

Installation Guide

Agilent Technologies Software

for
Signal Studio



Agilent Technologies

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For signal generator warranty information, refer to the signal generator Installation Guide or Service Guide.

Documentation Questions or Comments

We welcome any questions or comments you may have about signal source documentation. Please email us at sources_manuals@am.exch.agilent.com.

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Additional Information

Agilent Signal Studio products: <http://www.agilent.com/find/signalstudio>

Agilent signal generators: <http://www.agilent.com/find/signalgenerator>

Agilent spectrum analyzers: <http://www.agilent.com/find/spectrumanalyzer>

Assistance with test and measurements needs, or
information on finding a local Agilent office: <http://www.agilent.com/find/assist>

If you do not have access to the Internet, contact your field engineer.

1xEV-DO

Instrument	Requirements
E4438C ESG Vector Signal Generator	Firmware revision C.03.44 or later (see page 30) One of the following baseband generator options: Option 001 (internal baseband generator with 8 Msample memory), Option 002 (internal baseband generator with 32 Msample memory), Option 601 (internal baseband generator with 8 Msample memory and digital bus capability), Option 602 (internal baseband generator with 64 Msample memory and digital bus capability, <i>recommended</i>)
PC Requirements	
<p>Windows 2000 Professional® (service pack 4 or later) or Windows XP Professional® (service pack 1 or later)</p> <p>Microsoft® Internet Explorer (5.01 or later)</p> <p>Microsoft .NET® Framework 1.0 (service pack 2 or later) in OS language version (see "Installing and Setting Securities for the .NET Framework" on page 32)</p> <p>Pentium3® PC, 400 MHz or higher Pentium4® PC, 2 GHz or higher, <i>recommended</i></p> <p>160 MB free disk space (100 MB for .NET framework, 60 MB for 1xEV-DO software) NOTE: 160 MB free disk space is required to install .NET framework.</p> <p>Minimum 800 x 600 screen resolution with normal font size (1024 x 768 <i>recommended</i>)</p> <p>256 MB RAM (1 GB <i>recommended</i>)</p> <p>If using GPIB, one of the following libraries must be installed: Agilent IO Libraries (version L.01.00 or later), see "Installing Agilent IO Libraries" on page 35, or NI-488.2 driver, NI-VISA</p> <p>Installed GPIB IO interface card or LAN interface card (see "Interface Connections" on page 13)</p>	

1xEV-DV and cdma2000

Instrument	Requirements
E4438C ESG Vector Signal Generator	Firmware revision C.03.20 or later (see page 30) One of the following baseband generator options: Option 001 (internal baseband generator with 8 Msample memory), Option 002 (internal baseband generator with 32 Msample memory), Option 601 (internal baseband generator with 8 Msample memory and digital bus capability), Option 602 (internal baseband generator with 64 Msample memory and digital bus capability, <i>recommended</i>) Option 403 (calibrated noise personality, <i>required for C/N capability</i>)
PC Requirements	
<p>Windows XP Professional® (service pack 1 or later), Windows 2000® (service pack 3 or later), or Windows NT® 4.0 (service pack 4 or later)</p> <p>Microsoft® Internet Explorer (4.01 service pack 2 or later)</p> <p>Microsoft .NET® Framework 1.0 (service pack 2 or later) in OS language version (See "Installing and Setting Securities for the .NET Framework" on page 32)</p> <p>256 MB RAM</p> <p>Pentium® 3 PC, 400 MHz or higher (800 MHz or higher, <i>recommended</i>)</p> <p>50 MB free disk space NOTE: 160 MB free disk space is required to install .NET framework.</p> <p>Minimum 1024 x 768 screen resolution with normal font size</p> <p>If using GPIB, one of the following libraries must be installed: Agilent IO Libraries (version L.02.00 or later), see "Installing Agilent IO Libraries" on page 35, or NI-488.2 driver, NI-VISA</p> <p>Installed GPIB IO interface card or LAN interface card (see "Interface Connections" on page 13)</p>	

802.11 WLAN

Instrument	Requirements
E4438C ESG Vector Signal Generator	Firmware revision C.03.10 or later (see page 30) One of the following baseband generator options: Option 001 (internal baseband generator with 8 Msample memory), Option 002 (internal baseband generator with 32 Msample memory), Option 601 (internal baseband generator with 8 Msample memory and digital bus capability), Option 602 (internal baseband generator with 64 Msample memory and digital bus capability, <i>recommended</i>) Option 506 (250 kHz to 6 GHz frequency range, <i>recommended to support all WLAN frequency bands</i>) Option UNJ (enhanced phase noise performance, required with Option 506) Option 005 (6 GB internal hard drive, <i>recommended</i>)
PC Requirements	
Windows XP Professional® (service pack 1 or later), Windows 2000®, or Windows NT® 4.0 (service pack 4 or later) Microsoft® Internet Explorer (4.01 service pack 2 or later) Pentium® PC, 200 MHz or higher 64 MB RAM (128 MB for Windows 2000) 50 MB free disk space Installed Agilent IO Libraries (version L.01.00 or later), see " Installing Agilent IO Libraries " on page 35 Installed GPIB IO interface card or LAN interface card (see " Interface Connections " on page 13)	

Bluetooth™

Instrument	Requirements
E4438C ESG Vector Signal Generator	Firmware revision C.02.20 or later (see page 30) One of the following baseband generator options: Option 001 (internal baseband generator with 8 Msample memory), Option 002 (internal baseband generator with 32 Msample memory), Option 601 (internal baseband generator with 8 Msample memory and digital bus capability), Option 602 (internal baseband generator with 64 Msample memory and digital bus capability, <i>recommended</i>)
PC Requirements	
Windows XP Professional® (service pack 1 or later), Windows 2000®, or Windows NT® 4.0 (service pack 4 or later) Pentium® PC, 200 MHz or higher 64 MB RAM (128 MB for Windows 2000) 50 MB free disk space Installed Agilent IO Libraries (version L.01.00 or later), see " Installing Agilent IO Libraries " on page 35 Installed GPIB IO interface card or LAN interface card (see " Interface Connections " on page 13)	

Enhanced Multitone

Instrument	Requirements
E4438C ESG Vector Signal Generator	Firmware revision C.02.02 or later (see page 30) One of the following baseband generator options: Option 001 (internal baseband generator with 8 Msample memory), Option 002 (internal baseband generator with 32 Msample memory), Option 601 (internal baseband generator with 8 Msample memory and digital bus capability), Option 602 (internal baseband generator with 64 Msample memory and digital bus capability, <i>recommended</i>)
E8267C PSG Vector Signal Generator	Firmware revision C.03.05 or later (see page 30) One of the following baseband generator options: Option 002 (internal baseband generator with 32 Msample memory), Option 602 (internal baseband generator with 64 Msample memory and digital bus capability, <i>recommended</i>) Option 520 (250 kHz to 20 GHz frequency range)
E8267D PSG Vector Signal Generator	Firmware revision C.04.02 or later (see page 30) One of the following baseband generator options: Option 601 (internal baseband generator with 8 Msample memory and digital bus capability), Option 602 (internal baseband generator with 64 Msample memory and digital bus capability) Option 005 (6 GB internal hard drive, <i>recommended</i>)
E4440A, E4443A, or E4445A PSA Spectrum Analyzer	Firmware revision A.02.04 or later (see page 31)
PC Requirements	
Windows XP Professional® (service pack 1 or later), Windows 2000®, or Windows NT® 4.0 (service pack 4 or later) Microsoft® Internet Explorer (4.01 service pack 2 or later) Pentium® PC, 200 MHz or higher 64 MB RAM (128 MB for Windows 2000) 50 MB free disk space Installed Agilent IO Libraries (version L.01.00 or later), see " Installing Agilent IO Libraries " on page 35 Installed GPIB IO interface card or LAN interface card (see " Interface Connections " on page 13)	

HSDPA over W-CDMA

Instrument	Requirements
E4438C ESG Vector Signal Generator	Firmware revision C.03.70 or later (see page 30) One of the following baseband generator options: Option 001 (internal baseband generator with 8 Msample memory), Option 002 (internal baseband generator with 32 Msample memory), Option 601 (internal baseband generator with 8 Msample memory and digital bus capability), Option 602 (internal baseband generator with 64 Msample memory and digital bus capability, <i>recommended</i>) Option 403 (calibrated noise personality, <i>required for C/N capability</i>)
PC Requirements	
<p>Windows XP Professional® (service pack 1 or later) or Windows 2000 Professional® (service pack 4 or later)</p> <p>Microsoft® Internet Explorer 5.01 or later (6.0 <i>recommended</i>)</p> <p>Microsoft .NET® Framework 1.0 (service pack 2) in OS language version (See "Installing and Setting Securities for the .NET Framework" on page 32)</p> <p>256 MB RAM (minimum) 384 MB RAM (<i>recommended</i>)</p> <p>Pentium® 3 PC, 400 MHz or higher Pentium® 4 PC, 2 GHz or higher (<i>recommended</i>)</p> <p>120 MB free disk space (100 MB for .NET framework, 20 MB for HSDPA over W-CDMA software) NOTE: 160 MB free disk space is required to install .NET framework.</p> <p>Minimum 800 x 600 screen resolution with normal font size (1024 x 768 or higher <i>recommended</i>)</p> <p>If using GPIB, one of the following libraries must be installed: Agilent IO Libraries (version L.02.01 or later), see "Installing Agilent IO Libraries" on page 35, or NI-488.2 driver, NI-VISA</p> <p>Installed GPIB IO interface card, LAN interface card, or USB/GPIB interface card (see page 13)</p>	

