Agilent
RDX Test Platform for DigRFv4

Installation Guide

Agilent Technologies

Notices

Printing HIstory

Agilent Technologies, Inc. can issue revisions between the product releases to reflect the latest and correct information in the guide. Agilent Technologies, Inc. also reserves its right to not issue a new edition of the guide for every system release.

Product Release

1.9

Edition

Second edition, August 2011

Warranty

Technology Licenses

Restricted Rights Legend

Safety Notices

CAUTION

A **CAUTION** notice denotes a hazard. It calls attention to an operating procedure, practice, or the like that, if not correctly performed or adhered to, could result in damage to the product or loss of important data. Do not proceed beyond a **CAUTION** notice until the indicated conditions are fully understood and met.

WARNING

A WARNING notice denotes a hazard. It calls attention to an operating procedure, practice, or the like that, if not correctly performed or adhered to, could result in personal injury or death. Do not proceed beyond a WARNING notice until the indicated conditions are fully understood and met.

Safety Symbols on Instruments

Indicates warning or caution. If you see this symbol on a product, you must refer to the manuals for specific Warning or Caution information to avoid personal injury or damage to the product.

Frame or chassis ground terminal. Typically connects to the equipment's metal frame.

Indicates hazardous voltages and potential for electrical shock.

Indicates that antistatic precautions should be taken.

Indicates hot surface. Please do not touch.

Indicates laser radiation turned on.

CSA is the Canadian certification mark to demonstrate compliance with the Safety requirements.

CE compliance marking to the EU Safety and EMC Directives.

ISM GRP-1A classification according to the international EMC standard.

ICES/NMB-001 compliance marking to the Canadian EMC standard.

Safety Summary

General Safety Precautions

The following general safety precautions must be observed during all phases of operation of this instrument. Failure to comply with these precautions or with specific warnings elsewhere in this manual violates safety standards of design, manufacture, and intended use of the instrument.

Agilent Technologies Inc. assumes no liability for the customer's failure to comply with these requirements.

Before operation, review the instrument and manual for safety markings and instructions. You must follow these to ensure safe operation and to maintain the instrument in safe condition.

General

This product is a Safety Class 1 instrument (provided with a protective earth terminal). The protective features of this product may be impaired if it is used in a manner not specified in the operation instructions.

All Light Emitting Diodes (LEDs) used in this product are Class 1 LEDs as per IEC 60825-1.

Environment Conditions

This instrument is intended for indoor use in an installation category II, pollution degree 2 environment. It is designed to operate at a maximum relative humidity of 95% and at altitudes of up to 2000 meters.

Refer to the specifications tables for the ac mains voltage requirements and ambient operating temperature range.

Before Applying Power

Verify that all safety precautions are taken. The power cable inlet of the instrument serves as a device to disconnect from the mains in case of hazard. The instrument must be positioned so that the operator can easily access the power cable inlet. When the instrument is rack mounted the rack must be provided with an easily accessible mains switch.

Ground the Instrument

To minimize shock hazard, the instrument chassis and cover must be connected to an electrical protective earth ground. The instrument must be connected to the ac power mains through a grounded power cable, with the ground wire firmly connected to an electrical ground (safety ground) at the power outlet. Any interruption of the protective (grounding) conductor or disconnection of the protective earth terminal will cause a potential shock hazard that could result in personal injury.

Do Not Operate in an Explosive Atmosphere

Do not operate the instrument in the presence of flammable gases or fumes.

Do Not Remove the Instrument Cover

Operating personnel must not remove instrument covers. Component replacement and internal adjustments must be made only by qualified personnel.

Instruments that appear damaged or defective should be made inoperative and secured against unintended operation until they can be repaired by qualified service personnel.

Environmental Information

This product complies with the WEEE Directive (2002/96/EC) marking requirements. The affixed label indicates that you must not discard this electrical/electronic product in domestic household waste.

Product Category: With reference to the equipment types in the WEEE Directive Annex I, this product is classed as a "Monitoring and Control instrumentation" product.

Do not dispose in domestic household waste.

To return unwanted products, contact your local Agilent office, or see www.agilent.com/environment/product/ for more information.

About this Guide

This guide briefly describes RDX Test Platform for DigRFv4, and explains the tasks and functions required for setting up and starting RDX Test Platform for DigRFv4.

Here is how this guide is organized:

Introduction

Provides a list of equipments supplied, and information on what hardware and software should already be there before you move ahead in this guide.

Installing RDX Test Platform for DigRFv4

Explains how to install the RDX Test Platform for DigRFv4 software.

Setting Up the Hardware

Provides information on how to assemble the RDX Test Platform for DigRFv4 hardware equipments.

Getting Started

Explains how to start and use RDX Test Platform for DigRFv4.

Contents

1

Introduction

This chapter provides a list of equipments supplied as part of standard shipment to customer, and information on what hardware and software should already be there before you move ahead in this guide.

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Equipments Supplied

Agilent RDX Test Platform for DigRFv4 includes:

- N5343A Exerciser Module
- N5344A Analyzer Module
- N2X Chassis (2-slot or 4-slot)
- GPIO bus cable
- N5346A Flying lead cables

Installation Requirements

Prior to starting the installation process, ensure that all the system requirements to install the software components of RDX Test Platform for DigRFv4 are in place.

In the following sections, you will learn about the requirements of the Controller and Client PCs.

Controller PC Requirements

- Windows XP (with Service Pack 2 or higher) operating system is installed.
- At least 1 GB RAM is installed.
- At least 500 MB free disk space is available on the C drive.
- One 100BaseT LAN interface is installed for connection to the N2X chassis.

  Agilent recommends to install two 100BaseT LAN interfaces for concurrent access to the corporate network or other clients.

  You can also use the USB network adapter as a second LAN interface.

1 **Introduction**

2

Installation

Once you have set up the hardware, you can start installing the software components that come with the installation CD.

