


STEP	ACTION
2	Allow Windows to load as normal. Follow the same boot up procedure listed in the "System Initialization" section for both the CU-4 and the NCU.
3	<p>Ensure the other system units (Power/Transceiver, X-ray receiver, Imager, XR200) are properly connected and powered up before beginning a scan.</p> <p>See Chapter 5 as well as the RTR-4 Operator's Manual (Doc. 120300, Rev. C) for a detailed description of routine scanning procedures.</p>
	<p style="text-align: center;">NOTE</p> <p>Remember to reinsert the black antenna connector slot cover into the NIC when finished using the antenna to prevent damage to the NIC and to prevent debris from accumulating in the NIC's antenna port.</p>

System Initialization


System Initialization Description

This procedure describes powering up, initializing and using the CU-4 and NCU controllers before beginning a scan.

Prerequisites

The **WiFi NIC Setup** procedure must have been completed and if required, the **Optional Extended-Range Antenna Installation** as well.

STEP	ACTION
1	Power up the controller, either CU-4 or NCU.

STEP	ACTION
<p>2</p>	<p>The CU-4 will automatically select wired or wireless operation and load Windows.</p> <p>The NCU will instead display a screen that reads as follows:</p> <p>Windows cannot determine what configuration your computer is in.</p> <p>Select one of the following:</p> <ol style="list-style-type: none"> 1. Wired 2. Wireless 3. Original Configuration 4. None of the above <p>Enter your choice:</p> <p>Type in the number 2 after the “Enter your choice” command line to select wireless operation and press Enter to activate the wireless mode. The NCU will then load Windows. This mode only applies to NCU operation.</p>
<p>3</p>	<p>Ensure the other system units (Power/Transceiver, X-ray receiver, Imager, XR200) are properly connected and powered up before beginning a scan.</p>
	<p style="text-align: center;">NOTE</p> <p>See Chapter 5 as well as the RTR-4 Operator's Manual (Doc. 120300, Rev. C) for a detailed description of routine scanning procedures.</p>

Wireless Connection Test

The **Wireless Connection Test** procedure (which involves using the controller's built in “WaveManager Client” software utility to test wireless signal presence and strength) is described in detail in Chapter 6.

5 Wireless Option Operation

Introduction

Standard RTR-4 operating procedures for wireless option are identical to those for wired operation except that when the NCU (as opposed to the CU-4) is booted up, a standard MS/DOS command line interface screen menu appears as follows:

Windows cannot determine what configuration your computer is in.

Select one of the following:

1. **Wired**
2. **Wireless**
3. **Original Configuration**
4. **None of the above**

Enter your choice:

Type in the number 2 after the “Enter your choice” command line to select wireless operation and press Enter. This mode only applies for NCU operation. The CU-4 automatically selects wired or wireless as required.

See the RTR-4 Operator’s Manual as well as the Golden Engineering XR200 X-Ray Source Operator’s Manual for more information regarding system operation.

6 Maintenance & Troubleshooting

Introduction

Standard RTR-4 maintenance and troubleshooting procedures while using the wireless operating mode are identical to those for wired operation except for the items mentioned below.

See the RTR-4 Operator's Manual for general RTR-4 maintenance and troubleshooting procedures and the Golden Engineering XR200 X-Ray Source Operator's Manual for X-ray source maintenance and troubleshooting.

Power/Transceiver Battery Replacement

The Power/Transceiver is powered by a battery. This battery in the Power/Transceiver is accessed and removed as shown in Figures 6-1, 6-2, and 6-3.

Figure 6-1: Loosening Power/Transceiver Battery Cover



Figure 6-2: Removing Power/Transceiver Battery Cover



Figure 6-3: Removing Power/Transceiver Battery



X-ray Receiver Battery Replacement

The X-ray Receiver is powered by a standard 9-volt transistor radio battery. The battery is accessed by removing the slide cover on the bottom end of the X-ray Receiver below the Velcro strip (Figure 6-4.)

