Keysight Signal Generators

This manual provides documentation for the following instruments:

MXG Signal Generator (Series A)

ESG Signal Generator

Notice: This document contains references to Agilent. Please note that Agilent's Test and Measurement business has become Keysight Technologies. For more information, go to www.keysight.com.

KEYSIGHT TECHNOLOGIES

Security Features and Document of Volatility

Notices

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Safety Notices

CAUTION

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

WARNING

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

Warranty

This Keysight technologies instrument product is warranted against defects in material and workmanship for a period of three years from the date of shipment. During the warranty period, Keysight Technologies will, at its option, either repair or replace products that prove to be defective.

For warranty service or repair, this product must be returned to a service facility designated by Keysight Technologies. Buyer shall prepay shipping charges to Keysight Technologies, and Keysight Technologies shall pay shipping charges to return the product to Buyer. For products returned to Keysight Technologies from another country, Buyer shall pay all shipping charges, duties, and taxes.

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.keysight.com/find/mxg

http://www.keysight.com/find/esg

To receive the latest updates by email, subscribe to Keysight Email Updates:

http://www.keysight.com/find/emailupdates

Information on preventing instrument damage can be found at:

http://www.keysight.com/find/PreventingInstrumentRepair

Is your product software up-to-date?

Periodically, Keysight releases software updates to fix known defects and incorporate product enhancements. To search for software updates for your product, go to the Keysight Technical Support website at:

http://www.keysight.com/find/techsupport

Table of Contents

1 Contacting Keysight Sales and Service Offices

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

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

2 Products Covered by this Document

Product Family Name	Product Name	Model Number	Firmware Revision
X-Series Signal Generators	MXG Signal Generator (Series A)	N5183A N5182A N5181A N5162A[a] N5161A[a]	All
Keysight Signal Generators	ESG Signal Generator	E4438C[b]	C.03.40 or higher
		E4428C[b]	All

a. For the N5161A/62A Signal Generators, the softkey menus and features described in this guide are only available through the web-enabled interface or via SCPI commands. Refer to the instrument Installation Guide, Programming Guide and SCPI Programmers Reference for more information.
b. See "Recommended Software Upgrades" on page 10 for important firmware version information.

Document Purpose

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.keysight.com/find/security

IMPORTANT

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. Keysight 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.

Recommended Software Upgrades

The information in this section applies only to **ESG** Signal Generators.

CAUTION Do not use the **Erase All**, **Erase and Overwrite All**, **Erase and Sanitize All**, **Erase**, **Overwrite**, or **Sanitize** procedures with any of the firmware revisions listed in Table 2-1 below.

If your instrument's current firmware revision is among those listed, please upgrade **immediately** to newer firmware. For details, see "Firmware Update Procedure" on page 31.

Table 2-1 Firmware revisions that require upgrades

Instrument model number	Current firmware revision	Upgrade to firmware revision
E44x8C	C.04.84, C.04.86, C.04.95	C.04.96 or later

Signal Generator Products covered in Other Documents

As from August 2014, security details for some Keysight Signal Generator products that were formerly described in this document have been moved to separate documents. Table 2-2 below provides details of the models covered by the new Security Features documents.

Table 2-2 Other Security Features Documents

Product Names	Model Numbers	Security Features Document
MXG Microwave Analog Signal Generator MXG RF Vector Signal Generator MXG RF Analog Signal Generator	N5183B N5182B N5181B	Security Features and Document of Volatility (MXG Series B, EXG Signal Generators)
EXG Microwave Analog Signal Generator EXG RF Vector Signal Generator EXG RF Analog Signal Generator	N5173B N5172B N5171B	
PSG Signal Generator	E8663D E8663B E8267D E8267C E8257N E8257D E8257C E8247C	Security Features and Document of Volatility (PSG Signal Generator)

Products Covered by this Document
Signal Generator Products covered in Other Documents

3 Security Terms and Definitions

Term	Definition
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 in an environment that provides an acceptable level of protection for the data that was on the media before clearing. Hence, 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. Keysight 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 the data from media before reusing the media in an environment that does **not** provide an acceptable level of protection for the data that was in the media before sanitizing. Hence, 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. Keysight 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 Section 5.2.5.5.5 of the ISFO Process Manual for the Certification and Accreditation of Classified Systems under the NISPOM.
Secure Erase	Secure Erase is a term that is used to refer to either the clearing or sanitization features of Keysight instruments.

