Agilent X-Series Signal Analyzer

This manual provides documentation for the following analyzers:

PXA Signal Analyzer N9030A

MXA Signal Analyzer N9020A

EXA Signal Analyzer N9010A

CXA Signal Analyzer N9000A

Security Features and Certificate of Volatility

Agilent Technologies

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Where to Find the Latest Information

Documentation is updated periodically. For the latest information about these products, including instrument software upgrades, application information, and product information, see the following URLs:

http://www.agilent.com/find/pxa

http://www.agilent.com/find/mxa

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Information on preventing analyzer damage can be found at:

http://www.agilent.com/find/tips

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2 Contacting Agilent Sales and Service Offices

Assistance with test and measurement needs, and information to help you find a local Agilent office, is available via the internet at, http://www.agilent.com/find/assist. If you do not have internet access, please contact your designated Agilent representative.

NOTE In any correspondence or telephone conversation, refer to the instrument by its model number and full serial number. With this information, the Agilent representative can determine whether your unit is still within its warranty period.

3 Products Covered by this Document

Model Numbers:	N9030A-503 (3.6 GHz)
	N9030A-508 (8.4 GHz)
	N9030A-513 (13.6 GHz)
	N9030A-526 (26.5 GHz)
	N9020A-503 (3.6 GHz)
	N9020A-508 (8.4 GHz)
	N9020A-513 (13.6 GHz)
	N9020A-526 (26.5 GHz)
	N9010A-503 (3.6 GHz)
	N9010A-507 (7 GHz)
	N9010A-513 (13.6 GHz)
	N9010A-526 (26.5 GHz)
	N9000A-503 (3.0 GHz)
	N9000A-507 (7.5 GHz)
Product Names:	PXA Signal Analyzer
	MXA Signal Analyzer
	EXA Signal Analyzer
	CXA Signal Analyzer
Product Family Name:	X-Series Signal Analyzers

This document describes instrument memory types and security features. It provides a statement regarding the volatility of all memory types, and specifies the steps required to declassify an instrument through memory clearing, sanitization, or removal.

For additional information, go to:

http://www.agilent.com/find/security

NOTE Be sure that all information stored by the user in the instrument that needs to be saved is properly backed up before attempting to clear any of the instrument memory. Agilent Technologies cannot be held responsible for any lost files or data resulting from the clearing of memory.

Be sure to read this document entirely before proceeding with any file deletion or memory clearing.

X-Series Processor and Disk Drive Configurations

This document describes three alternative Processor and Disk Drive Configurations for X-Series analyzers:

1. A **Single-Core** processor with fixed disk drive. This configuration is standard for EXA and CXA instruments, and for MXA instruments with serial prefixes prior to MY/SG/US4910.
2. A **Dual-Core** processor with removable magnetic **hard** disk drive (Standard). The Dual-Core processor unit is standard for all PXA instruments, for MXA instruments with serial prefixes MY/SG/US4910 or higher, and is available as an upgrade for EXA instruments (Option PC2). For upgrade ordering information, see the document Speed Enhancement and Removable Hard Drive for the X-Series Signal Analyzers (MXA/EXA).

   By default, instruments with Dual-Core processors are supplied with hard disk cartridges.

   For details of the capacities of each drive type, see "Non-Volatile Memory" on page 15.
3. A **Dual-Core** processor with removable solid-state (**Flash**) drive (Option SSD).

   For details of how to substitute a solid-state drive cartridge for the default hard disk drive cartridge, see Speed Enhancement and Removable Hard Drive for the X-Series Signal Analyzers (MXA/EXA).

   For details of the capacities of each drive type, see "Non-Volatile Memory" on page 15.

Determining Analyzer Configuration based on Product Name

Use the following procedure to determine the configuration of your analyzer, starting from its Product Name.

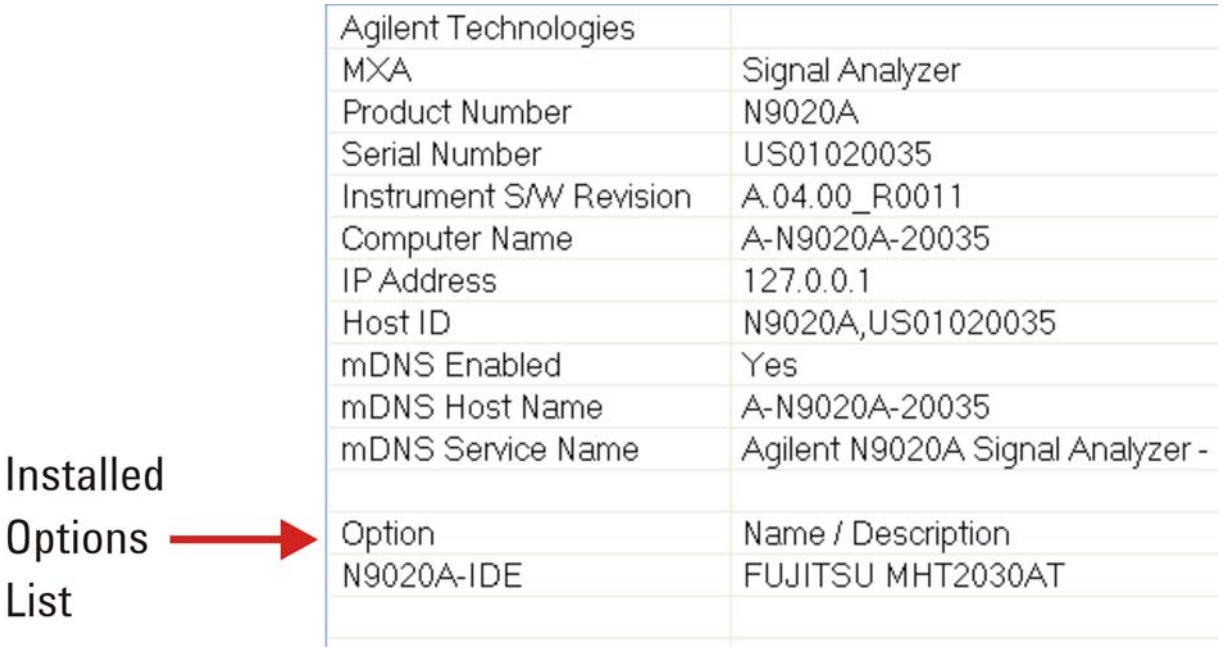
Step	Procedure
1	What is the Product Name of your analyzer? PXA: Go to Step 4. MXA: Go to Step 2. EXA: Go to Step 3. CXA: Go to Step 5.
2	Is the instrument serial number prefix **lower** than MY/SG/US4910? Yes: Go to Step 3. No: Go to Step 4.
3	Has the instrument been upgraded to Dual-Core Processor configuration (Option PC2)? (To determine whether Option PC2 is installed, see "Determining Installed Options" on page 11 below.) Yes: Go to Step 4. No: Go to Step 5.
4	Is Option SSD installed? (To determine whether Option SSD is installed, see "Determining Installed Options" on page 11 below.) Yes: Go to Step 7. No: Go to Step 6.
5	Your instrument has a Single-Core processor with fixed magnetic disk drive.
6	Your instrument has a Dual-Core processor with a Standard removable magnetic disk drive.
7	Your instrument has a Dual-Core processor with an Option SSD removable solid-state disk drive.

Determining Installed Options

Use the following procedure to determine whether your analyzer includes Option PC2 (Dual-Core Processor) or Option SSD (Solid-State Disk Drive).

1. Using the instrument front panel and softkey menus, press **System** > **Show** > **System**.
2. The "Show System" display appears. Look for start of the "Option" listing, a few lines below the top of the table, as shown in Figure 3-1 below.

Figure 3-1 Show System Display: Option Listing



3. If the Option list includes "N90X0A-SSD" (where "X" is a digit between 0 and 3, according to the Model Number), then Option SSD is installed. (If your instrument has a magnetic disk drive, then "N90X0A-IDE" is listed, as shown in Figure 3-1 above.)
4. If the Option list includes "N90X0A-PC2" (where "X" is a digit between 0 and 3, according to the Model Number), then Option PC2 is installed.
5. To dismiss the "Show System" display, press any other front-panel or menu key.

4 Terms and Definitions

Security Terms

Clearing	As defined in Section 8-301a of DoD 5220.22-M, "National Industrial Security Program Operating Manual (NISPOM)", clearing is the process of eradicating the data on media before reusing the media so that the data can no longer be retrieved using the standard interfaces on the instrument. Clearing is typically used when the instrument is to remain in an environment with an acceptable level of protection.
Instrument Declassification	A term that refers to procedures that must be undertaken before an instrument can be removed from a secure environment, such as is the case when the instrument is returned for calibration. Declassification procedures include memory sanitization or memory removal, or both. Agilent declassification procedures are designed to meet the requirements specified in DoD 5220.22-M, "National Industrial Security Program Operating Manual (NISPOM)", Chapter 8.
Sanitization	As defined in Section 8-301b of DoD 5220.22-M, "National Industrial Security Program Operating Manual (NISPOM)", sanitization is the process of removing or eradicating stored data so that the data cannot be recovered using any known technology. Instrument sanitization is typically required when an instrument is moved from a secure to a non-secure environment, such as when it is returned to the factory for calibration. Agilent memory sanitization procedures are designed for customers who need to meet the requirements specified by the US Defense Security Service (DSS). These requirements are specified in the "Clearing and Sanitization Matrix" in Appendix O of the ODAA Process Guide for C&A of Classified Systems under NISPOM, Rev. 2008.1.
Secure Erase	Secure Erase is a term that is used to refer to either the clearing or sanitization features of Agilent instruments.