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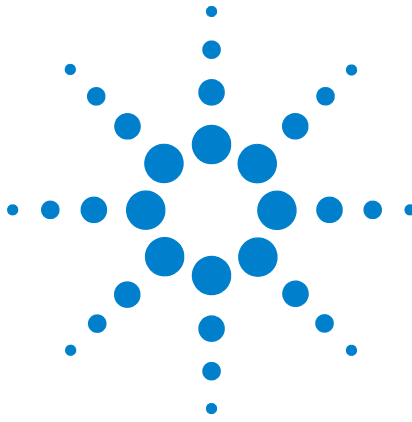
Configuring the Controller PC

You need to configure the Controller PC to enable communication between the Controller and Client PCs for data interchange.

In order to configure the Controller PC, you need to set up the FTP service.

| NOTE | You do not have to configure the Client PC if you have planned to install both the Controller and Client software on a single PC. |

Setting Up the FTP

On the Controller PC, you need to install and enable the FTP service to download firmware for various test modules. For this requirement, RDX Test Platform for DigRFv4 provides a third-party FTP server named WARftp.

Remember the following about WARftp while installing RDX Test Platform for DigRFv4:

- WARftp is automatically installed and configured while installing RDX Test Platform for DigRFv4.
- WARftp is installed only when the default FTP service is not installed on the Controller PC.
- Do not install WARftp prior to installing RDX Test Platform for DigRFv4.
- Uninstall WARftp if it is already installed, as it halts the installation of RDX Test Platform for DigRFv4.

| NOTE | WARftp restricts many organizations, such as government organizations, from using it. For more information on using WARftp, please refer to www.warftp.org. Also, please refer to the license notes to find out if you can use WARftp. |

If you are not allowed to use WARftp, you can use the FTP server that comes with the Windows operating system. In Windows, FTP is a part of Internet Information Services (IIS).

| NOTE | If IIS is already installed on the Controller PC, then skip to the next section. |

In this section, you will learn:

- "To Install FTP

- "To Enable FTP

To Install FTP

1   Click **Start > Settings > Control Panel**.

The Control Panel window appears.

2   Double-click the **Add/Remove Programs** icon.

The Add/Remove Programs window appears.

3   Click the **Add/Remove Windows Components** button.

The Windows Components Wizard dialog box appears.

4   Select the **Internet Information Services (IIS)** check box in the Components list box.

5   Click **Details**.

The Internet Information Services (IIS) dialog box appears.

6   Select the **File Transfer Protocol (FTP) Server** check box in the Sub components of Internet Information Services (IIS) list box.

This automatically selects the **Common Files** and **Internet Information Services Snap-In** check boxes.

7   Click **OK**.

This saves the changes you made and closes the Internet Information Services (IIS) dialog box.

8   Click **Next** to install IIS.

9   Click **Finish** to complete the installation process.

To Enable FTP

1   Click **Start > Settings > Control Panel**.

The Control Panel window appears.

2   Double-click the **Administrative Tools** icon.

The **Administrative Tools** window appears.

3   Double-click the **Services** icon.

The **Services** window appears.

4   Select the **FTP Publishing Service** service from the Name column.

5   Select **Action > Start** to enable FTP.

Installing RDX Test Platform for DigRFv4

Once you have prepared the system for installation, you can start installing RDX Test Platform for DigRFv4 on it. There are two ways to install RDX Test Platform for DigRFv4. One is to install without using the USB network adapter, and the other is to install using the USB network adapter.

In this section, you will learn:

- "Installing RDX Test Platform for DigRFv4 without the USB Network Adapter
- "Installing RDX Test Platform for DigRFv4 with the USB Network Adapter
- "Uninstalling the USB Network Adapter

NOTE	Before moving to the next section, uninstall the N2X software if it is installed on the Controller PC.

Installing RDX Test Platform for DigRFv4 without the USB Network Adapter

To install RDX Test Platform for DigRFv4 without the USB Network Adapter:

1 Insert the installation CD in the CD drive.

The installation page appears.

NOTE	If the installation page does not appear automatically, do the following:

1 Access the CD drive using Windows Explorer.
2 Browse to the **SystemProtocolTester** folder.
3 Double-click the **Setup.exe** file.

Running Setup.exe takes you to the message box that is otherwise displayed when you click Run in Step 4, or to the License Agreement screen that is otherwise displayed when you click Next in Step 6, whichever is applicable.

NOTE	In case, no installation CD is available, do the following:

1 Browse to the RDX Test Platform for DigRFv4 software package.
2 Double-click **Agilent Serial Protocol Tester.exe** file.

Running Setup.exe takes you to the message box that is otherwise displayed when you click Run in Step 4,

2 Click **Installation**.

The Install System Protocol Tester Software page appears.

3 Click the **System Protocol Tester** hyperlink.

The File Download - Security Warning dialog box appears. This dialog box prompts if you want to run or save the `Setup.exe` file.

4 Click **Run**.

If legacy components are installed on your computer, then a message box appears and prompts you to remove them.

To remove legacy components, do the following:

a Click **Yes**. The uninstallation process starts. Once this process ends, the Uninstall Complete screen of the wizard appears.

b Click **Finish**.

This takes you back to the Install System Protocol Tester Software page.

5 Repeat Steps 3 and 4.

This time, the welcome screen of the installation wizard appears.

6 Click **Next**.

The License Agreement screen appears.

7 Select **I accept the terms of the license agreement**.

8 Click **Next**.

The Setup Type screen appears. This screen prompts you to select the setup type that best suits your need.

9 Select one of the following options:

a **Client (GUI only)**: Select if you want to install only the Client software on your PC. It connects to the client remotely.

b **Controller + Client (Full)**: Select if you want to install both the Controller and Client software on your PC.

10 Click **Next**.

The Ready to Install the Program screen appears.

11 Click **Install**.

This installs System Protocol Tester, and displays the next screen of the wizard.