4 Instrument Memory & Volatility

This chapter contains information on the memory components in your instrument.

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

The descriptions are divided by product type, as follows:

MXG (Series A) Memory

The following tables describe each memory type used in the base instrument and optional baseband generator.

Table 4-1 Base Instrument (All models and options)

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. Main Memory (DRAM) 32 MByte	Yes	No	Firmware operating memory	Operating system	CPU board, not battery backed.	Turn off instrument power.
2. Main Memory (Flash) 8 MByte	Yes	Yes	Factory calibration/ configuration data User file system[a], which includes flatness calibration, instrument states, and sweep lists	Firmware upgrades and user-saved data[a]	CPU board (same chip as firmware memory, but managed separately)	Because this memory chip contains 8 MB of user data (described here) and 8 MB of firmware memory, a full-chip erase is not desirable. User data areas are selectively and completely sanitized by the procedure "Erase and Sanitize All" on page 24.
3. Firmware Memory (Flash) 8 MByte	No	Yes	Main firmware image	Factory installed or firmware upgrade During normal operation, this memory cannot be overwritten.	CPU board (same chip as main flash memory, but managed separately)	Because this memory chip contains 8 MB of user data and 8 MB of firmware memory (described here), a full-chip erase is not desirable. User data areas are selectively and completely sanitized by the procedure "Erase and Sanitize All" on page 24.
4. Bootrom Memory (EEPROM)	No	Yes	CPU bootup parameters	Factory programmed	CPU board	None required (no user data)
8 KByte	Yes	Yes	LAN configuration	Front panel entry or remotely	During normal operation, this memory cannot be overwritten or erased except for LAN configuration. This read-only data is programmed at the factory.	

Table 4-1 Base Instrument (All models and options)

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
5. Calibration Data (Flash) 256 KByte	No	Yes	Factory calibration and configuration data backup	Factory or service only	RF Board	None required (no user data)
6. LCD Display Memory (DRAM) 160 KByte	No	No	Display buffer	Operating system	CPU board, not battery backed.	Turn off instrument power.
7. Front Panel Memory (Flash) 32 KByte	No	Yes	Front panel keyboard controller firmware	Operating system	Front Panel board	None required (no user data)

a. Analog instruments only

Table 4-2 Vector Models with Baseband Generator (N5162A/N5182A with Options 651, 652, or 654)

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. Waveform Memory (DRAM) $\leq$ 320 MByte	Yes	No	Waveforms (including header and marker data)	Normal user operation	Not battery backed.	Turn off instrument power.
2. Extended Persistent Memory (Flash)[a] 4 GByte	Yes	Yes	All user data	Normal user operation		User data is completely sanitized by the procedure "Erase and Sanitize All" on page 24.
3. Calibration Data Memory (Flash) 128 KByte	No	Yes	No user data	Factory or service only		None required (no user data)

a. For serial numbers lower than MY/US/SG4818xxxx, the persistent memory value is 512 MByte.

ESG Memory

The following tables describe each memory type used in the base instrument, optional baseband generator, optional hard disk and option flash drive.