X Series Analyzer Configuration Terms

Single-Core	X-Series analyzers may be equipped with either a single-core microprocessor and non-removable disk drive, or a dual-core processor with removable disk drive. In this document, this term indicates information that applies *only* to instruments equipped with single-core processors. For more details, see "X-Series Processor and Disk Drive Configurations" on page 10.

Dual-Core	X-Series analyzers may be equipped with either a single-core microprocessor and non-removable disk drive, or a dual-core processor with removable disk drive. In this document, this term indicates information that applies *only* to instruments equipped with dual-core processors. For more details, see "X-Series Processor and Disk Drive Configurations" on page 10.
Option SSD	By default, X-Series analyzers with dual-core microprocessors are supplied with a removable disk drive cartridge, referred to as the "Standard" drive. If Option SSD is specified at time of purchase, the instrument is supplied instead with a solid-state (Flash) drive cartridge. You can also purchase a solid-state drive cartridge separately, which may be substituted for the magnetic drive cartridge. For more details of Option SSD, and ordering information, see Speed Enhancement and Removable Hard Drive for the X-Series Signal Analyzers (MXA/EXA).
Standard (Drive)	The magnetic disk drive cartridge that is supplied by default with X Series Analyzers. A solid-state drive cartridge may be supplied as an option: see Option SSD.

5 Instrument Memory & Certificate of Volatility

This chapter summarizes all memory types in the instrument, for the following configurations:

a. Single-Core processors with fixed disk drives,

b. Dual-Core processors with Standard removable magnetic disk drives.

c. Dual-Core processors with Option SSD removable solid-state drives.

To determine the configuration of your analyzer, based on its Product Name and installed options, see "X-Series Processor and Disk Drive Configurations" on page 10.

The descriptions are divided between:

1. Non-Volatile Memory,
2. Volatile Memory.

Non-Volatile Memory

This section contains information on the memory components available in your instrument.

Table 5-1 on page 16 describes memory components that are present in all instruments.

Table 5-2 on page 21 describes additional memory components that are present only in PXA instruments.

Both tables provide details of the size of each memory component, its type, how it is used, its location, volatility, and the sanitization procedure.

NOTE The instrument contains no user-accessible non-volatile memory, except for the Disk Drive described in Item 1 of Table 5-1 on page 16. For this reason, as indicated in the tables below, no sanitization procedure is required for any memory component except the Disk Drive.

Table 5-1 *Summary of Non-Volatile instrument memory - All Instruments (Single-Core and Dual-Core Processors)*

Memory Component, Type and Size	Writable During Normal Operation?	Data Retained When Powered Off?	Purpose/Contents	Data Input Method	Location in Instrument and Remarks	Sanitization Procedure
1. Disk Drive Single-Core: 40 GByte Dual-Core Standard: 160 GByte Dual-Core Option SSD: 32 GByte This drive is partitioned, as detailed in "Disk Drive Partitioning" on page 22.	Yes	Yes	Contains Operating System, Instrument Software, Factory Calibration Data, Diagnostic software, Crash recovery image, user instrument states, user data files, user trace data and any user installed third party software.	Programmed before installation or by factory/service center calibration procedure software, or by upgrade installation software. Also programmed via operations and by the user.	Single-Core: A4 Processor Assy. Dual-Core: Rear Panel (Removable) Contains user data.	See Table 6-1 on page 25.
2. CPU BIOS (CMOS NVRAM) 256 Byte (battery backed)	No	Yes	Contains default BIOS settings to use when booting the Processor Assembly.	Programmed by factory. Settings can be toggled by user.	A4 Processor Assy. Battery backed to maintain Windows calendar time. Contains no user data.	None.
3. License Storage Memory (EEPROM) 512 kbit	No	Yes	Contains instrument serial number and license keys for measurement applications. License keys are encrypted.	Programmed before installation and by installing new license keys.	A7 Midplane Assy. Contains no user data.	None.

Table 5-1 *Summary of Non-Volatile instrument memory - All Instruments (Single-Core and Dual-Core Processors)*

Memory Component, Type and Size	Writable During Normal Operation?	Data Retained When Powered Off?	Purpose/Contents	Data Input Method	Location in Instrument and Remarks	Sanitization Procedure
4. Config & Cal Memory (EEPROM) 8 kbit (1024 x 8)	No	Yes	Header EEPROM used to identify the assembly.	Programmed before installation.	A14 Synthesizer Assy. Contains no user data.	None.
5. Config Memory (EEPROM) 8 kbit (1024 x 8)	No	Yes	Contains measurement and control software, which is preloaded into FPGA during instrument power-up.	Programmed before installation.	A14 Synthesizer Assy. Contains no user data.	None.
6. Config & Cal Memory (EEPROM) 8 kbit (1024 x 8)	No	Yes	Header EEPROM used to identify the assembly.	Programmed before installation.	A13 Front End Control Assy. Contains no user data.	None.
7. Config Memory (Flash) 2 Mbit	No	Yes	Contains measurement and control software, which is preloaded into FPGA during instrument power-up. Primarily YTF, attenuator, and front end switch control.	Programmed before installation.	A13 Front End Control Assy. Contains no user data.	None.
8. Config & Cal Memory (EEPROM) 8 kbit (1024 x 8)	No	Yes	Header EEPROM used to identify the assembly.	Programmed before installation.	A2 Analog IF Assy. Contains no user data.	None.

Table 5-1 *Summary of Non-Volatile instrument memory - All Instruments (Single-Core and Dual-Core Processors)*

Memory Component, Type and Size	Writable During Normal Operation?	Data Retained When Powered Off?	Purpose/Contents	Data Input Method	Location in Instrument and Remarks	Sanitization Procedure
9. Control Logic Memory (CPLD) 1600 Gates	No	Yes	Contains control algorithms to optimize filter performance.	Programmed before installation.	A2 Analog IF Assy. Contains no user data.	None.
10. Config & Cal Memory (EEPROM) 8 kbit (1024 x 8)	No	Yes	Header EEPROM used to identify the assembly.	Programmed before installation.	A3 Digital IF Assy. Contains no user data.	None.
11. Config Memory (Flash) 8 Mbit	No	Yes	Contains measurement and control software, which is preloaded into FPGA during instrument power-up.	Programmed before installation.	A3 Digital IF Assy. Contains no user data.	None.
12. Control Logic Memory (CPLD) 6400 Gates	No	Yes	Contains measurement and control algorithms to optimize digital filtering.	Programmed before installation.	A3 Digital IF Assy. Contains no user data.	None.
13. Serial Presence Detect Memory (EEPROM) 2 Mbit	No	Yes	Used on commercial SDRAM Module, programmed by chip vendor. Contains module identification information.	Progammed by IC vendor only.	A3 Digital IF Assy. Contains no user data.	None.
14. Config & Cal Memory (EEPROM) 8 kbit (1024 x 8)	No	Yes	Header EEPROM used to identify the assembly.	Programmed before installation.	A16 Reference Assy. Contains no user data.	None.

Table 5-1 *Summary of Non-Volatile instrument memory - All Instruments (Single-Core and Dual-Core Processors)*

Memory Component, Type and Size	Writable During Normal Operation?	Data Retained When Powered Off?	Purpose/Contents	Data Input Method	Location in Instrument and Remarks	Sanitization Procedure
15. FPGA Config Memory (EEPROM) 2 Mbit	No	Yes	Contains measurement and control software.	Programmed before installation.	A16 Reference Assy. Contains no user data.	None.
16. Digital Potentiometer (EEPROM) 112 bits (14 Bytes)	No	Yes	Contains default data to preset digital potentiometers during power-up.	Programmed before installation.	A16 Reference Assy. Contains no user data.	None.
17. Front Panel EEPROM 64 kbit	No	Yes	Contains software for running front panel microcontroller. Operates front panel LEDs, and transmits key presses to processor.	Programmed before installation.	A1A2 Front Panel Interface Board Contains no user data.	None.
18. Front Panel CPLD 800 Gates	No	Yes	Contains fixed digital logic associated with front panel keyboard button operation and LEDs.	Programmed before installation at the factory only.	A1A2 Front Panel Interface Board Contains no user data.	None.

Table 5-1 *Summary of Non-Volatile instrument memory - All Instruments (Single-Core and Dual-Core Processors)*

Memory Component, Type and Size	Writable During Normal Operation?	Data Retained When Powered Off?	Purpose/Contents	Data Input Method	Location in Instrument and Remarks	Sanitization Procedure
19. EDID Memory (EEPROM) 2 kbit	No	Yes	Extended Display Identification Data is a VESA standard data format that contains basic information about a monitor and its capabilities, including vendor information, maximum image size, color characteristics, factory pre-set timings, frequency range limits, and character strings for the monitor name and serial number.	Programmed before installation.	A1A2 Front Panel Interface Board. Contains no user data.	None.

