO	Alarm display text (same as the text in the sent trap).
winlink1000IduAdmProductType	1.3.6.1.4.1.4458.1000.2.1.1	DisplayString	RO	IDU configuration description.
winlink1000IduAdmHwRev	1.3.6.1.4.1.4458.1000.2.1.2	DisplayString	RO	IDU Hardware Revision.
winlink1000IduAdmSwRev	1.3.6.1.4.1.4458.1000.2.1.3	DisplayString	RO	IDU Software Revision.
winlink1000OduAdmNumOfExternalAlarmIn	1.3.6.1.4.1.4458.1000.2.1.4	Integer	RO	Indicates the number of currently available External Alarm Inputs.
winlink1000OduAdmExternAlarmInTable			N/A	This is the External Alarm Inputs table.
winlink1000OduAdmExternAlarmInEntry			N/A	Entry containing the elements of a single External Alarm Input.

Table G-2: Private MIB Parameters (Sheet 11 of 14)

Name	OID	Type	Access	Description
winlink1000OduAdmExternAlarmInIndex	1.3.6.1.4.1.4458.1000.2.1.5.1.1	Integer	RO	This value indicates the index of the External Alarm Input entry.
winlink1000OduAdmExternAlarmInText	1.3.6.1.4.1.4458.1000.2.1.5.1.2	DisplayString	RW	This field describes the External Alarm Input. It is an optional string of no more than 64 characters which will be used in the event being sent as a result of a change in the status of the External Alarm Input. DEFVAL {Alarm Description}
winlink1000OduAdmExternAlarmInAdmin State	1.3.6.1.4.1.4458.1000.2.1.5.1.3	Integer	RW	This value indicates if this External Alarm Input is enabled or disabled.
winlink1000OduAdmExternAlarmInStatus	1.3.6.1.4.1.4458.1000.2.1.5.1.4	Integer	RO	This value indicates the current status of the External Alarm Input.
winlink1000IduAdmSN	1.3.6.1.4.1.4458.1000.2.1.6	DisplayString	RO	Idu Serial Number
winlink1000IduSrvDesiredTrunks	1.3.6.1.4.1.4458.1000.2.2.2	Integer	RW	Required trunks bitmap. Note that the number of possible trunks that can be configured may vary based on the IDU hardware configuration the selected air interface rate and the range of the installation. The provided Manager application enables the user to select only available configurations. A change is effective immediately if applied to a master unit and the link is in service mode.
winlink1000IduSrvServices	1.3.6.1.4.1.4458.1000.2.2.4	ObjectID	RO	This parameter is reserved to the Manager application provided with the product.
winlink1000IduSrvActiveTrunks	1.3.6.1.4.1.4458.1000.2.2.6	Integer	RO	A bitmap describing the currently open TDM trunks.
winlink1000IduSrvAvailableTrunks	1.3.6.1.4.1.4458.1000.2.2.8	Integer	RO	A bitmap describing the number of TDM trunks that can be opened in the current configuration. The values take into account the IDU hardware configuration the air rate and the installation range.
winlink1000IduSrvPossibleServicesTable			N/A	IDU Possible Services table.
winlink1000IduSrvPossibleServicesEntry			N/A	IDU Services table entry.
winlink1000IduSrvPossibleServicesIndex	1.3.6.1.4.1.4458.1000.2.2.10.1.1	Integer	RO	Table index Rate index of the air interface.
winlink1000IduSrvPossibleTdmServices	1.3.6.1.4.1.4458.1000.2.2.10.1.2	Integer	RO	Deprecated parameter. A bitmap describing the TDM trunks that can be opened in the corresponding Air Rate.
winlink1000IduSrvPossibleEthServices	1.3.6.1.4.1.4458.1000.2.2.10.1.3	Integer	RO	Deprecated parameter. This parameter describes if the Ethernet Service can be opened in the corresponding Air Rate. The valid values are: disabled (0) enabled (1).
winlink1000IduSrvRemainingRate	1.3.6.1.4.1.4458.1000.2.2.10.1.4	Integer	RO	Current Ethernet bandwidth in bps per air rate.
winlink1000IduSrvTrunkCost	1.3.6.1.4.1.4458.1000.2.2.10.1.5	Integer	RO	Cost of the TDM Service in bps.
winlink1000IduSrvAvailServicesTable			N/A	ODU Possible TDM Services table.
winlink1000IduSrvAvailServicesEntry			N/A	ODU TDM Services table entry.
winlink1000IduSrvAvailServicesIndex	1.3.6.1.4.1.4458.1000.2.2.11.1.1	Integer	RO	Table index. The index is the bit mask of the TDM service.
winlink1000IduSrvAvailServicesState	1.3.6.1.4.1.4458.1000.2.2.11.1.2	Integer	RO	Represents the TDM service availability.
winlink1000IduSrvAvailServicesMinRatel dx	1.3.6.1.4.1.4458.1000.2.2.11.1.3	Integer	RO	Minimum rate index of the air interface which make the service possible.
winlink1000IduSrvAvailServicesMaxRatel dx	1.3.6.1.4.1.4458.1000.2.2.11.1.4	Integer	RO	Maximum rate index of the air interface which make the service possible.

Table G-2: Private MIB Parameters (Sheet 12 of 14)

Name	OID	Type	Access	Description
winlink1000IduSrvAvailServicesReason	1.3.6.1.4.1.4458.1000.2.2.11.1.5	Integer	RO	Information about the TDM Service availability. - Not Applicable if the service is available. The reasons for TDM Service unavailability: - The available throughput isn't sufficient for Service demands; - The IDU HW doesn't support the service; - A Link Password mismatch was detected; - The external pulse type detected is improper for TDM services; - A Software versions mismatch was detected.
winlink1000IduSrvEthActive	1.3.6.1.4.1.4458.1000.2.2.12	Integer	RO	Represents the Ethernet service activation state.
winlink1000IduSrvEthAvailable	1.3.6.1.4.1.4458.1000.2.2.13	Integer	RO	Represents the Ethernet service availability state.
winlink1000IduSrvEthThroughput	1.3.6.1.4.1.4458.1000.2.2.14	Gauge	RO	Current available Ethernet service throughput in bps.
winlink1000IduSrvEthMaxInfoRate	1.3.6.1.4.1.4458.1000.2.2.15	Integer	RW	Holds the maximum bandwidth (kbps) to be allocated for Ethernet service. Value of zero means that Ethernet service works as best effort. The maximum value is product specific. Refer to the user manual.
winlink1000IduEthernetIfTable			N/A	IDU Ethernet Interface table.
winlink1000IduEthernetIfEntry			N/A	IDU Ethernet Interface table entry.
winlink1000IduEthernetIfIndex			RO	If Index corresponding to this Interface.
winlink1000IduEthernetIfAddress	1.3.6.1.4.1.4458.1000.2.3.1.1.5	DisplayString	RO	IDU MAC address.
winlink1000IduEthernetNumOfLanPorts	1.3.6.1.4.1.4458.1000.2.3.3	Integer	RO	Number of LAN interfaces in the IDU.
winlink1000IduBridgeTpAging	1.3.6.1.4.1.4458.1000.2.4.4.2	Integer	RW	Timeout in seconds for aging. Note that for this parameter to be effective the ODU must be configured to HUB mode. A change is effective immediately.
winlink1000IduTdmTxClockAvailStates	1.3.6.1.4.1.4458.1000.2.6.1.1	Integer	RO	Available states of the TDM Transmit Clock Control each input status is represented by a bit. When the state is available the bit value is 1. When the state is unavailable the bit value is 0. The available states are: bit 2 = Transparent. bit 3 = Local Loop Timed. bit 4 = Remote Loop Timed. bit 5 = Local Internal. bit 6 = Remote Internal.
winlink1000IduTdmTxClockDesiredState	1.3.6.1.4.1.4458.1000.2.6.1.2	Integer	RW	Required state of the TDM Transmit Clock Control. A change is effective after re-activation of the TDM service.
winlink1000IduTdmTxClockActualState	1.3.6.1.4.1.4458.1000.2.6.1.3	Integer	RO	Actual state of the TDM Transmit Clock Control.
winlink1000IduTdmMasterClockAvailOptions	1.3.6.1.4.1.4458.1000.2.6.2.1	Integer	RO	Available options of the TDM Master Clock Control each input status is represented by a bit. When the option is available the bit value is 1. When the option is unavailable the bit value is 0. The available options are: bit 2 = Automatic. bit 3 = Trunk #1. bit 4 = Trunk #2. bit 5 = Trunk #3. bit 6 = Trunk #4. When no options are available the returned value is: 1
winlink1000IduTdmMasterClockDesired	1.3.6.1.4.1.4458.1000.2.6.2.2	Integer	RW	Required TDM Master Clock. A change is effective after re-activation of the TDM service.
winlink1000IduTdmMasterClockActual	1.3.6.1.4.1.4458.1000.2.6.2.3	Integer	RO	Actual Trunk used for TDM Master Clock.
winlink1000IduTdmConfigTable			N/A	IDU TDM Links Configuration table.
winlink1000IduTdmConfigEntry			N/A	IDU TDM Links Configuration table entry.
winlink1000IduTdmConfigIndex			RO	Table index.
winlink1000IduTdmIfIndex			RO	Link index in the interface table.