12 Clear the **View Readme.txt** check box if you do not want to view the `Readme.txt` file.

13 Clear the **Run USB network adapter Config Helper** check box.

14 Click **Next**.

The InstallShield Wizard Complete screen appears.

15 Click **Finish**.

This completes the System Protocol Tester installation.

Installing RDX Test Platform for DigRFv4 with the USB Network Adapter

To install RDX Test Platform for DigRFv4 with the USB Network Adapter:

1 Repeat steps 1 to 12 from the previous section.

2 Select the **Run USB network adapter Config Helper** check box.

3 Click **Next**.

A message box appears that prompts you to attach the USB network adapter to the Controller PC.

4 Attach the USB network adapter to the Controller PC.

5 Click **Yes**.

A message box, displaying the USB network adapter and DHCP settings, appears.

6 Click **Yes**.

A message box, displaying the *Settings successfully modified* message, appears.

7 Click **OK**.

The InstallShield Wizard Complete screen appears. This screen prompts you to restart your computer.

8 Select **Yes, I want to restart my computer now**.

9 Click **Finish**.

NOTE	• Do not connect the USB cable of the USB network adapter with the Controller PC until installation wizard prompts you for it.
	• If you are using the USB network adapter, and has already used the Config Helper tool to configure the LAN interface and DHCP, jump to Chapter 4, Getting Started on page 27.

Uninstalling the USB Network Adapter

Once you have used the USB network adapter in the installation process, you can remove it. However, doing this does not releases the IP address assigned to the USB network adapter. Therefore, any attempts to use that port displays an error, which prompts that the IP address is already assigned to a device. To avoid this situation, uninstall the USB network adapter before physically removing it from the computer.

To uninstall the USB network adapter

1 Right-click the **My Computer** icon.

2 Select **Manage** from right-click menu.

The Computer Management window appears (Figure 1).
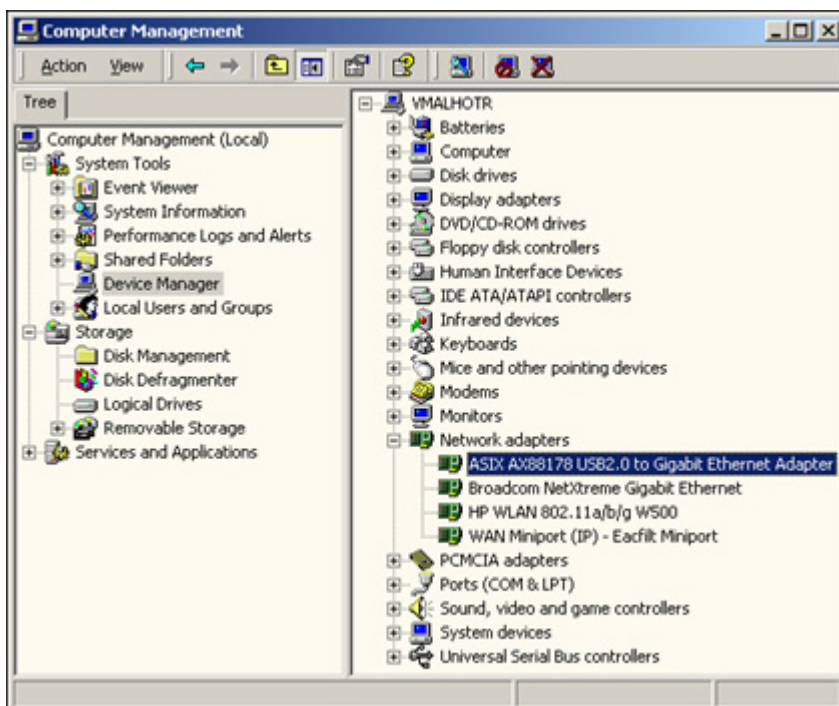
Figure 1   Computer Management window

3 Click the **System Tools > Device Manager** icon under the Tree tab.

This displays an expandable list of options in the right panel of the Computer Management window.

4 Expand the **Network adapters** icon.

A list of network adapters attached to your computer is displayed.

5 Right-click the option that represents the USB network adapter.

6 Select **Uninstall** from the context menu.

The Confirm Device Removal message box appears (Figure 2).

Figure 2   Confirm Device Removal message box

7 Click **OK**.

This uninstalls the USB network adapter. You can now remove the USB network adapter from the computer and assign its IP address to some other device.

Setting Up the DHCP Service

DHCP is a communication protocol that lets network administrators centrally manage and automate the assignment of IP addresses in a computer network. DHCP lets a network administrator supervise and distribute IP addresses from a central point and automatically sends a new IP address when a computer is plugged into a different place in the network.

The DHCP server installed with RDX Test Platform for DigRFv4 does not use the standard DHCP port. Rather, it uses the following special ports to avoid any interference with the DHCP server running within your corporate LAN:

- **7901**: This port is used to listen to the requests sent from a serial I/O module.

- **7902**: This port is used to listen to the responses/answers sent from the Controller PC.

Setting up the DHCP service for RDX Test Platform for DigRFv4 requires you to configure the LAN card and configure the DHCP service.

In this section, you will learn:

- "Configuring the LAN interface
- "Configuring DHCP
- "Updating the DHCP configuration file to use MAC address

Configuring the LAN interface

You need to configure the LAN card on the Controller PC to establish a private LAN connection between the Controller PC and the chassis.

To configure the LAN interface

1 Click **Start > Settings > Control Panel**.

   The Control Panel window appears.

2 Double-click the **Network** and **Dial-up Connections** icon.

   The Network and Dial-up Connections window appears.

3 Select the icon that represents LAN card for private network.

4 Click **File > Properties**.

   The Properties dialog box for the selected LAN card appears.

5 Click the **General** tab.

6 Select the **Internet Protocol (TCP/IP)** check box in the **Components checked are used by this connection** list box.

7   Click **Properties**.

The Internet Protocol (TCP/IP) dialog box appears.