Table 5-2 *Summary of Non-Volatile instrument memory - Additional Components for PXA Instruments Only (Dual-Core Processor)*

Memory Component, Type and Size	Writable During Normal Operation?	Data Retained When Powered Off?	Purpose/Contents	Data Input Method	Location in Instrument and Remarks	Sanitization Procedure
1. Boot ROM (Flash) 8 MByte	No	Yes	Contains the boot ROM, operating system and run-time code for the WBDIF CPU.	Programmed by factory at installation time, or during firmware upgrade.	A26 WBDIF assembly Contains no user data.	None.
2. (Flash) 16 MByte (2 x 64 Mbit)	No	Yes	Contains up to 3 WBDIF FPGA images.	Programmed by factory at installation time, or during FPGA upgrade process.	A26 WBDIF assembly Contains no user data.	None.
3. (EEPROM) 512 Byte	No	Yes	Contains header information used to identify the assembly, and configuration information used to initialize the PCI bus.	Programmed before installation.	A26 WBDIF assembly Contains no user data.	None.
4. (EEPROM) 1024 byte	No	Yes	Contains configuration information used during initialization of the PCI bus. This component is currently unprogrammed.	Programmed before installation.	A26 WBDIF assembly Contains no user data.	None.
5. (CPLD) 256 Macrocells	No	Yes	Contains critical hardware control algorithms.	Programmed before installation.	A26 WBDIF assembly Contains no user data.	None.

Disk Drive Partitioning

The instrument's disk drive is divided at the factory into three logical partitions, labeled C:, D: and E:, plus a fourth hidden partition.

The sizes of each partition vary according to whether the instrument has a Single-Core or Dual-Core processor. For Dual-Core processors only, the partition sizes of the Standard magnetic drive or Option SSD solid-state drive also differ.

Details of the sizes and functions of all partitions are provided in Table 5-3 below.

Table 5-3 Disk Drive Partitions

Partition Label	Size (GBytes)	Purpose
C:	Single-Core: 15 GB Dual-Core Standard: 62 GB Dual-Core Option SSD: 16 GB	Primary partition for applications and secondary data.
D:	Single-Core: 6 GB Dual-Core Standard: 23 GB Dual-Core Option SSD: 3.75 GB	Default location for user data.
E:	Single-Core: 6 GB Dual-Core Standard: 2.3 GB Dual-Core Option SSD: 1.6 GB	Calibration data.
Hidden	Single-Core: 6.5 GB Dual-Core Standard: 54 GB Dual-Core Option SSD: 8.2 GB	Factory recovery image of the C: partition.

Volatile Memory

The volatile memory in the instrument does not have battery backup. It does not retain any information when AC power is removed.

Removing power from this memory meets the memory sanitization requirements specified in the "Clearing and Sanitization Matrix" in Appendix O of the ODAA Process Guide for C&A of Classified Systems under NISPOM, Rev. 2008.1.

Table 5-4 *Summary of Volatile Instrument Memory - Instruments with Single-Core and Dual-Core Processors*

Memory Type and Size	Writable During Normal Operation?	Data Retained When Powered Off?	Purpose/Contents	Data Input Method	Location in Instrument and Remarks	Sanitization Procedure
1. Processor SDRAM Single-Core: 1 GByte or 2 GByte Dual-Core: 4 GByte	Yes	No	Main dynamic RAM memory for processor. Contains working copies of Operating System, instrument measurement applications, calibration data, and measurement data.	Programmed before installation, or by factory/service center calibration procedure software, or by firmware upgrade installation software. Also programmed via firmware operations and by user.	A4 Processor Assy. Contains user data. This memory is not battery backed-up or connected to standby power.	Turn off instrument power.
2. SDRAM 256 MByte	Yes	No	Contains measurement data from data acquisition system.	Programmed by firmware. Not accessible by user.	A3 Digital IF Assy. Contains raw measurement data. This memory is not battery backed-up or connected to standby power.	Turn off instrument power.

Volatile Memory

6 Memory Clearing, Sanitization and/or Removal Procedures

This section explains how to clear, sanitize, and remove memory from your instrument, for all types of non-volatile memory that can be written to during normal instrument operation.

Table 6-1 *Disk Drive*

Description and purpose	The Disk Drive is the main memory for the instrument. It has very large storage capacity, plus fast read and write times. There are no limitations on the number of read/write cycles. It contains the Operating System, Instrument Software, Factory Calibration Data, Diagnostic software, Crash recovery image, user instrument states, user data files, user trace data and any user-installed third party software. The Disk Drive is written to frequently by the Operating System and other application software.
Size	Single-Core Processor: 40 Gigabytes Dual-Core Standard: 160 Gigabytes Dual-Core Option SSD: 32 GBytes
Memory clearing	Software utilities are available that comply with the clearing requirements specified for Magnetic Disks in the “Clearing and Sanitization Matrix” in Appendix O of the ODAA Process Guide for C&A of Classified Systems under NISPOM, Rev. 2008.1.
Memory sanitization	We recommend always removing the Disk Drive to achieve sanitization. For program classifications lower than Top Secret, this media type can be sanitized using method "d" as defined in the "Clearing and Sanitization Matrix" in Appendix O of the ODAA Process Guide for C&A of Classified Systems under NISPOM, Rev. 2008.1“. For Top Secret and higher program classifications, Disk Drive removal is the only acceptable sanitization procedure.
Memory removal	Single-Core Processor: see “Instruments with Non-Removable Drives” on page 39, in the Chapter "Disk Drive Removal Procedure". Dual-Core Processor: see “Instruments with Removable Drives” on page 40, in the Chapter "Disk Drive Removal Procedure".
Write protecting	The Disk Drive cannot be write protected. The operating system and software must be able to read from and write to the drive during normal operation.
Memory validation	The Disk Drive memory can be validated using third-party Windows utilities.

Table 6-2 CPLD, CMOS Programmable Logic Devices

Description and purpose	These memory devices are used to execute timing, control, and measurement functions. No user data is contained in these devices. This memory cannot be written to during instrument operation.
Size	1600 to 6400 logic gates.
Memory clearing	Not applicable. This memory does not contain user information and is not accessible by the user.
Memory sanitization	Not applicable. This memory does not contain user information and is not accessible by the user.
Memory removal	Not applicable.
Write protecting	Not applicable.
Memory validation	Not applicable.
Remarks	These devices are programmed in the factory via diagnostic connectors on the PCB assemblies. After instrument assembly, the diagnostic connectors are not physically accessible and not electrically connected.

Table 6-3 EEPROM Memories

Description and purpose	These memories are used to identify the assemblies (header info) and store option configuration data. Some are also used to hold factory software for FPGAs. The software is loaded when the instrument powers up. This memory cannot be written to during instrument operation.
Size	2 Kbit to 8 Mbit
Memory clearing	Not applicable. This memory does not contain user information and is not accessible by the user.
Memory sanitization	Not applicable. This memory does not contain user information and is not accessible by the user.
Memory removal	Not applicable.
Write protecting	Not applicable.
Memory validation	Not applicable.

Table 6-3 EEPROM Memories

Remarks	With one exception, as described below, these memories are only writable by factory/service center software, or upgrade installation software. These memories are internally connected to proprietary internal control data busses (as opposed to standard computer busses such as IDE, PCI, USB). They are not accessible by the Operating System or by third-party software, or by the user, to protect the measurement accuracy and consistency of the instrument. They are rarely modified, to ensure no degradation of instrument performance. These memories contain no user data. Many of these memories have long write times, and limited write endurance, so they are not intended to be written to dynamically by software. The sole exception applies to the EEPROM on the A7 Midplane Assembly. Inserting a USB memory device containing a valid license key file into the analyzer causes the key file to be copied to both the C: drive and the EEPROM on the A7 Midplane Assembly.

Instrument Sanitization Procedures

This section includes flowcharts that describe how to sanitize an instrument by physical removal and replacement of either the Processor Assembly or Disk Drive.

- For Single-Core instruments, see Replacement of Processor Assembly.
- For Dual-Core instruments, see Replacement of Disk Drive.

Application License Key Storage

Note that License keys for most Applications are stored in EEPROM on the A7 Midplane Assembly (as described in Item 3 of Table 5-1 on page 16). Therefore, when replacing either the Processor Assembly or Disk Drive, you do **not** need to back up and restore the license keys.

The sole exception is the 89601A VSA Application, which uses a Site Key license. For information on how to regenerate a Site Key, see "Regenerating a Site Key License for 89601A VSA Application" on page 27 below.

Regenerating a Site Key License for 89601A VSA Application

When replacing a Processor Assembly or Disk Drive for an instrument that includes the 89601A VSA Application, you must request a new Site Key License, as if installing 89601A VSA for the first time. Details of how to do this are provided in the following article, available on the Agilent web site:

How do I recover my VSA 89600S license after a hard drive crash?

Replacement of Processor Assembly

This procedure applies only to Single-Core instruments.

Refer to the flowchart in Figure 6-1 for details of how to perform this procedure.