Noise Power Ratio (NPR)

Instrument	Requirements
E4438C ESG Vector Signal Generator	Firmware revision C.03.20 or later (see page 30) One of the following baseband generator options: Option 001 (internal baseband generator with 8 Msample memory), Option 002 (internal baseband generator with 32 Msample memory), Option 601 (internal baseband generator with 8 Msample memory and digital bus capability), Option 602 (internal baseband generator with 64 Ms memory and digital bus capability, <i>recommended</i>) Option 005 (6 GB internal hard drive, <i>recommended</i>)
E8267C PSG Vector Signal Generator	Firmware revision C.03.07 or later (see page 30) One of the following baseband generator options: Option 002 (internal baseband generator with 32 Msample memory), Option 602 (internal baseband generator with 64 Ms memory and digital bus capability, <i>recommended</i>) Option 005 (6 GB internal hard drive, <i>recommended</i>)
E8267D PSG Vector Signal Generator	Firmware revision C.04.02 or later (see page 30) One of the following baseband generator options: Option 601 (internal baseband generator with 8 Msample memory and digital bus capability), Option 602 (internal baseband generator with 64 Msample memory and digital bus capability) Option 005 (6 GB internal hard drive, <i>recommended</i>)
E4440A, E4443A, E4445A, E4446A, or E4448A PSA Spectrum Analyzer	Firmware revision A.04.05 or later (see page 31)
PC Requirements	
Windows XP Professional® (service pack 1 or later), Windows 2000® (service pack 3 or later), or Windows NT® 4.0 (service pack 6a or later) Microsoft® Internet Explorer (4.01 service pack 2 or later) Microsoft .NET® Framework 1.0 (service pack 2) in OS language version (see " Installing and Setting Securities for the .NET Framework " on page 32) 256 MB RAM Pentium® 3 PC, 400 MHz or higher (800 MHz or higher <i>recommended</i>) 120 MB free disk space (100 MB for .NET framework, 20 MB for application software) NOTE: 160 MB free disk space is required to install .NET framework. Minimum 800 x 600 screen resolution with normal font size (1024 x 768 or higher <i>recommended</i>) Installed Agilent IO Libraries (version L.02.01 or later), see " Installing Agilent IO Libraries " on page 35 Installed GPIB IO interface card, LAN interface card, or USB/GPIB interface card (see page 13)	

Pulse Building

Instrument	Requirements
E4438C ESG Vector Signal Generator	Firmware revision C.03.60 or later (see page 30) One of the following baseband generator options: Option 001 (internal baseband generator with 8 Msample memory), Option 002 (internal baseband generator with 32 Msample memory), Option 601 (internal baseband generator with 8 Msample memory and digital bus capability), Option 602 (internal baseband generator with 64 Ms memory and digital bus capability, <i>recommended</i>) Option 005 (6 GB internal hard drive, <i>recommended</i>) Option UNJ (enhanced phase noise performance, <i>recommended</i>)
E8267C PSG Vector Signal Generator	Firmware revision C.03.05 or later (see page 30) One of the following baseband generator options: Option 002 (internal baseband generator with 32 Msample memory), Option 602 (internal baseband generator with 64 Ms memory and digital bus capability, <i>recommended</i>) Option 520 (250 kHz to 20 GHz frequency range) Option 1E6 (Narrow pulse below 3.2 GHz, <i>recommended</i>) Option 005 (6 GB internal hard drive, <i>recommended</i>) Option UNR (enhanced phase noise performance, <i>recommended</i>)
E8267D PSG Vector Signal Generator	Firmware revision C.04.02 or later (see page 30) One of the following baseband generator options: Option 601 (internal baseband generator with 8 Msample memory and digital bus capability), Option 602 (internal baseband generator with 64 Msample memory and digital bus capability) Option 005 (6 GB internal hard drive, <i>recommended</i>) Option UNR (enhanced phase noise performance, <i>recommended</i>)
E4440A, E4443A, E4445A, E4446A, or E4448A PSA Spectrum Analyzer (<i>optional</i>)	Firmware revision A.03.05 or later (see page 31)
E4403B, E4408B, or E4411B ESA-L Series Spectrum Analyzer (<i>optional</i>)	Firmware revision A.09.01 or later (see page 31)
E4401B, E4402B, E4404B, E4405B, or E4407B ESA-E Series Spectrum Analyzer (<i>optional</i>)	Firmware revision A.09.01 or later (see page 31)
PC Requirements	
Windows XP Professional® (service pack 1 or later), Windows 2000® (service pack 3 or later), or Windows NT® 4.0 (service pack 6a or later) Microsoft® Internet Explorer (4.01 service pack 2 or later) Microsoft .NET® Framework 1.0 (service pack 2) in OS language version (see " Installing and Setting Securities for the .NET Framework " on page 32) 256 MB RAM Pentium® 3 PC, 400 MHz or higher (800 MHz or higher <i>recommended</i>) 120 MB free disk space (100 MB for .NET framework, 20 MB for application software) NOTE: 160 MB free disk space is required to install .NET framework. Minimum 800 x 600 screen resolution with normal font size (1024 x 768 or higher <i>recommended</i>) Installed Agilent IO Libraries (version L.02.01 or later), see " Installing Agilent IO Libraries " on page 35 Installed GPIB IO interface card, LAN interface card, or USB/GPIB interface card (see " Interface Connections " on page 13)	

S-DMB

Instrument	Requirements
E4438C ESG Vector Signal Generator	Firmware revision C.03.62 or later (see page 30) One of the following baseband generator options: Option 001 ^a (internal baseband generator with 8 Msample memory), Option 002 ^b (internal baseband generator with 32 Msample memory), Option 601 ^a (internal baseband generator with 8 Msample memory and digital bus capability), Option 602 ^c (internal baseband generator with 64 Msample memory and digital bus capability, <i>recommended</i>)
PC Requirements	
Windows 2000 Professional® (service pack 4 or later) or Windows XP Professional® (service pack 1 or later) Microsoft® Internet Explorer 5.01 or later (6.0 <i>recommended</i>) Microsoft .NET® Framework 1.0 (service pack 2 or later) in OS language version (See " Installing and Setting Securities for the .NET Framework " on page 32) Pentium PC, 400 MHz or higher (1 GHz or higher <i>recommended</i>) 1.2 GB free disk space (100 MB for .NET framework, 1.1 GB for S-DMB software) NOTE: 160 MB free disk space is required to install .NET framework. Minimum 800 x 600 screen resolution with normal font size (1024 x 768 <i>recommended</i>) 512 MB RAM (1 GB recommended) If using GPIB, one of the following libraries must be installed: Agilent IO Libraries (version L.02.01 or later), see " Installing Agilent IO Libraries " on page 35, or NI-488.2 driver, NI-VISA Installed GPIB IO interface card or LAN interface card (see " Interface Connections " on page 13)	

^aTwo super frames available with an oversample ratio (OSR) of 3.

^bEight super frames available with an OSR of 3; six super frames available with an OSR of 4.

^cTwelve super frames available.

Signal Studio Tool Kit

Instrument	Requirements
E4438C ESG Vector Signal Generator	Firmware revision C.03.72 or later (see page 30) One of the following baseband generator options: Option 001 (internal baseband generator with 8 Msample memory), Option 002 (internal baseband generator with 32 Msample memory), Option 601 (internal baseband generator with 8 Msample memory and digital bus capability), Option 602 (internal baseband generator with 64 Ms memory and digital bus capability, <i>recommended</i>) Option 005 (6 GB internal hard drive) Option 015 (wideband external I/Q, <i>required for wideband IQ</i>)
E8267C PSG Vector Signal Generator	Firmware revision C.03.75 or later (see page 30) One of the following baseband generator options: Option 002 (internal baseband generator with 32 Msample memory), Option 602 (internal baseband generator with 64 Ms memory and digital bus capability, <i>recommended</i>) Option 005 (6 GB internal hard drive) Option 015 (wideband external I/Q, <i>required for wideband IQ</i>)
E8267D PSG Vector Signal Generator	Firmware revision C.04.01 or later (see page 30) One of the following baseband generator options: Option 601 (internal baseband generator with 8 Msample memory and digital bus capability), Option 602 (internal baseband generator with 64 Ms memory and digital bus capability, <i>recommended</i>) Option 005 (6 GB internal hard drive) Option 015 (wideband external I/Q, <i>required for wideband IQ</i>)
Tektronix® AWG520	Program version 4.0 Program build August 30, 2002 OS version 3.0 OS build August 30, 2002 Lowpass coaxial filters: Mini-Circuits® BLP-150 (300 MHZ RF BW) through BLP-450 (800 MHZ RF BW)
E4440A PSA Series Spectrum Analyzer	Firmware revision A.05.06 or later (see page 31)
E4440B ESA Series Spectrum Analyzer	Firmware revision A.07.05, or A.11.00 with Option B72 (see page 31)
PC Requirements	
Windows XP Professional® (service pack 1 or later), Windows 2000® (service pack 3 or later) Microsoft .NET® Framework 1.1 in OS language version (see " Installing and Setting Securities for the .NET Framework " on page 32) Minimum 256 MB RAM (512 <i>recommended</i>) Pentium® family PC, 800 MHz or higher 120 MB free disk space (100 MB for .NET framework, 20 MB for application software) NOTE: 160 MB free disk space is required to install .NET framework. Minimum 1024 x 768 screen resolution with normal font size Installed Agilent IO Libraries (version M.01.01 or later), see " Installing Agilent IO Libraries " on page 35 Installed GPIB IO interface card, LAN interface card, or USB/GPIB interface card (see " Interface Connections " on page 13)	