Table 4-3 Base Instrument (All models and options)

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. Main Memory (SDRAM) 64 MByte	Yes	No	Firmware operating memory	Operating system (not user)	CPU board. Not battery backed.	Turn off instrument power.
2. Main Memory (Flash) 20 MByte	Yes	Yes	Factory calibration/ configuration data User file system, which includes instrument status backup, flatness calibration, IQ calibration, instrument states, waveforms (including header and marker data), modulation definitions, and sweep lists	Firmware upgrades and user-saved data	CPU board (same chip as firmware memory, but managed separately) User data is not stored in this memory if hard disk (Option 005) or flash drive (Option 008/009) is installed.	Because this 32 MB memory chip contains 20 MB of user data (described here) and 12 MB of firmware memory, a selective chip erase is performed. User data areas are selectively and completely sanitized by the procedure "Erase and Sanitize All" on page 24.
3. Firmware Memory (Flash) 12 MByte	No	Yes	Main firmware image	Factory installed or firmware upgrade	CPU board (same chip as main flash memory, but managed separately) During normal operation, this memory cannot be overwritten except for LAN configuration.	Because this 32 MB memory chip contains 20 MB of user data and 12 MB of firmware memory (described here), a selective chip erase is performed. User data areas are selectively and completely sanitized by the procedure "Erase and Sanitize All" on page 24.
	Yes	Yes	LAN configuration	Front panel entry or remotely		
4. Battery Backed Memory (SRAM) 512 KByte	Yes	Yes	User-editable data (table editors) Last instrument state, last instrument state backup, and persistent instrument state and instrument status	Firmware operations	CPU board The battery is located on the motherboard.	Sanitized by the procedure described in "Erase and Sanitize All" on page 24.

Table 4-3 Base Instrument (All models and options)

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
5. Bootrom Memory (Flash) 128 KByte	No	Yes	CPU bootup program and firmware loader/updater	Factory programmed	CPU board During normal operation, this memory cannot be overwritten or erased.	None required (no user data)
6. Calibration Backup Memory (Flash) 512 KByte	No	Yes	Factory calibration/ configuration data backup	Factory or service only	Motherboard	None required (no user data)
7. Boards Memory (Flash) 512 Bytes	No	Yes	Factory calibration and information files, code images, and self-test limits	Factory or service only	All RF boards, baseband generator, and motherboard	None required (no user data)
8. Micro- processor Cache (SRAM) 3 KByte	Yes	No	CPU data and instruction cache	Memory is managed by CPU, not user	CPU board, not battery backed.	Turn off instrument power.

Table 4-4 Vector Models with Baseband Generator (E4438C with Options 601 or 602)

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. Waveform Memory (SDRAM) 40 MByte– 320 MByte	Yes	No	Waveforms (including header and marker data) and PRAM	Normal user operation	Not battery backed.	User data is completely sanitized by the procedure "Erase and Sanitize All" on page 24.
2. BBG Firmware Memory (Flash) 32 MByte	No	Yes	Firmware image for baseband generator	Firmware upgrade		None required (no user data)

Table 4-4 Vector Models with Baseband Generator (E4438C with Options 601 or 602)

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
3. Coprocessor Memory (SRAM) 32 MByte	Yes	No	Operating memory of baseband coprocessor CPU	During normal operation, some user information, such as payload data, can remain in the memory.	This memory is used during normal baseband generator operation. It is not directly accessible by the user. Not battery backed.	Turn off instrument power.
4. Buffer Memory (SRAM) 5 x 512 KByte	No	No	Support buffer memory for ARB and real-time applications	Normal user operation	This memory is used during normal baseband generator operation. It is not directly accessible by the user. Not battery backed.	Turn off instrument power.

Table 4-5 Hard Disk (E4438C with Option 005)

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. Media Storage (Built-in Hard Disk) 6 GByte or 10 GByte (4 GByte usable in both cases)	Yes	Yes	User files, including flatness calibrations, IQ calibration, instrument states, waveforms (including header and marker data), modulation definitions, and sweep lists	User-saved data	The hard disk is an option for vector instruments (E4438C Option 005) and is therefore not installed in some instruments. If it is installed, these files are stored on the hard disk instead of in flash memory.	The magnetic residue requires several rewrite cycles or drive removal and destruction. User data is completely sanitized by the procedure "Erase and Sanitize All" on page 24.
2. Buffer Memory (DRAM) 512 KByte	No	No	Buffer (cache) memory	Normal operation, via hard disk		Turn off instrument power.