Table G-2: Private MIB Parameters (Sheet 13 of 14)

Name	OID	Type	Access	Description
winlink1000IduTdmLineCoding	1.3.6.1.4.1.4458.1000.2.6.6.1.6	Integer	RW	This parameter applies to T1 trunks only. The parameter controls the line coding. Setting the value to each of the indices applies to all. A change is effective after the next open of the TDM service.
winlink1000IduTdmLoopbackConfig	1.3.6.1.4.1.4458.1000.2.6.6.1.9	Integer	RW	Loop back configuration table. Each of the trunks can be set Normal Line loop back or Reverse line loop back. A change is effective immediately.
winlink1000IduTdmLineStatus	1.3.6.1.4.1.4458.1000.2.6.6.1.10	Integer	RO	Line status.
winlink1000IduTdmCurrentTable			N/A	IDU TDM Links Statistics table.
winlink1000IduTdmCurrentEntry			N/A	IDU TDM Links Statistics table entry.
winlink1000IduTdmCurrentIndex			RO	Table index (Same as winlink1000IduTdmLineIndex).
winlink1000IduTdmCurrentBlocks	1.3.6.1.4.1.4458.1000.2.6.7.1.101	Counter	RO	Number of correct blocks transmitted to the line.
winlink1000IduTdmCurrentDrops	1.3.6.1.4.1.4458.1000.2.6.7.1.102	Counter	RO	Number of error blocks transmitted to the line.
winlink1000IduTdmCurrentTxClock	1.3.6.1.4.1.4458.1000.2.6.7.1.103	Integer	RW	TDM Transmit Clock. A change is effective after re-activation of the TDM service.
winlink1000IduTdmCurrentBlocksHigh	1.3.6.1.4.1.4458.1000.2.6.7.1.104	Counter	RO	High part of the 64 bits counter Current Blocks
winlink1000IduTdmRemoteQual	1.3.6.1.4.1.4458.1000.2.6.8	Integer	RO	Estimated average interval between error second events. The valid values are $1-2^{31}$ where a value of -1 is used to indicate an undefined state.
winlink1000IduTdmRemoteQualEval	1.3.6.1.4.1.4458.1000.2.6.9	Integer	RO	Estimated average interval between error second events during evaluation process. The valid values are $1-2^{31}$ where a value of -1 is used to indicate an undefined state.
winlink1000IduTdmSrvEval	1.3.6.1.4.1.4458.1000.2.6.10	Integer	RW	Evaluated TDM service bit mask. Setting this parameter to value that is bigger than the activated TDM service bit mask will execute the evaluation process for 30 seconds. Setting this parameter to 0 will stop the evaluation process immediately.
winlink1000IduTdmBackupAvailableLinks	1.3.6.1.4.1.4458.1000.2.6.11	Integer	RO	Number of TDM backup trunks.
winlink1000IduTdmBackupTable			N/A	IDU TDM Links Statistics table.
winlink1000IduTdmBackupEntry			N/A	IDU TDM Links Statistics table entry.
winlink1000IduTdmBackupIndex	1.3.6.1.4.1.4458.1000.2.6.12.1.1	Integer	RO	Table index.
winlink1000IduTdmBackupMode	1.3.6.1.4.1.4458.1000.2.6.12.1.2	Integer	RW	TDM backup mode: Enable or Disable where the main link is the air link or the external link. Changes will be effective immediatly.
winlink1000IduTdmBackupCurrentActiveLink	1.3.6.1.4.1.4458.1000.2.6.12.1.3	Integer	RO	TDM backup current active link: N/A air link is active or external link is active.
winlink1000IduTdmJitterBufferSize	1.3.6.1.4.1.4458.1000.2.6.13	Integer	RW	TDM Jitter Buffer Size. The value must be between the minimum and the maximum TDM Jitter Buffer Size. The units are 0.1 x millisecond.
winlink1000IduTdmJitterBufferDefaultSize	1.3.6.1.4.1.4458.1000.2.6.14	Integer	RO	TDM Jitter Buffer Default Size. The units are 0.1 x millisecond.
winlink1000IduTdmJitterBufferMinSize	1.3.6.1.4.1.4458.1000.2.6.15	Integer	RO	TDM Jitter Buffer Minimum Size. The units are 0.1 x millisecond.
winlink1000IduTdmJitterBufferMaxSize	1.3.6.1.4.1.4458.1000.2.6.16	Integer	RO	TDM Jitter Buffer Maximum Size. The units are 0.1 x millisecond.
winlink1000IduTdmJitterBufferSizeEval	1.3.6.1.4.1.4458.1000.2.6.17	Integer	RW	TDM Jitter Buffer Size for evaluation. The value must be between the minimum and the maximum TDM Jitter Buffer Size. The units are 0.1 x millisecond.
winlink1000IduTdmType	1.3.6.1.4.1.4458.1000.2.6.18	Integer	RW	TDM Type (The value undefined is read-only).
winlink1000IduTdmTypeEval	1.3.6.1.4.1.4458.1000.2.6.19	Integer	RW	TDM Type for evaluation.
winlink1000IduTdmLineStatusStr			RO	Line status.

Table G-2: Private MIB Parameters (Sheet 14 of 14)

Name	OID	Type	Access	Description
winlink1000GeneralTrapDescription	1.3.6.1.4.1.4458.1000.100.1	DisplayString	RO	Trap's Description. Used for Trap parameters.
winlink1000GeneralTrapSeverity	1.3.6.1.4.1.4458.1000.100.2	Integer	RO	Trap's Severity. Used for Trap parameters.
winlink1000GeneralCookie	1.3.6.1.4.1.4458.1000.100.3	DisplayString	RW	Reserved for the Manager application provided with the product used for saving user preferences affecting ODU operation.
winlink1000GeneralEcChangesCounter	1.3.6.1.4.1.4458.1000.100.4	Integer	RO	This counter is initialized to 0 after a device reset and is incremented upon each element constant write operation via SNMP or Telnet.

MIB Traps

General

Each ODU can be configured with up to 10 different trap destinations. When the link is operational, each ODU sends traps originating from both Site A and Site B.