Figure 6-4: X-ray Receiver Battery Location



Wireless Signal Strength Test Utility

Wireless Signal Strength Test Utility Description

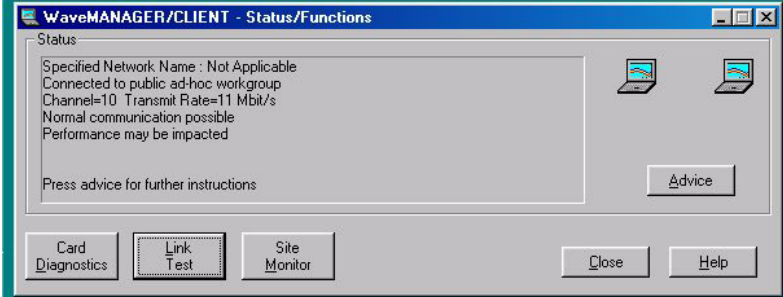
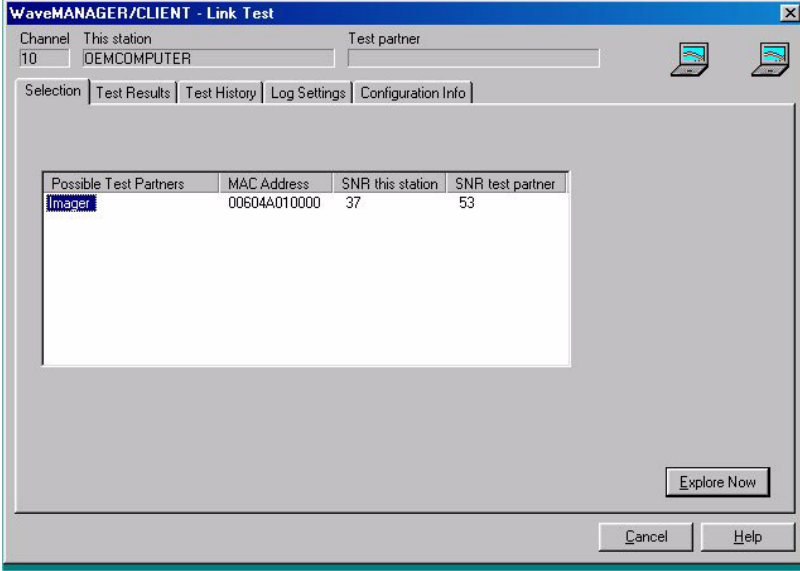
The RTR-4 Wireless Option features a signal strength test utility called “WaveManager Client” and is launched by clicking on an icon on the Windows desktop. This test has two main subtests--Link Test and Test History--both used to determine the system’s effective signal strength when deployed in the field.

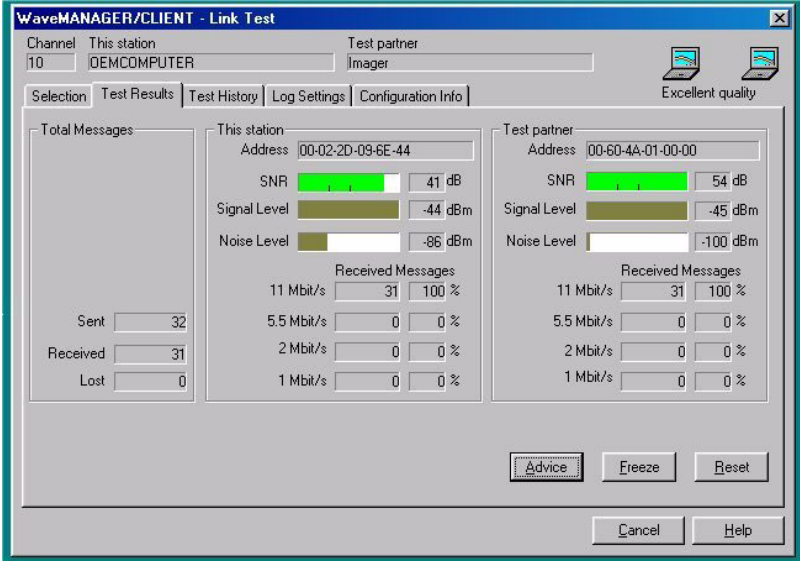
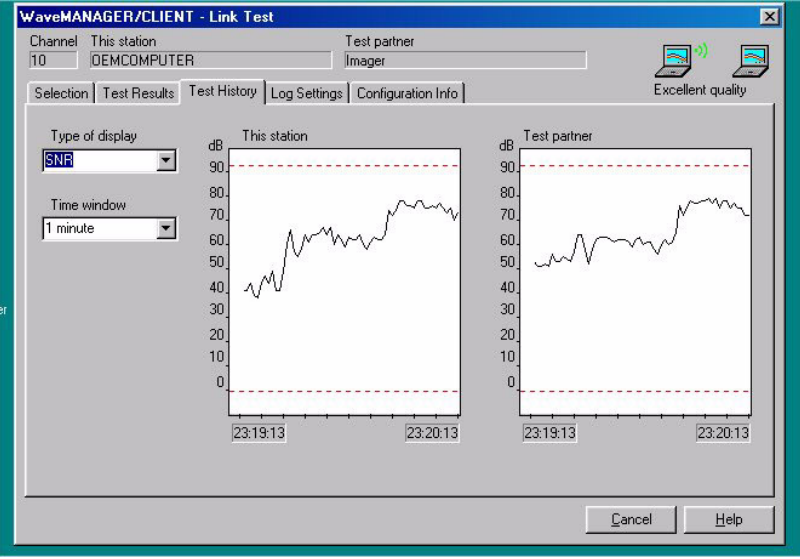
Prerequisites