5 Memory Clearing, Sanitization and Removal Procedures

This chapter describes several security functions you can use to remove sensitive data stored in the instrument before moving it from a secure development environment. The functions described are:

CAUTION These functions do **not** erase or sanitize external media connected to the instrument's USB port.

CAUTION (This information applies only to **ESG** Signal Generators.)

Do not use the **Erase All**, **Erase and Overwrite All**, **Erase and Sanitize All**, **Erase**, **Overwrite**, or **Sanitize** procedure with any of these firmware revisions:

E44x8C: C.04.84, C.04.86, C.04.95

If your instrument's current firmware revision is among those listed above, please upgrade **immediately** to newer firmware. For details, see "Firmware Update Procedure" on page 31.

Erase All

This function removes all user files, user flatness calibrations, user I/Q calibrations, and resets all table editors with original factory values, ensuring that user data and configurations are not accessible or viewable. The instrument appears as if it is in its original factory state, however, the memory is not sanitized. This action is relatively quick, typically taking less than one minute (the exact time depends on the number of files).

Model	Key Sequence
MXG (Series A)	**File** > **More** > **Security** > **Erase All** > **Confirm Erase**
ESG	**Utility** > **Memory Catalog** > **More** > **Security** > **Erase All** > **Confirm Erase**

Note that there is a similar but distinct function, as described below, that deletes all user files but does **not** reset the table editors:

Model	Key Sequence
MXG (Series A)	**File** > **Delete All Files**
ESG	**Utility** > **Memory Catalog** > **More** > **Delete All Files**

Erase and Overwrite All

This function performs the same actions as **Erase All**, plus it clears and overwrites various memory types, as described below.

Memory Type	Models	Description
SRAM (Battery- backed)	Not MXG	All addressable locations are overwritten once with random characters.
CPU Flash	All	User data is erased with flash chip block-erase commands. No overwrite is performed. During erasure, the system files are temporarily moved to main memory and are then restored to CPU Flash when erasure is complete.
Extended Persistent Memory (Flash)	MXG N5162A/82A only	The file system is formatted, then all addressable locations are overwritten with random characters, and then the file system is reformatted again.
Hard Disk	ESG E4438C	All addressable locations are overwritten once with a random character.

Model	Key Sequence
MXG (Series A)	**File** > **More** > **Security** > **Erase and Overwrite All** > **Confirm Overwrite**
ESG	**Utility** > **Memory Catalog** > **More** > **Security** > **Erase and Overwrite All** > **Confirm Overwrite**

Erase and Sanitize All

This function performs the same actions as **Erase All**, plus it clears and overwrites the various memory types, as described below.

Memory Type	Models	Description
SRAM (Battery- backed)	ESG only	All addressable locations are overwritten once with random characters.
CPU Flash	MXG Series A ESG	User data is erased with flash chip block-erase commands. No overwrite is performed. During erasure, the system files are temporarily moved to main memory and are then restored to CPU Flash when erasure is complete.
Extended Persistent Memory (Flash)	MXG N5162A/82A only	The file system is formatted, then all addressable locations are overwritten with random characters, and then the file system is reformatted again. These actions are then repeated.
Hard Disk	ESG E4438C	All addressable locations are overwritten with a random character three times.

NOTE The Erase and Sanitize All operation resets the instrument's LAN settings to their factory defaults. For more details, see "LAN Setup" on page 25.

Model	Key Sequence
MXG (Series A)	**File** > **More** > **Security** > **Erase and Sanitize All** > **Confirm Sanitize**
ESG	**Utility** > **Memory Catalog** > **More** > **Security** > **Erase and Sanitize All** > **Confirm Sanitize**

Key Sequence: **File** > **More** > **Security** > **Erase and Sanitize All** > **Confirm Sanitize**

Clear Persistent State Information

Persistent State

The persistent state settings contain instrument setup information that can be toggled within predefined limits such as display intensity, contrast and the GPIB address. In vector models, the user IQ Cal is also saved in this area.