The source IP address of the trap is the sending ODU. The trap originator can be identified by the trap Community string or by the trap description text. The public Community string is used for Site Al ODU traps and public-remote (as set by the user) is used for Site B ODU traps.

Each trap contains a trap description and additional relevant information such as alarm severity, interface index, time stamp and additional parameters. See **table G-3** for additional information.

Trap parameters

Table G-3: MIB Traps (Sheet 1 of 4)

Name	ID	Severity	Description
trunkStateChanged	1	normal	Indicates a change in the state of one of the TDM trunks. Raised by both sides of the link. Contains 3 parameters: 1 - Description: TDM Interface %n - %x. 2 - %n: Is the trunk number. 3 - %x: Is the alarm type and can be one of the following: Normal, AIS, LOS, Loopback.
linkUp	2	normal	Indicates that the radio link is up. Contains a single parameter, which is its description: 1 - Description: Radio Link - Sync on channel %n GHz. %n Is the channel frequency in GHz.
linkDown	3	critical	Indicates that the radio link is down. Contains a single parameter, which is its description: 1 - Description: Radio Link - Out of Sync. The reason is: %s. %s Is the reason.
detectIDU	4	normal	Indicates that the IDU was detected. Raised by both sides of the link. Contains a single parameter, which is its description: 1 - Description: IDU of Type %s was Detected. %s Is the type of the IDU.
disconnectIDU	5	major	Indicates that the IDU was disconnected. Raised by both sides of the link. Contains a single parameter, which is its description: 1 - Description: IDU Disconnected.
mismatchIDU	6	major	Indicates a mismatch between the IDUs. Raised by the master only. Contains a single parameter, which is its description: 1 - Description: IDUs Mismatch: One Side is %s and the Other is %s. %s Is the type of the IDU.

Table G-3: MIB Traps (Sheet 2 of 4)

Name	ID	Severity	Description
openedServices	7	normal	Indicates that services were opened. Raised by the master only. Contains 3 parameters: 1 - Description: %n2 out of %n1 Requested TDM Trunks have been Opened. 2 - %n1: Is the requested number of TDM truncks. 3 - %n2: Is the actual number of TDM trunks that were opened.
closedServices	8	normal	Indicates that services were closed. Raised by the master only. Contains a single parameter, which is its description: 1 - Description: TDM Service has been closed. The reason is: %s. %s Is the reason.
incompatibleODUs	9	critical	Indicates that the ODUs are incompatible. Contains a single parameter, which is its description: 1 - Description: Incompatible ODUs.
incompatibleIDUs	10	major	Indicates that the IDUs are incompatible. Contains a single parameter, which is its description: 1 - Description: Incompatible IDUs.
incompatibleOduIdu	11	major	Indicates that the ODU and IDU are incompatible. Contains a single parameter, which is its description: 1 - Description: The IDU could not be loaded. The reason is: %s. %s Is the incompatibility type.
probingChannel	12	normal	Indicates that the ODU is monitoring radar activity. Contains a single parameter, which is its description: 1 - Description: Monitoring for radar activity on channel %n GHz. %n is the channel frequency in GHz.
radarDetected	13	normal	Indicates that radar activity was detected. Contains a single parameter, which is its description: 1 - Description: Radar activity was detected in %s, on channel %n GHz. %s Is the site name. %n Is the channel frequency in GHz.
transmittingOnChannel	14	normal	Indicates that the ODU is transmitting on channel. Contains a single parameter, which is its description: 1 - Description: Transmitting on channel %n GHz. %n Is the channel frequency in GHz.
scanningChannels	15	normal	Indicates that the ODU is scanning channels. Contains a single parameter, which is its description: 1 - Description: Channel scanning in progress.
incompatiblePartner	16	critical	Indicates that configuration problem was detected and that link installation is required to fix it. Contains a single parameter, which is its description: 1 - Description: Configuration problem detected. Link installation required.
timeClockSet	17	normal	Indicates that the ODU time clock was set. Contains a single parameter, which is its description: 1 - Description: The time was set to: %p. %p Is the date and time.
configurationChanged	18	normal	Indicates that the ODU was recovered from an error, but there are configuration changes. Contains two parameters: 1 - Description: Configuration changed. Error code is: %n. 2 - %n number.
vlanModeActive	22	normal	Indicates to non-VLAN PC that after 2 minutes the system will support only VLAN tag on management interface. Contains a single parameter, which is its description: 1 - Description: VLAN Mode is active. Non-VLAN traffic will be blocked in 2 minutes.
tdmServiceAlarm	100	major	Indicates that TDM Service is in alarm state. Contains a single parameter, which is its description: 1 - Description: TDM Service - Alarm.
ethServiceClosed	101	major	Indicates that Ethernet Service is closed. Contains a single parameter, which is its description: 1 - Description: Ethernet Service is closed.
ethServiceNotPermitted	102	major	Indicates that Ethernet Service is not permitted. Contains a single parameter, which is its description: 1 - Description: A valid Idu could not be detected at %s. Please check your configuration. %s - Is the Local Site name or Remote Site name or both sides of the Link.
encryptionAlarm	103	major	Indicates an encryption key mismatch. Contains a single parameter which is its description: 1 - Description: Encryption Status - Failed. No Services are available.
changeLinkPasswordAlarm	104	major	Indicates that a failure has occurred while attempting to change the Link Password. Contains a single parameter which is its description: 1 - Description: Failed to change the Link Password at/on: %s. %s - Is the Local Site name or Remote Site name or both sides of the Link.

Table G-3: MIB Traps (Sheet 3 of 4)

Name	ID	Severity	Description
externalAlarmInPort1Alarm	105	major	The trap is sent every time an alarm occurs in the External Alarm Input of port #1. Contains a single parameter which is its description: 1 - Description: External Alarm 1 - <User Text> - Alarm.
externalAlarmInPort2Alarm	106	major	The trap is sent every time an alarm occurs in the External Alarm Input of port #2. Contains a single parameter which is its description: 1 - Description: External Alarm 2 - <User Text> - Alarm.
bitFailedAlarm	107	critical	The trap is sent in case there is no way to recover from the situation. Contains two parameters: 1 - Description: ODU power up built in test failed. Error code is: %n. 2 - %n number.
wrongConfigurationLoadedAlarm	108	major	The trap is sent in case there is a way to recover from the situation. Contains two parameters: 1 - Description: Wrong configuration loaded. Error code is: %n. 2 - %n number.
lanPort1DisconnectedAlarm	109	major	Indicates the LAN port 1 status changed to disconnected. Contains a single parameter which is its description: 1 - Description: LAN port 1 status changed to disconnected.
lanPort2DisconnectedAlarm	110	major	Indicates the LAN port 2 status changed to disconnected. Contains a single parameter which is its description: 1 - Description: LAN port 2 status changed to disconnected.
mngPortDisconnectedAlarm	111	major	Indicates the management port status changed to disconnected. Contains a single parameter which is its description: 1 - Description: Management port status changed to disconnected.
externalAlarmInPort3Alarm	112	major	The trap is sent every time an alarm occurs in the External Alarm Input of port #3. Contains a single parameter which is its description: 1 - Description: External Alarm 3 - <User Text> - Alarm.
externalAlarmInPort4Alarm	113	major	The trap is sent every time an alarm occurs in the External Alarm Input of port #4. Contains a single parameter which is its description: 1 - Description: External Alarm 4 - <User Text> - Alarm.
swVersionsMismatchFullCompatibilityAlarm	114	warning	The trap is sent in case SW versions mismatch with full link functionality. Contains a single parameter which is its description: 1 - Description: Software versions mismatch - full link functionality
swVersionsMismatchRestrictedCompatibilityAlarm	115	minor	The trap is sent in case SW versions mismatch with restricted link functionality. Contains a single parameter which is its description: 1 - Description: Software versions mismatch - restricted link functionality
swVersionsMismatchSoftwareUpgradeRequired	116	major	The trap is sent in case SW versions mismatch and SW upgrade is required. Contains a single parameter which is its description: 1 - Description: Software versions mismatch - Software upgrade required
swVersionsIncompatible	117	critical	The trap is sent in case SW versions are incompatible. Contains a single parameter which is its description: 1 - Description: SW Versions incompatible
tdmBackupAlarm	121	major	Indicates that the TDM backup link was activated. Contains a single parameter, which is its description: 1 - Description: TDM backup alarm - backup link was activated.
linkLockUnautorizedRemoteODU	122	major	Indicates that the remote ODU is unautorized. Contains a single parameter which is its description: 1 - Description: Unauthorized remote ODU connection rejected.
linkLockUnautorizedODU	123	major	Indicates that the ODU is unautorized. Contains a single parameter which is its description: 1 - Description: Unauthorized ODU connection rejected.
tdmServiceClear	200	normal	Indicates that TDM Service fault is cleared. Contains a single parameter, which is its description: 1 - Description: TDM Service - Normal.
ethServiceOpened	201	normal	Indicates that Ethernet Service has been opened. Contains a single parameter,3 which is its description: 1 - Description: Ethernet Service has been opened.
encryptionClear	203	normal	Indicates that encryption is OK. Contains a single parameter which is its description: 1 - Description: Encryption Status - Normal.