8   Select **Use the following IP address**.

9   Type in the following information in the **IP address**, **Subnet mask**, and **Default gateway** text boxes.

```
IP address: 10.0.0.1

Subnet mask: 255.0.0.0
```

10 Click **OK**.

Configuring DHCP

To configure DHCP, you need to update the DHCP configuration file (`dhcpd.conf`), restart the DHCP service, and update the DHCP registry file (`dhcpd.reg`) and the system registry.

In this section, you will learn to:

• "To update the DHCP configuration file

• "To restart the DHCP service

• "To update the DHCP registry file and the system registry

To update the DHCP configuration file

1 Go to the `c:\dhcpdnt` directory.

2 Open the `dhcpd.conf` file in a text editor.

3 Modify the `subnet`, `netmask`, and `range dynamic-bootp` parameters, as desired.

4 Save the `dhcpd.conf` file.

5 Close the `dhcpd.conf` file.

NOTE	Before you move to the next section, ensure that the controller PC is connected with the chassis.

To restart the DHCP service

1 Click **Start > Settings > Control Panel**.

The Control Panel window appears.

2 Double-click the **Administrative Tools** icon.

The Administrative Tools window appears.

3 Double-click the **Services** icon.

The Services window appears.

4 Select **dhcpdNT** under the **Name** column.

5 Click **Action > Restart**.

This assigns IP addresses to the serial I/O modules according to the new settings.

To update the DHCP registry file and the system registry

1 Go to the `c:\dhcpdnt` directory.

2 Open the `dhcpd.reg` file in a text editor.

3 Modify the `Interface.0` parameter with the IP address of the LAN card that is connected to serial I/O modules.

The address you specify here should be within the subnet and is used as the DHCP server.

4 Save the `dhcpd.reg` file.

5 Close the `dhcpd.reg` file.

6 Double-click the `dhcpd.reg` file in Windows Explorer.

The Registry Editor dialog box appears asking if you want to update the system registry using the `dhcpd.reg` file.

7 Click **Yes**.

The Registry Editor message box displays prompting that the system registry has been successfully updated.

8 Click **OK**.

Updating the DHCP configuration file to use MAC address

If you do not want to use DHCP, then you can use MAC addresses of the serial I/O modules to assign them their IP addresses. For this, you need to update the DHCP configuration file in order to prepare it for using MAC addresses of the serial I/O modules.

To update the DHCP configuration file for using MAC addresses

1 Go to the `c:\dhcpdnt` directory.

2 Open the `dhcpd.conf` file in a text editor.

3 Comment out the following statements:

`boot-unknown-clients true;`

`range dynamic-bootp <range of ip addresses for modules>;`

To comment out these statements, insert the # symbol in the beginning.

Commenting these statements disables the automatic configuration of the IP addresses.

4 Uncomment the following function for each serial I/O module:

#host *<hostname for module>*{

hardware ethernet *<MAC address of the module>*;

fixed-address *<ip address to be assigned to this module>*;

#}

5 Replace the *<hostname for module>* parameter with the name of the serial I/O module.

6 Replace the *<MAC address of the module>* parameter with the MAC address of the serial I/O module.

You can find the MAC address of the serial I/O module on its label.

7 Replace the *<ip address to be assigned to this module>* parameter with the IP address of the serial I/O module.

The IP address of the serial I/O module should be within the defined subnet.

8 Save the dhcpd.conf file.

9 Restart the DHCP service.

For information on restarting the DHCP service, refer to "To restart the DHCP service" on page 16.

10 Reboot the serial I/O modules.

The new IP addresses are assigned to the serial I/O modules.

Installing Agilent Logic Analyzer

To install Agilent Logic analyzer for the Rx side:

1 Insert the installation CD in the CD drive.

   The installation page appears.

   | NOTE | If the installation page does not appear automatically, do the following: |

   1 Access the CD drive using Windows Explorer.
   2 Browse to the **Agilent Logic Analyzer** folder.
   3 Double-click the **Setup.exe** file.

   Running Setup.exe takes you to the message box that is otherwise displayed when you click Run in Step 4, or to the License Agreement screen that is otherwise displayed when you click Next in Step 6, whichever is applicable.

   | NOTE | In case, no installation CD is available, do the following: |

   1 Browse to the RDX Test Platform for DigRFv4software package.
   2 Double-click **SetupLA.exe** file.

   Running Setup.exe takes you to the message box that is otherwise displayed when you click Run in Step 4,

2 Click **Installation**.

   The Install Agilent Logic Analyzer Software page appears.

3 Click the **Agilent Logic Analyzer** hyperlink.

   The File Download - Security Warning dialog box appears. This dialog box prompts if you want to run or save the Setup.exe file.

4 Click **Run**.

   If legacy components are installed on your computer, then a message box appears and prompts you to remove them.

   To remove legacy components, do the following:

   a Click **Yes**. The uninstallation process starts. Once this process ends, the Uninstall Complete screen of the wizard appears.

   b Click **Finish**.

   This takes you back to the Install Agilent Logic Analyzer Software page.

5 The Agilent Logic Analyzer install shield wizard page appears.

The install shield wizard extracts the files needed to install Agilent Logic Analyzer.

> **NOTE** You need to have .Net Framework 3.5 installed on controller PC or should have access to public internet, to continue the Agilent Logic Analyzer installation.

6 Click **OK** to continue.

The welcome screen of the installation wizard appears.

7 Click **Next**.

The License Agreement screen appears.

8 Select **I accept the terms of the license agreement**.

9 Click **Next**.

The Setup Type screen appears. This screen prompts you to select the setup type that best suits your need.

10 Select one of the following options:

a **Complete**: Select if you want to install the Agilent Logic Analyzer, Agilent I/O libraries and help volumes about 161MB.

b **Incomplete**: Select if you want to install only the Agilent Logic Analyzer on your PC.