The following key sequences or SCPI commands can be used to clear the IQ Cal file and to set the operating states that are not affected by an instrument power-on, preset, or *RST command to their factory default:

Instrument Setup

Key Sequence	MXG (Series A)	**Utility** > **Power On/Preset** > **Restore System Settings to Default Values** > **Confirm Restore Sys Settings to Default Values**
Key Sequence	ESG	**Utility** > **Power On/Preset** > **Restore System Defaults** > **Confirm Restore Sys Defaults**
SCPI Command	All Models	`:SYSTem:PRESet:PERSistent`

LAN Setup

The LAN setup (hostname, IP address, subnet mask, and default gateway) information is not modified by an instrument power-on or *RST command. This information can be changed or cleared by entering new data, or can be reset to the factory default settings by performing an Erase and Sanitize All operation.

User IQ Cal File (Vector Models Only)

When a user-defined IQ Calibration has been performed, the cal file data is removed by setting the cal file to default, as follows:

Key Sequence	All Models	**I/Q** > **I/Q Calibration** > **Revert to Default Cal Settings**
SCPI Command	MXG (Series A)	`:CAL:IQ:DEF`
SCPI Command	ESG	`:CAL:WBIQ:DEF`

Memory Clearing, Sanitization and Removal Procedures
Clear Persistent State Information

6 Using Secure Mode

Secure Mode automatically applies the selected **Security Level** action the next time the instrument's power is cycled.

To activate Secure Mode, do the following:

Step	Action	Notes
1	Open the Security Level menu	For MXG (Series A), press: **File** > **More** > **Security** > **Security Level** For ESG, press: **Utility** > **Memory Catalog** > **More** > **Security** > **Security Level**
2	Select the Security Level	Available options: ▪ **None** – equivalent to a factory preset, no user information is lost ▪ **Erase** – equivalent to Erase All ▪ **Overwrite** – equivalent to Erase and Overwrite All ▪ **Sanitize** – equivalent to Erase and Sanitize All
3	Activate Secure Mode	CAUTION Once you activate secure mode (by pressing **Confirm)**, you cannot deactivate or decrease the Security Level; the erasure actions for the selected Security Level execute at the next power cycle. Once you activate Secure Mode, you can only increase the Security Level until you cycle power. For example, you can change **Erase** to **Overwrite**, but not the reverse. After the power cycle, the Security Level selection remains the same, but the secure mode is not activated. For MXG (Series A), press: **File** > **More** > **Security** > **Enter Secure Mode** > **Confirm** For ESG, press: **Utility** > **Memory Catalog** > **More** > **Security** > **Enter Secure Mode** > **Confirm** The **Enter Secure Mode** softkey changes to **Secure Mode Activated**.