Table G-3: MIB Traps (Sheet 4 of 4)

Name	ID	Severity	Description
changeLinkPasswordClear	204	normal	Indicates that the Link Password was changed successfully. Contains a single parameter which is its description: 1 - Description: Link Password has been changed at/on: %s. %s - Is the Local Site name or Remote Site name or both sides of the Link.
externalAlarmInPort1Clear	204	normal	This Trap is sent every time an External Alarm Input fault of port # 1 is cleared. Contains a single parameter which is its description: 1 - Description: External Alarm 1 - <User Text> - Alarm Cleared.
externalAlarmInPort2Clear	206	normal	This Trap is sent every time an External Alarm Input fault of port # 2 is cleared. Contains a single parameter which is its description: 1 - Description: External Alarm 2 - <User Text> - Alarm Cleared.
lanPort1Clear	209	normal	Indicates the LAN port 1 status changed to connected. Contains two parameters: 1 - Description: LAN port 1 status changed to connected - %s. 2 - %s Is the Eth. mode (speed & duplex).
lanPort2Clear	210	normal	Indicates the LAN port 2 status changed to connected. Contains two parameters: 1 - Description: LAN port 2 status changed to connected - %s. 2 - %s Is the Eth. mode (speed & duplex).
mngPort2Clear	211	normal	Indicates the management port status changed to connected. Contains two parameters: 1 - Description: Management port status changed to connected - %s. 2 - %s Is the Eth. mode (speed & duplex).
externalAlarmInPort3Clear	211	normal	This Trap is sent every time an External Alarm Input fault of port # 3 is cleared. Contains a single parameter which is its description: 1 - Description: External Alarm 3 - <User Text> - Alarm Cleared.
externalAlarmInPort4Clear	213	normal	This Trap is sent every time an External Alarm Input fault of port # 4 is cleared. Contains a single parameter which is its description: 1 - Description: External Alarm 4 - <User Text> - Alarm Cleared.
swVersionsMatchFullCompatibilityClear	214	normal	The trap is sent in case SW versions match. Contains a single parameter which is its description: 1 - Description: Software Versions compatible
swVersionsMatchRestrictedCompatibilityClear	215	normal	The trap is sent in case SW versions match and link functionality is not restricted. Contains a single parameter which is its description: 1 - Description: Software Versions compatible
swVersionsMatchSoftwareUpgradeRequiredClear	216	normal	The trap is sent in case SW versions match and SW upgrade is successful. Contains a single parameter which is its description: 1 - Description: Software Versions compatible
swVersionsCompatibleClear	217	normal	The trap is sent in case SW versions compatible Contains a single parameter which is its description: 1 - Description: Software Versions compatible
tdmBackupClear	221	normal	
linkLockAutorizedODU	223	normal	Indicates that the ODU is autorized. Contains a single parameter which is its description: 1 - Description: Authorized ODU connection permitted.
linkAuthenticationDisabled	224	normal	Indicates that the Link Lock is disabled. Contains a single parameter which is its description: 1 - Description: Link Authentication has been disabled

RADWIN Manager Traps

The RADWIN Manager application issues traps to indicate various events. These traps are shown in the RADWIN Managerr Events Log.

A list of Trap Messages as displayed by the RADWIN Manager is shown in **table 7-5**.

External Alarms Specification

External Alarms Specification

The IDU-C supports external input and output alarms through a standard DB25 pin female connector.

Input alarms

The input alarms are raised by events from external equipment, such as a fire warning, door open or air conditioner failure.

Output alarms

Output alarms are generated through dry contact relays to indicate various system events according to the following table. An alarm is raised if at least one of the conditions is met.

Table H-1: Output Alarms Pinout

Alarm	Description	Alarm On Conditions	Alarm Off Condition
Output 1	Air interface Alarm	• Link is down • Link in installation mode • Link authentication problem	Link is up
Output 2	Equipment Alarm	• Built in Test (BIT) error • No connection to the ODU • Incompatible software	Both ODU and IDU are in operational state
Output 3	Service Alarm at Site B	N/A	Permanently off
Output 4	Power Failure at Site B	Link Loss due to Power Failure at Site B	Link is up or down without power failure indication within the last two seconds

Combo Configuration Tool

What is the Combo Configuration Tool?

The RADWIN 1000/2000/5000 is supplied preconfigured to a default frequency band and regulation. The user may however, reconfigure it to use any one of the supported frequency bands shown in the following example:

Product	Default Band
2050	FCC/IC 5.8 GHz
	FCC/IC 5.3 GHz
	FCC/IC 5.4 GHz
	FCC/IC 4.9 GHz
	FCC/IC 2.4 GHz

The Combo Configuration Tool is a software utility supplied by RADWIN to change the link frequency band. It runs as familiar Windows Wizard.

This appendix will walk you through the Wizard. It also provides help for common problems encountered during the configuration.

Who may use the Combo Configuration Tool

The Combo Configuration Tool is a password protected utility intended for the use of RADWIN accredited personnel at the user's site, RADWIN Customer Support Engineers or Professional Installers conversant with FCC requirements.

Caveat to the use of the Combo Configuration Tool

It is the user's responsibility to operate the system according to local regulations and to acquire the relevant permits or licenses for the frequency band selected, if applicable.

Prerequisites to using the Combo Configuration Tool

To use the Tool, you need a PC running Windows 2000 or Windows XP Pro to be connected to the RADWIN 1000/2000/5000 link.

Operating the Combo Configuration Tool

The tool is supplied as an executable called ComboConfigurationTool.exe. It should be copied to a convenient directory on a hard disk from where it can be run from a command line, or placed on the desktop and opened with a double click.

The Combo Configuration Tool is a Wizard, which guides you through the process of changing the frequency band.