11 Click **Next**.

12 Click **Install** to begin installation.

This installs Agilent Logic Analyzer, and displays the next screen of the wizard.

13 Click **OK**.

The Product Installation Complete screen appears.

14 Click **OK**.

This completes the Agilent Logic Analyzer installation.

3

Setting Up the Hardware

Once all the system requirements are in place, you need to start setting up the hardware for RDX Test Platform for DigRFv4. This requires you to set up basic hardware, such as I/O modules, chassis, and controller PC.

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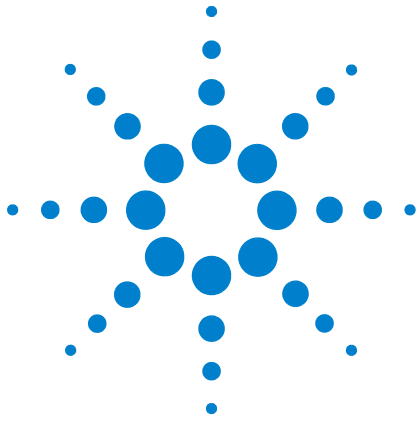
Adjusting I/O Modules Inside the Chassis

To adjust I/O modules inside a chassis, you need to know how to attach as well as remove them to and from chassis.

In this section you will learn:

- "Attaching an I/O module to the chassis
- "Removing an I/O module from the chassis
- "Setting up the N5343A module

Attaching an I/O module to the chassis

To attach an I/O module to the chassis:

1 Insert the I/O module inside the empty slot and push it to adjust it inside the empty slot.
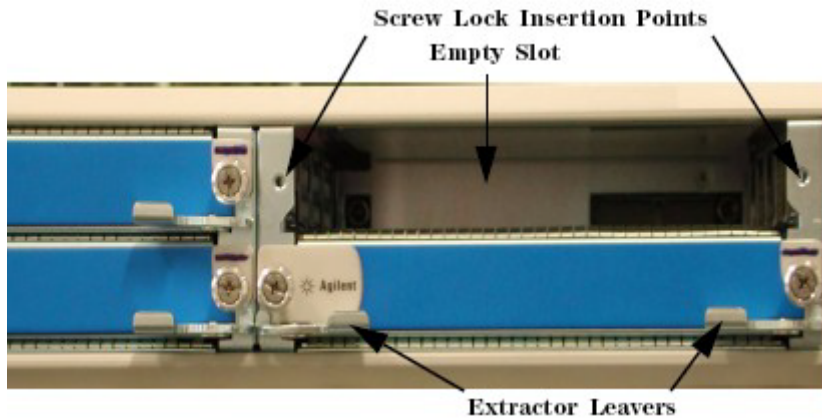

Figure 3   Chassis with an Empty Slot

2 Tighten the screw locks of the I/O module.

The I/O module is now attached to the chassis.

Removing an I/O module from the chassis

To remove an I/O module from the chassis:

1 Unscrew the screw locks.
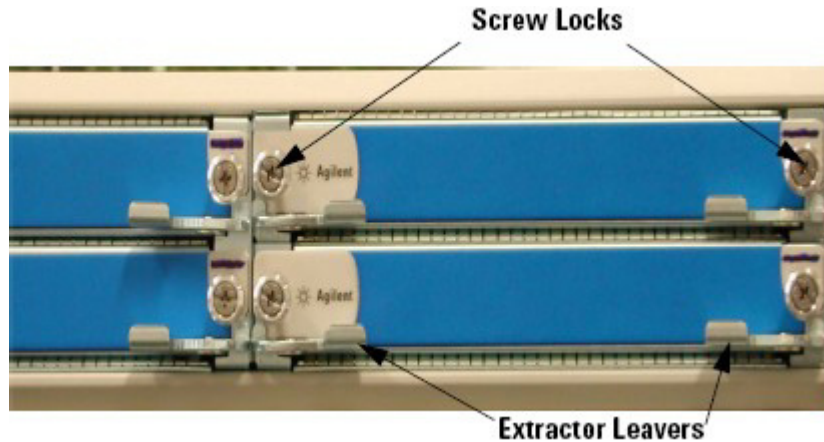
Figure 4   Screw locks on the Chassis

2 Pull the extractor levers outside the chassis.

3 Pull out the I/O module to remove it from the chassis.

Once you have removed the I/O module from the chassis, hold it by the front panel and metal case, and place it on a hard and flat surface.

WARNING	Do not directly touch any component on the I/O module. It may be hot.

CAUTION	Components on the I/O module are sensitive to the static electricity. Therefore, take necessary anti-static precautions, such as wear a grounded wrist strap, to minimize the possibility of electrostatic damage. Also, you should not operate a chassis with empty slots. Fill empty slots with blanking plates to ensure correct operation on the chassis.

Setting up the N5343A module

Once you have adjusted the modules inside the chassis, power on the N5343A module.

