
E5061B/ E5063A Vector Network Analyzer

Notices

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2010-2024

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Revision

Rev. 9

Contacting Keysight Sales and Service Offices

Assistance with test and measurements needs and information on finding local Keysight offices are available on the internet at, <http://www.keysight.com/find/assist>. If you do not have access to the internet, please contact your field engineer.

Note: In any correspondence or telephone conversations, refer to the signal generator 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.

Product Declassification and Security

Model Number(s): E5061B/E5063A
Product Name: Network Analyzer
Product Family Name: ENA

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

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Terms and Definitions

Definitions:

Clearing – 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.

Sanitization – 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. 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 outlined in the “Clearing and Sanitization Matrix” issued by the Cognizant Security Agency (CSA) and referenced in National Industrial Security Program Operating Manual (NISPOM) DoD 5220.22M ISL 01L-1 section 8-301.

Security erase – Security erase is a term that is used to refer to either the clearing or sanitization features of Keysight instruments.

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 will include memory sanitization and/or memory removal. Keysight declassification procedures are designed to meet the requirements specified by the DSS NISPOM security document (DoD 5220.22M chapter 8)

Instrument Memory

This section contains information on the types of memory available in your instrument. It explains the size of memory, how it is used, its location, volatility, and the sanitization procedure.

Summary of 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 (RAM) E5061B 2GB[SN:MY491xxxxx] 2GB[SN:MY492xxxxx] 4GB[SN:MY493xxxxx] 4GB[SN:MY494xxxxx] 4GB[SN:MY495xxxxx] 4GB[SN:MY496xxxxx] 4GB[SN:MY497xxxxx] 4GB[SN:MY498xxxxx] 8GB[SN:MY499xxxxx] 8GB[SN:MY500xxxxx] E5063A 4GB[SN:MY541xxxxx] 4GB[SN:MY542xxxxx] 4GB[SN:MY543xxxxx] 4GB[SN:MY544xxxxx] 4GB[SN:MY545xxxxx] 8GB[SN:MY546xxxxx] 8GB[SN:MY547xxxxx] 8GB[SN:MY548xxxxx]	Yes	No	Windows Operating system memory	Operating system (not user defined)	E5061B A50/A60/A70/A80/A53/A100 CPU Module E5063A A80/A53/A100/A50 CPU Module	Cycle power
Media Storage E5061B (Hard Disk Drive) 160 GB – [Revision Prefix: ELxxx, KY203 – KY221] 320 GB – [Revision Prefix: KY222] (Solid State Drive) 80 GB –	Yes	Yes	Windows Operating system boot device, factory correction data, and users file including saved traces data, settings, or images.	User-Saved Data Operating system (not user defined)	HDD/SSD assembly	Remove

<p>[Revision Prefix: KWxxx, YD472 - YD486]</p> <p>150 GB – [Revision Prefix: YD488 and above]</p> <p>256 GB/ 480GB – [Revision Prefix: YF500-YF520, YGxxx and above]</p> <p>256 GB– [Revision Prefix: YH623 and above]</p> <p>E5063A (Solid State Drive)</p> <p>80 GB – [Revision Prefix: KA, KD, KE]</p> <p>150 GB/ 256 GB – [Revision Prefix: KE, KF]</p> <p>240 GB/ 256 GB – [Revision Prefix: KG, KH]</p> <p>256 GB – [Revision Prefix: KJ]</p>						
<p>Memory for DSP module (RAM)</p>	<p>Yes</p>	<p>Yes</p>	<p>Data Processing for measurement</p>	<p>Measurement (not user defined)</p>	<p>A51/ A71/ A81 DSP Module</p>	<p>Cycle power</p>
<p>Non-volatile Memory (Flash)</p>	<p>No</p>	<p>Yes</p>	<p>Product serial number, Options</p> <p>System calibration data (E5061B) (not user defined calibration)</p>	<p>Adjustment Program performed by Keysight factory personnel or by calibration labs</p>	<p>A51/ A71/A81 DSP Module</p>	<p>N/A (The data is not stored by user under normal operation.)</p>