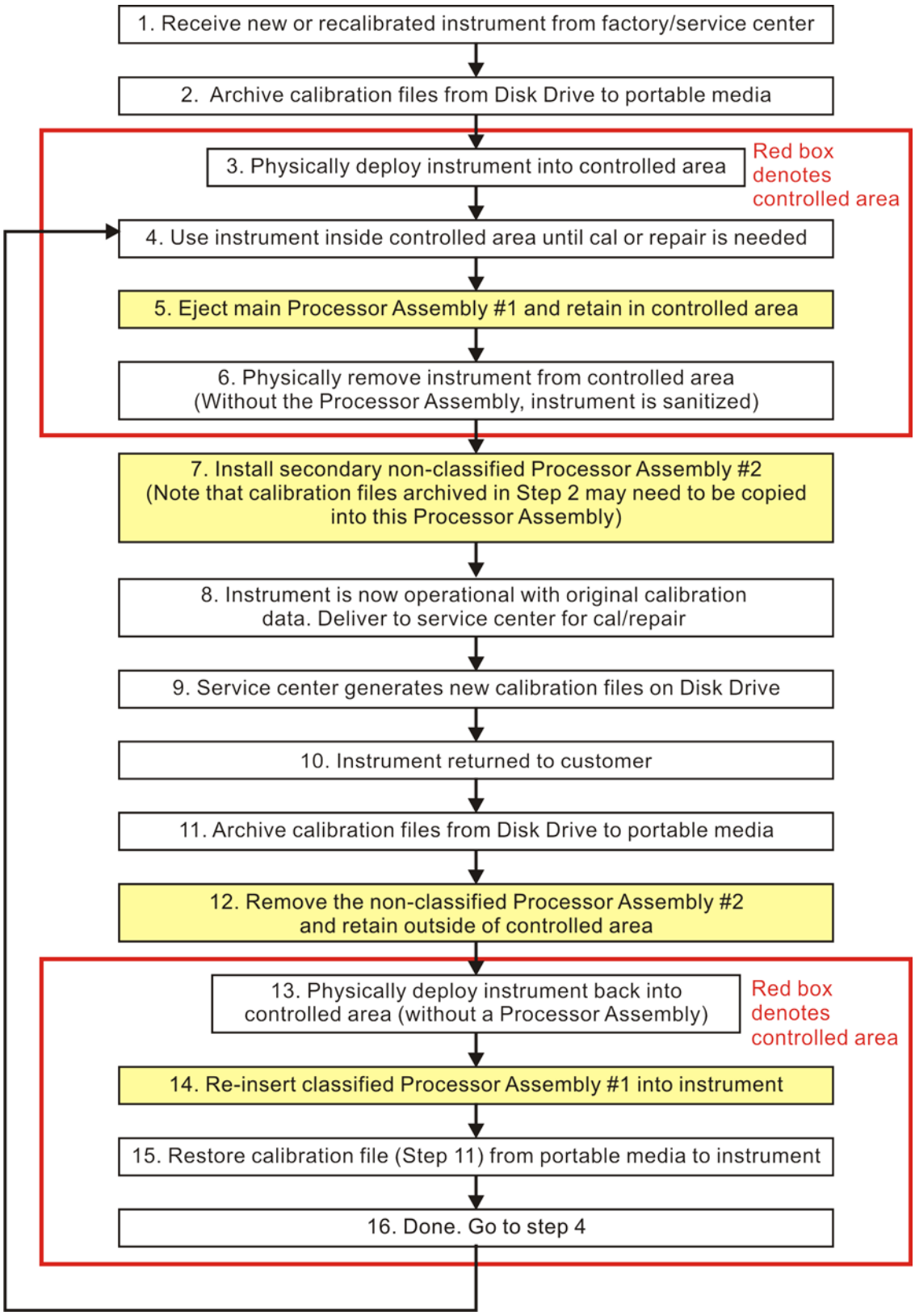
Note that this flowchart differs from that for replacement of the Disk Drive only in that the entire Processor

Assembly is replaced. The steps that differ between the two procedures are marked in yellow in the flowcharts.

For details of how to archive or restore the instrument's calibration files (Steps 2, 11 and 15 in the flowchart), see "Archiving and Restoring Factory Calibration Data Files" on page 32.

For details of how to remove the Processor Assembly (Step 5), see "Processor Assembly Removal Procedure" on page 37.

Figure 6-1 *Flowchart for Instrument Sanitization Process by Processor Removal*



Replacement of Disk Drive

This procedure applies only to Dual-Core instruments.

Refer to the flowchart in Figure 6-2 for details of how to perform this procedure.

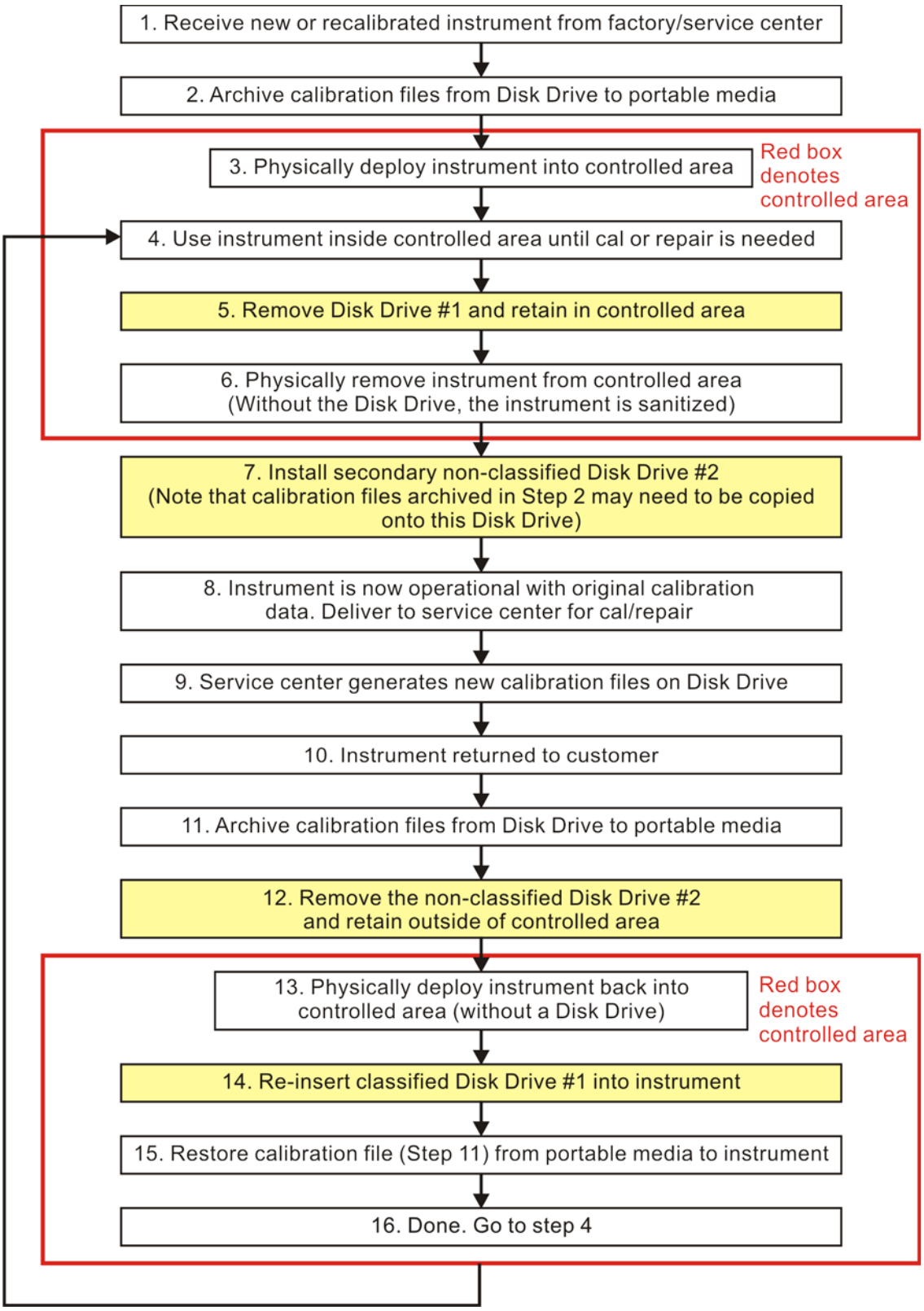
Note that this flowchart differs from that for replacement of the Processor Assembly only in that the removable Disk Drive is replaced. The steps that differ between the two procedures are marked in yellow in the flowcharts.

For details of how to archive or restore the instrument's calibration files (Steps 2, 11 and 15 in the flowchart), see "Archiving and Restoring Factory Calibration Data Files" on page 32.

For details of how to remove the Disk Drive (Step 5), see "Disk Drive Removal Procedure" on page 39.

IMPORTANT	When installing a replacement Disk Drive, ensure that the instrument software revision on the replacement drive matches that of the original drive.

Figure 6-2 *Flowchart for Instrument Sanitization Process by Disk Drive Removal*



Archiving and Restoring Factory Calibration Data Files

This section describes how to archive ("back up") the instrument's factory calibration data to an external USB memory device, or restore the calibration data from an external memory device.

The backup and restore procedures differ according to the instrument software revision. This section describes the three possible pairs of procedures.

To determine the instrument software revision, follow the procedure "Determining Instrument Software Revision" on page 32 below.

To determine which backup or restore procedures should be used, according to the instrument software revision, see Table 6-4 on page 33.

