



**RSA5100B Series
Real-Time Signal Analyzers
Declassification and Security
Instructions**

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Preface

This document helps customers with data security concerns to sanitize or remove memory devices from the RSA5100B Series Real-Time Signal Analyzers.

These products have data storage (memory) devices and data output devices (USB ports). These instructions tell how to clear or sanitize the memory devices and disable the data output devices. The instructions also tell how to declassify an instrument that is not functioning.

Reference The procedures in this document are written to meet the requirements specified in:

- NISPOM, DoD 5220.22–M, Chapter 8
- ISFO Process Manual for Certification & Accreditation of Classified Systems under NISPOM

Products The following Tektronix products are covered by this document:

RSA5103B

RSA5106B

RSA5115B

RSA5126B

Terms The following terms may be used in this document:

- **Clear.** This removes data on media/memory before reusing it in a secured area. All reusable memory is cleared to deny access to previously stored information by standard means of access.
- **Erase.** This is equivalent to clear.
- **Instrument Declassification.** A term that refers to procedures that must be undertaken before an instrument is removed from a secure environment. Declassification procedures include memory sanitization and memory removal, and sometimes both.
- **Media storage/data export device.** Any of several devices that can be used to store or export data from the instrument, such as a USB port.
- **Power off.** Some instruments have a “Standby” mode, in which power is still supplied to the instrument. For the purpose of clearing data, putting the instrument in Standby mode does not qualify as powering off. For these products, you will need to either press a rear-panel OFF switch or remove the power source from the instrument.

- **Remove.** This is a physical means to clear the data by removing the memory device from the instrument. Instructions are available in the product Service Manual.
- **Sanitize.** This eradicates the data from media/memory so that the data cannot be recovered by other means or technology. This is typically used when the device will be moved (temporarily or permanently) from a secured area to a non-secured area.
- **Scrub.** This is equivalent to sanitize.
- **User Accessible.** User is able to directly retrieve the memory device contents.
- **User-modifiable.** The user can write to the memory device during normal instrument operation, using the instrument interface or remote control.
- **Volatile memory.** Data is lost when the instrument is powered off.
- **Nonvolatile memory.** Data is retained when the instrument is powered off.

Clear and Sanitize Procedures

Memory Devices

The following tables list the volatile and nonvolatile memory devices in the standard instrument and listed options. Detailed procedures to clear or sanitize these devices, if any, are shown following each table.

Terminology

The following terms are used in the tables in this section:

- User data – Describes the type of information stored in the device. Refers to waveforms or other measurement data representing signals connected to the instrument by users.
- User settings – Describes the type of information stored in the device. Refers to instrument settings that can be changed by the user.
- Both – Describes the type of information stored in the device. It means that both user data and user settings are stored in the device.
- None – Describes the type of information stored in the device. It means that neither user data nor user settings are stored in the device.
- Directly – Describes how data is modified. It means that the user can modify the data.
- Indirectly – Describes how data is modified. It means that the instrument system resources modify the data and that the user cannot modify the data.

Table 1: Volatile memory devices

| Type and min. size | Function | Type of user info stored | Backed-up by battery | Method of modification | Data Input method | Location | User accessible | To clear | Process to sanitize |
|--|-------------------------------|--------------------------|----------------------|------------------------|-----------------------------|-------------------------|-----------------|---|---|
| SDRAM 1 GB (std) 4 GB (Opt. 53) | Holds active acquisition data | User data | No | Indirectly | Firmware operations | Digital Interface board | No | Remove power from the instrument for at least 20 seconds. | Remove power from the instrument for at least 20 seconds. |
| SDRAM 4 GB) | Microprocessor system memory | User data, user settings | No | Direct | Written by processor system | Slot-PC board | Yes | Remove power from the instrument for at least 20 seconds. | Remove power from the instrument for at least 20 seconds. |
| SRAM 2 MB | Power PC system memory | None | No | Indirect | Firmware operations | Digital Interface board | No | Remove power from the instrument for at least 20 seconds. | Remove power from the instrument for at least 20 seconds. |

Table 1: Volatile memory devices (cont.)