Figure 5   N5343A module

Connecting a Chassis to the Controller PC

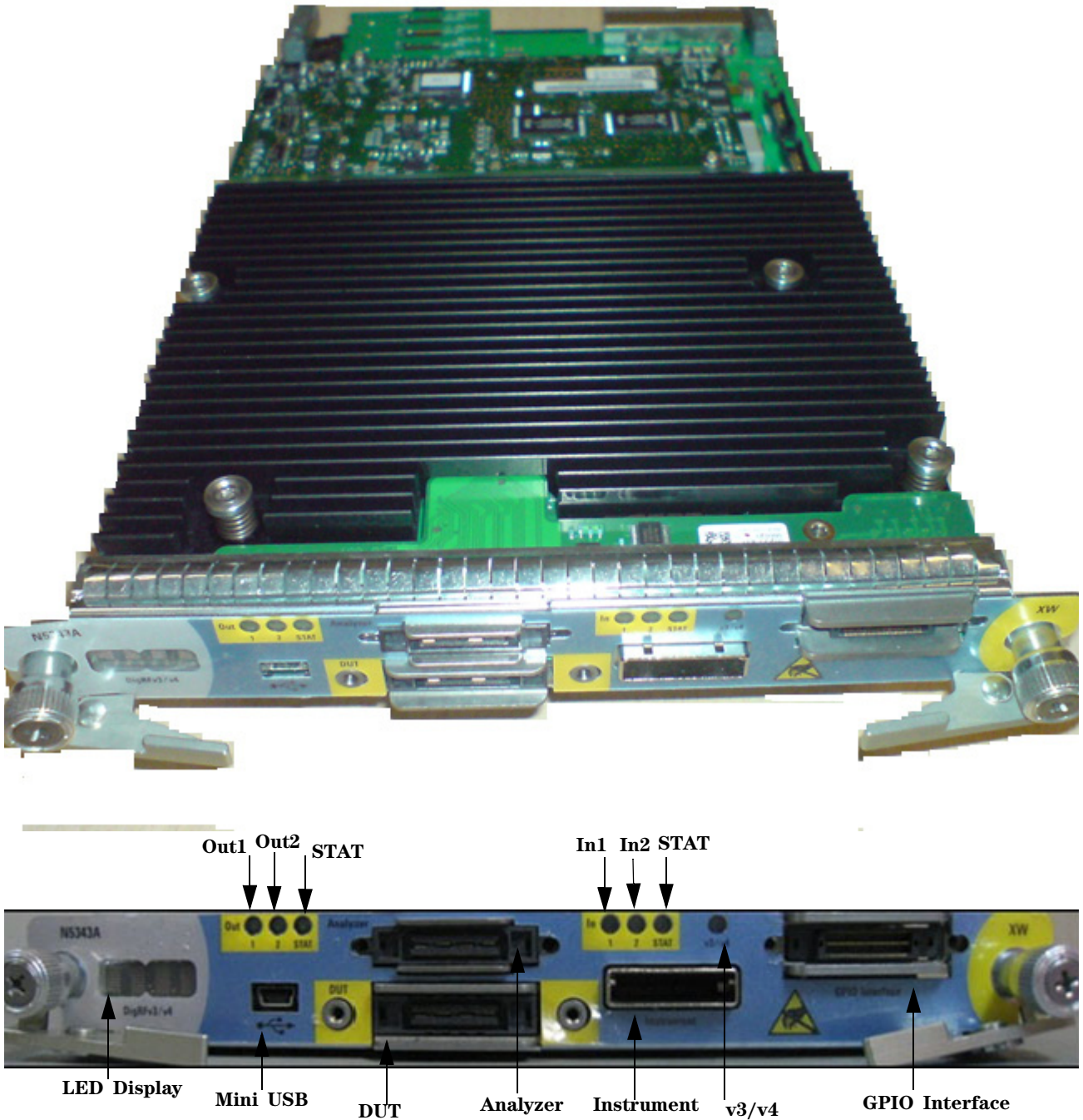After setting up the module, you can connect the chassis to the Controller PC. For this, you can refer to the following arrangements, as applicable:

- **No LAN interface available**: In this situation, you can use the USB network adapter to connect the Controller PC to the master chassis.

  The advantage of this arrangement is that you can set up a test environment easily at different places. For example, you can use a mobile instrument, such as laptop, as Controller PC and connect it directly to the chassis.

- **Single LAN interface available**: In this situation, you can:
  - Connect the chassis to the Controller PC through the private LAN.
  - Use the USB network adapter, which comes with RDX Test Platform for DigRFv4, as a second LAN interface.

  The advantage of this arrangement is that you can access the Controller PC from anywhere within the corporate LAN. For example, multiple Client PCs can access the Controller PC through the corporate LAN.

NOTE	The two-slot chassis and the four-slot chassis have the same connector assembly at the rear.

To connect the master chassis to the Controller PC

- Connect the MDI-X port of the chassis to the Controller PC using the standard LAN cable.
- Or, connect the MDI-X port of the chassis to the USB network adapter using the standard LAN cable.

NOTE	Do not connect the USB cable of the USB network adapter with the Controller PC until installation wizard prompts you for it.

4

Getting Started

This chapter provides information on how to power up the system, and the start and join a new DigRF v4 session.
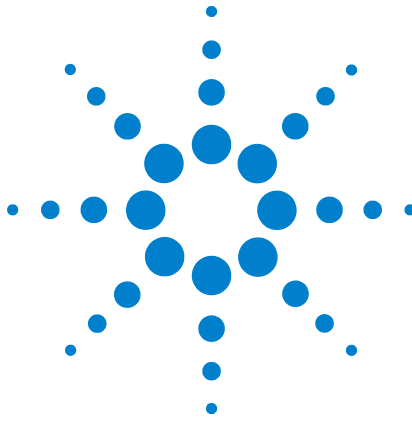
Starting an DigRF v4 Session

After installing RDX Test Platform for DigRFv4, the following procedure tells you about how to power up the system and start a new session.

In this section, you will learn:

- To power up the system
- To start a new session

To power up the system

1 Power up the Controller PC.

Powering up the Controller PC starts the *AgtResourceManager* service. This service keeps track of the chassis connected to the Controller PC.

2 Power up the Ethernet switch or hub if you have connected the chassis through an Ethernet switch or hub.

3 Power up the chassis connected to the Controller PC.

You can power up the chassis using the power switch, which is at the front of each chassis.

Powering up the chassis also boots the I/O modules installed in it.

4 View the matrix display of the I/O module.

After booting, the I/O module displays its number along with a trail of pixel snake around the border of the display area.

To start a new session

1 Invoke the Tcl command prompt.

2 Load the `AgtClient` package into the Tcl interpreter.

To do this, use the following Tcl command:

`package require AgtClient`

3 Press the `ENTER` key on the keyboard to load the `AgtClient` package, which has the entire DigRF v4 API.

The following output is displayed:

`0.2`

This connects the Tcl shell to the DigRF v4 system. The `0.2` value is the version of the `AgtClient` package.