			data)			
Non-volatile Memory	No	Yes	Module serial number, Revision number System Calibration Data (E5063A)	Calibration at factory	<p>E5061B A1 /A11 Source Module A2 Receiver Module (Opt. 3L5) A3 Receiver Module (Opt. xx5, 50 ohm) A4 Receiver Module (Opt. xx7, 75 ohm) A9 LF Source/Bias Module (Opt. 3L5)</p> <p>E5063A For MY541/542, A1 Analog Module (All frequency options) For MY543 and above, A1 Analog Module (Opt 2D5/ 2H5) A3 Analog Module (Opt 205/215/235/245/265/285)</p>	N/A (The data is not stored by user under normal operation.)

Memory Clearing, Sanitization and/or Removal Procedures

This section explains how to clear, sanitize, and remove memory from your instrument for all memory types.

<Memory type >

Description and purpose	Main Memory for Windows Operating system memory
Size	Windows XP: 2 GB, Windows 7: 4 GB, Windows 10: 4 GB/ 8GB
Memory clearing	Power rebooting. This is a volatile memory.
Memory sanitization	Power rebooting. This is a volatile memory.
Memory removal	This memory cannot be removed without damaging the instrument
Write protecting	N/A
Memory validation	N/A
Remarks	

Description and purpose	Media Storage (Hard Disk Drive/Solid State Drive)
Size	Windows XP/HDD:160 GB/ 320 GB, Windows 7/SSD: 80 GB/ 150/ 256 GB, Windows 10/SSD: 150/ 256/ 240/ 256/ 480 GB. E5061B. (Hard Disk Drive) 160 GB – [Revision Prefix: ELxxx, KY203 – KY221] 320 GB – [Revision Prefix: KY222] (Solid State Drive) 80 GB – [Revision Prefix: KWxxx, YD472 – YD486] 150 GB – [Revision Prefix: YD488, YF] 256 GB/ 480GB – [Revision Prefix: YF500–YF520, YGxxx and above] 256 GB – [Revision Prefix: YH623 and above] E5063A (Solid State Drive) 80 GB – [Revision Prefix: KA, KD, KE] 150 GB/ 256 GB – [Revision Prefix: KE, KF] 240 GB/ 256 GB – [Revision Prefix: KG, KH] 256 GB – [Revision Prefix: KJ]
Memory clearing	N/A
Memory sanitization	N/A
Memory removal	The storage drive needs to be removed and replaced with a new or unused hard disk drive part as per the service manual.
Write protecting	N/A
Memory validation	N/A
Remarks	

Description and purpose	Memory for DSP (RAM) for A51/ A71/ A81 DSP Module
Size	18M-bit
Memory clearing	Power rebooting. This is a volatile memory.

Memory sanitization	Power rebooting. This is a volatile memory.
Memory removal	This memory cannot be removed without damaging the instrument.
Write protecting	N/A
Memory validation	N/A
Remarks	

Description and purpose	Non-volatile memory (Flash) for A51/ A71/ A81 DSP Module. This memory is for product serial number and option. The system calibration data are also stored in the E5063A. (Any user data is not stored in these memory)
Size	64 MB
Memory clearing	N/A
Memory sanitization	N/A
Memory removal	The A51/ A71/ A81 DSP module needs to be removed and replaced with a new or unused module as per the service manual. See E5061B/E5063A Service Manual for more detail information on the procedure as well as the replacement parts.
Write protecting	N/A
Memory validation	N/A
Remarks	

Description and purpose	E5061B Non-volatile memory (EEPROM) for A1, A2, A3, A4, A9 and A11 Modules. These memories are for board serial number, board revision number. (Any user data is not stored in these memories)
Size	256 M Bit
Memory clearing	N/A
Memory sanitization	N/A
Memory removal	The E5061B A1, A2, A3, A4, A9 and A11 modules need to be removed and replaced with a new or unused module as per the service manual. See the E5061B Service Manual for more detail information on the procedure as well as the replacement parts.
Write protecting	N/A
Memory validation	N/A
Remarks	