TD-SCDMA (TSM)

Instrument	Requirements
E4438C ESG Vector Signal Generator	Firmware revision C.03.30 or later (see page 30) One of the following baseband generator options: Option 001 (internal baseband generator with 8 Msample memory), Option 002 (internal baseband generator with 32 Msample memory), Option 601 (internal baseband generator with 8 Msample memory and digital bus capability), Option 602 (internal baseband generator with 64 Msample memory and digital bus capability, <i>recommended</i>), Option 604 (calibrated noise personality, <i>necessary for low noise capability</i>)
PC Requirements	
<p>Windows XP Professional® (service pack 1 or later) or Windows 2000® (service pack 3 or later)</p> <p>Microsoft® Internet Explorer (4.01 service pack 2 or later)</p> <p>Microsoft .NET® Framework 1.0 (service pack 2 or later) in OS language version (See "Installing and Setting Securities for the .NET Framework" on page 32)</p> <p>128 MB RAM (256 MB <i>recommended</i>)</p> <p>Pentium® family PC, 400 MHz or higher (800 MHz or higher, <i>recommended</i>)</p> <p>120 MB free disk space (100 MB for .NET framework, 20 MB for TD-SCDMA software) NOTE: 160 MB free disk space is required to install .NET framework.</p> <p>Minimum 800 x 600 screen resolution with normal font size (1024 x 768 <i>recommended</i>)</p> <p>If using GPIB, one of the following libraries must be installed: Agilent IO Libraries (version L.01.00 or later), see "Installing Agilent IO Libraries" on page 35, or NI-488.2 driver, NI-VISA</p> <p>Installed GPIB IO interface card or LAN interface card (see "Interface Connections" on page 13)</p>	
<p>NOTE The Signal Studio for TD-SCDMA (TSM) application is not supported on a networked drive.</p>	

2 Interface Connections

This chapter covers the following:

- [Using the GPIB Interface](#)
 - [Setup](#) on page 14
 - [Connections](#)
 - ["Connecting the GPIB Interface"](#) on page 15
 - ["Connecting the USB/GPIB Interface"](#) on page 16
 - [Verification](#) on page 17
 - [Troubleshooting](#) on page 19
- [Using the LAN Interface](#)
 - [Setup](#) on page 22
 - [Connection](#) on page 24
 - [Verification](#) on page 26
 - [Troubleshooting](#) on page 27

Using the GPIB Interface

The software can be configured to use the general purpose interface bus (GPIB) connection for instrument control.

The GPIB and its associated interface protocols are defined in the ANSI/IEEE standard 488.1-1987 and ANSI/IEEE standard 488.2-1992. For more information on these standards, refer to the IEEE website (<http://www.ieee.org>).

1. Install the GPIB interface card and the I/O library supplied with the card.

Follow the installation instructions supplied by the GPIB interface card manufacturer.

- Installation of an Agilent GPIB interface card usually includes installation of the Agilent IO Libraries.
- Installation of a National Instrument's GPIB interface card usually includes installation of the NI-VISA libraries.

The difference between Agilent VISA (which is part of the Agilent IO Libraries) and NI-VISA is the lower level libraries used: SICL and NI-488.2 respectively. The following table provides information on the supported GPIB interface cards.

Interface Card	Operating System	Agilent IO Libraries	Backplane/BUS	Max I/O	Buffering
82350A for PCI bus computers	Windows 98/2000 NT/Me XP Professional	Agilent VISA/SICL For the specific version, refer to Chapter 1 .	PCI 32 bit	750 kbytes/s	Built-in
National Instruments PCI-GPIB		NI-VISA version 1.5 or later	PCI 32 bit	1.5 Mbytes/s	NA
National Instruments PCMCIA-GPIB			PCMCIA		

2. Configure the GPIB Card.

For the Agilent 82350 GPIB Interface

- Run the IO Config program: Press **Start > Programs > Agilent IO Libraries > IO Config**.

For the National Instruments GPIB Interface

- a. Run the NI-488.2 Getting Started Wizard to verify the installation. If necessary, refer to National Instruments documentation for help with the installation.
- b. Install the Agilent IO Libraries as described on [page 35](#).

Make sure that the **2. SICL and side-by-side Agilent VISA Installation** is selected during the Agilent IO Libraries installation.

- c. Run the IO Config program. The IO Config program is included with the Agilent IO Libraries download and is located in the **Start > Programs > Agilent IO Libraries > IO Config** directory.

Connections

Connecting the GPIB Interface

For a information on Agilent GPIB cables, refer to <http://www.agilent.com/find/gpib>.

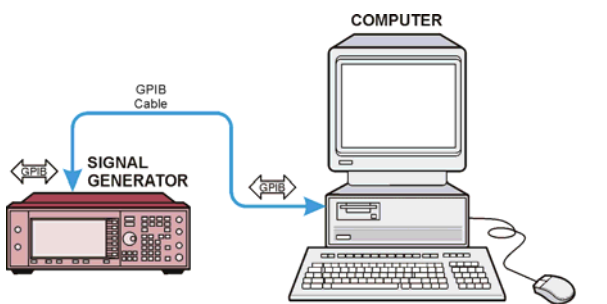
Cable	Connection from...	to...
Basic Configuration		
GPIB interface cable	Signal generator GPIB connector	PC GPIB connector
Using a Spectrum Analyzer		
Low-loss, high frequency RF cable ^a	Signal generator RF output	Spectrum analyzer input
Two GPIB interface cables	Signal generator GPIB connector PC GPIB connector	Spectrum analyzer
BNC cable	Signal generator 10 MHz IN	Spectrum analyzer 10 MHz OUT

^aUsed to perform a signal generator calibration.

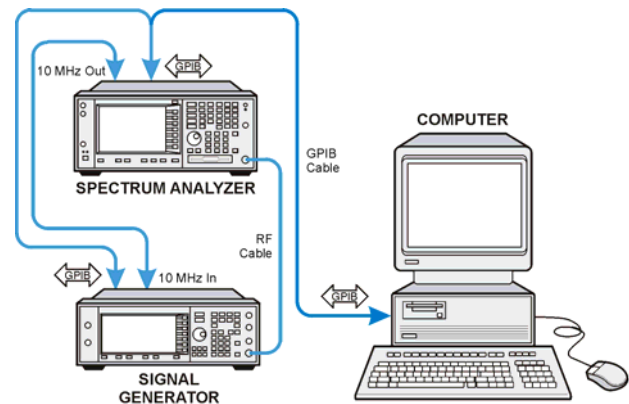
To use the spectrum analyzer's 10 MHz reference:

On the spectrum analyzer, select **System > Reference > Freq Ref Int** and set **10 MHz Out** to On.

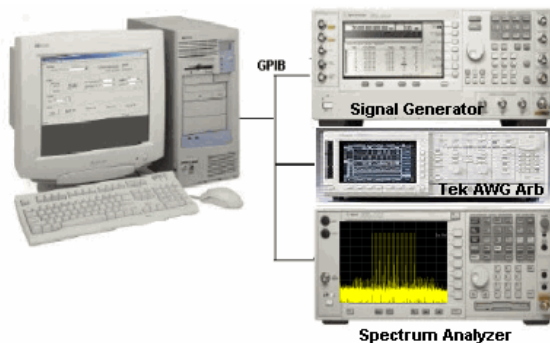
The signal generator automatically detects and uses the external reference.



Basic Configuration: A Signal Generator and a PC



Using a Spectrum Analyzer



Using a Spectrum Analyzer and a Tektronix Arbitrary Waveform Generator

Connecting the USB/GPIB Interface

The Agilent 82357A USB/GPIB Interface provides a direct connection from the USB port on a laptop or desktop PC to GPIB instruments. Because the 82357A is a standard Plug and Play device, it is automatically detected and configured when connected to a computer's USB port.

Refer to [Chapter 1](#) to determine which software products can use the USB/GPIB interface card.

For information on Agilent GPIB cables, refer to <http://www.agilent.com/find/gpib>.

For information on the Agilent 82357A USB/GPIB cable, refer to <http://www.agilent.com/find/82357>.

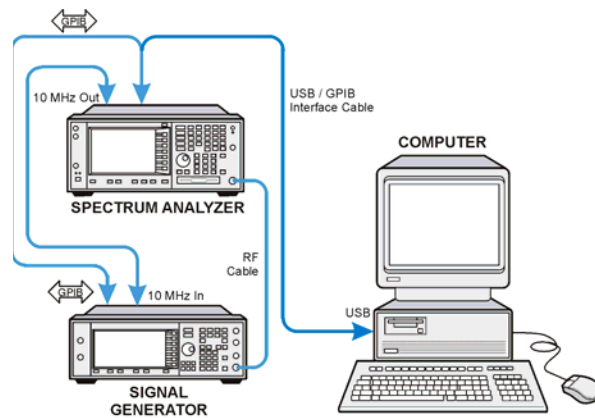
Cable	Connection from...	to...
82357A USB/GPIB interface cable	Signal generator GPIB connector	PC USB connector
Low-loss, high frequency RF cable ^a	Signal generator RF output	Spectrum analyzer input
GPIB cable	Signal generator	Spectrum analyzer
BNC cable	Signal generator 10 MHz IN	Spectrum analyzer 10 MHz OUT

^aUsed to perform a signal generator calibration.

To use the spectrum analyzer's 10 MHz reference:

On the spectrum analyzer, select **System > Reference > Freq Ref Int** and set **10 MHz Out** to **On**.