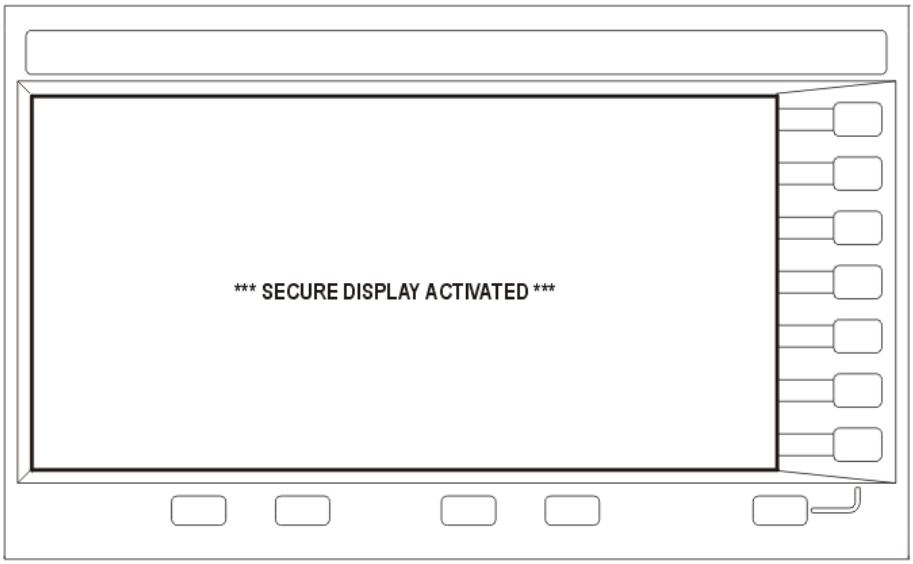
7 Using Secure Display

This function prevents unauthorized personnel from reading the instrument display or tampering with the current configuration via the front panel. When Secure Display is active, the display is blank, except for an advisory message, as shown in Figure 7-1 below. All front panel keys are disabled.

To set Secure Display, press: **Utility** > **Display** > **More** > **Activate Secure Display** > **Confirm Secure Display**

Once Secure Display has been activated, the power must be cycled to re-enable the display and front panel keys.

Figure 7-1 Signal Generator Screen with Secure Display Activated



8 Security Issues for Certain Firmware Revisions

If your instrument currently has one of the firmware revisions listed in Table 8-1, using certain security features may cause the deletion of some of the instrument's system files. Before using the security features, update your firmware to the appropriate revision listed in the "Update to" column of Table 8-1.

Table 8-1 Firmware Revisions by Instrument Model

Model	Affected firmware revisions	Update to
E4428C	C.04.84, C.04.86, or C.04.95	C.04.96 or later
E4438C	C.04.84, C.04.86, or C.04.95	C.04.96 or later

Firmware Update Procedure

To obtain the latest firmware online, perform the following steps:

1. Access the instrument's web page: `www.keysight.com/find/<model_number>` (Example: www.keysight.com/find/E4438C).
2. Under the **Technical Support Tab**, select **Drivers and Software**, and follow the remaining links to the firmware upgrade page.

If web access is not available, Keysight can provide the new firmware on CD-ROM. To obtain the CD-ROM, contact Keysight or your Keysight representative, as described in "Contacting Keysight Sales and Service Offices" on page 7.

Error Messages and Secure Environments

If you cannot upgrade the firmware prior to using the security features, Keysight will help you to recover from error messages that may appear after executing the security functions. The error messages indicate that instrument system files have been erased. The following list shows some possible error messages:

- `256, File name not found; /SYS/LICENSE.TXT`
- `617, Configuration Error; License file not found. Creating empty one.`
- `A missing or damaged system file was encountered while trying to diagnose the system.`

Even if these error messages appear, the security function has completely sanitized the instrument. If the instrument is located in a secure environment, it is safe to remove it. After removing it from the secure area, follow the process below to recover the lost system files.

Recovering Erased System Files

To recover the lost files, perform the following steps:

1. Obtain your instrument's model and serial number.
2. Contact Keysight and request a replacement license file.

   The Keysight representative will ask for the model and serial number.
3. Update the firmware to the revision specified in the "Update to" column of Table 8-1 on page 31.

   a. If problems occur when upgrading the firmware, manually enter as many license keys as possible using **Utilities** > **Instrument Info** > **Options Info** > **Auxiliary Software Options**

   b. Upgrade the firmware again.
4. Open Internet Explorer and enter `http://<instrument IP address>/update`.
5. Locate **Recover Self-test System Files** and click **Execute**.
6. Locate **Overwrite LICENSE.TXT**, cut and paste the replacement license file (obtained in Step 2) into the text box, and click **Execute**.
7. Cycle the power on the instrument.
8. If configuration errors persist after completing the previous steps, contact Keysight again.

9 Procedure for Declassifying a Faulty Instrument

If the instrument is not functional, and you are unable to use the security functions, you may physically remove the Processor board and Hard Disk or Solid State Drive (if installed).