Before using the Combo Configuration Tool

Before starting:

⇒ Obtain the IP address of both the local ODU and remote ODUs of the link

⇒ Make a note of the correct required frequency band

⇒ If the link uses external antennas, ensure that they support your required frequency band

Also, note that

1. The procedure below must be carried out for both ODUs in the link.

2. Changing the frequency band may affect the available Link Budget and system performance.

Using the Combo Configuration Tool

➢ **To change the link frequency band:**

1. Open the Tool from a command line or double clicking it on the desktop. The following Welcome screen appears:
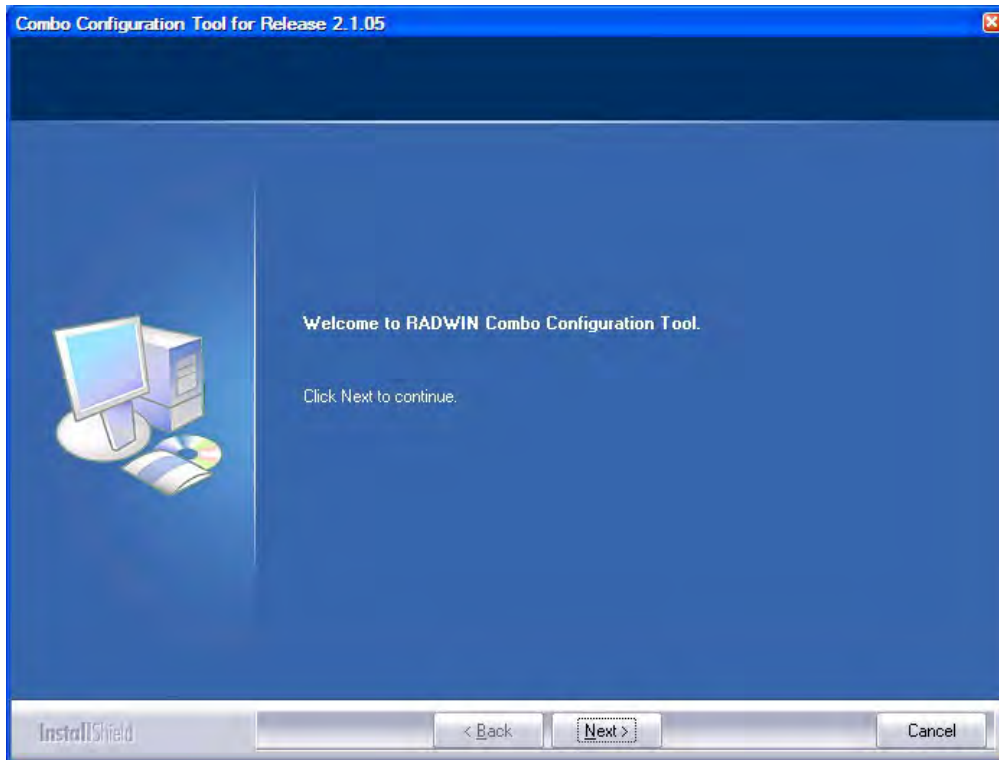
2. Click Next. The window below is displayed:
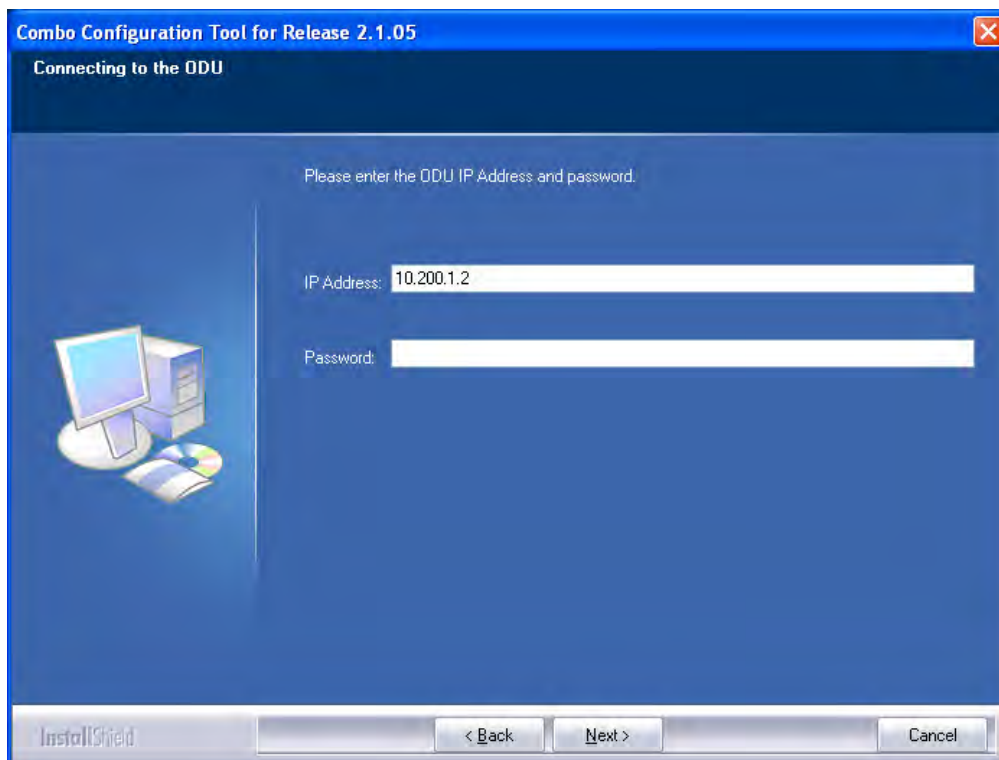
3. Enter the ODU IP address and password.

4. Click Next. The following progress panel is displayed:
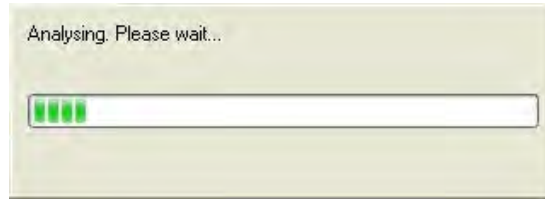
Upon completion the following screen is displayed:
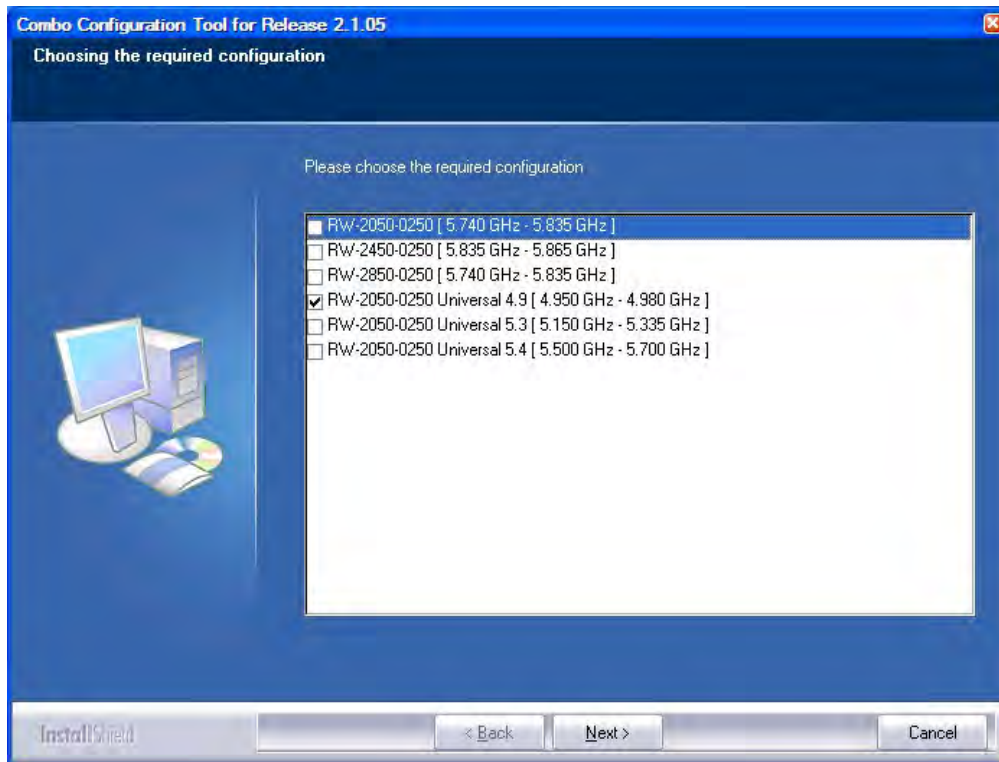
The checked item is the currently configured frequency band.

