



8560E/EC-Series
Spectrum Analyzers

Security Features and Volatility

Table of Contents

Contacting Agilent Sales and Service Offices	3
Products Covered by this Document	4
Security Terms and Definitions	5
Instrument Memory	6
Memory Clearing, Sanitization and Removal Procedures.....	9
User and Remote Interface Security Measures	12
Deleting User Information	12
Screen and Annotation Blanking	13
SCPI/GPIB Control of Interfaces	13
Remote Access Interfaces.....	14
Procedure for Declassifying a Faulty Instrument.....	15
References.....	16

Contacting Agilent Sales and Service Offices

Assistance with test and measurement needs and information on finding a local Agilent office is available on the internet at:

<http://www.agilent.com/find/assist>.

If you do not have internet access, please contact your field engineer.

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.

Products Covered by this Document

Product Family Name	Product Names	Model Numbers
Portable Spectrum Analyzers	8560E-Series Spectrum Analyzer	8560E, 8561E, 8562E, 8563E, 8564E, 8565E
	8560EC-Series Spectrum Analyzer	8560EC, 8561EC, 8562EC, 8563EC, 8564EC, 8565EC

(All models were sold with either Agilent or Hewlett-Packard branding.)

This document describes instrument security features and the steps to declassify an instrument through memory sanitization or removal. 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.

Security Terms and Definitions

Term	Definition
Clearing	As defined in Section 8-301a of DoD 5220.22-M , 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 , Chapter 8.
Sanitization	<p>As defined in Section 8-301b of DoD 5220.22-M, 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.</p> <p>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 Section 5.2.5.5.5 of the ISFO Process Manual.</p>
Secure Erase	Secure Erase is a term that is used to refer to either the clearing or sanitization features of Agilent instruments.

Instrument Memory

This section contains information on the memory components present 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.

Table 1: Instrument Memory - Base Instrument

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
Main Memory (UVEPROM) (E-Series) 12 Mbit	No	Yes	Firmware operating memory	Programmed before installed (no user files)	A2 Controller Board Contains no user data	None
Main Memory (Flash) (EC-Series) 16 Mbit	No	Yes	Firmware operating memory	Programmed before installed (no user files)	A2 Controller Board Contains no user data	None
Battery-backed Display Memory (SRAM) (E-Series only) 128 kbit	Yes	Yes	Display processing, trace data	Firmware operations and user	A2 Controller Board The battery can be removed to clear the memory, but must be reinstalled for complete instrument functionality	See Table 3
Battery-backed Display Memory (SRAM) (EC-Series) 2 Mbit	Yes	Yes	Display processing, trace data	Firmware operations and user	A2 Controller Board The battery can be removed to clear the memory, but must be reinstalled for complete instrument functionality	See Table 3

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
Battery-backed User Memory (SRAM) (Both E & EC) 2 Mbit (1.2 Mbit if serial prefix is 3305A or lower)	Yes	Yes	Used to store instrument state files, trace data, and user preselector peak information	Firmware operations and user	A2 Controller Board The battery can be removed to clear the memory, but must be reinstalled for complete instrument functionality	See Table 3
Config & Cal Memory (EEPROM) (Both E & EC) 64 kbit (16 kbit if firmware version is earlier than 931216)	Yes	Yes	Config and cal data. Serial & model No., installed options, frequency response cal data, preselector tuning, microcircuit bias values, focus & intensity values, elapsed time data, ext. mixer conv. loss factors, and User Power On State.	Firmware operations and user	A2 Controller Board Memory IC is socketed and can be removed. This IC is A2U23 in EC Series and A2U500 or A2U501 in E-Series.	See Table 6

Table 2: Additional Instrument Memory - with 85620A Mass Memory Module

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
Module control (UVEPROM) 1.5 or 2 Mbit	No	Yes	Firmware operating memory	Operating system (not user)	Module attaches to rear of instrument and this memory is in the module.	None
DLP Storage (SRAM) 1 Mbit	Yes	Yes	Storage of DLP's (downloadable programs). User files	User-saved data	Module attaches to rear of instrument and this memory is in the module.	See Table 4
Memory card (Battery-backed SRAM) Size depends on card used.	Yes	Yes	User files, including trace data and instrument state files.	User-saved data and DLP's	The memory card is inserted into the Mass Memory Module (attached to rear of instrument).	See Table 5

Memory Clearing, Sanitization and Removal Procedures

This section explains how to clear, sanitize, and remove memory from your instrument, for all memory that can be written to during normal operation and for which the clearing and sanitization procedure is non-trivial.