The signal generator automatically detects and uses the external reference.



NOTE USB/GPIB is not supported for NT.

Verification

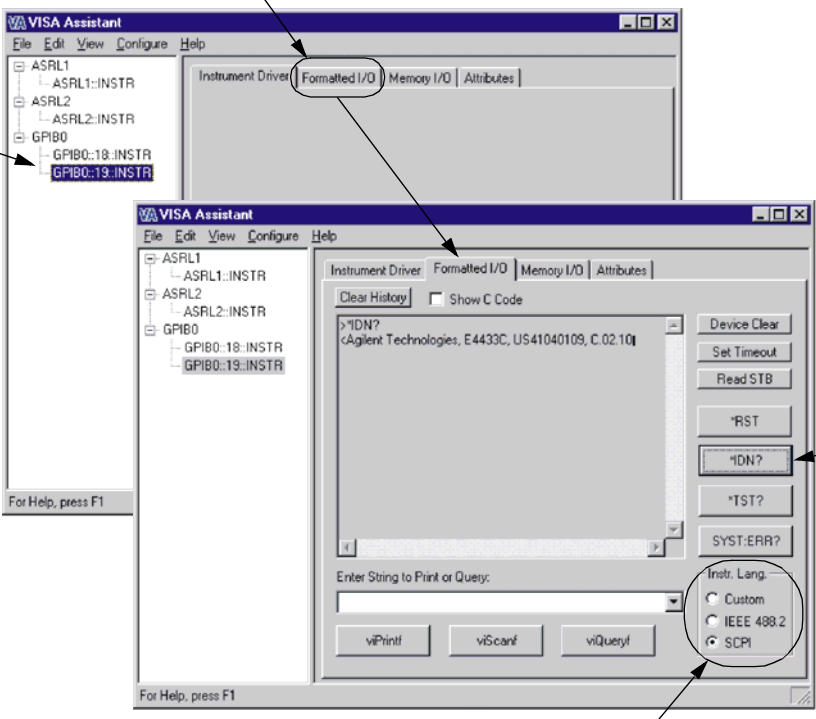
Depending on the type of GPIB interface card installed on your computer, you can use either the Agilent VISA Assistant (described below) or the NI-488.2 Getting Started Wizard (described on [page 18](#)) to verify the GPIB installation.

Agilent 82350 GPIB Interface Verification

1. Connect the equipment as shown on [page 15](#) or [page 16](#).
2. Click on the blue IO icon in the task bar. The icon is located at the lower right of the PC display.
3. Click **Run VISA Assistant**.

NOTE If a **Progress** window appears with a **Searching for knowledge base** title and a long time delay occurs (a minute or more), refer to "[Communication Time Problems](#)" on page 27.

5. Click the **Formatted I/O** tab.



4. Click the GPIB address for the signal generator.

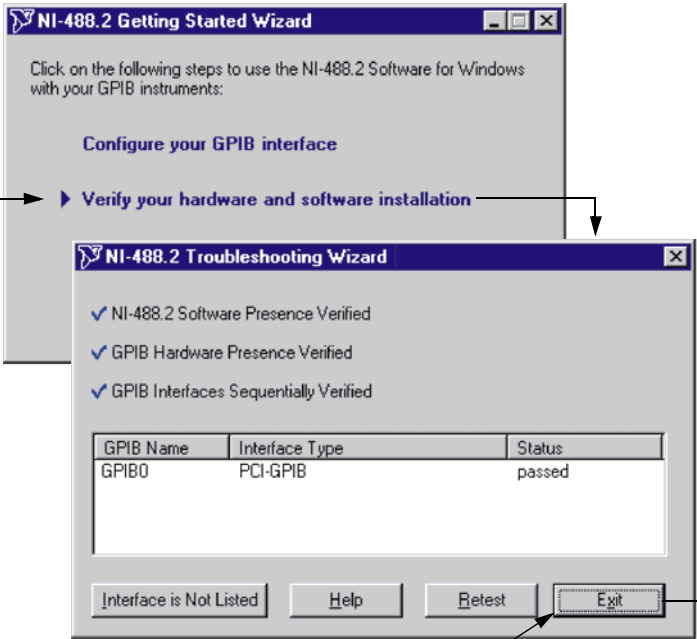
7. Click ***IDN?**
 The response should be similar to that shown in this figure.

6. Select **SCPI**.

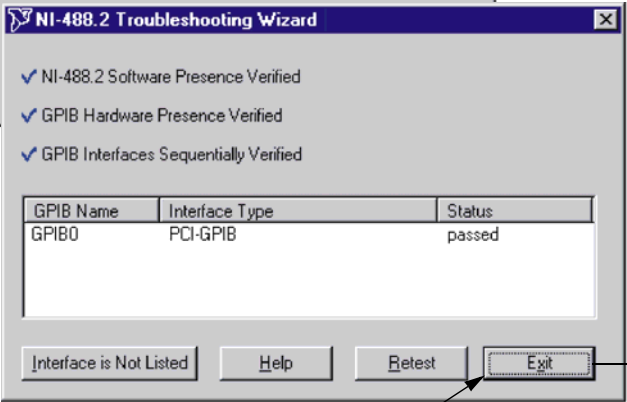
NI-GPIB Interface Verification

1. Connect the equipment as shown on [page 15](#) or [page 16](#).
2. To open the Getting Started Wizard, click **Start > Programs > National Instruments NI-488.2 > Getting Started Wizard**.

3. Click **Verify...** →



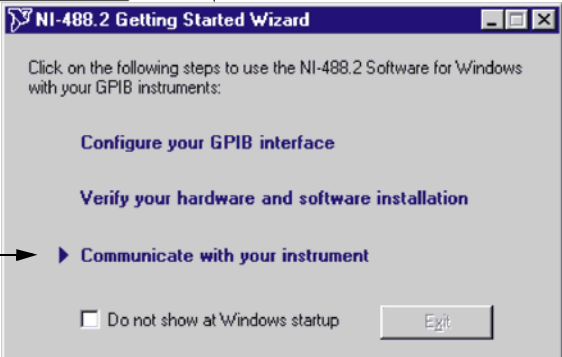
4. After the NI-GPIB interface verifies, click **Exit**.



GPIB Name	Interface Type	Status
GPIB0	PCI-GPIB	passed

5. Click **Communicate...** →

This checks for instruments connected to the GPIB interface.
Follow the instructions in each window.



6. When finished, click **Exit**.

Troubleshooting

If you experience problems communicating with or controlling instruments over the GPIB, perform the following steps:

1. Check to see that the instrument you are trying to communicate with is turned on.
2. Check to see that the GPIB cable connections are securely attached to the instrument and PC.
3. Verify that the GPIB address of the instrument is the same as that set in the **Visa Assistant** window, as shown on [page 17](#).
4. Restart the computer. You must restart the PC to initialize the GPIB configuration.
5. Verify that the instrument you are trying to communicate with is using the SCPI (Standard Commands for Programming Instruments) language. For example, the signal generator supports 8656B, 8657A/B languages as well as SCPI. Refer to the instrument's manual for information on available languages and how to select the SCPI language.

Creating and Editing the *intfcfg.ini* File

If the Agilent IO Config utility did not detect the presence of a configured NI-488.2 GPIB interface, you can override the default search algorithm and directly specify this interface by creating and editing the *intfcfg.ini* file.

You must create the *intfcfg.ini* file. It is not installed during the Agilent IO Libraries configuration. If you have not previously created the *intfcfg.ini* file, you can create it by copying the sample *intfcfg.txt* file to *intfcfg.ini*. The file is located in the *intfcfg* subdirectory under the Agilent IO Libraries installation directory:

C:\Program Files\Agilent\IO Libraries\intfcfg\intfcfg.txt (if you used the default location).

NOTE If you are using Windows explorer to create *intfcfg.ini*, make sure the **Hide File Extensions** is not set. If it is set, you will create the file *intfcfg.ini.txt*, which will not work.

To edit the *intfcfg.ini* file, perform the following steps:

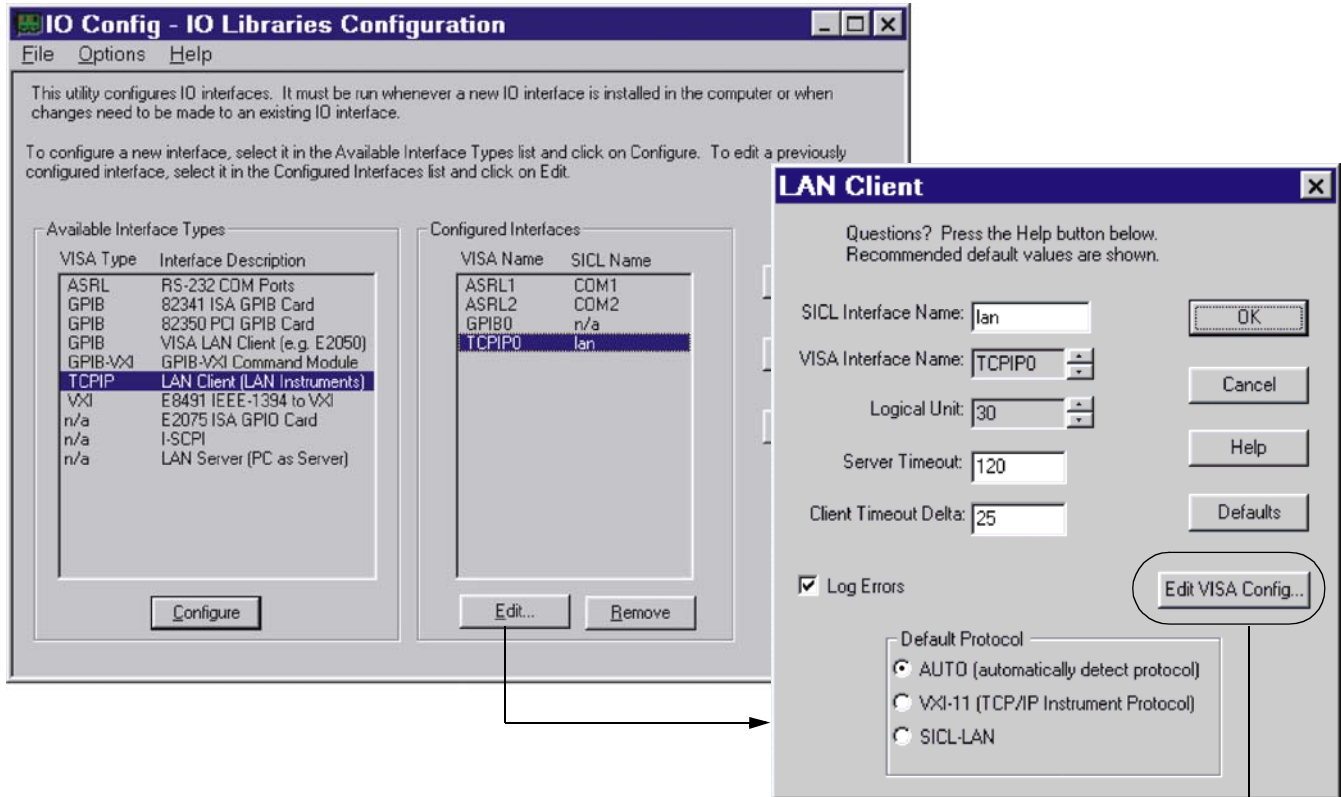
1. Make a backup copy of the *intfcfg.ini* file.
2. Locate the [*CfgNi488*] section in the *intfcfg.ini* file.
3. Remove the leading semicolon from the appropriate *GPIBn=yes* line to force IO Config to recognize the NI-488.2 GPIB interface. Uncomment only the lines for which you have a configured NI-488.2 GPIB interface.
4. Save the modified *intfcfg.ini* file.
5. Run the Agilent IO Config utility. The GPIB NI-488.2 interface should now appear in the **Available Interface Types** area of the **IO Config-IO Libraries Configuration** window.

Communication Time Problems

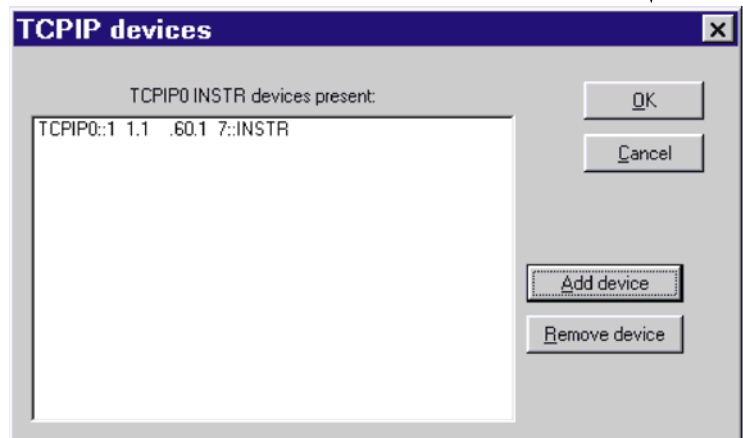
If you experience a long delay (a minute or more) when trying to run the software, there might be an unresolved instrument IP address configured in the IO Config program. An unresolved IP address can affect GPIB communication. To check for this, perform the following steps:

1. Go to "Using the LAN Interface" on page 22 and perform steps 1 through 5. Leave the IO Config-IO Libraries Configuration window (shown in Figure 2-1) open.
2. In the IO Config-IO Libraries Configuration, window highlight **TCPIP0 lan**, and click **Edit > Edit Visa Config**.

Figure 2-1 Editing the Visa Configuration



3. Verify that any device listed in the **TCPIP devices** window is turned on and that the IP address listed is correct. If any device address is incorrect or the instrument is off or no longer present on the interface:
 - a. Click on the device address listed in the TCPIP0 INSTR devices present section of the **TCPIP devices** window.
 - b. Click the **Remove device** button.
4. Click the **OK** button on successive forms to back out of the IO Config program.



If communication problems persist, you may need to edit the hosts file on your computer:

1. Using a text editor such as Notepad, open the hosts file (in *C:\WINNT\SYSTEM32\drivers\etc*).
2. Add the IP address for instruments you want to use at the bottom of the file (refer to the example hosts file, below).
3. Save the hosts file and close the text editor.

WARNING Do not use **Save As** when saving the hosts file. The hosts file does not have a file extension!

The following is an example of a Windows hosts file with references to the signal generator and spectrum analyzer IP addresses.

```
# Copyright (c) 1993-1999 Microsoft Corp.
#
# This is a sample HOSTS file used by Microsoft TCP/IP for Windows.
#
# This file contains the mappings of IP addresses to host names. Each
# entry should be kept on an individual line. The IP address should
# be placed in the first column followed by the corresponding host name.
# The IP address and the host name should be separated by at least one
# space.
#
# Additionally, comments (such as these) may be inserted on individual
# lines or following the machine name denoted by a '#' symbol.
#
# For example:
#
# 102.54.94.97 rhino.acme.com    # source server
# 38.25.63.10 x.acme.com      # x client host

<xxx.xxx.xxx.xxx> localhost
<xxx.xxx.xxx.xxx> <signal generator hostname>
<xxx.xxx.xxx.xxx> <spectrum analyzer hostname>
```

NOTE If an instrument IP changes, you must update this file.

Using the LAN Interface

Many software products can be configured to use the LAN interface for instrument control (see [Chapter 1](#)). You can make a LAN connection either through a local network server, or directly between the PC and an instrument (crossover LAN connection).

The LAN and its associated interface protocols are defined in the IEEE standard 802. For information on this standard, refer to the IEEE website (<http://www.ieee.org>). If you wish to use the LAN interface, the following are required:

- A local area network (LAN) interface card. Most computers have a LAN interface card as part of the hardware configuration. If your computer does not have a LAN card, you can get one from Agilent Technologies or another manufacturer.
- If connecting to the LAN through a local server: a 10Base-T cable for the PC and one for each instrument.
or
If connecting the PC directly to one instrument: one 10Base-T crossover cable.
or
If connecting the PC directly to more than one instrument: one 10Base-T crossover cable, and a 10Base-T cable each instrument, and a 10Base-T hub.
- If required for the software (see [Chapter 1](#)), the Agilent IO libraries (installation is described on [page 35](#)).

Configuring the LAN for the Agilent IO Libraries

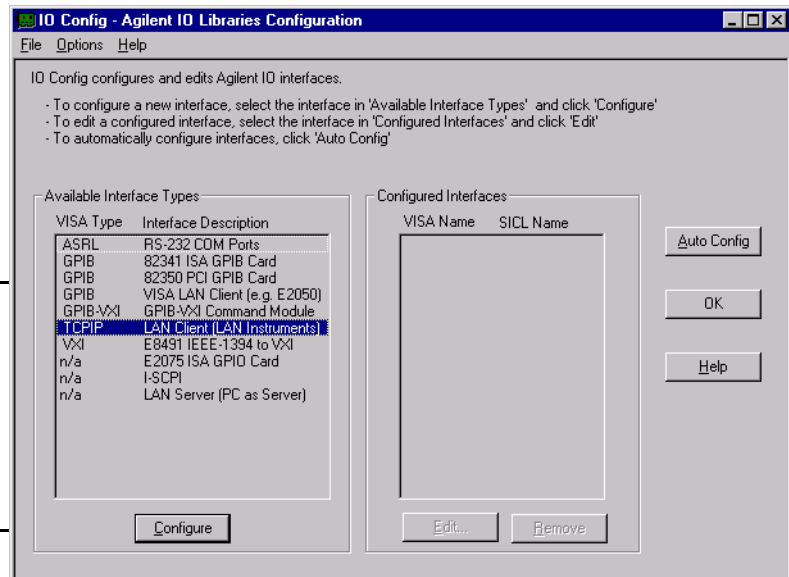
Use the following steps to configure the LAN interface:

1. Run the IO Config program:
Click **Start > Programs > Agilent IO Libraries > IO Config**.

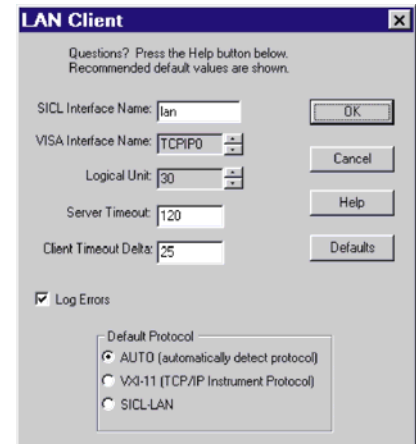
The IO Config - Agilent IO Libraries Configuration window (shown at right) opens.

2. From the **Available Interface Types** list, click **TCPIP LAN Client (LAN Instruments)**.

NOTE Because the list of interface types depends on the interfaces installed on the PC, the list you see may differ from the list shown. Simply make the selections described in this procedure.