5. Check the box with the required frequency band. If you do not see the required frequency band in the above window, click **Cancel** and consult RADWIN Customer Support.

.
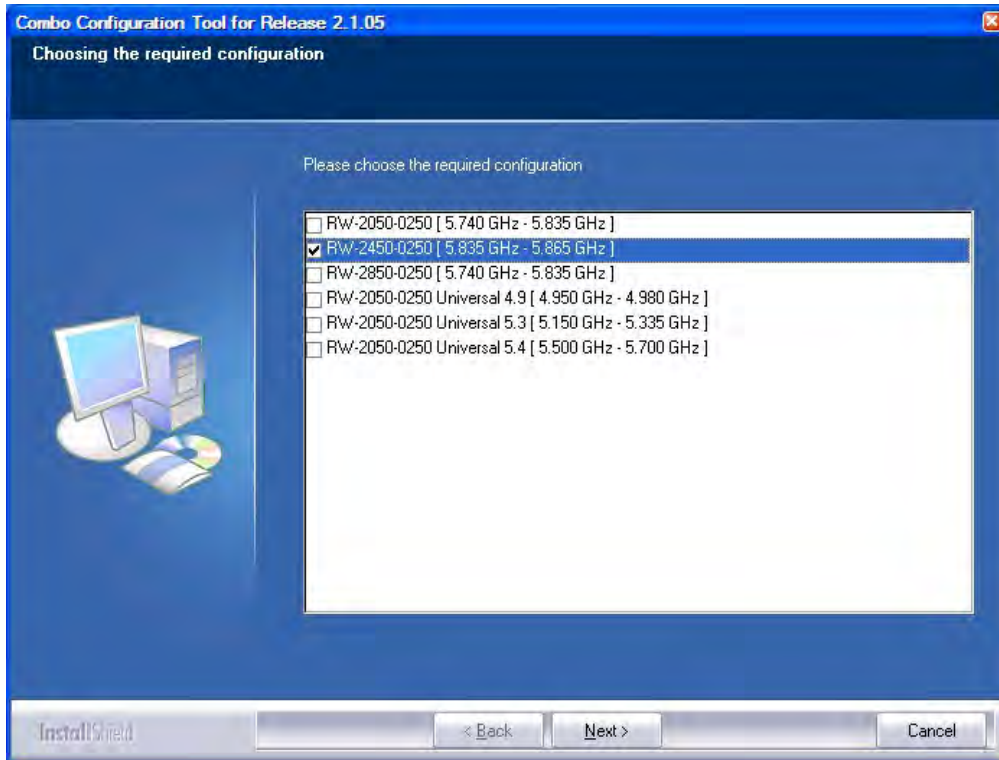
6. Otherwise, click **Next**. The following window is displayed:

:
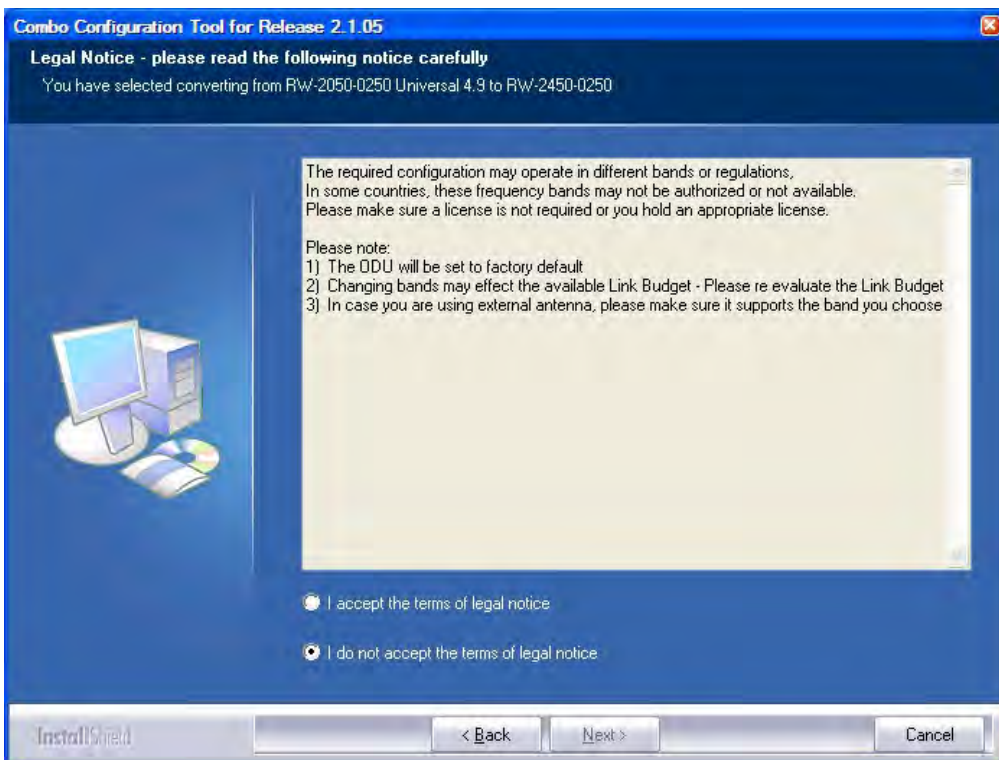
7. If the legal notice is acceptable, click the "I accept" radio button, and then click Next. Two successive progress panels are displayed. The configuration may take several minutes.
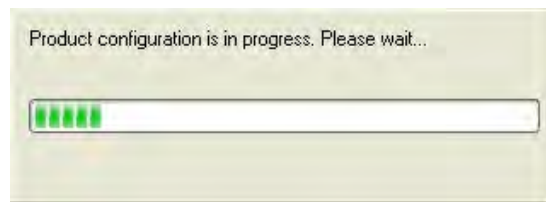
Upon successful completion of the configuration process, the following termination window is displayed:
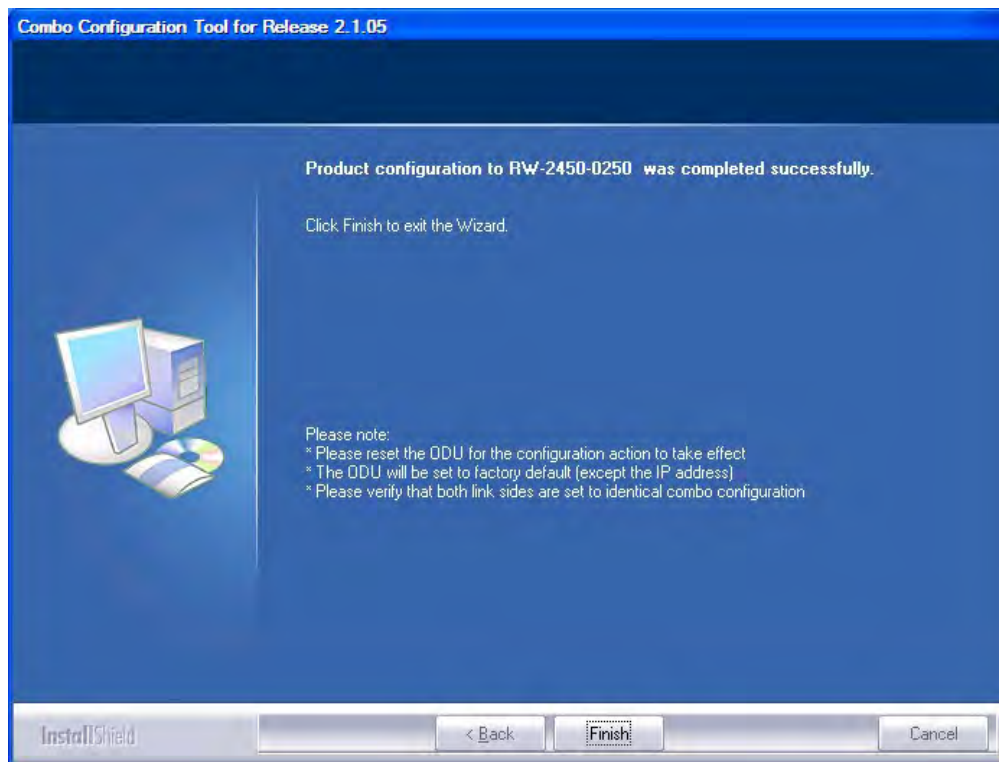
8. Click Finish to exit the Wizard as shown.