For removal and replacement procedures, refer to the Service Guide for your instrument.

Once the Processor and Hard Disk assemblies have been removed, proceed as in Table 9-1 below:

Table 9-1 Assembly Disposal Procedures

Assembly	Procedure
Processor (CPU) Board	**Either** Discard the processor board and send the instrument to a repair facility. A new Processor Board will be installed, then the instrument will be repaired and calibrated. If the instrument is still under warranty, you will not be charged for the new Processor Board. **or** If you have another working instrument, install the Processor Board into that instrument and erase the memory. Then reinstall the Processor Board back into the non-working instrument and send it to a repair facility for repair and calibration. If you discover that the Processor Board does not function in the working instrument, discard the Processor Board and note that it caused the instrument failure on the repair order. If the instrument is still under warranty, you will not be charged for the new Processor Board.
Hard Disk (E4438C Option 005 only)	**Either** Discard the Hard Disk and send the instrument to a repair facility. Indicate on the repair order that the Hard Disk was removed and must be replaced. A new Hard Disk will be installed, then the instrument will be repaired and calibrated. If the instrument is still under warranty, you will not be charged for the new hard disk. **or** Keep the Hard Disk and send the instrument to a repair facility. When the instrument is returned, reinstall the Hard Disk.

A: References

1. **DoD 5220.22-M, "National Industrial Security Program Operating Manual (NISPOM)"**
United States Department of Defense. Revised February 28, 2006.
Security Features and Document of Volatility
http://www.dss.mil/isp/fac_clear/download_nispom.html

2. **ISFO Process Manual for the Certification and Accreditation of Classified Systems under the NISPOM**
Defense Security Service.
DSS-cleared industries may request a copy of this document via email, by following the instructions at:
http://www.dss.mil/isp/odaa/request.html

3. **Greenliant NANDrive Security Erase Feature, Purge Command Specification**
This Application Note may be obtained in PDF format from Greenliant Systems Ltd., by contacting the company via their web site:
http://www.greenliant.com/contact_us

4. **AT Attachment 8 - ATA/ATAPI Command Set (ATA8-ACS)**
INCITS Technical Committee T13/1699-D Revision 6a, September 6th, 2008
This standard may be downloaded in Acrobat (PDF) format from the INCITS T13 web site:
http://www.t13.org/documents/UploadedDocuments/docs2008/D1699r6a-ATA8-ACS.pdf

5. **Installation Guide**
Keysight Technologies Inc. Specific to Signal Generator model
MXG (Series A): http://literature.cdn.keysight.com/litweb/pdf/N5180-90002.pdf
ESG: http://literature.cdn.keysight.com/litweb/pdf/E4400-90502.pdf

6. **Programming Guide**
Keysight Technologies Inc.
http://literature.cdn.keysight.com/litweb/pdf/N5180-90005.pdf

7. **SCPI Programmers Reference**
Keysight Technologies Inc. Specific to Signal Generator model:
MXG (Series A): http://literature.cdn.keysight.com/litweb/pdf/N5180-90004.pdf
ESG: http://literature.cdn.keysight.com/litweb/pdf/E4400-90506.pdf

8. **Service Guide**
Keysight Technologies Inc.
N5161A/62A/81A/82A/83A MXG (Series A) Signal Generators
http://literature.cdn.keysight.com/litweb/pdf/N5180-90006.pdf
E4428C/38C ESG Signal Generators
http://literature.cdn.keysight.com/litweb/pdf/E4400-90511.pdf

9. **Security Features and Document of Volatility (PSG Signal Generator)**
Keysight Technologies Inc.
http://literature.cdn.keysight.com/litweb/pdf/E8251-90379.pdf

10. **Security Features and Document of Volatility (MXG Series B, EXG Signal Generators)**
Keysight Technologies Inc.
http://literature.cdn.keysight.com/litweb/pdf/N5180-90079.pdf