3. Click **Configure**. The LAN Client window appears, as shown to the right.
4. In the **Default Protocol** area, select **AUTO (automatically detect protocol)**.
5. In the **LAN Client** window, click **OK**.
6. To finish the LAN interface configuration, click **OK** in the IO Config - Agilent IO Libraries Configuration window.



Connections

Either connect the PC and any other instruments you wish to use through a local server (LAN network), as shown in [Figure 2-2](#), or connect directly to the PC as shown in [Figure 2-3](#).

Figure 2-2 Connecting to an Existing Network

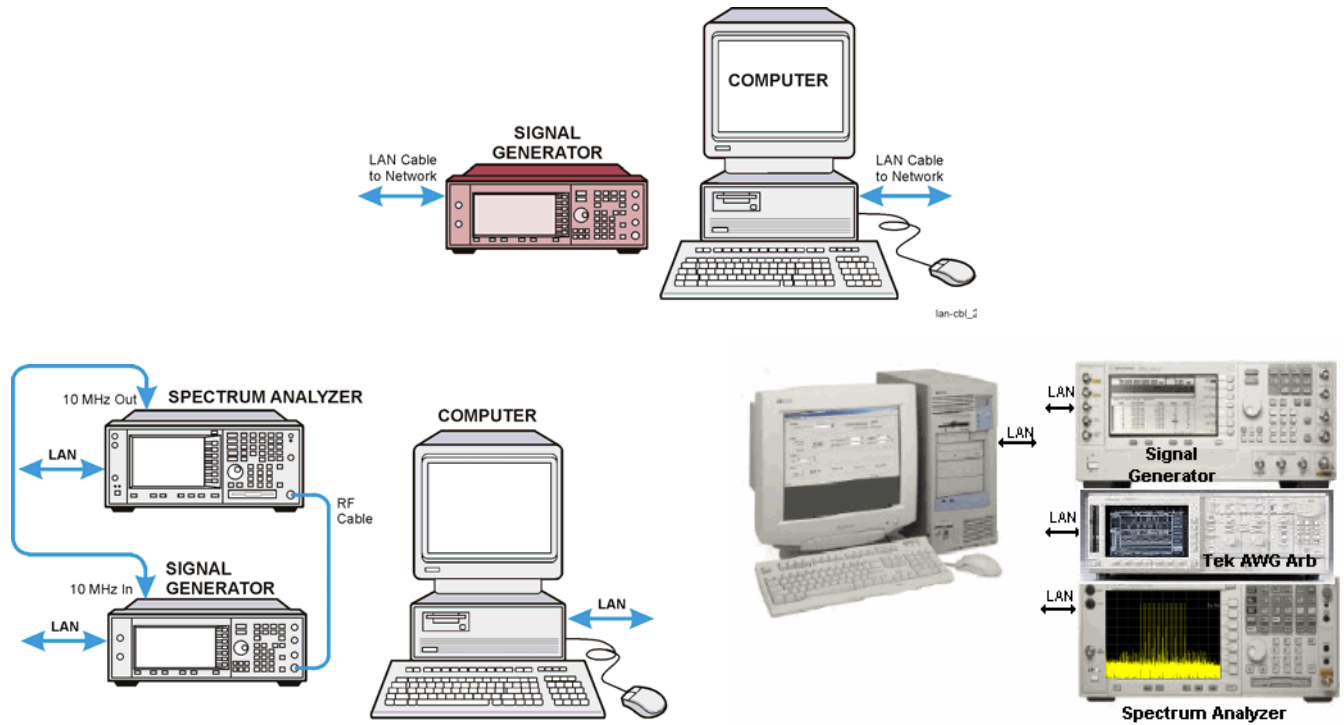
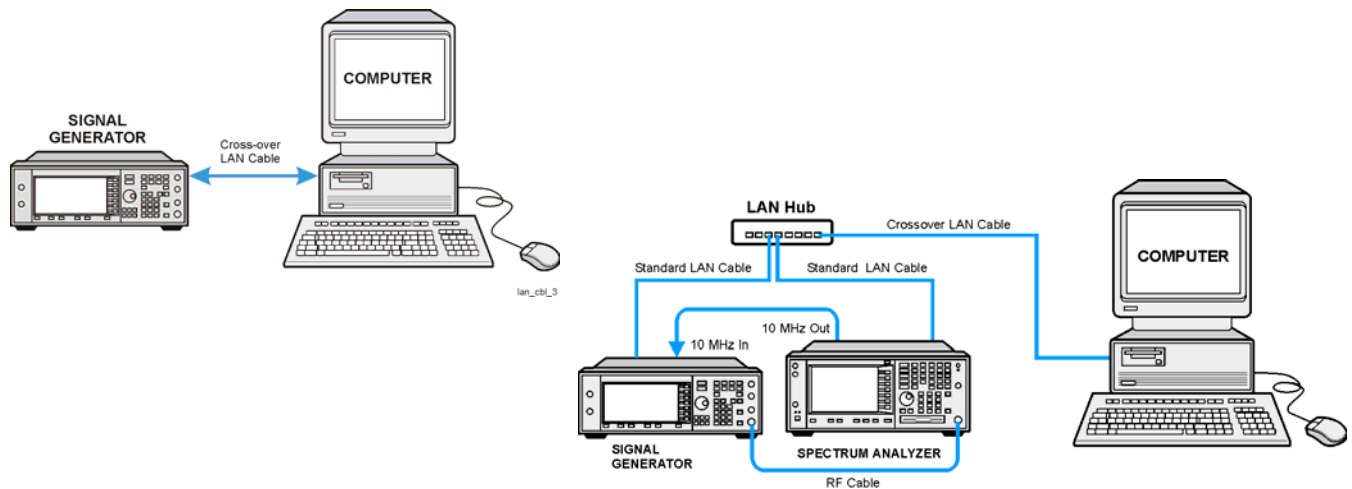


Figure 2-3 Connecting Directly Between the PC and other Instruments



Configuring for a Crossover LAN Connection

Configuring the PC

1. Select **Start > Setting > Networks and Dial-up Connections > Local Area Connection** (from the Network and Dial-up Connections window).
The Local Area Connection Status dialog box appears. You can also access the Networks and Dial-up Connections window from the Control Panel.
2. In the Local Area Connection Status dialog box, click **Properties**.
The Local Area Connection Properties dialog box appears.
3. In the Local Area Connection Properties dialog box, select the **Internet Protocol (TCP/IP)** radio selection, ensure that the check box remains checked.
4. Click the **Properties** button.
5. Select the **Use the following IP address** option (radio selection).
6. Enter **1** once for each of the four areas that make up the IP address. After your entries, the IP address should show 1.1.1.1
7. Click the Subnet mask entry field; an address appears.
8. Click **OK > OK** (on the Local Area Connection Properties dialog box)
9. In the Local Area Connection Status dialog box, click **Disable**.
10. In the Network and Dial-up Connections window, double-click **Local Area Connection**. The status changes from Disabled to Enabled.

NOTE To reconfigure the PC for the LAN, perform the following steps:

1. Repeat steps 1–4.
 2. Select the **Obtain an IP address automatically** option.
 3. Repeat steps 8–10.
-

Configuring Instruments

Signal Generator 1. Press **Utility > GPIB/RS-232 LAN > LAN Setup > IP Address**

2. Record the current IP address.
3. Enter **1 > . > 1 > . > 1 > . > 2** as the new IP address.
4. Press **Enter > Proceed with Reconfiguration > Confirm Change (Instrument will reboot)**.

The signal generator reboots, completing the LAN reconfiguration.

Spectrum Analyzer 1. Press **System > Config I/O > IP Address**

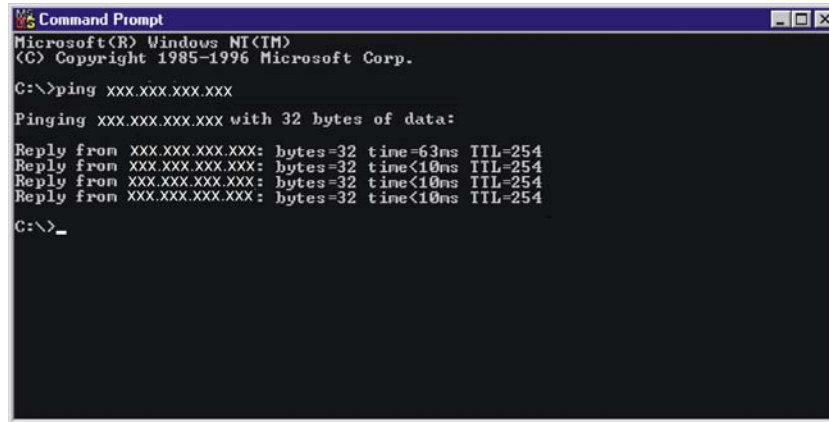
2. Record the current IP address.
3. Enter **1 > . > 1 > . > 1 > . > 3** as the new IP address.
4. Press **Enter**.

The PSA LAN configuration is now complete.

Verification

To verify LAN communication, use the ping program available on your computer. Go to Start > Programs > MSDOS Command Prompt.