Description and purpose	E5063A Non-volatile memory (flash) for A1/ A3 Modules. These memories are for board serial number, board revision number, and system calibration data.
Size	2 MB
Memory clearing	N/A
Memory sanitization	N/A
Memory removal	The E5063A A1/ A3 modules need to be removed and replaced with a new or unused module as per the service manual. See the E5063A Service Manual for more detail information on the procedure as well as the replacement parts.
Write protecting	N/A
Memory validation	N/A
Remarks	

Storage removal (E5063A/E5061B-020 only for E5061B)

Because it is virtually impossible to erase all user data completely and selectively on a hard drive without also destroying the operating system, the best method for maintaining security when the E5061B/E5063A must be removed from a secure area is to replace the storage with a "non-secure" hard drive, i.e. a drive that has never had any sensitive data placed on it. This allows the E5061B/E5063A to still function properly in non-secured areas or for use when servicing. The E5061B-020 and all E5063A have a removable storage on the rear panel. Keysight has available a pre-configured storage for the E5061B/E5063A that must be purchased in order for this security method to work. A spare disk is available as below.

Product Number	Windows License (See the Windows label on the rear panel)	Keysight Part Number
E5061B	Windows Vista Business	Not Assigned
	Windows XP Pro for Embedded Systems	E5061-65003
	Windows Embedded Standard 7 (For MY494/SG494, MY495/ SG495)	E5061-65004
	Windows Embedded Standard 7 (For MY496/SG496, MY497/ SG497)	E5061-65054
	Windows 10 IoT v1607 (for MY498/ SG498)	E5061-65055
	Windows 10 IoT v1809 (for MY499/ SG499)	E5061-65056
	Windows 10 IoT v1809 (For MY500/ SG500)	E5061-65058
E5063A	Windows Embedded Standard 7 (For MY541/SG541)	E5063-65001
	Windows Embedded Standard 7 (For MY542/SG542)	E5063-65051
	Windows Embedded Standard 7 (For MY543/SG543, MY544/ SG544)	E5063-65052
	Windows 10 IoT v1607 (for MY545/ SG545)	E5063-65056
	Windows 10 IoT v1607 (for MY546/ SG546)	E5063-65057 ^(*) ^(*)
		E5063-65058 ^(*)
	Windows 10 IoT v1809 (for MY547/ SG547)	E5063-65058
Windows 10 IoT v1809 (for MY548/ SG548)	E5063-65060	

Note: The limited number of times for removing/connecting is 50 times.

^(*) Depending on HW, SW variant, BIOS setting reconfiguration might be required in enabling GPT (UEFI) boot capability.

Refer to BIOS setting reconfiguration section for further information.

^(**) E5063-65057 has been discontinued and replaced by E5063-65058 (Win-10 v1809 - GPT).

BIOS Settings Reconfiguration

For E5061B of all serial prefix & E5063A with serial prefix of MY547 and SG547 and above, skip this BIOS reconfiguration section.

(BIOS reconfiguration is only applicable to E5063A with serial prefix of MY546 or SG546, or previous generations upgraded to 2.7GHz Celeron G3930TE with 8GB memory)

Listed are E5063A (Windows 10) HW, SW, FW variants.

E5063A serial prefix	SSD storage part number & revision (C:\ label)	Factory shipped BIOS settings	MBR formatted SSD compatibility?	GPT formatted SSD compatibility?
MY545/ SG545	Win-10 1607 KF501-KF510 (KF5xx) E5063-65056	MBR	Yes	No support on GPT formatted storage.
MY546/ SG546	Win-10 1607 KG600-KG601 (KG6xx) E5063-65057 ^(*) Win-10 1809 (KHxxx) E5063-65058	MBR	Yes	Yes. (BIOS settings dependent. Boot priority reconfiguration will be required).
MY547/ SG547	Win-10 1809 (KHxxx) E5063-65058	GPT	Invalid hardware combination	Yes
MY548/ SG548	Win-10 1809 (KJxxx) E5063-65060	GPT	Invalid hardware combination	Yes

^(*) E5063-65057 has been discontinued and replaced by E5063-65058 (Win-10 v1809 - GPT).

