RSA6100B Series and RSA5100A Series Real-Time Signal Analyzers Declassification and Security

Instructions

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Tektronix

Contacting Tektronix

Tektronix, Inc.
14150 SW Karl Braun Drive
P.O. Box 500
Beaverton, OR 97077
USA

For product information, sales, service, and technical support:
- In North America, call 1-800-833-9200.
- Worldwide, visit www.tektronix.com to find contacts in your area.

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RSA6100B Series and RSA5100A Series Declassification and Security Instructions

Preface

This document helps customers with data security concerns to sanitize or remove memory devices from the RSA6100B Series or RSA5100A 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:

RSA5103A

RSA5106A

RSA6106B

RSA6114B

RSA6120B

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.
ZBT SRAM 2 MB	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.
SRAM, 1 MB	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.
QDR SRAM 20 MB (Option 200)	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.

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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 59)	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 intrument Service manual. Reinstall the instrument software using the supplied recovery disk. See *Clearing Hard Disk Drives*.	Remove the hard drive. Store the removed hard drive in a secure area or destroy it. (See page 5, *Fixed Hard Drive Removal Procedure*.) When the hard drive is removed, no user data remains in the instrument.
Removable Hard Drive (Option 56)	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 instrument Service manual. Reinstall the instrument software using the supplied recovery disk. See *Clearing Hard Disk Drives*.	Remove the hard drive. Store the removed hard drive in a secure area or destroy it. (See page 6, *Removable Hard Drive Procedure*.) When the hard drive is removed, no user data remains in the instrument.
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 1 Mbit (Option 110)	Holds data buffer firmware	None	None	Factory configuration	Wideband 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. Sanitizing 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, 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.

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
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.
RSA5100A only: 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
RSA5100A only: 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.

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 RSA5100A or RSA6100B application and erase the free space on the hard disk using commercial software.

Fixed Hard Drive Removal Procedure

The following procedure applies to instruments that have Option 57 (DVD-RW drive) installed. If your instrument has a DVD drive, it has a fixed hard drive. This procedure is an overview of the removal process. For detailed removal and replacement procedures, see the *RSA6100B Series Real-Time Signal Analyzers Service Manual*, Tektronix part number 077-0648-XX, or *RSA5100A Series Real-Time Signal Analyzers Service Manual*, Tektronix part number 077-0522-XX.

⚠ *WARNING. Only qualified service personnel should perform this procedure. Read the Service Safety Summary and the General Safety Summary in the RSA6100B Series Real-Time Signal Analyzers Service Manual or RSA5100A 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 56 (Removable Hard Disk Drive) installed. For detailed information on removing parts from the instrument, see the *RSA6100B Series Real-Time Signal Analyzers Service Manual*, Tektronix part number 077-0648-XX. or *RSA5100A Series Real-Time Signal Analyzers Service Manual*, Tektronix part number 077-0522-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
DVD+/-RW (Option 57 only)	User storage of reference waveforms, screen images, and instrument setups and installation of software.	Directly	System resources and directly by user	Front panel	Remove all DVDs. Rewriteable DVDs can be formatted, stored in a secure area, or destroyed. Non-rewriteable DVDs can either be stored or destroyed.
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 7, *Disabling the RSA6100B Series USB Ports*.) .(See page 8, *Disabling the RSA5100A Series USB Ports*.) You can set a BIOS password to prevent changes to the BIOS. (See page 9, *Setting the RSA5100A Series BIOS Password*.) (See page 9, *Setting the RSA6100B Series BIOS Password*.)
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 RSA6100B Series USB Ports Use the following procedure to disable the front and rear panel USB ports.

⚠ **CAUTION.** *When the USB ports are disabled, no mouse input is accepted. The PS2 connector on the rear panel does not support a mouse.*

⚠ **CAUTION.** *To avoid disabling the instrument, 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 **Chipset**.

3. Select **South Bridge**.

4. Select **USB Configuration**.

5. From the list, select which USB ports to enable or disable. USB Ports 1 and 2 route to the front panel. USB Ports 4 and 5 route to the rear panel.

6. Save the BIOS settings and exit.

Disabling the RSA5100A Series 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 RSA6100B Series 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, 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 **Security**.

3. Select **Administrative Password**.

4. Choose a BIOS password.

5. Confirm the new BIOS password.

6. Save the BIOS settings and exit.

Setting the RSA5100A Series 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 RSA6100B Series USB Ports

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

⚠️ **CAUTION.** *To avoid disabling the instrument, 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 **Chipset**.

3. Select **South Bridge**.

4. Change **USB Configuration**.

5. From the list, select which USB ports to enable or disable. USB Ports 1 and 2 route to the front panel. USB Ports 4 and 5 route to the rear panel.

6. Save the BIOS settings and exit.

Enabling the RSA5100A Series 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 RSA6100B Series BIOS Password

Use the following procedure to disable the BIOS password.

⚠ *CAUTION. To avoid disabling the instrument, 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. Enter the current BIOS password.

3. Select **Security**.

4. Select **Administrative Password**.

5. Press the **Enter** key.

6. Press the **Enter** key again to confirm disabling the BIOS password.

7. Save the BIOS settings and exit.

Disabling the RSA5100A Series 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 for 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 59) or removable hard disk (Option 56) using the procedures in this document.

DVDs   Remove any DVDs from the instrument. If the instrument does not power up, you can insert a small paper clip into the hole next to the DVD drawer latch to release the drawer and remove discs.

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
077-0521-00	1-10-2011	First release.
077-0521-01	4-2-2012	Revised to include RSA6100B Series

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