9. Repeat the whole process for the second ODU in the link.

If you receive an error message

The last stage above may terminate unsuccessfully due to an error. Error messages are posted to a window like this:
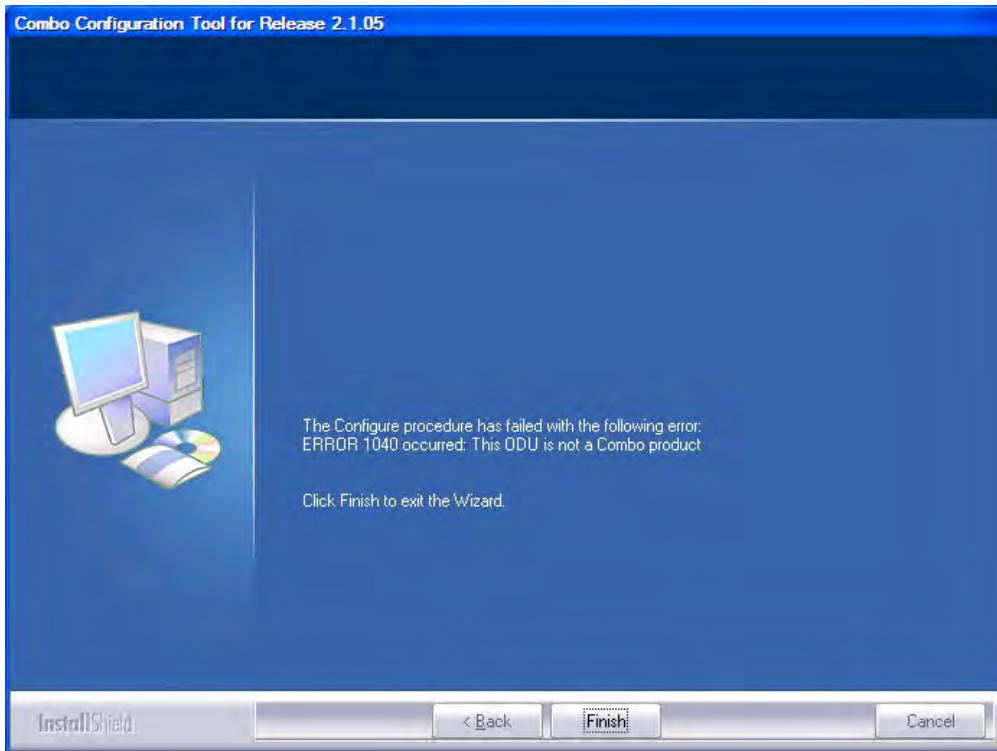
The following table sets out possible errors:

Error Number (nn)	Error Text Message
Common message preamble:	The Configure procedure has failed with the following error: ERROR nn occurred:
120	Failed to communicate with the ODU. Please verify the existence of a stable IP connection and try again.
940	Product is not identified.
1040	The ODU is not a Combo product.
1020	A configuration problem detected. Aborting.

The only items requiring explanation are errors 940 and 1020.

Error 940 may arise as a result of an ODU firmware problem. Error 1020 will appear for any reason not caught by the other entries in the table. In all such cases, you should consult with RADWIN Customer Support.

Regional Notice: French Canadian

Procédures de sécurité

Généralités

Avant de manipuler du matériel connecté à des lignes électriques ou de télécommunications, il est conseillé de se défaire de bijoux ou de tout autre objet métallique qui pourrait entrer en contact avec les éléments sous tension.

Mise à la terre

Tous les produits RADWIN doivent être mis à la terre pendant l'usage courant. La mise à la terre est assurée en reliant la fiche d'alimentation à une prise de courant avec une protection de terre. En outre:

- La cosse de masse sur l'IDU-C doit être constamment connectée à la protection de terre, par un câble de diamètre de 18 AWG ou plus. Le matériel monté sur rack doit être installé seulement sur des racks ou armoires reliés à la terre

- Une ODU doit mise à la terre par un câble de diamètre de 12 AWG ou plus

- Il ne doit pas y avoir de fusibles ou d'interrupteurs sur la connection à la terre

De plus:

- Il faut toujours connecter la terre en premier et la déconnecter en dernier

- Il ne faut jamais connecter les câbles de télécommunication à du matériel non à la terre

- Il faut s'assurer que tous les autres câbles sont déconnectés avant de déconnecter la terre

Protection contre la foudre

L'utilisation de dispositifs de protection contre la foudre dépend des exigences réglementaires et de l'utilisateur final. Toutes les unités extérieures RADWIN sont conçues avec des circuits de limitation de surtension afin de minimiser les risques de dommages dus à la foudre. RADWIN conseille l'utilisation d'un dispositif de parafoudre supplémentaire afin de protéger le matériel de coups de foudre proches.

Matériel supplémentaire requis

L'équipement requis pour l'installation du matériel est le suivant:

- Pince à sertir RJ-45 (si un câble pré-assemblé ODU/IDU n'est pas utilisé)
- Perceuse (pour le montage sur mur seulement)
- Câbles de terre IDU et ODU
- Clef 13 mm (½″)
- Câble ODU - IDU si non commandé (type extérieur, CAT-5e, 4 paires torsadées, 24 AWG)
- Colliers de serrage
- Ordinateur portable avec Windows 2000 ou Windows XP.

Précautions de sécurité pendant le montage de ODU

Avant de connecter un câble à l'ODU, la borne protectrice de masse (visse) de l'ODU doit être connectée à un conducteur externe protecteur ou à un pylône relié à la terre. Il ne doit pas y avoir de fusibles ou d'interrupteurs sur la connection à la terre.

Seulement un personnel qualifié utilisant l'équipement de sécurité approprié doit pouvoir monter sur le pylône d'antenne. De même, l'installation ou le démontage de ODU ou de pylônes doit être effectuée seulement par des professionnels ayant suivi une formation.

➤**Pour monter l'ODU:**

1. Vérifier que les supports de fixation de l'ODU sont correctement mis à la terre.

2. Monter l'unité ODU sur le pylône ou sur le mur; se référer à la **Installation sur pylône et mur** au dessous.

3. Connecter la câble de terre au point de châssis sur l'ODU.

4. Relier le câble ODU-IDU au connecteur ODU RJ-45.

5. Visser les presses-étoupe de câbles pour assurer le scellement hermétique des unités ODU.

6. Attacher le *câble au pylône ou aux supports en utilisant des colliers classés* UV.

7. Répéter la procédure sur le site distant.

Ne pas se placer en face d'une ODU sous tension.

Prudence

Connecter la terre à IDU-C

Connecter un câble de terre de 18 AWG à la borne de masse de l'appareil. L'appareil doit être constamment connecté à la terre.