Listed are E5061B (Windows 10) HW, SW, FW variants.

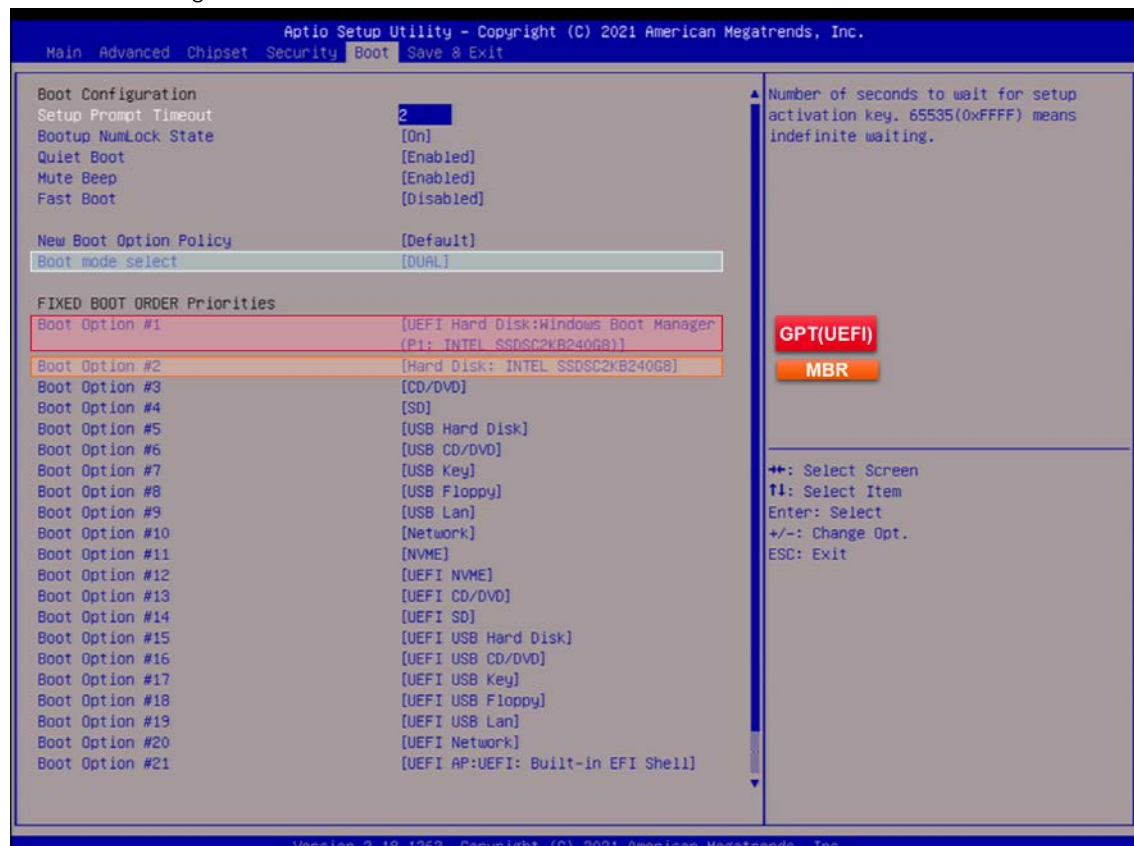
E5061B serial prefix	SSD storage revision (C:\ label)	Factory shipped BIOS settings	MBR formatted SSD compatibility?	GPT formatted SSD compatibility?
MY498/ SG498	Win-10 1607 (YF5xx) YF500-YF506, YF508-YF520 E5061-65055	MBR	Yes	No support on GPT formatted storage.
MY499/ SG499	Win-10 1809 (YGxxx) E5061-65056	GPT	Invalid hardware combination	Yes.
MY500/ SG500	Win-10 1809 (YHxxx) E5061-65058	GPT	Invalid hardware combination	Yes.