| Type and min. size | Function | Type of user info stored | Backed-up by battery | Method of modification | Data Input method | Location | User accessible | To clear | Process to sanitize |
|---|-----------------------------------|--------------------------|----------------------|------------------------|---------------------|-----------|-----------------|---|---|
| SDRAM, 128 MB (std) 1.4 GB (Option 300) | Holds active DPX acquisition data | User data | No | Indirect | Firmware operations | DPX board | No | Remove power from the instrument for at least 20 seconds. | Remove power from the instrument for at least 20 seconds. |
| QDR SRAM 8 MB (Option 300) | Unused | None | No | None | None | DPX board | No | Remove power from the instrument for at least 20 seconds. | Remove power from the instrument for at least 20 seconds. |

Table 2: Nonvolatile memory devices

| Type and min. size | Function | Type of user info stored | Method of modification | Data Input method | Location | User accessible | To clear | To sanitize |
|--------------------------------------|---|--------------------------|------------------------|---------------------------------|--|-----------------|---|---|
| Fixed Hard Drive (Part of Option 61) | Holds instrument operating system and application software. Holds all user-storable data such as waveforms, measurement results, and instrument settings. | User data, user settings | Indirect | Firmware operations, user input | Internal | Yes | Acquire a full memory length acquisition of noise (no signal attached to the input). Erase the hard drive with commercial erasure software. Reinstall Microsoft Windows using the OS Restore procedure in the Quick Start User Manual. Reinstall the instrument software using the supplied recovery disk. See <i>Clearing Hard Disk Drives</i> . | Remove the hard drive. Store the removed hard drive in a secure area or destroy it. (See page 5, <i>Fixed Hard Drive Removal Procedure</i> .) When the hard drive is removed, no user data remains in the instrument. |
| Removable Hard Drive (Option 60) | Holds instrument operating system and application software. Holds all user-storable data such as waveforms, measurement results, and instrument settings. | User data, user settings | Indirect | Firmware operations, user input | Front panel. Additional drives can be purchased from Tektronix, Inc. | Yes | Acquire a full memory length acquisition of noise (no signal attached to the input). Erase the hard drive with commercial erasure software. Reinstall Microsoft Windows using the OS Restore procedure in the Quick Start User Manual. Reinstall the instrument software using the supplied recovery disk. See <i>Clearing Hard Disk Drives</i> . | Remove the hard drive. Store the removed hard drive in a secure area or destroy it. (See page 5, <i>Removable Hard Drive Procedure</i> .) When the hard drive is removed, no user data remains in the instrument. |

Table 2: Nonvolatile memory devices (cont.)

| Type and min. size | Function | Type of user info stored | Method of modification | Data Input method | Location | User accessible | To clear | To sanitize |
|--------------------------------------|---|--------------------------|------------------------|-----------------------|--|-----------------|---|--|
| Flash 16 Mbytes | Holds instrument calibration data, serial number, and Option key. | None | Indirect | Firmware operations | Digital Interface board | No | Not applicable, does not contain user data or settings. Clearing would disable instrument functionality. | Not applicable, does not contain user data or settings. Sanitizing would disable instrument functionality. |
| EEPROM 16Mbit | Holds data buffer firmware | None | None | Factory configuration | Acquisition Board | No | Not applicable, does not contain user data or settings. Clearing would disable instrument functionality. | Not applicable, does not contain user data or settings. Clearing would disable instrument functionality. |
| EEPROM 16Mbit | Holds board interface firmware. | None | None | Factory configuration | Acquisition Board | No | Not applicable, does not contain user data or settings. Clearing would disable instrument functionality. | Not applicable, does not contain user data or settings. Clearing would disable instrument functionality. |
| EEPROM, 8 KB | Unused (for future software enhancements) | None | None | None | Digital Interface board | No | Not applicable. Does not contain user data or settings. Not used by the system. | Not applicable, does not contain user data or settings. Not used by the system. |
| EEPROM 16Mbit (Option 65 & 66) | Holds option board calibration data. | None | None | Factory configuration | Zero-Span Output/Digital IQ Output option board. | No | Not applicable, does not contain user data or settings. Clearing would disable Zero Span Output functionality | Not applicable, does not contain user data or settings. Clearing would disable Zero Span Output functionality. |
| EEPROM, 1 Kb | PCI configuration – PLX9056 | None | None | Factory configuration | Digital Interface board | No | Not applicable, does not contain user data or settings. Clearing would disable instrument functionality. | Not applicable, does not contain user data or settings. Sanitizing would disable instrument functionality. |
| EEPROM, 1 Kb | PCIe configuration –PEX8311 | None | None | Factory configuration | Digital Interface board | No | Not applicable, does not contain user data or settings. Clearing would disable instrument functionality. | Not applicable, does not contain user data or settings. Sanitizing would disable instrument functionality. |
| Flash, 1 Mb | Unused (for future software enhancements) | None | None | None | RFI board | No | Not applicable, does not contain user data or settings. Not used by the system | Not applicable, does not contain user data or settings. Not used by the system |
| Flash, 32 Mb | Holds calibration data | None | None | Factory configuration | LO board | No | Not applicable, does not contain user data or settings. | Not applicable, does not contain user data or settings. |