Prudence

- Les appareils sont prévus pour être installés par un personnel de service.
- Les appareils doivent être connectés à une prise de courant avec une protection de terre.
- Le courant CC du IDU-C doit être fourni par l'intermédiaire d'un disjoncteur bipolaire et le diamètre du câble doit être de 14 mm avec un conduit de 16 mm.

Installation sur pylône et mur

L' ODU ou l'O-PoE peuvent être montés sur un pylône ou un mur.

Contenu du kit de montage ODU

Le kit de montage ODU comprend les pièces suivantes:

- une grande clame (voir **figure J-1**)
- une *petite clame* (voir **figure J-2**)
- un bras (voir **figure J-3**)
- quatre visses hex tête M8x40
- deux visses hex tête M8x70
- quatre rondelles plates M8
- trois rondelles élastiques M8
- deux écrous M8.
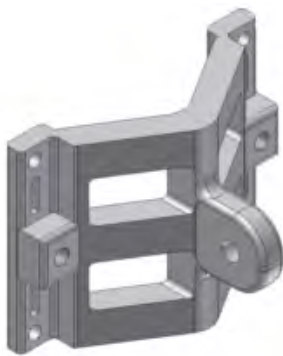
Figure J-1: grande clame   *Figure J-2:* petite clame   *Figure J-3:* bras
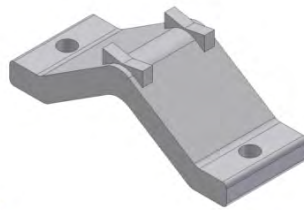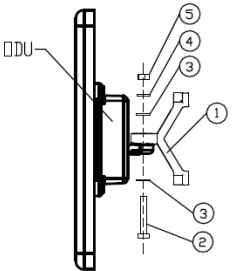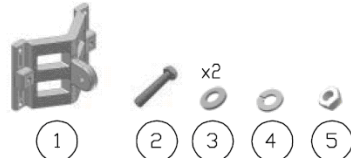
Montage sur un pylône

Figure J-4: Montage sur un pylône

Montage sur un mur
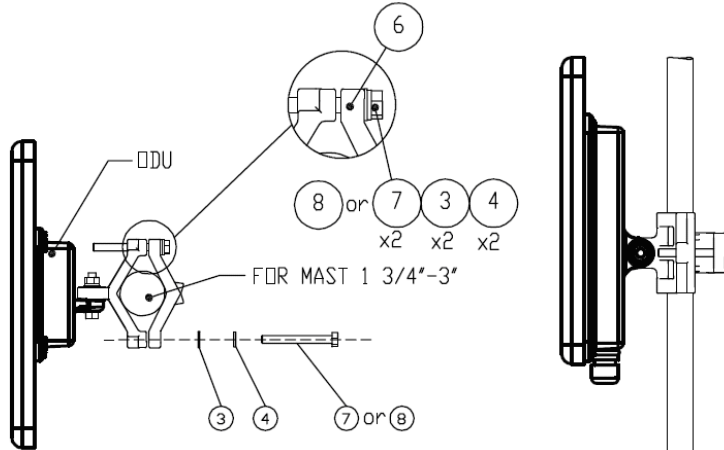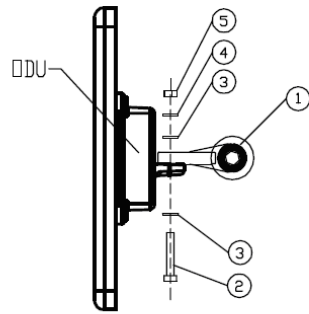
Kit d'installation

PIÈCE	DESCRIPTION	QUANTITE
1	Bras	1
2	visses hex tête M8x40	2
3	rondelles plates M	4
4	rondelles élastiques M8	2
5	écrou M8	2
6	base	1
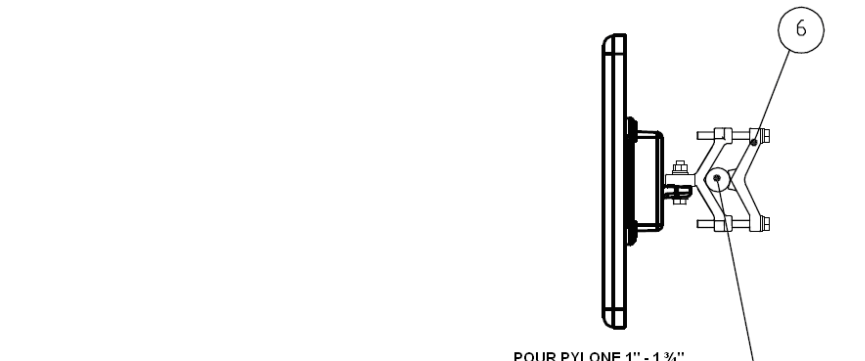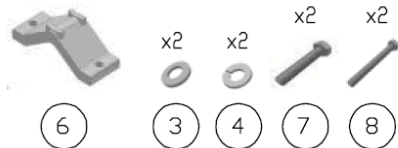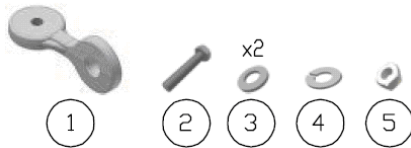
ETAPE 1
Attacher la pièce 1 a la base (repérer les surfaces moletées) en utilisant les pièces 2, 3, 4, 5 comme indiqué. Utiliser un couple de serrage de 24 N/m.
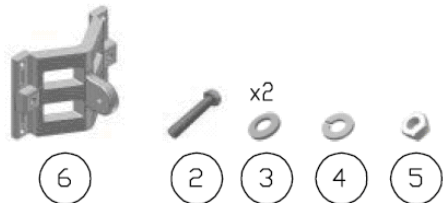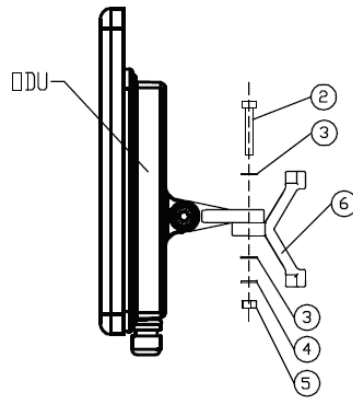
ETAPE 2

Attacher la pièce 6 au bras (repérer les surfaces moletées) en utilisant les pièces 2, 3, 4, 5 comme indiqué. Utiliser un couple de serrage de 24 N/m.

ETAPE 3

Installer l'antenne sur le mur (matériel fourni par le client)

WALL
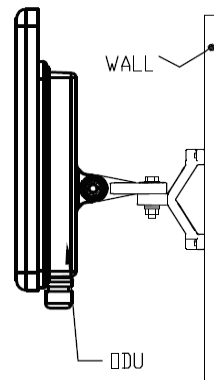
Figure J-5: Montage sur un mur

Montage d'une antenne externe

L'antenne externe optionnelle peut être montée sur un pylône.

Contenu du kit de montage d'une antenne externe

Le kit de montage d'une antenne externe comprend les pièces suivantes

- Douze rondelles plates
- Huit rondelles élastiques
- Huit écrous hex
- Quatre boulons
- Un support en U
- Un support à pivotement
- Deux courroies de fixation en métal

➢ **Pour installer une antenne externe sur un pylône:**

1. Attacher le support en U à l'arrière de l'antenne en utilisant quatre rondelles plates, quatre rondelles élastiques et quatre écrous hex.

2. Attacher le support à pivotement au support en U en utilisant huit rondelles plates, quatre rondelles élastiques, quatre écrous hex et quatre boulons.

3. Passer les deux courroies de fixation par les fentes verticales dans le support à pivotement.

4. Attacher l'antenne au pylône en utilisant les deux courroies de fixation .

Ajuster l'inclinaison nécessaire en utilisant l'échelle angulaire et serrer tous les boulons et écrous à la position requise.

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