E5063A and E5061B were initially shipped with Windows 10 ver. 1607 on MBR. Windows 10 ver.1809 and newer version only support GPT (UEFI). MBR is no longer supported. Hence, BIOS settings update is necessary on the ENA Motherboard BIOS configured with “UEFI and Legacy” with boot priority change. This ensures both MBR and GPT formatted SSD will work with the ENA.

1. To access to the BIOS setup,
Connect an external keyboard to E5063A, power on E5063A. Press “Delete” key repeatedly until BIOS setup page is displayed.
2. In the BIOS setup, navigate to the following. Ensure the settings are identical.
 - Boot mode select: [DUAL] – This ensures both MBR and GPT formatted SSD are bootable.
 - Boot Option#1: [UEFI Hard Disk]
 - Boot Option#2: [Hard Disk] (MBR)

Note: UEFI Hard Disk needs to be the first boot option followed by MBR Hard Disk being the second. The following boot order priorities enable the dynamic boot capabilities on both MBR and GPT formatted spare SSDs.

3. Save the changes and restart.



Hard disk removal procedure:

Two main variants of removable storage with distinct differences according to the listed serial prefix.

The serial prefix identification is no longer applicable to the instrument(s) with digital hardware/ OS upgrades applied. Refer to the physical appearance in identifying the storage removal procedure.

These steps should be followed to maintain security:

Storage Removal Procedure A – Applicable to the following serial numbers

E5061B – Serial Prefix MY497 or SG497 and below

E5063A – Serial Prefix MY542 or SG542 and below

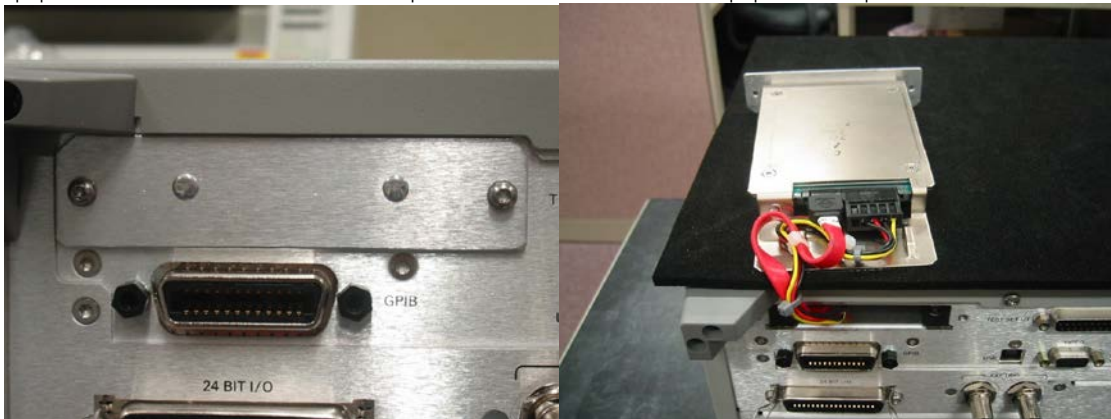
Storage Removal Procedure B – Applicable to the following serial numbers

E5061B – Serial Prefix MY498 or SG498 and above

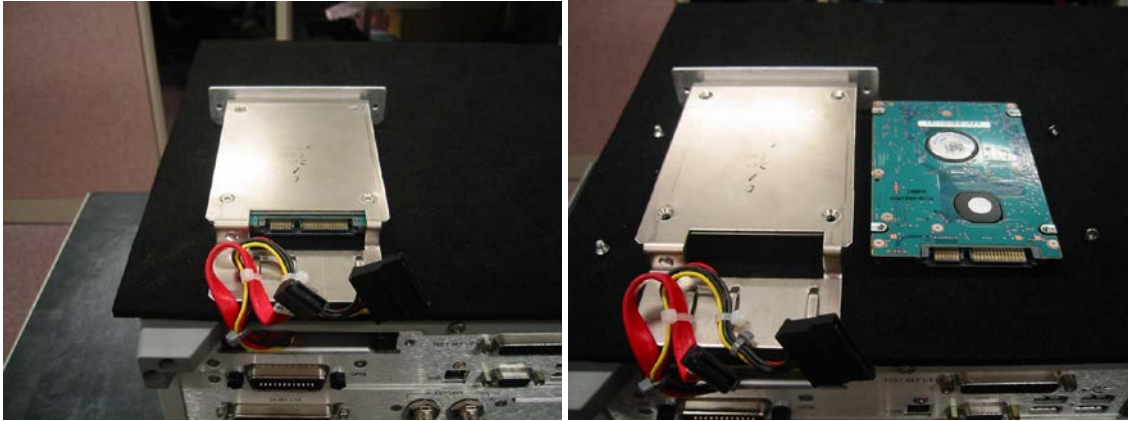
E5063A – Serial Prefix MY543 or SG543 and above