Table 2: Nonvolatile memory devices (cont.)

| Type and min. size | Function | Type of user info stored | Method of modification | Data Input method | Location | User accessible | To clear | To sanitize |
|--|--|--------------------------|------------------------|-----------------------|---------------|-----------------|--|--|
| RSA5115B and RSA5126B only; Flash, 32 Mb | Holds calibration data | None | None | Factory configuration | MFC LO board | No | Not applicable, does not contain user data or settings. Clearing would disable instrument functionality. | Not applicable, does not contain user data or settings. Clearing would disable instrument functionality. |
| RSA5126B only; Flash, 32 Mb | Holds calibration data | None | None | Factory configuration | 26 GHz module | No | Not applicable, does not contain user data or settings. Clearing would disable instrument functionality. | Not applicable, does not contain user data or settings. Clearing would disable instrument functionality. |
| Flash 32 Mb (Option 300) | Unused (for future software enhancement) | None | None | None | DPX board | No | Not applicable, does not contain user data or settings. Not used by the system | Not applicable, does not contain user data or settings. Not used by the system |

NOTE. The following procedure covers only Tektronix installed software.

Clearing Hard Disk Drives

If your organization's security protocols allow the use of software to purge or sanitize hard drives, you can use commercial software to erase free space on the hard drive before sending the instrument out for upgrades or repair. Follow the instructions that come with the software to ensure that the erasure of sensitive data from the hard drive complies with your organization's security protocols.

Sequence for clearing secure data from a hard drive:

1. Delete all stored signals and instrument settings files (all files stored with a **tiq**, **csv**, or **Setup** extension).
2. Acquire several full memory-length acquisitions of noise (no signal attached to the input).
 - Without Option 53, acquire a full-length acquisition 4 times.
 - With Option 53, acquire a full-length acquisition 16 times.
3. Close the RSA5100B application and erase the free space on the hard disk using commercial software.

Fixed Hard Drive Removal Procedure

The following procedure applies to instruments with Option 61 (Fixed Hard Disk Drive) installed. This procedure is an overview of the removal process. For detailed removal and replacement procedures, see the *RSA5100B Series Real-Time Signal Analyzers Service Manual*, Tektronix part number 077-0903-XX.



WARNING. Only qualified service personnel should perform this procedure. Read the Service Safety Summary and the General Safety Summary in the *RSA5100B Series Real-Time Signal Analyzers Service Manual* before performing this procedure.



WARNING. Before performing this procedure, disconnect the power cord from the line voltage source. Failure to do so could cause serious injury or death.



CAUTION. To avoid damaging the hard drive, perform the following procedure in a static-safe environment with proper electro-static discharge controls in place.

1. Remove the front cover (if installed), the front panel trim, and the cabinet top.
2. Remove the top EMI cover.
3. Remove the hard drive and support bracket.
4. Unplug the SATA cable from the hard drive.
5. Remove the hard drive from the support bracket.
6. Reinstall the support bracket.
7. Reinstall the top EMI cover.
8. Reinstall the cabinet top, the front panel trim, and front cover (if removed).

Removable Hard Drive Procedure

The following procedure applies to instruments with Option 60 (Removable Hard Disk Drive) installed. For detailed information on removing parts from the instrument, see the *RSA5100B Series Real-Time Signal Analyzers Service Manual*, Tektronix part number 077-0903-XX.



WARNING. Before doing this procedure, disconnect the power cord from the line voltage source. Failure to do so could cause serious injury or death.



CAUTION. To avoid damaging the hard drive, perform the following procedure in a static-safe environment with proper electro-static discharge controls in place.