At the C:\> prompt, enter ping <IP address> (where <IP address> is the IP address of the signal generator). If the ping program response is a “Reply” as shown in the following figure, the IP address is correct, and communication can be established between the PC and the signal generator. If not, refer to “[Troubleshooting](#).”



```
Microsoft Windows [Version 5.00.4779.01]
(c) Copyright 1985-1996 Microsoft Corp.

C:\>ping xxx.xxx.xxx.xxx

Pinging xxx.xxx.xxx.xxx with 32 bytes of data:

Reply from xxx.xxx.xxx.xxx: bytes=32 time=63ms TTL=254
Reply from xxx.xxx.xxx.xxx: bytes=32 time<10ms TTL=254
Reply from xxx.xxx.xxx.xxx: bytes=32 time<10ms TTL=254
Reply from xxx.xxx.xxx.xxx: bytes=32 time<10ms TTL=254

C:\>_
```

Troubleshooting

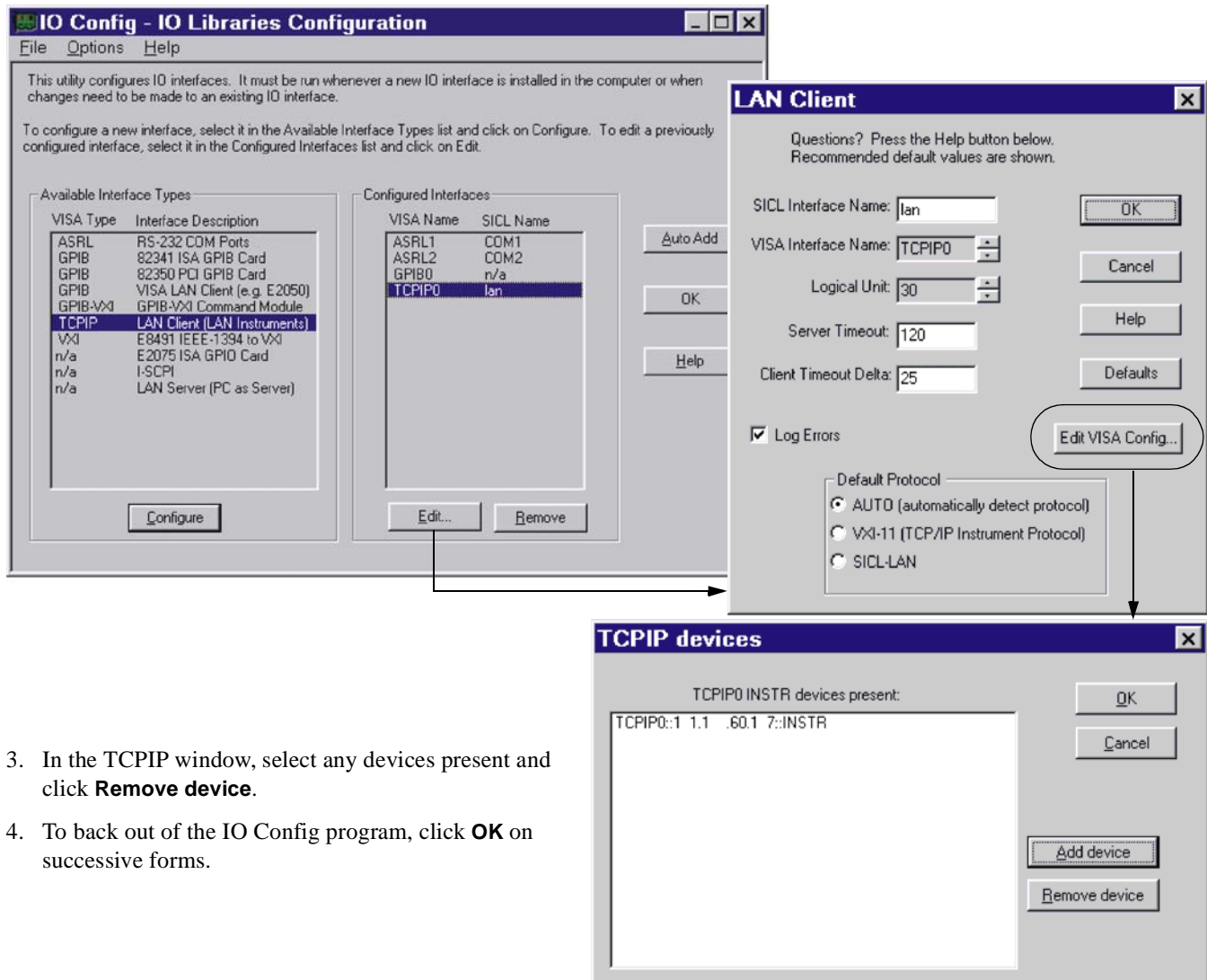
1. Ensure that the IP address of the signal generator is the same as that used in the ping program.
2. Ensure that the 10Base-T cable used is appropriate (see "Using the LAN Interface" on page 22).
3. If the ping program responds with a Request timed out message, the IP address might not be correct. Contact your IT department for further help.

Communication Time Problems

If you experience a long delay (a minute or more) when trying to run the software, there might be an unresolved instrument IP address configured in the IO Config program. An unresolved IP address can affect communication. To check for this, perform the following steps:

1. Go to "Using the LAN Interface" on page 22 and perform steps 1 through 5. Leave the IO Config-IO Libraries Configuration window (shown in Figure 2-4) open.
2. In the IO Config-IO Libraries Configuration window, highlight **TCPIP0 lan**, and click **Edit > Edit Visa Config**.

Figure 2-4 Editing the Visa Configuration



3. In the TCPIP window, select any devices present and click **Remove device**.
4. To back out of the IO Config program, click **OK** on successive forms.

If communication problems persist, *and* you are using either a cross-over cable (as shown in [Figure 2-3](#) on page 24) or a hub, you must add items to the computer's hosts file. For applications that use Agilent IO Library, when each connection is initialized, the library tries to find the instrument's IP address in the dynamic name server (DNS). When the signal generator is connected directly to the PC, the library cannot find the DNS, but continues to look for it.

The hosts file on the PC acts as a DNS; if the instrument IP is in this file, the IO Library can find it.

1. Using a text editor such as Notepad, open the hosts file (in `C:\WINNT\SYSTEM32\drivers\etc`).
2. Add the IP address for instruments you want to use at the bottom of the file (refer to the example hosts file, below).
3. Save the host file and close the text editor.

WARNING Do not use **Save As** when saving the hosts file. The hosts file does not have a file extension!

The following is an example of a Windows hosts file with references to the signal generator and spectrum analyzer IP addresses.

```
# Copyright (c) 1993-1999 Microsoft Corp.
#
# This is a sample HOSTS file used by Microsoft TCP/IP for Windows.
#
# This file contains the mappings of IP addresses to host names. Each
# entry should be kept on an individual line. The IP address should
# be placed in the first column followed by the corresponding host name.
# The IP address and the host name should be separated by at least one
# space.
#
# Additionally, comments (such as these) may be inserted on individual
# lines or following the machine name denoted by a '#' symbol.
#
# For example:
#
# 102.54.94.97 rhino.acme.com # source server
# 38.25.63.10 x.acme.com # x client host

<xxx.xxx.xxx.xxx> localhost
<xxx.xxx.xxx.xxx> <signal generator hostname>
<xxx.xxx.xxx.xxx> <spectrum analyzer hostname>
```

NOTE If an instrument IP changes, you must update this file.

3 Firmware and Software

This chapter covers the following:

- ["Downloading Agilent PSG or ESG Signal Generator Firmware"](#) on page 30
- ["Downloading Agilent PSA or ESA Spectrum Analyzer Firmware"](#) on page 31
- ["Installing and Setting Securities for the .NET Framework"](#) on page 32
- ["Installing Agilent IO Libraries"](#) on page 35
- [Installing Signal Studio Software and the Signal Generator License Key](#)
 - ["Installing the Software"](#) on page 36
 - ["Loading the License Key"](#) on page 36

Downloading Agilent PSG or ESG Signal Generator Firmware

CAUTION Failure to follow this procedure may affect the signal generator's compatibility with other software applications.

You may need to upgrade the firmware in your signal generator to run the software (see [Chapter 1](#)). Use the following steps to load the latest version of firmware:

1. Go to <http://www.agilent.com/find/upgradeassistant>.
2. Click the **PSG/ESG Upgrade Assistant** and install the program.
3. Click the latest version of firmware for your signal generator model.
4. Click **Enhancements, Issues Resolved, and Hardware Compatibility**, and check the compatibility information for the firmware release that you wish to download. If there is a compatibility problem, contact Agilent Technologies for assistance: <http://www.agilent.com/find/assist>.
5. If there are no compatibility problems, return to the firmware page and click the firmware update to place the firmware files in the Upgrade Assistant folder.
6. Run the Upgrade Assistant and follow the program prompts.

If you would like more information, click **PSG/ESG Firmware Upgrade Guide**.

Downloading Agilent PSA or ESA Spectrum Analyzer Firmware

CAUTION Failure to follow this procedure may affect the spectrum analyzer's compatibility with other software applications.

You may need to upgrade the firmware in your signal generator to run the software (see [Chapter 1](#)). Use the following steps to load the latest version of firmware:

1. Go to <http://www.agilent.com/find/spectrumanalyzer>.
2. In the Key Library Information, click **Software & Firmware Downloads**.
3. Select your spectrum analyzer model.
4. Click the Firmware Upgrade selection.
5. In the Documents & Downloads area, click the Upgrade Documentation selection.
6. Read and follow the directions in the documentation.

Installing and Setting Securities for the .NET Framework

Installing the .NET Framework

NOTES

You must have administrator privileges on your PC before you can install the .NET Framework.

You must have .NET Framework 1.0 installed. You can have .NET Framework versions 1.0 and 1.1 installed at the same time.

If you receive the error message “Unable to Locate DLL” while loading the software, install .NET Framework 1.0. If you have already installed .NET Framework 1.0, a re-installation of the .NET Framework should resolve the error.