- Ensure all RTR-4 Wireless Option units have been properly set up, connected, configured and powered up as described in Chapter 4.
- The **WiFi NIC Setup** procedure and, if required, the **Optional Extended-Range Antenna Installation** both described in Chapter 4 must have been completed.
- The CU-4/NCU must be booted up and running Windows.

Wireless Signal Strength Test Utility Procedure

Run the Wireless Signal Strength Test Utility as follows:

STEP	ACTION								
<p>1</p>	<p>Doubleclick on the WaveManager Client icon on the Windows desktop. A dialog box entitled “WaveManager/Client - Status/Functions” appears.</p> 								
<p>2</p>	<p>Click on the “Link Test” button. A dialog box entitled “WaveManager/Client-Link Test” It has five tabs at its top, two named “Test Results” and “Test History.”</p>  <table border="1" data-bbox="657 1066 1182 1262"> <thead> <tr> <th>Possible Test Partners</th> <th>MAC Address</th> <th>SNR this station</th> <th>SNR test partner</th> </tr> </thead> <tbody> <tr> <td>Imager</td> <td>00604A010000</td> <td>37</td> <td>53</td> </tr> </tbody> </table>	Possible Test Partners	MAC Address	SNR this station	SNR test partner	Imager	00604A010000	37	53
Possible Test Partners	MAC Address	SNR this station	SNR test partner						
Imager	00604A010000	37	53						

STEP	ACTION
3	<p>Clicking on the “Test Results” tab displays a real-time bar graph of connectivity metrics as shown below.</p>  <p>The screenshot shows the 'WaveMANAGER/CLIENT - Link Test' window with the 'Test Results' tab selected. It displays metrics for 'This station' (Address: 00-02-2D-09-6E-44) and 'Test partner' (Address: 00-60-4A-01-00-00). Metrics include SNR (41 dB and 54 dB), Signal Level (-44 dBm and -45 dBm), Noise Level (-86 dBm and -100 dBm), and Received Messages (31 and 100%). A status indicator shows 'Excellent quality'.</p> <p>The numerical values displayed are typical for a Power Transceiver and WiFi NIC minus the optional Medium-Range Antenna.</p>
4	<p>Clicking on the “Test History” tab displays a real-time signal-to-noise ratio (SNR) figure and corresponding line graphs. The higher-level graphic lines shown in the figure below illustrate more efficient and robust communications are. (The rise in the curve is due to the use of the optional Medium-Range Antenna.)</p>  <p>The screenshot shows the 'WaveMANAGER/CLIENT - Link Test' window with the 'Test History' tab selected. It displays two line graphs showing SNR (dB) over time for 'This station' and 'Test partner'. The y-axis ranges from 0 to 90 dB, and the x-axis shows time from 23:19:13 to 23:20:13. The graphs show a general upward trend in SNR, indicating improved communication quality.</p>

STEP	ACTION
5	Click the "Cancel" button on either the Test Results or Test History dialog boxes to exit the tests.
6	Click the "Close" button on the "WaveManager/Client - Status/Functions" dialog box to exit the WaveManager Test Utility.