1. Loosen the thumbscrews on the removable drive panel.
2. Pull the removable drive out from the instrument.

Media and Data Export Devices

Table 3: Media and data export devices

| Type and min. size | Function | Method of modification | Data Input method | Location | Process to disable |
|-------------------------|--|------------------------|------------------------------|-----------------------|---|
| USB device ports | Supports removable USB flash drive. User storage of reference waveforms, screen images, and instrument setups. | Directly | Directly by system resources | Front and rear panels | Remove all USB memory devices. USB devices can be formatted, stored in a secure area, or destroyed. The USB ports can be disabled. (See page 6, <i>Disabling the USB Ports</i> .) You can set a BIOS password to prevent changes to the BIOS. (See page 7, <i>Setting the BIOS Password</i> .) |
| LAN Ethernet Connection | Supports remote control and data transfer | Directly | System resources | Rear panel | Disconnect from Network cable |
| GPIB connector | Supports remote control and data transfer | Directly | System resources | Rear panel | N/A |

Disabling the USB Ports Use the following procedure to disable the front and rear panel USB ports.



CAUTION. *Disabling the USB ports will disable the front panel and touch screen. When the USB ports are disabled, no mouse input is accepted. The PS2 connector on the rear panel does not support a mouse. When the USB ports are disabled, the only way to control the instrument is through the GPIB/LAN programmatic interface.*



CAUTION. *To avoid disabling the instrument, be sure to perform this procedure exactly as stated. A misconfigured BIOS can make the instrument unusable and require that it be returned to Tektronix for servicing.*

1. Reboot instrument and press the **Delete** key to access the BIOS settings screen.
2. Select **Integrated Peripherals**.
3. Select **USB Device Setting**.
4. Change **USB 1.0 Controller** from **Enable** to **Disable**. Change **USB 2.0 Controller** from **Enable** to **Disable**.
5. Save the BIOS settings and exit.

Setting the BIOS Password Use the following procedure to set a BIOS password that will prevent others from changing the BIOS settings.



CAUTION. *To avoid disabling the instrument, be sure to perform this procedure exactly as stated. A misconfigured BIOS can make the instrument unusable and require that it be returned to Tektronix for servicing.*

1. Reboot the instrument and press the **Delete** key to access the BIOS settings screen.
2. Select **Set Password**.
3. Choose a BIOS password.
4. Confirm the new BIOS password.
5. Save the BIOS settings and exit.

Enabling the USB Ports Use the following procedure to enable the front and rear panel USB ports.



CAUTION. *To avoid disabling the instrument, be sure to perform this procedure exactly as stated. A misconfigured BIOS can make the instrument unusable and require that it be returned to Tektronix for servicing.*

1. Reboot instrument and press the **Delete** key to access the BIOS settings screen.
2. Select **Integrated Peripherals**.
3. Select **USB Device Settings**.
4. Change **USB 1.0 Controller** from **Disable** to **Enable**. Change **USB 2.0 Controller** from **Disable** to **Enable**.
5. Save the BIOS settings and exit.

Disabling the BIOS Password Use the following procedure to disable the BIOS password.



CAUTION. *To avoid disabling the instrument, be sure to perform this procedure exactly as stated. A misconfigured BIOS can make the instrument unusable and require that it be returned to Tektronix for servicing.*

1. Reboot instrument and press the **Delete** key to access the BIOS settings screen.
2. Enter the current BIOS password.

3. Select **Set Password**.
4. Press the **Enter** key.
5. Press the **Enter** key again to confirm disabling the BIOS password.
6. Save the BIOS settings and exit.

Troubleshooting

How to Clear or Sanitize a Non-Functional Instrument

If your instrument is not functioning, perform the following actions and return the instrument to Tektronix for repair. Describe the initial problem with the product. Tektronix will install replacement parts and then repair and return the instrument.

Hard Disk Drives Remove the internal hard disk (Option 61) or removable hard disk (Option 60) using the procedures in this document.

External Memory Devices Remove any USB flash drives or external hard drives from the instrument.
Refer to your company's internal policies regarding handling or disposal of the external memory device.

Charges Replacement of any missing hardware will be charged according to the rate at the time of replacement.

Change Log

| Document part number | Revision date | Change description |
|-----------------------------|----------------------|--|
| 077-0902-00 | April, 2, 2014 | First release. |
| 077-0902-01 | January 12, 2015 | Update to Table 1 and Table 2. |
| 077-0902-01 Rev A | July 14, 2020 | Changed Option 59 to 61 & Option 56 to 60 throughout document. |