4 Specify the following command to start a new *DigRF v4 exerciser* session:

```
AgtInvoke AgtTestSession OpenSession DigRFv4Exerciser
AGT_SESSION_ONLINE
```

In the above command:

- **AgtInvoke** is the primary API command used to interact with RDX Test Platform for DigRFv4. Its syntax is *AgtInvoke <object> <method> <params>.* Where, <object> is an object in the DigRF v4 system, <method> is one of the many actions that you can perform on <object>, and <params> are the parameters required/returned by <method>.

- **AgtTestSession** is an interface that provides methods to open and close an DigRF v4 session.

- **OpenSession** is a method used to create a new session. This method takes <sessionType> and <sessionMode> parameters, and returns <sessionHandle> parameter.

- **DigRFv4Exerciser** is a <sessionType> parameter.

- **AGT_SESSION_ONLINE** is a <sessionMode> parameter.

5 Specify the following command to add a port to the session:

```
AgtInvoke AgtPortSelector AddPort 101 1
```

This command creates a new session, and returns you the unique session id, such as 1.

In the above command:

- **AgtPortSelector** is an interface that provides methods to reserve ports for the current test session. As ports are added, modules are locked for exclusive use by the session.

- **AddPort** is a method used to add a port to the current session. It takes <moduleNum> and <portNum>, and returns <portHandle>.

- **101** is a module number.

- **1** is a port number.

6 Specify the following to join the session you just created:

```
AgtConnect 1
```

Where,

- **1** is the unique session id returned to you in Step 5.

Using DigRF v4 API - Example

Once you have created and joined a session, you can start to use the DigRF v4 API.

In this section, you will learn how to emulate as BBIC to RFIC.

To emulate as BBIC to RFIC

1 To Set DigRF common property value, select the DigRF v4 link protocol. Use the following command as below:

```
AgtInvoke AgtDigRFv4Exerciser SetProperty 0x1
AGT_DIGRF_PROP_SELECT_PROTOCOL 0x1
```

Where,

- `AGT_DIGRF_LINKTYPE_V4` is the type of link whose property you want to set.

2 Set the interface in the internal loopback disable mode. Use the following command as below:

```
AgtInvoke AgtDigRFv4Exerciser SetProperty 0x1
AGT_DIGRF_PROP_INTERNAL_LOOPBACK_MODE 0x0.
```

3 To set DigRF link property value, select DigRF v4 link type as current protocol. And specify internal or on board oscillator clock source. Use the following commands as below:

```
AgtInvoke AgtDigRFv4Exerciser SetLinkProperty 0x1
AGT_DIGRF_LINKTYPE_v4 AGT_DIGRF_V3_LINK_NONE
AGT_DIGRF_PROP_CLOCK_SOURCE 0x1
```

4 Select the link interface type as Baseband IC. Use the following command as below:

```
AgtInvoke AgtDigRFv4Exerciser SetLinkProperty 0x1
AGT_DIGRF_LINKTYPE_V4 AGT_DIGRF_V3_LINK_NONE
AGT_DIGRF_PROP_LINK_INTERFACE_TYPE 0x1
```

5 Specify the clock speed for v4 link as 26 Mbps. Use the following command as below:

```
AgtInvoke AgtDigRFv4Exerciser SetLinkProperty 0x1
AGT_DIGRF_LINKTYPE_V4 AGT_DIGRF_V3_LINK_NONE
AGT_DIGRF_PROP_LINK_CLOCK_SPEED 0x0
```

6 Specify the sys-burst speed mode values for Tx property. Use the following command as below:

```
AgtInvoke AgtDigRFv4Exerciser SetLinkProperty 0x1
AGT_DIGRF_LINKTYPE_V4 AGT_DIGRF_V3_LINK_NONE
AGT_DIGRF_PROP_LINK_TX_SPEED_MODE 0x0
```

7 Specify the runmode value as primary to transmit line rate. Use the following command as below:

```
AgtInvoke AgtDigRFv4Exerciser SetLinkProperty 0x1
AGT_DIGRF_LINKTYPE_V4 AGT_DIGRF_V3_LINK_NONE
AGT_DIGRF_PROP_V4_LINK_LINE_RATE 0x0
```

8 Set the trigger message pattern. An individual pattern will be identified by its respective index which ranges from 0to 7.

```
AgtInvoke AgtDigRFv4Exerciser SetTriggerMessagePattern
0x1 AGT_DIGRF_DIR_TX AGT_DIGRF_TRIG_PATTERN_INDEX_ONE 0x0
```

where,

- `AGT_DIGRF_DIR_TX`, specifies the Tx link direction as capture direction for analyzer module.
- `AGT_DIGRF_TRIG_PATTERN_INDEX_ONE`, specifies the trigger pattern index value for first pattern matcher.
- `0x0`,specifies the value of the pattern. So, that the value set for pattern will be matched with first four bytes of a frame.
- `0x0`, Specify the value of mask. i.e 0 as match or 1 as don't care.

9 Enable the trigger message pattern to store frames in external or internal capture memory. Use the following command as below:

```
AgtInvoke AgtDigRFv4Exerciser SetTriggerAction 0x1
AGT_DIGRF_DIR_TX AGT_DIGRF_INPUT_PM1 0x2
```

where,

- `SetTriggerAction`, sets the trigger action for given input triggers.
- `AGT_DIGRF_INPUT_PM1`, specifies the value used in SetTriggerAction API to set trigger action for the pattern matcher route.
- `0x2`, specifies the value used as bitmap in SetTriggerAction API for 'action' parameter. It is the value to store frames in Rx external memory for enum `AGT_DIGRF_ROUTE_EXTERNAL_MEMORY`. The action is enabled for the selected trigger condition.