Tools Required

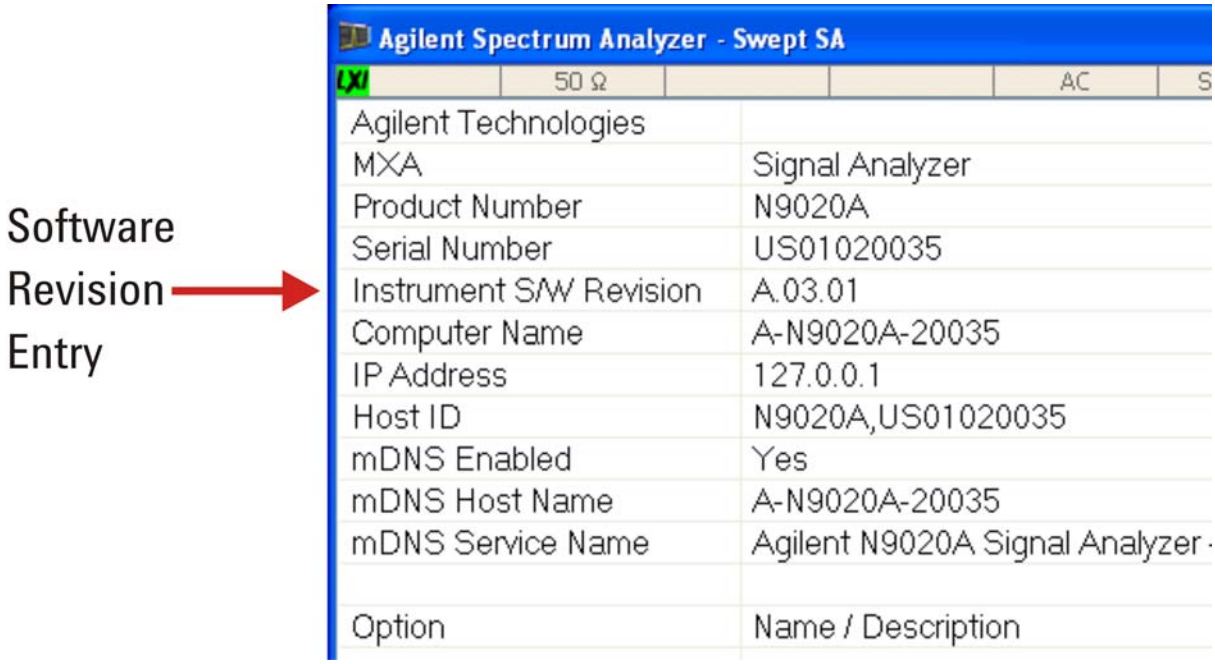
To perform backup or restore operations, you need:

- a mouse with a USB interface
- a portable memory device with a USB interface

Determining Instrument Software Revision

1. On the instrument front panel, press **System** > **Show** > **System**.
2. The "Show System" display appears, as shown in Figure 6-3 below. Look for the Software Revision number specified in the "Instrument S/W Revision" entry.

Figure 6-3 Show System Display



3. To dismiss the "Show System" display, press any other front-panel or menu key.

When you have obtained the instrument Software Revision number, refer to Table 6-4 on page 33 below for the appropriate backup or restore procedure.

Table 6-4 Backup & Restore Procedures for all Instrument Software Revisions

Instrument Software Revision	Backup Procedure	Restore Procedure
A.01.55 or lower	See "Data Backup using XML File" on page 33.	See "Data Restore using XML File" on page 33.
Greater than A.01.55; lower than A.02.00	See "Data Backup using Utility Program" on page 34.	See "Data Restore using Utility Program" on page 35.
A.02.00 or greater	See "Data Backup or Restore using Alignment Data Wizard" on page 35.	See "Data Backup or Restore using Alignment Data Wizard" on page 35.

Software Revision A.01.55 or Lower

If the instrument software revision is A.01.55 or lower, the calibration data is stored in an XML database file.

Data Backup using XML File

Follow the steps below:

1. Close the instrument application software by pressing **File** > **Exit** > **Enter**.
2. Plug the mouse's USB cable into one of the instrument's USB ports.
3. Plug the USB memory device into another of the instrument's USB ports.
4. Using the mouse, double-click on the Windows Explorer icon on the desktop and navigate to the following folder:

   `E:\AlignDataStorage`

5. Copy the following file onto the USB memory device:

   `CurrentDataSet.xml`

Data Restore using XML File

The data can be restored from a USB memory device containing the XML database file, by using the following process.

1. Close the instrument application software by pressing **File** > **Exit** > **Enter**.
2. Plug the mouse's USB cable into one of the instrument's USB ports.
3. Plug the USB memory device into another of the instrument's USB ports.
4. Using the mouse, double-click on the Windows Explorer icon on the desktop and navigate to a folder on the USB memory device containing a previously-saved calibration data file named:

   `CurrentDataSet.xml`

5. Select the calibration data file, then copy it to the Windows clipboard by selecting **Edit** > **Copy** from the

Windows Explorer pull-down menu.

6. Navigate to the folder below and paste the file by selecting **Edit** > **Paste** from the Windows Explorer pull-down menu:

   `E:\AlignDataStorage`

7. Verify that the file `CurrentDataSet.xml` was copied to the new location.
8. Cycle the instrument power.

Software Revision Greater than A.01.55 and Lower than A.02.00

If the instrument software revision is greater than A.01.55, the calibration data is stored in an SQL database file.

For software revisions greater than A.01.55, but lower than A.02.00, the SQL file is written and read by a utility program called `BackupAndRestore.exe`.

Data Backup using Utility Program

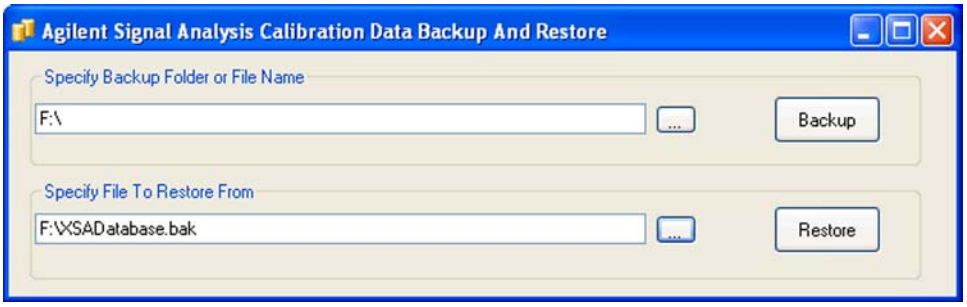
Follow the steps below:

1. Close the instrument application software by pressing **File** > **Exit** > **Enter**.
2. Plug the mouse's USB cable into one of the instrument's USB ports.
3. Plug the USB memory device into another of the instrument's USB ports.
4. Using the mouse double-click on the Windows Explorer icon on the desktop and navigate to the following folder:

   `C:\Program Files\Agilent\SignalAnalysis\Physics`

5. Double-click on `BackupAndRestore.exe`. The "Calibration Data Backup And Restore" dialog shown in Figure 6-4 appears.

Figure 6-4 Calibration Data Backup



6. In the group box "Specify Backup Folder or File Name" use the mouse to press the "**...**" button to open the "Browse For Folder" dialog.
7. In the "Browse For Folder" dialog, select or create the desired folder on the USB memory device, then press **OK**.
8. Press **Backup**, then wait for the calibration database to be backed up.

9. When the backup has completed, close the "Calibration Data Backup And Restore" dialog.

Data Restore using Utility Program

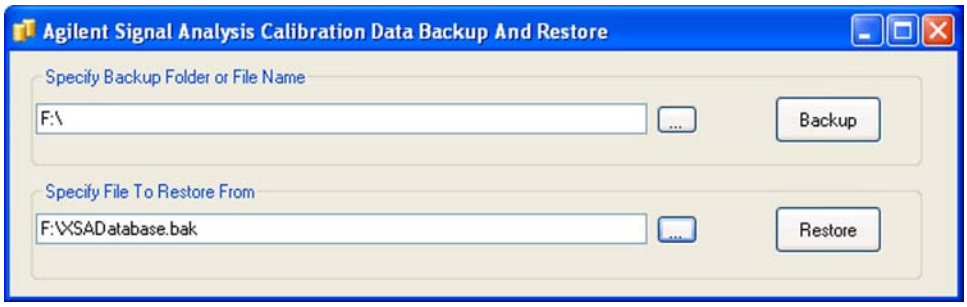
Follow the steps below:

1. Close the instrument application software by pressing **File** > **Exit** > **Enter**.
2. Plug the mouse's USB cable into one of the instrument's USB ports.
3. Plug the USB memory device into another of the instrument's USB ports.
4. Using the mouse double-click on the Windows Explorer icon on the desktop and navigate to the following folder:

   `C:\Program Files\Agilent\SignalAnalysis\Physics`

5. Double-click on `BackupAndRestore.exe`: the "Calibration Data Backup And Restore" dialog shown in Figure 6-4 appears.

Figure 6-5 Calibration Data Backup



6. In the group box "Specify File To Restore From" use the mouse to press the "**...**" button to open the "Browse For File" dialog.
7. In the "Browse For File" dialog, select the desired file on the USB memory device, then press **OK**.
8. Press **Restore**, then wait for the calibration database to be restored.
9. When the restore has completed, close the "Calibration Data Backup And Restore" dialog.

Software Revision A.02.00 or Greater

For software revisions A.02.00 or greater, the SQL calibration data file is read and written by the Alignment Data Wizard.