Table 3: SRAM

Description and purpose	Display memory used to process the display data and trace data, and user memory used to store instrument state files and user preselector peak information.
Size	Display memory, E-Series: 128 kbit Display memory, EC-Series: 2 Mbit User memory, E- & EC-Series: 2 Mbit (1.2 Mbit if the serial prefix is 3305A or lower)
Memory clearing	<p>This memory can be cleared by removing the battery and leaving the power off for at least one hour. All data stored in the memory will be cleared.</p> <p>If a module such as the 85620A is attached, the module must be removed to access the battery. Remove the battery by first removing the two screws that attach the battery cover to the rear panel. The battery can then be removed from its holder. The battery voltage to the SRAM is controlled by a battery manager circuit and stored in a capacitor on the A2 Controller Board; so shorting the terminals on the battery holder does not accelerate memory clearing.</p> <p>This procedure complies with the clearing requirements specified for SRAM in the “Clearing and Sanitization Matrix” in Section 5.2.5.5.5 of the ISFO Process Manual.</p>
Memory sanitization	Follow the procedure described in “Memory clearing” above. The procedure complies with the sanitization requirements specified for SRAM in the “Clearing and Sanitization Matrix” in Section 5.2.5.5.5 of the ISFO Process Manual .
Memory removal	Refer to the service documentation for your instrument to remove and replace the A2 Controller Board. (The memory chips are soldered onto the controller board and are difficult to remove.)
Write protecting	Not applicable.
Memory validation	When the SRAM is cleared, an error 718 “BATTERY ?” message will appear on the display when the instrument is powered on.

Table 4: SRAM (85620A Module)

Description and purpose	Memory used to store DLP's and user data in the 85620A Mass Memory Module.
Size	1 Mbit
Memory clearing	Remove module and keep it in secure area, or remove battery from module for at least one hour before reinserting. This procedure complies with the clearing requirements specified for SRAM in the "Clearing and Sanitization Matrix" in Section 5.2.5.5.5 of the ISFO Process Manual .
Memory sanitization	Follow the procedure described in "Memory clearing" above. The procedure complies with the sanitization requirements specified for SRAM in the "Clearing and Sanitization Matrix" in Section 5.2.5.5.5 of the ISFO Process Manual .
Memory removal	The entire 85620A can be removed from the rear of the instrument and kept in a secure area. See the user documentation for the 85620A.
Write protecting	Not applicable.
Memory validation	Not applicable.

Table 5: SRAM (Memory Card)

Description and purpose	Memory used to load DLPs and store user data in the 85620A Mass Memory Module.
Size	Dependent on card used.
Memory clearing	Remove card and keep it in secure area, or remove battery from card for at least one hour before reinserting. This procedure complies with the clearing requirements specified for SRAM in the "Clearing and Sanitization Matrix" in Section 5.2.5.5.5 of the ISFO Process Manual .
Memory sanitization	Follow the procedure described in "Memory clearing" above. The procedure complies with the sanitization requirements specified for SRAM in the "Clearing and Sanitization Matrix" in Section 5.2.5.5.5 of the ISFO Process Manual .
Memory removal	The memory card is readily removable from the 85620A and can thus be retained in a secure location.
Write protecting	Not applicable.
Memory validation	Not applicable.

Table 6: EEPROM

Description and purpose	Configuration and calibration memory used to store the configuration and calibration data, including serial and model number, installed options, frequency response calibration data, preselector tuning, microcircuit bias values, focus and intensity values, elapsed time data, external mixer conversion loss factors, and User Power On State.
Size	64 kbit (16 kbit if firmware version is earlier than 931216)
Memory clearing	Since this memory contains mostly instrument configuration and calibration data, it cannot be cleared without destroying the integrity of the instrument. However, this memory stores only two types of data that would require manual clearance. These are External mixer conversion loss factors and User Power On state, which may be cleared using the procedure found under "User and Remote Interface Security Measures."
Memory sanitization	This memory cannot be sanitized in compliance with the sanitization requirements specified for EEPROM in the "Clearing and Sanitization Matrix" in Section 5.2.5.5.5 of the ISFO Process Manual . To meet declassification requirements, see "Memory removal" in this table.
Memory removal	This memory may be removed, but for proper operation, it must be replaced by a new memory chip with the instrument configuration and calibration information. This memory chip is in a socket on the A2 Controller Board. (EC-Series: A2U23. E-Series: A2U500 or A2U501.) See the service documentation for location and removal of the A2 Controller Board and location of this memory.
Write protecting	Not applicable.
Memory validation	Not applicable.

User and Remote Interface Security Measures

This section includes the following topics:

- Deleting User Information
- Screen and Annotation Blanking
- SCPI/GPIB Control of Interfaces

Deleting User Information

This section describes procedures that allow you to clear user Information from memory, without clearing the entire memory.