10 Enable trigger for pattern matcher 1. Use the following command as below:

```
AgtInvoke AgtDigRFv4Exerciser SetProperty 0x1
AGT_DIGRF_PROP_ENABLE_ACTION_TRIGGER_TX 0x1
```

where,

- `0x1`, is the value to enable the trigger for pattern matcher 1 i.e `AGT_DIGRF_TRIGGER_PM1`.

11 Clear the previous memory behavior i.e internal Tx frame storage. Use the following command as below:

```
AgtInvoke AgtDigRFv4Exerciser ClearTxMemBehavior 0x1
AGT_DIGRF_TX_CONTROL 0x1
```

where,

- `AGT_DIGRF_TX_CONTROL`, type of the transmit memory in which behaviors you want to clear

12 Clear the previous frame. To clear the control frame or internal Tx frame storage in the block 0, use the following command as below:

```
AgtInvoke AgtDigRFv4Exerciser ClearFrame 0x1
AGT_DIGRF_TX_CONTROL 0x1 0x0
```

where,

- `AGT_DIGRF_TX_CONTROL`, type of the transmit memory where you want to modify the frame
- `0x0` is the block number of the transmit memory where you want to clear out.

13 Add DigRF frame to transmit memory. Use the following command as below:

```
AgtInvoke AgtDigRFv4Exerciser AddFrame 0x1
AGT_DIGRF_V3_LINK_NONE AGT_DIGRF_TX_CONTROL 0x0
AGT_DIGRF_TX_PRIO_LOW 0x00 AGT_DIGRF_TX_TIMER_ABSOLUTE
0x0 0x8000 {0x80 0x1 0x2 0x3 0x4 0x5 0x6 0x7 0x8 0x9 0x10
0x11 0xA 0xB 0xC 0xD}
```

where,

- `AGT_DIGRF_TX_CONTROL` is the value of the internal Tx frame storage where to want to add the frame.
- `0x0` is the block of the transmit memory where you want to add the frame (0 to7).
- `AGT_DIGRF_TX_PRIO_LOW` is the priority of the frame when sent.
- `0x0` is the error type to be added when sent, if no error.
- `AGT_DIGRF_TX_TIMER_ABSOLUTE`, specifies Tx behavior timer value as absolute. i.e the type of the time information for this frame.
- `0x0`, specifies high Dword 32-bits of the timing information. The value specified is in ticks.
- `0x8000`, specifies low Dword 32-bits of the timing information. The value specified is in ticks.
- `{0x80 0x1 0x2 0x3 0x4 0x5 0x6 0x7 0x8 0x9 0x10 0x11 0xA 0xB 0xC 0xD}`, specifies the payload size or the frame length.

14 Add DigRF transmit behavior. Use the following command as below:

```
AgtInvoke AgtDigRFv4Exerciser AddTxMemBehavior 0x1
AGT_DIGRF_TX_CONTROL AGT_DIGRF_TX_BEHAVIOR_NORMAL 0x0 0x0
0x1
```

where,

- `AGT_DIGRF_TX_CONTROL`, specifies the type of the transmit memory whose behavior where you want to modify a behavior.

- `AGT_DIGRF_TX_BEHAVIOR_NORMAL`, specifies the behavior value as normal. i.e to run the given set of frames once.

- `0x0` is the block number to which this behavior belongs to.

- `0x0` specifies the start frame number if behavior control is `AGT_DIGRF_TX_BEHAVIOR_NORMAL` or loop number if behavior control is `AGT_DIGRF_TX_BEHAVIOR_LOOP`. If start is greater than number of frames added then this behavior will not do anything.

- `0x1`, If behavior control is `AGT_DIGRF_TX_BEHAVIOR_NORMAL`, count specifies number of frames for which to run this behavior and count value of '0' means send all the frames of the given block from 'start' frame number. if behavior control is `AGT_DIGRF_TX_BEHAVIOR_LOOP`, count specifies repeat count for the loop to run, and a count value of '0' in this case means run loop infinitely.

15 To stop transmission use the following command below.

```
AgtInvoke AgtDigRFv4Exerciser AddTxMemBehavior 0x1
AGT_DIGRF_TX_CONTROL AGT_DIGRF_TX_BEHAVIOR_STOP 0x0 0x0
0x0
```

where,

`AGT_DIGRF_TX_BEHAVIOR_STOP`, specifies the behavior value as stop to stop transmission.

16 Start capture on Rx. Specify the Rx run type value as START_CAPTURE to start capture. Use the following command as below:

```
AgtInvoke AgtDigRFv4Exerciser RxControl 0x1
AGT_DIGRF_RX_CONTROL_START_CAPTURE
```

where,

- `AGT_DIGRF_RX_CONTROL_START_CAPTURE` is the start capturing mode in Rx.

17 Activate Tx. Start SI transmission and start transmit engine. Use the following command as below:

```
AgtInvoke AgtDigRFv4Exerciser TxControl 0x1
AGT_DIGRF_TX_SI_START
```

where,

- `0x1`, specifies the portHandle within an established session.

- `AGT_DIGRF_TX_SI_START` start SI transmission in Tx mode.

```
AgtInvoke AgtDigRFv4Exerciser TxControl 0x1
AGT_DIGRF_TX_CONTROL_START
```

where,

- `0x1`, specifies the portHandle within an established session.

- `AGT_DIGRF_TX_CONTROL_START`, start transmit engine in Tx mode.

18 Stop capture. Use the following command as below:

```
AgtInvoke AgtDigRFv4Exerciser TxControl 0x1
AGT_DIGRF_TX_SI_STOP
```

where,

- `0x1`, specifies the portHandle within an established session.

- `AGT_DIGRF_TX_SI_STOP`, stops SI transmission in Tx mode.

```
AgtInvoke AgtDigRFv4Exerciser RxControl 0x1
AGT_DIGRF_RX_CONTROL_STOP_CAPTURE
```

where,

- `0x1`, specifies the portHandle within an established session.

- `AGT_DIGRF_RX_CONTROL_STOP_CAPTURE`, stops capture in Rx.