Data Backup or Restore using Alignment Data Wizard

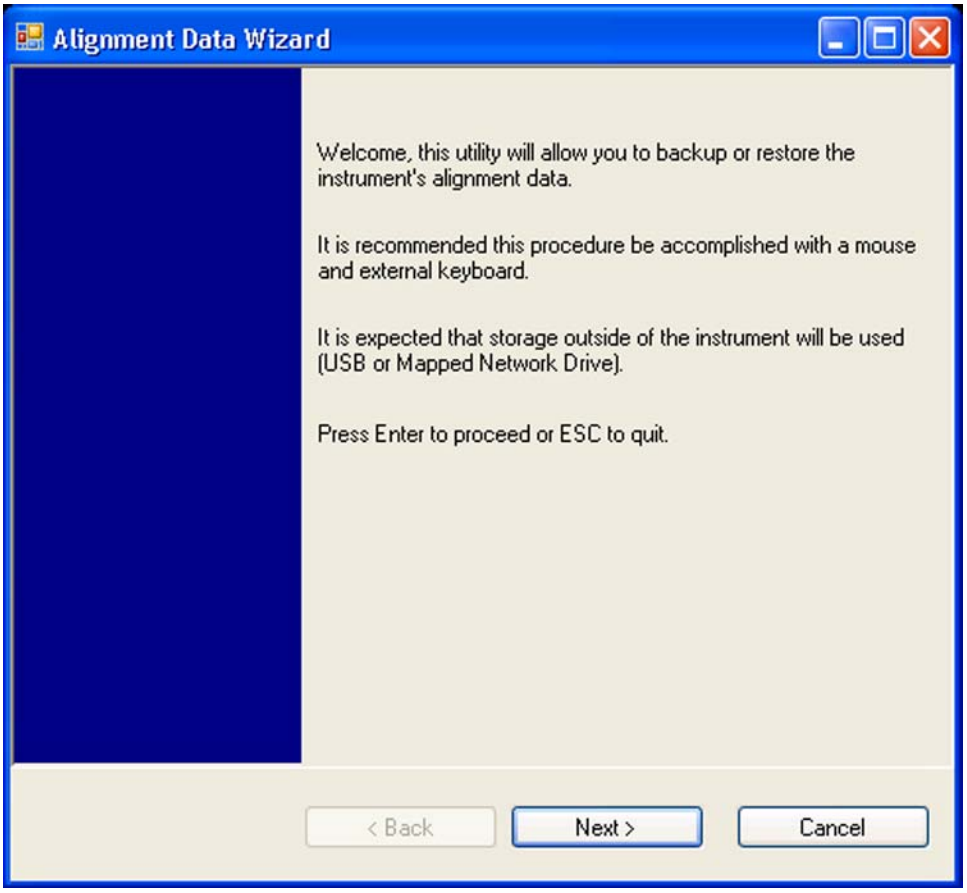
The Alignment Data Wizard is launched directly from the instrument application software interface, so you do **not** need to exit the application software before proceeding.

Follow the steps below to start the wizard:

1. Plug the mouse's USB cable into one of the instrument's USB ports.
2. Plug the USB memory device into another of the instrument's USB ports.

3. Press **System** > **Alignments** > **Backup or Restore Align Data...**
4. The Alignment Data Wizard dialog appears, as shown in Figure 6-6 below:

Figure 6-6 Alignment Data Wizard Dialog



5. Follow the wizard's on-screen instructions to back up the calibration data to the external USB memory device, **or** restore the data from the device.

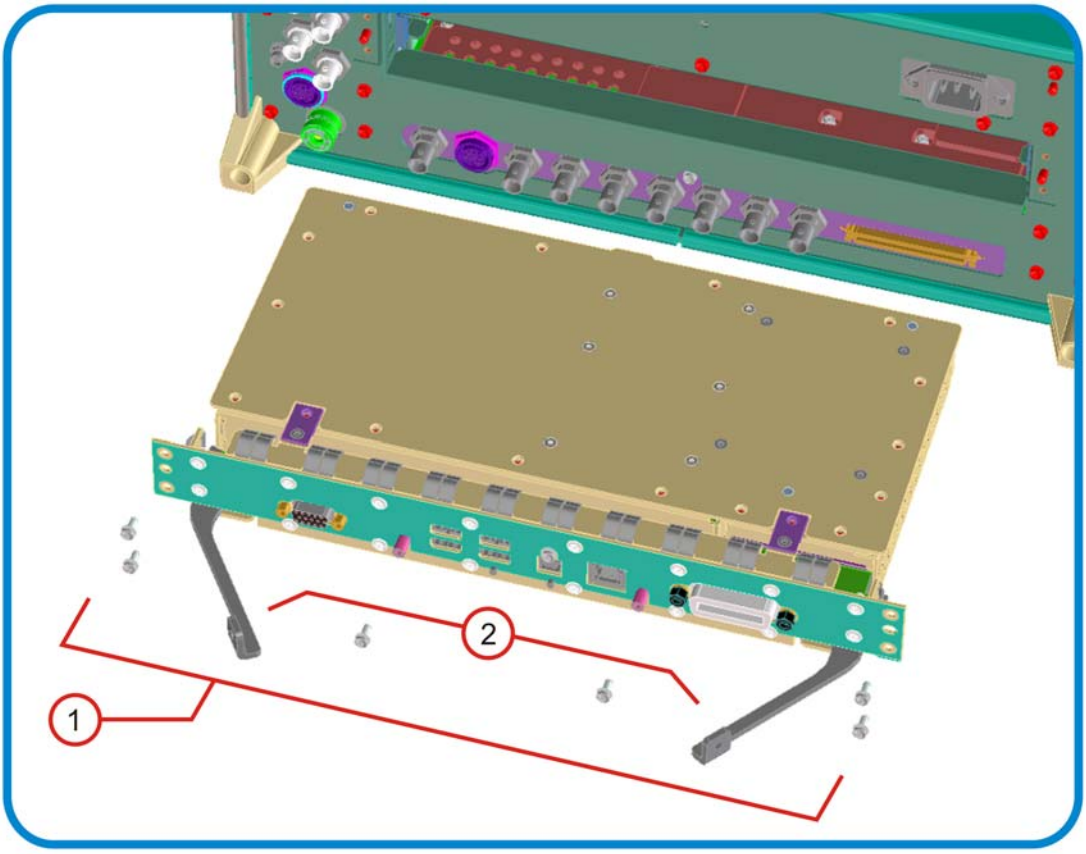
7 Processor Assembly Removal Procedure

To remove the processor board assembly, follow the procedure below, while referring to Figure 7-1, which shows the rear panel of instruments with Single-Core processors and non-removable disk drives.

The procedure for instruments with Dual-Core processor assemblies is identical, although the appearance of the rear panel differs from that shown in Figure 7-1.

CAUTION Before removing the Processor Assembly, ensure that the instrument's power is turned off.

Figure 7-1 Processor Assembly Removal Procedure



1. Locate and remove the Processor Assembly from the instrument, by removing the 6 rear panel screws (part number 0515-0372, M3 x 0.5, 8 mm long).
2. The assembly can be removed from the chassis by pulling it straight out. Use the two ejector arms to remove the Assembly from the instrument

TIP

Most Application License keys are stored in EEPROM on the A7 Midplane Assembly (as described in Item 3 of Table 5-1 on page 16). Therefore, when replacing the Processor Assembly, you do **not** need to back up and restore the license keys.

The sole exception is the license key for the 89601A VSA Application. For information about how to regenerate these licenses, see "Regenerating a Site Key License for 89601A VSA Application" on page 27.

8 Disk Drive Removal Procedure

This chapter describes the procedures for physical removal of the disk drive from:

a. Instruments with Non-Removable Drives (generally, CXA, or EXA without optional Dual-Core processor upgrade),

b. Instruments with Removable Drives (generally, PXA, MXA, or EXA with optional Dual-Core processor upgrade).

For detailed information about the drive types installed in each instrument type, see the entries for Single-Core Processor or Dual-Core Processor in the Chapter Terms and Definitions.

TIP

Most Application License keys are stored in EEPROM on the A7 Midplane Assembly (as described in Item 3 of Table 5-1 on page 16). Therefore, when replacing the Disk Drive, you do **not** need to back up and restore the license keys.

The sole exception is the license key for the 89601A VSA Application. For information about how to regenerate these licenses, see "Regenerating a Site Key License for 89601A VSA Application" on page 27.

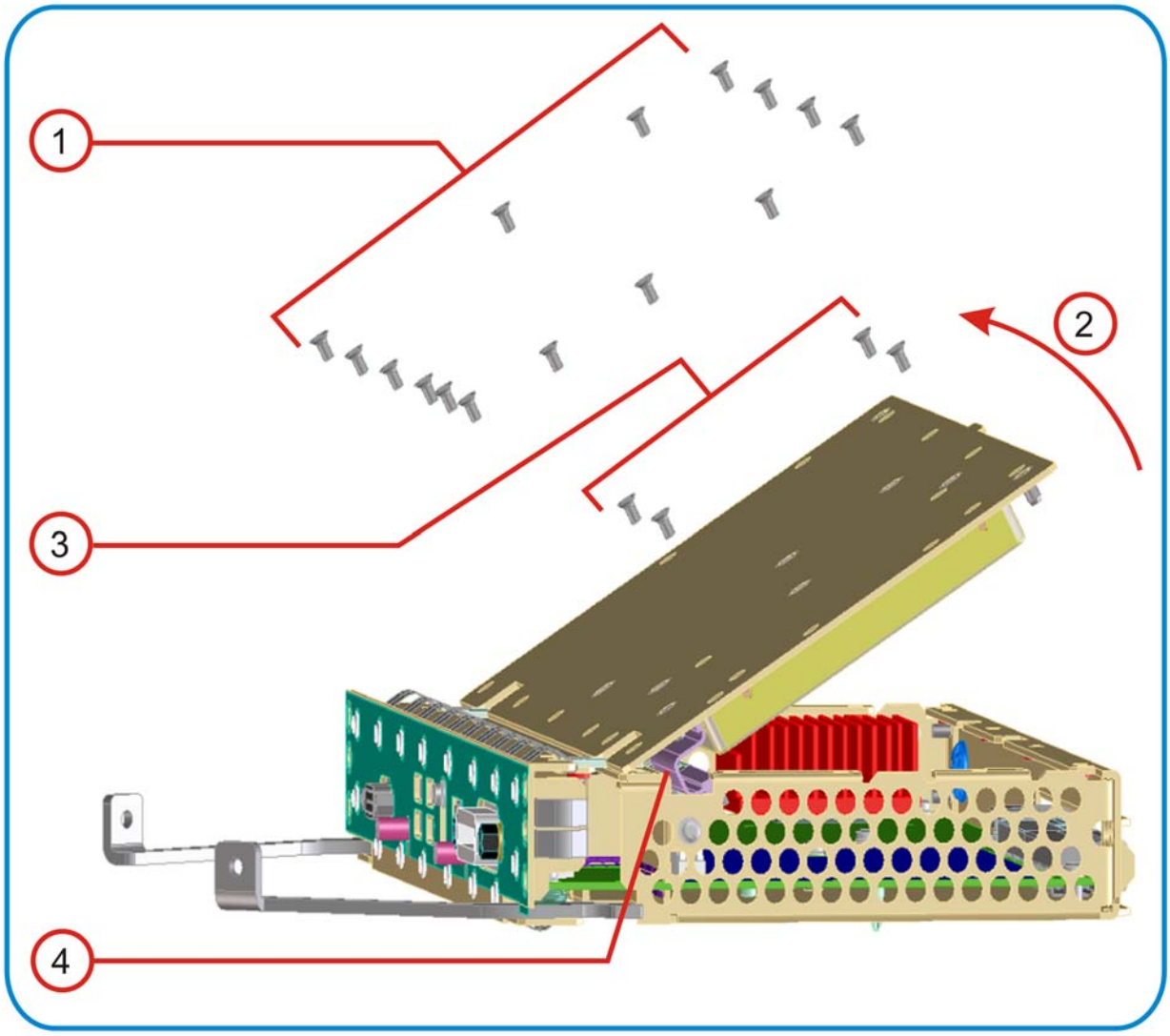
When installing a replacement Disk Drive, ensure that the instrument software revision on the replacement drive matches that of the original drive.