Storage Removal Procedure A

1. Clearly mark the spare hard drive as "Unsecured!"
2. If there is the file named *.lic under E:\License directory, copy it into your USB memory. This file contains software option information.
3. Remove the two screws on the rear panel. Remove the case with the hard drive and put it on the top panel. (It is recommended to place a cushion on the top panel to put the hard drive.)



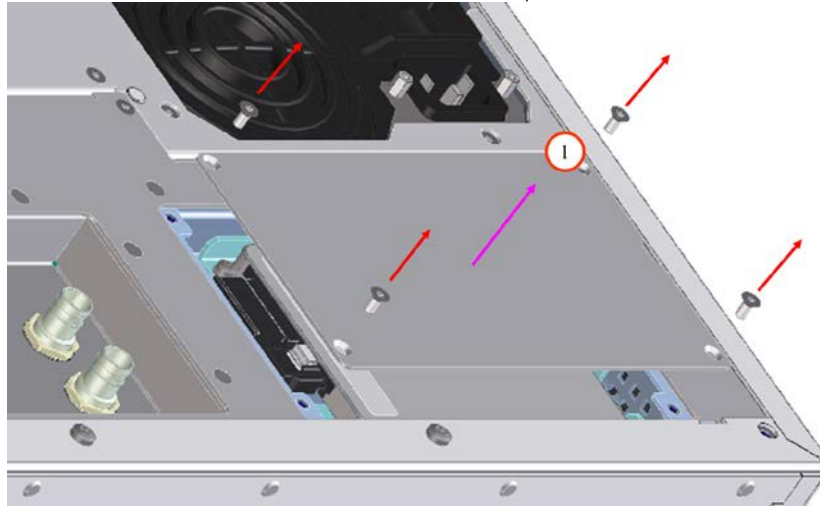
4. Disconnect both connectors from the HDD, and then remove the four screws holding the hard drive to the case.



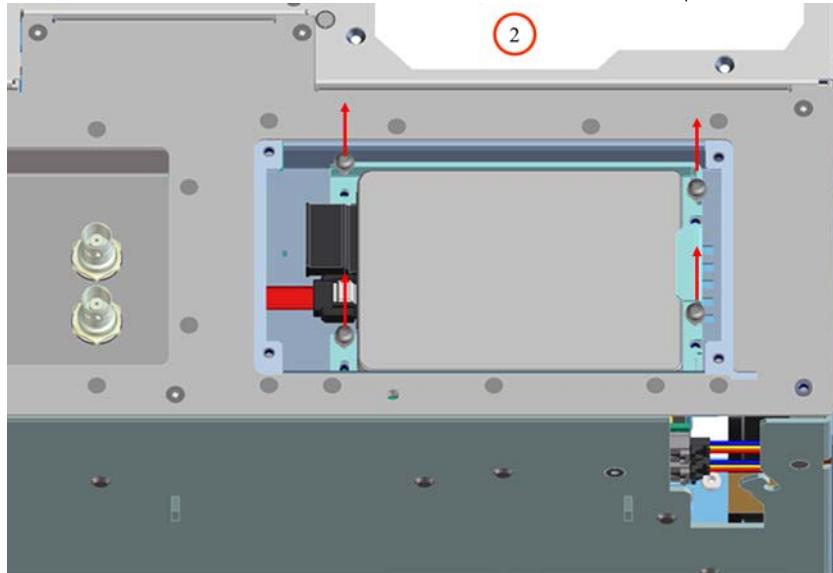
5. Replace the original "Secured" hard drive with the spare "Unsecured" hard drive.
 6. Connect an external keyboard and mouse to the connectors on the E5061B. Turn on the E5061B.
 7. Press [Macro Setup] and press **Load Project...** in the softkey menu.
 8. A dialog box will appear for you to select the program to load. Select **RestoreSysCorFile.vba** from the **D:\Agilent\Service** folder and then press the Open button.
 9. Press [Macro Run]. The **RestoreSysCorFile** dialog box will appear. Click OK.
 10. Place the **gen.lic** files into the **E:\License** directory. Manually create the License directory if the directory does not exist.
- The E5061B/E5063A can now be used elsewhere or sent for servicing without fear of leaking any sensitive information.