Information Type	Clearing Procedure
Instrument states	<p>Up to ten states can be stored in the Instrument State Registers. Instrument states include frequency, amplitude, bandwidth, and other settings. The state softkeys are named according to the current screen title, if one was used when the state was saved. The state registers are cleared by storing the instrument preset state in them.</p> <p>To save the preset state to all state registers, press [PRESET][SAVE], set {SAVE LOCK} to OFF, press {SAVE STATE}, then press each of the ten state register softkeys.</p> <p>To clear the “Last State,” press the PRESET button twice: [PRESET][PRESET].</p>
User preselector peak information	<p>The user preselector peak information can be cleared by overwriting it with the factory preselector peak information.</p> <p>To do this, press [RECALL][MORE]{FACTORY PRSEL PK}[SAVE]{SAVE PRSEL PK}.</p>
Trace data	<p>Up to eight traces can be saved in the Trace Storage registers. As with the state storage, the trace softkeys are named according to the current screen title, if one was used when the trace was saved. The trace registers are cleared by storing the instrument preset trace to them.</p> <p>To save the preset trace to all trace registers, press [PRESET][SAVE], set {SAVE LOCK} to OFF, press {SAVE STATE}{SAVE TRACE A}, then press each of the eight trace register softkeys.</p>
Display memory	<p>Press [PRESET].</p> <p>This stores the preset condition into the memory.</p>

Information Type	Clearing Procedure
External mixer conversion loss factors	<p>(Does not apply to instruments with the Tracking Generator, Option 002)</p> <p>When using external mixing, the user can enter conversion loss factors for bands A, Q, U, V, E, W, F, D, G, Y, and J. Each of these bands has multiple predefined frequency points (a total of 79 correction points) all of which may need to be reset or cleared if external mixing has been used. The default value for all of these points is 30 dB, which is what they should be set to when clearing the memory.</p> <p>To access this information, press [AUX CTRL]{EXTERNAL MIXER}, then [FULL BAND]. Use the UP or DOWN arrow to select "A BAND." To reset the data for this band, press {AMPTD CORRECT}{CNV LOSS VS FREQ} and then enter 30 dB for each of the correction points in the list. (Use the UP and DOWN arrows to scroll through the list.) Repeat this procedure for each band to reset all of the values.</p>
User Power On state	Press [PRESET][SAVE]{PWR ON STATE}.

Screen and Annotation Blanking

Table 7: Disabling Display Parameters

Function	Key Sequence	Remote Command
Annotations	[DISPLAY]{MORE 1 of 2}{ANNOT ON OFF}	ANNOT OFF ON
Graticule	[DISPLAY]{MORE 1 of 2}{GRAT ON OFF}	GRAT OFF ON
Display Line	[DISPLAY]{DISPL LIN ON OFF}	DL OFF ON
Threshold	[DISPLAY]{THRESHLD ON OFF}	TH OFF ON
Frequency	[DISPLAY]{MORE 1 of 2}{FREQ DSP OFF}	FDSP OFF
Trace	[TRACE]{BLANK A} or {BLANK B}	BLANK TRA TRB
Softkeys	[HOLD]	HD

Executing all of the above sequences may render the display completely blank. Screen elements can be unblanked by executing similar key sequences, or by pressing [PRESET].

Consult your User's Guide for complete information on the proper use of these commands. Some of them may affect program operation.

SCPI/GPIB Control of Interfaces

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

Remote Access Interfaces

The user is 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.

For the 8560E/EC-Series, the only I/O port is the GPIB port.

Procedure for Declassifying a Faulty Instrument

If the instrument is not able to power on, the user information cannot be cleared using the front panel or the remote interface. The only choice in this situation is to take manual steps to remove any user information that may be present. This includes removing the user SRAM backup battery, the 85620A Mass Memory Module, and possibly the EEPROM.

Component	Procedure
User SRAM backup battery	<p>This can be removed through the rear panel of the instrument. If a module, such as the 85620A, is attached, the module must be removed to access the battery.</p> <p>Remove the two screws that attach the battery cover, then remove the battery from its holder. The battery must be removed for at least one hour, while the analyzer is disconnected from the AC power source.</p>
85620A Mass Memory Module	<p>If this module is installed on the rear of the instrument, it can be removed and kept in the secure area when the inoperative instrument is removed.</p>
EEPROM	<p>All user-stored information in the instrument will be cleared once the SRAM backup battery and 85620A Mass Memory Module have been removed as described above, with two exceptions. The two exceptions are external mixer conversion loss factors and a user-saved Power On State, as these are saved in EEPROM, which does not require battery backup. If no conversion loss factors and no user-defined Power On State have been saved, no further action is required. However, if conversion loss factors or a user-defined Power On State have been saved (or if it is not known whether they have been saved), the EEPROM will need to be removed. The EEPROM containing this information is in a socket on the A2 Controller Board. For the 8560EC-Series instruments, it is A2U23. For the 8560E-Series instruments, it is either A2U500 or A2U501. Information on how to access the A2 Controller Board can be found in the service guide for the instrument in question.</p> <p>An inoperative instrument can normally be returned to operating condition without having this EEPROM installed. If the instrument in question is going to be returned to the secure area once the repair is completed, the EEPROM that was removed could be reinstalled when the instrument is returned, if the repair was minor and did not require new correction data to be written to the EEPROM. If necessary, a new EEPROM can be installed by an Agilent Service Center and reprogrammed as needed. If a new EEPROM is installed, any user data that was saved in the old EEPROM must be copied to the new EEPROM.</p>

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:
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>

This information is subject to change without notice.

© Agilent Technologies, Inc. 2005-2011

Published in USA, August 2011

Supersedes: July 2011

08560-90174