Instruments with Non-Removable Drives

To remove the disk drive, follow the procedure below, while referring to Figure 8-1. The numbered items in the figure correspond to the step numbers in the procedure.

Before commencing this procedure, remove the complete Processor Assembly from the instrument, following the procedure described in the chapter Processor Assembly Removal Procedure.

Figure 8-1 Disk Drive Removal Procedure



1. Remove 15 screws from the top lid of the Processor Assembly.
2. Tilt the lid up.
3. While holding the disk drive to prevent it from falling, remove the 4 drive retaining screws.
4. Disconnect the drive cable from the disk drive.

Instruments with Removable Drives

To remove the disk drive, follow the procedure below. You do **not** need to remove the Processor Assembly from the instrument before removing the drive. (The illustrations below show the Processor Assembly removed from the instrument for clarity.)

The numbered items in the figures below correspond to the step numbers in the procedure.

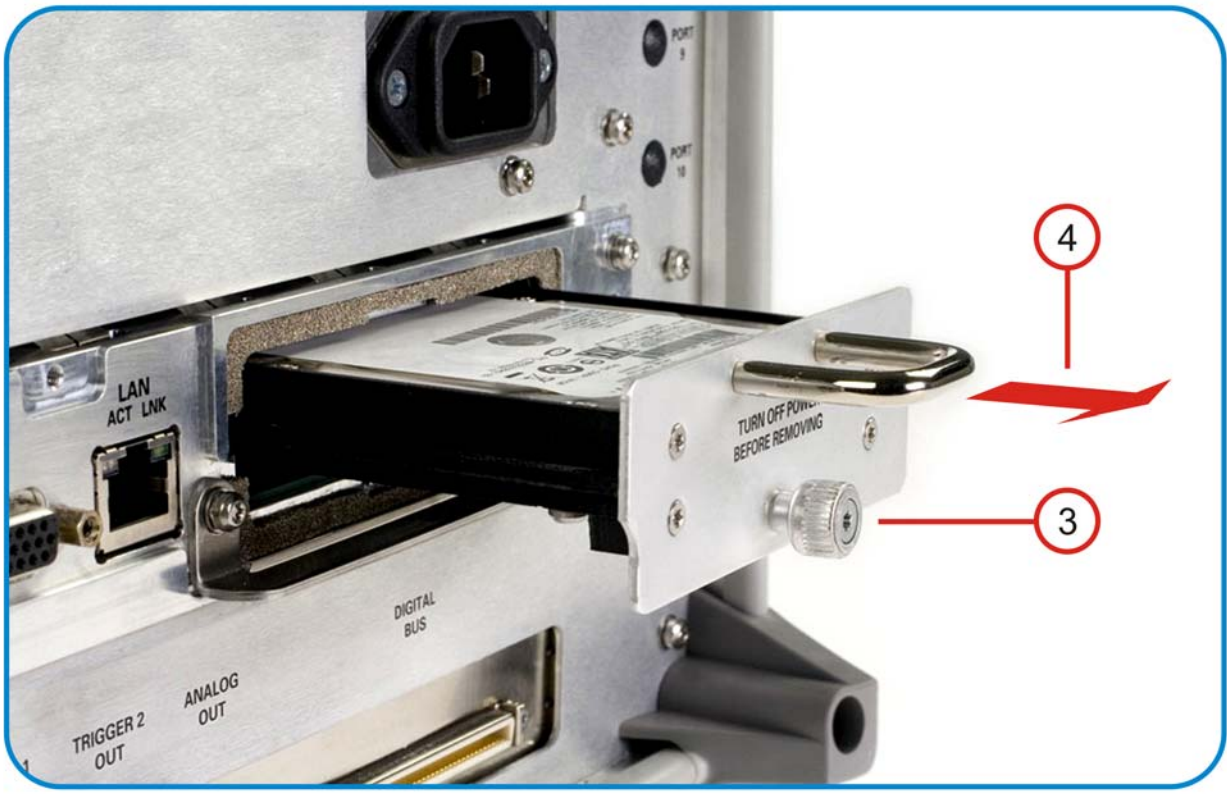
CAUTION Before removing the disk drive, ensure that the instrument's power is turned off.

1. Locate the Processor and Disk Drive Assembly on the instrument's rear panel, as shown in Figure 8-2 below.

Figure 8-2 Processor Assembly with Removable Disk Drive

2. Locate the removable drive, and its retaining thumbscrew, as shown in Figure 8-2.
3. Turn the thumbscrew to release the drive from the panel, as shown in Figure 8-3 below. If the thumbscrew is too tight to turn by hand, use a TORX T10 screwdriver to loosen it.

Figure 8-3 Removable Disk Drive Unit partially extracted



4. Pull the U-shaped handle attached to the drive unit, to remove the drive from the Processor Assembly, as shown in Figure 8-3.

9 User and Remote Interface Security Measures

Remote Access Interfaces

The GPIB command LLO (local lockout) can be sent by the controller to prevent front-panel keyboard access.

Users are responsible for providing security for the I/O ports for remote access, by controlling physical access to the I/O ports. The I/O ports must be controlled because they provide access to most user settings, user states, and the display memory.

Operating System Security Features

The instrument's Windows operating system includes a variety of features that you can invoke or modify to enhance system security. These include the following:

- The ability to create custom user accounts, and assign different security levels to each account by adding it to an existing group. The group types predefined by Windows are: Administrator, Power User, User, Backup Operator, and Guest, but you can also define new group types.
- To provide additional protection for instruments that have a network (or internet) connection, the standard Windows Firewall is enabled by default.
- You can install standard third-party antivirus and spyware detection software designed for use with Windows XP. If your instrument uses a network (or internet) connection, this may be advisable.

Details of all these features are provided in the "Windows Security" chapter of the Agilent X-Series Signal Analyzer: Getting Started Guide.

USB Interfaces

The instrument's Microsoft Windows operating system can be configured to improve the security of the USB interfaces.

Disabling or Enabling Autorun/Autoplay

Autorun, and the associated **Autoplay**, are Windows features that assist users in selecting appropriate actions when new media and devices are detected. The Autorun feature is disabled in the instrument by default, for improved security, unless the Administrator account is running. (In Adminstrator mode, Autorun is enabled, to aid with program installation.)

You can change the Autorun configuration by editing the value of one of two Windows Registry keys. The Windows Registry is a database that stores critical configuration information for the instrument's operating system.

CAUTION Exercise extreme caution whenever you edit the Windows Registry. Entering an incorrect Registry value, or accidentally deleting Registry keys, may have serious consequences that can prevent the system from starting, or require that you reinstall Windows. The instructions in "Disable & Enable Procedure" on page 45 below assume that you are familiar with the use of the Windows Registry Editor to modify Registry settings.

Registry Key Definitions

Autorun can be configured per-machine or per-user.

NOTE If the per-machine Registry key is present, its settings override those of the per-user Registry key.