Storage Removal Procedure B

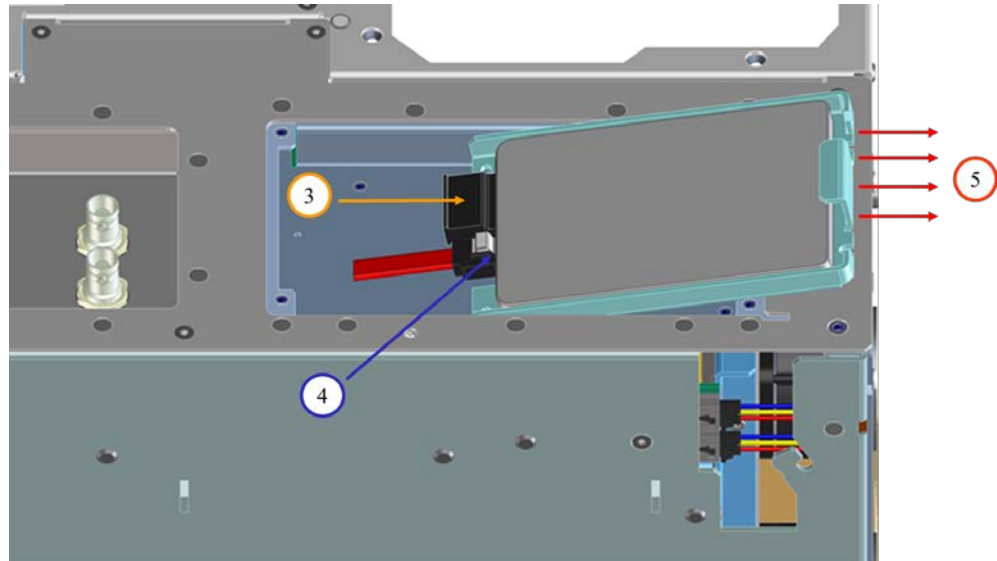
1. Loosen the 4 screws and remove the cover. (Keep the screws for re-assembly)



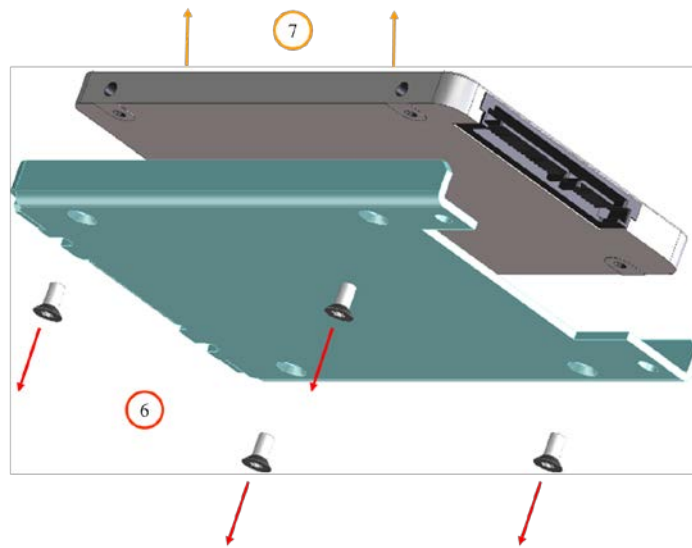
2. Loosen the 4 screws that hold bracket of the HDD/SSD. (Keep the screws for re-assembly)



3. Disconnect the cable.
4. Push the latch and disconnect the red cable.
5. Remove the HDD/SSD from the instrument.



- 6. Loosen the 4 screws (Keep the screws for re-assembly)
- 7. Remove the installed HDD/SDD



Storage disk re-installation procedure:

Once the E5061B/E5063A is returned to the secured area, follow the steps listed below. Any servicing of the E5061B/E5063A may include the regeneration of correction constants.