1. On the Microsoft website, go to the SDKs, Redistributables & Service Packs page:
<http://msdn.microsoft.com/netframework/downloads/updates/>.
2. Download and install version 1.0 of the .NET Framework.
3. Download and install the .NET Framework 1.0 Service Pack 2.

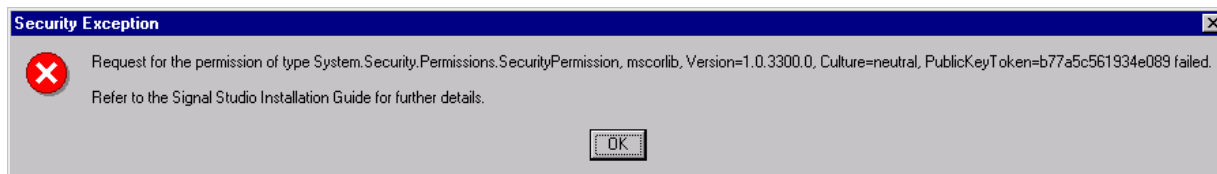
Setting Securities

If the program is installed on a shared network drive, you may not be able to run it because of the default security setting on most intranets. To run the software from a shared drive, you must adjust the security setting to grant more permissions to the local intranet.

for details on setting the security level in Windows NT, see [page 33](#).

For details on setting the security level in Windows 2000 and Windows XP Professional, see [page 34](#).

If you have installed the .NET Framework on your C:\ drive and you get the following security exception when you try to open the software, you must adjust the security level on your computer. Use the procedures indicated above, but select **My Computer** instead of **Local Intranet**.

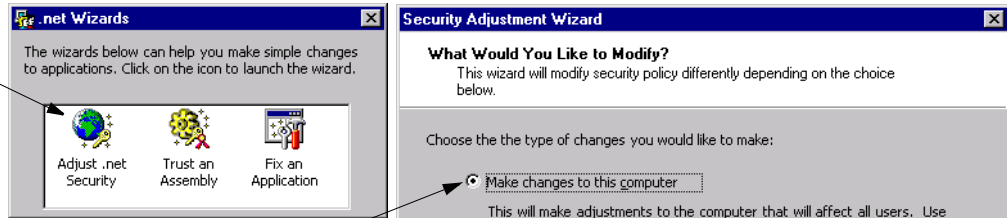


NOTE

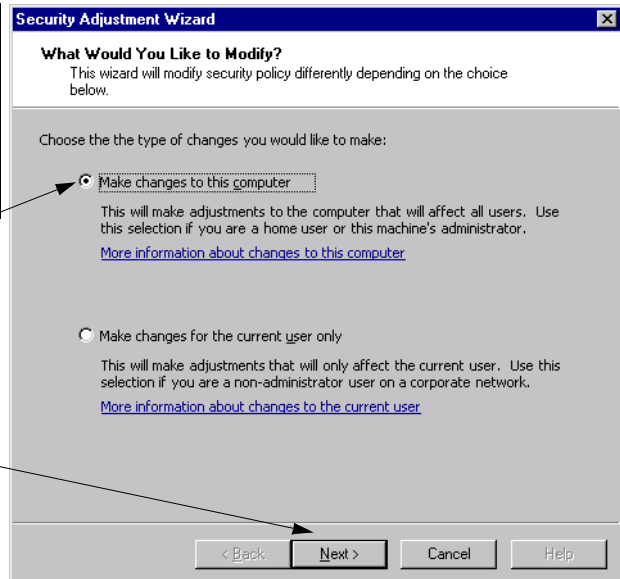
For more details on .NET and security settings, go to <http://www.microsoft.com>.

Windows NT

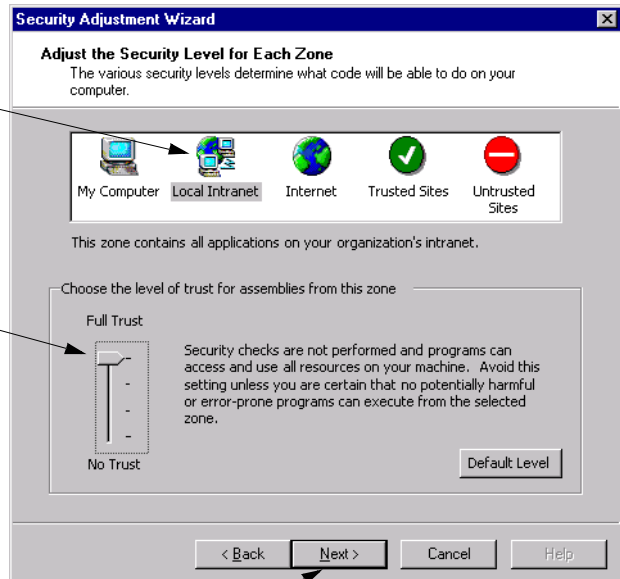
1. To open the **.net Wizards** window, select **Start > Programs > Administrative Tools > Microsoft .NET Framework Wizards**
2. To open the **Security Adjustment Wizard**, select **Adjust .net Security**



3. Select **Make changes to this computer**

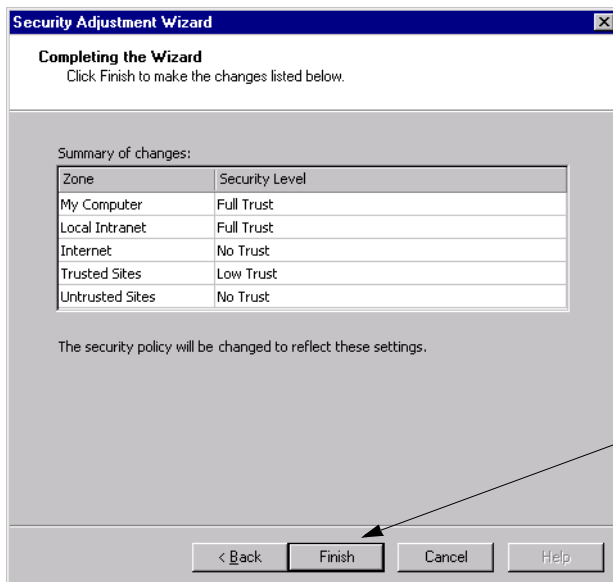


4. Click **Next >**



5. Select the **Local Intranet**

6. Move the slider up one position



7. Click **Next >**

8. Click **Finish**

Windows 2000 and Windows XP Professional

1. Open the Control Panel:
Select: **Start > Settings > Control Panel**
2. Open the .NET Framework Configuration tool:
In Windows 2000, select:
Administrative Tools > Microsoft .NET Framework Configuration
In Windows XP, select:
Performance and Maintenance > Administrative Tools > Microsoft .NET Framework Configuration
3. Select **Expand Runtime Security Policy > Machine > Code Groups > All_code**
4. Select **LocalIntranet_Zone**.
5. Click the **Edit code group properties** link.
6. Select the **Permission set** tab.
7. In the **Permission set** drop-down list, select **Full Trust**, then click **OK**.

Installing Agilent IO Libraries

Use the latest version of Agilent IO Libraries, or at least the version listed for your software product in [Chapter 1](#). Agilent IO Libraries are included with most Agilent interface products, or you can download Agilent IO Libraries from the Agilent website free of charge:

1. Go to <http://www.agilent.com/find/iolib>.
2. Fill out the Agilent Developer Network (ADN) registration information and click **Submit**.
3. In the **Software: Instrument IO Libraries** area, click **IO Libraries**.
4. From the **Downloads** area, select the latest Agilent IO Libraries version and follow the installation procedure.

If you have problems with the installation, or if you want to customize the installation, refer to the *Agilent IO Libraries Installation and Configuration Guide*, also available from the **Downloads** area.

Installing Signal Studio Software and the Signal Generator License Key

Installing the Software

1. Go to the Agilent Technologies website: <http://www.agilent.com/find/signalstudio>.
2. Click the **Signal Studio Software** link for the signal generator you are using.
3. Click the link for the software you would like to install.
4. On the software application page, click the program/utility link and follow the download instructions.

NOTE The Signal Studio for TD-SCDMA (TSM) application is not supported on a network drive.

Loading the License Key

While you can download the software for viewing, you must have a license key before you can use an ESG or PSG signal generator with the software. To purchase a license key, contact your sales engineer or local sales office, or Agilent Contact Center at <http://www.agilent.com/find/assist>. To redeem a license key, follow the instructions on the *Software Entitlement Certificate* that you get after you place your order.

1. Verify that the licence key is valid for the signal generator.

There are two methods of verifying a license key: using the host ID, or using the instrument's model and serial number. The method you use depends on the software product:

Host ID		Instrument Model & Serial Number
1xEV-DO	HSDPA over W-CDMA	Signal Studio Tool Kit
1xEV-DV and cdma200	Noise Power Ratio (NPR)	
802.11 WLAN	Pulse Building	
Bluetooth™	S-DMB	
Enhanced Multitone	TD-SCDMA (TSM)	

Using the Instrument's Host ID:

- a. Press **Utility > Instrument Adjustments > Instrument Options > Software Options**.
- b. Verify that the host ID shown on the display matches the host ID on the license key.

Using the Instrument's Model and Serial Number:

- a. Press **Utility > Instrument Info/Help Mode > Diagnostic Info**.
 - b. Verify that the listed instrument model and serial number match those on the license key.
 - c. Press **Utility > Instrument Adjustments > Instrument Options > Software Options**.
2. Highlight the desired option and press **Modify License Key**.
 3. Enter the 12-character license key and press **Enter**.
 4. Press **Proceed With Reconfiguration > Confirm Change (Instrument will Reboot)**.

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