The Registry key that controls the **per-machine** Autorun settings is:

`HKEY_LOCAL_MACHINE\Software\Microsoft\Windows\CurrentVersion\Policies\Explorer\NoDriveTypeAutoRun`

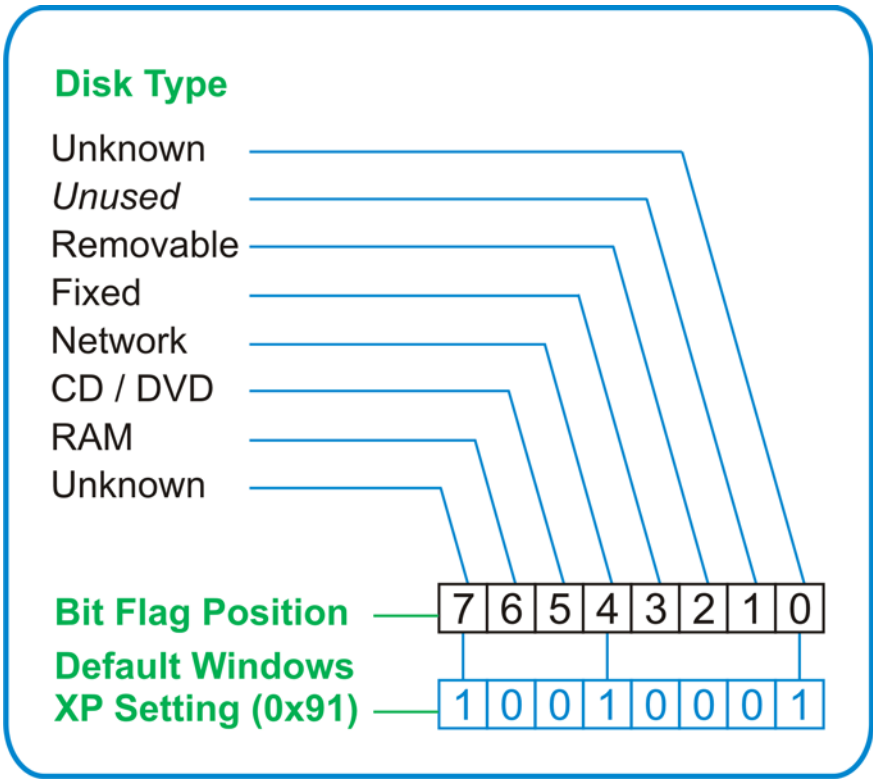
The Registry key that controls the **per-user** Autorun settings is:

`HKEY_CURRENT_USER\SOFTWARE\Microsoft\Windows\CurrentVersion\policies\Explorer\NoDriveTypeAutoRun`

In the following discussions, we use the industry-standard abbreviation HKLM for the root key HKEY_LOCAL_MACHINE, and the industry-standard abbreviation HKCU for the root key HKEY_CURRENT_USER.

The DWORD value of either of these entries represents a set of single-bit flags. Each flag specifies the Autorun setting for a specific drive type, as shown in Figure 9-1 on page 45. Setting a bit flag to 1 disables Autorun for that drive type.

Figure 9-1 Autorun Flag Definitions for NoDriveTypeAutoRun Registry entry



As shown in Figure 9-1 on page 45 above, the default Windows XP (post-SP2) value for this entry is `0x91` (under the entry `HKCU\...\NoDriveTypeAutoRun`). This setting disables Autorun for `Unknown` and `Network` drives, but enables Autorun for `Removable`, `Fixed`, `CD/DVD` or `RAM` drives. You can disable Autorun for all drive types by changing the value to `0xFF`, as described in the following section.

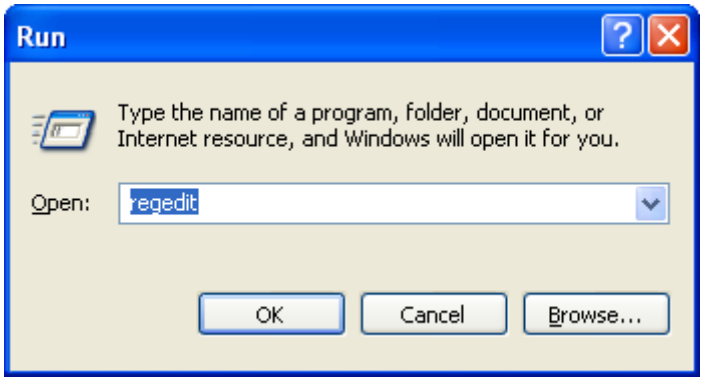
Disable & Enable Procedure

In view of the interaction between the per-machine and per-user Registry settings, as described above, it is recommended that, if both keys exist in your instrument's Registry, you should alter the settings of **both** Registry keys to the same value at the same time.

Use the following procedure to disable Autorun for all drive types, or to revert all Autorun settings to their Windows XP default values.

1. Open the Windows Registry editor. Generally, the easiest way to do this is to select **Run...** from the Windows Start menu. Then, type `regedit` into the Windows Run dialog box, as shown in Figure 9-2 on page 46 below, and click **OK**.

Figure 9-2 Windows Run Dialog



2. The Registry Editor window appears. Using the tree view control on the left of the window, navigate to the per-machine (HKLM) key: `HKLM\Software\Microsoft\Windows\CurrentVersion\Policies\Explorer`.
3. To **disable** Autorun for all drive types, set the value of entry `NoDriveTypeAutoRun` to `0xFF`.

   To **revert** Autorun settings to the Windows default values, set the value of entry `NoDriveTypeAutoRun` to `0x91`.
4. Again using the tree view control on the left of the Registry Editor window, navigate to the per-user (HKCU) key: `HKCU\SOFTWARE\Microsoft\Windows\CurrentVersion\policies\Explorer`.
5. To **disable** Autorun for all drive types, set the value of entry `NoDriveTypeAutoRun` to `0xFF`.

   To **revert** Autorun settings to the Windows default values, set the value of entry `NoDriveTypeAutoRun` to `0x91`.
6. From the Registry Editor menu, select **File** > **Exit** to save the settings and exit the editor.
7. Shut down and restart the instrument, to enable the new settings to take effect.

Microsoft AutoRun Patch

There is a defect in Windows XP that compromises the ability to disable Autorun. This defect has been fixed by a patch from Microsoft, as described in the Microsoft Knowledge Base Article ID: 967715.

This patch has been included in new instrument shipments from the factory since revision A.03.00.

After the patch has been applied, there will be a Registry entry at:

`HKLM\Software\Microsoft\Windows\CurrentVersion\Policies\Explorer\HonorAutorunSetting` with a default value of 1.

More Information

The following Wikipedia articles provide more information about AutoRun and AutoPlay:

http://en.wikipedia.org/wiki/AutoRun

http://en.wikipedia.org/wiki/AutoPlay

Configuring USB for Read-only

As from instrument software revision A.04.00, a convenient mechanism is provided to set the instrument's USB interfaces to read-only, thus preventing transfer of files from the instrument onto USB devices.

You can change this setting only when you are logged on as the Administrator. For details of how to log on to the instrument as the Administrator, see the Agilent X-Series Signal Analyzer: Getting Started Guide. To change the setting, do the following:

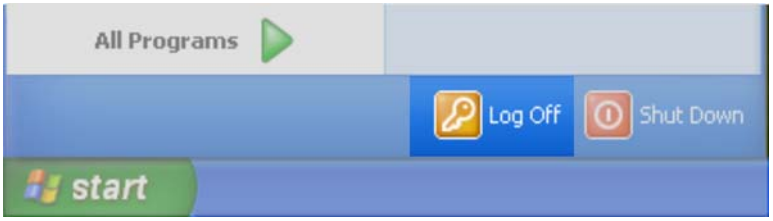
1. If you are **not** currently logged on to the instrument as the Administrator, you must log out.

   If you are currently logged on to the instrument as the Administrator, and the Agilent XSA application is already running, go to Step 4.

   The log-off procedure executes more quickly if you firstly exit the Agilent XSA application, but you can also log off without exiting the application.

2. Select **Log Off** from the Windows Start menu (as highlighted in Figure 9-3 on page 47 below), then click **Log Off** in the Log Off Windows dialog that appears.

   Figure 9-3 Log Off Button in Windows Start Menu

3. After you have logged on to the instrument as the Administrator, restart the Agilent XSA application.
4. When the XSA application has fully initialized (that is, when the main results view and softkey menu are visible), press the **System** front-panel key.
5. From the System softkey menu, select: **More** > **Security** > **USB**.
6. Select the option **Read Only**.

10 Procedure for Declassifying a Faulty Instrument

Even if the instrument is not able to power on, it may be declassified by removing the disk drive from the instrument, using the appropriate procedure as described in "Disk Drive Removal Procedure" on page 39.

11 References

1. **DoD 5220.22-M, "National Industrial Security Program Operating Manual (NISPOM)"**

   United States Department of Defense. Revised February 28, 2006.

   May be downloaded in Acrobat (PDF) format from:

   https://www.dss.mil/GW/ShowBinary/DSS/isp/fac_clear/download_nispom.html

2. **ODAA Process Guide for C&A of Classified Systems under NISPOM, Rev. 2008.1**

   Defense Security Service.

   May be downloaded in Acrobat (PDF) format from:

   https://www.dss.mil/GW/ShowBinary/DSS/isp/odaa/odaa.html

3. **Speed Enhancement and Removable Hard Drive for the X-Series Signal Analyzers (MXA/EXA)**

   Agilent Technologies Inc. 2008, 2009. Part Number: 5989-6541EN.

   May be downloaded in Acrobat (PDF) format from:

   http://www.home.agilent.com/agilent/facet.jspx?kt=1&cc=US&lc=eng&k=5989-6541en

4. **Agilent X-Series Signal Analyzer: Getting Started Guide**

   Agilent Technologies Inc. 2008, 2009. Part Number: subject to change as document is revised.

   A printed copy of this document is supplied with each Agilent X-Series Analyzer.

   It is also available in Acrobat (PDF) form:

   - on the Documentation DVD supplied with each analyzer,
   - on the instrument's disk drive at the following location:

     C:\Program Files\Agilent\SignalAnalysis\Infrastructure\Help\bookfiles\getstart.pdf
   - via download from:

     www.agilent.com/find/xseries_getting_started_guide

5. **Microsoft Knowledge Base Article ID: 967715**

   "How to disable the Autorun functionality in Windows": may be viewed at:

   http://support.microsoft.com/kb/967715

   Note that a second article, at: http://support.microsoft.com/kb/953252, "How to correct 'disable Autorun registry key' enforcement in Windows", redirects to article ID 967715.

This information is subject to change without notice.

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