1. Remove the spare "Unsecured" hard drive and replace it with the original "Secured" hard drive.
2. Connect the external keyboard and mouse to the connectors on the E5061B/E5063A. Turn on the E5061B/E5063A.
3. Press [Macro Setup] and press **Load Project...** in the softkey menu.
4. A dialog box will appear for you to select the program to load. **Select RestoreSysCorFile.vba** from the **D:\Agilent\Service** folder and then press the Open button.
5. Press [Macro Run]. The RestoreSysCorFile dialog box will appear. Click OK.
6. Copy the **gen.lic** files from your USB memory into the **E:\License** directory. Manually create the License directory if the directory does not exist.

Note: If your secured hard disk does not contain the "RestoreSysCorFile.vba" program, copy the program from the unsecured hard disk.

User and Remote Interface Security

Screen and Annotation Blanking

The frequency-blanking feature is available. This function provides three security levels:

“OFF” during normal operation;

“Low” deletes frequency information from the display, but can be turned “OFF” by front panel operation;

and

“High” deletes frequency information from the display and cannot be turned “OFF” except rebooting.

The operator can perform the following keystrokes to control this frequency-blanking feature, [System] > Service Menu > Security Level > None | Low | High,

or set the levels by the following SCPI command:

```
:SYSTem:SECurity:LEVel {NONE|LOW|HIGH}
```

Note:

Any SCPI/COM commands that read the frequency data are not influenced by this function. All commands can read frequency data regardless of the security level.

USB Mass Storage Device Security

E5061B Windows XP

Users can disable any USB-compatible external mass storage devices in order to ensure confidentiality.

The following procedure shows how to disable a USB Mass Storage Device.

1. [Save/Recall] > Explorer....
2. Double-click “DisableUsbStorage.exe” from D”\Agilent\Service.
3. Click OK in the SUCCEEDED message window that appears. If any USB mass storage device is connected to the E5061B/E5063A under this condition, the Hardware Wizard will start, but the USB mass storage device will not work.

The following procedure shows how to enable a USB Mass Storage Device.

1. [Save/Recall] > Explorer....
2. Double-click “EnableUsbStorage.exe” from D”\Agilent\Service.
3. Click OK in the SUCCEEDED message window that appears.

Note: If you do not want any USB mass storage device to ever be enabled at any time, delete EnableUsbStorage.exe from the E5061B/E5063A after DisableUsbStorage.exe has been completed. These two programs will not be recovered automatically by applying the firmware update or other such action. Before deleting any of these programs, you should make a backup copy to a recording medium such as a floppy disk and store it separately.

Note: If the program fails to run, it is possible that you have not logged in as a user in the Administrators Group. When you want to execute any of the above programs, make sure to log in as a user in the Administrators Group.

E5063A/E5061B Windows 7 & Windows 10

Refer to the following site.

E5061B

https://helpfiles.keysight.com/csg/e5061b/using_windows_xp/enablingdisabling_usb_storage.htm

E5063A

https://rfmw.em.keysight.com/wireless/helpfiles/e5063a/using_windows/enablingdisabling_usb_storage.htm

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 all user settings, user states and the display image.

The I/O ports include USB, GPIB and LAN.

The LAN port provides the following services, which can be selectively disabled:

- a) http
- b) ftp
- c) sockets
- d) telnet

There is also a 'ping' service, which presently cannot be selectively disabled. The concern might be that it is possible to discover IP addresses of connected instruments in order to query their setups over the net or break into the code.