**Tektronix OM5000, OM4000, OM2000 Series
Optical Modulation Instruments
Declassification and Security**

Instructions

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.

Table of Contents

Tektronix OM5000, OM4000, OM2000 Declassification and Security Instructions

Preface

This document helps customers with data security concerns to sanitize or remove memory devices from the Tektronix OM5000, OM4000, and OM2000 Series Optical Modulation instruments.

These products have data storage (memory) devices. 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:

- OM5110

- OM4106D

- OM4006D

- OM2210

- OM2012

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 can be 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.

- **Nonvolatile memory.** Data is retained when the instrument is powered off.

- **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 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.

- **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 is moved (temporarily or permanently) from a secured area to a nonsecured 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.

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
SRAM 512K	Program operation	User data	No	Indirectly	Written by processor system	Microcontroller board	No	Remove power from the instrument for at least 20 seconds.	Remove power from the instrument for at least 20 seconds.
SRAM 6K	Microcontroller system memory	None	No	Indirectly	Written by processor system	Optical bias controller 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 modification	Data Input method	Location	User accessible	To clear	To sanitize
Flash 8 Mbytes	Holds firmware, instrument calibration data, serial number	None	Indirect	Firmware operations	Microcontroller board	No	Does not contain user data or settings. See procedure for microcontroller board removal. Clearing would disable instrument functionality.	Does not contain user data or settings. See procedure for microcontroller board removal. Clearing would disable instrument functionality.
Flash 240 bytes (OM5110)		User settings	Indirect	Firmware operations	RF Amplifier Bias board	No	User settings can be over-written as shown below.	User settings can be over-written as shown below.
Flash 32K bytes (OM5110)		User settings	Indirect	Firmware operations	Optical bias controller board	No	User settings can be over-written as shown below.	User settings can be over-written as shown below.

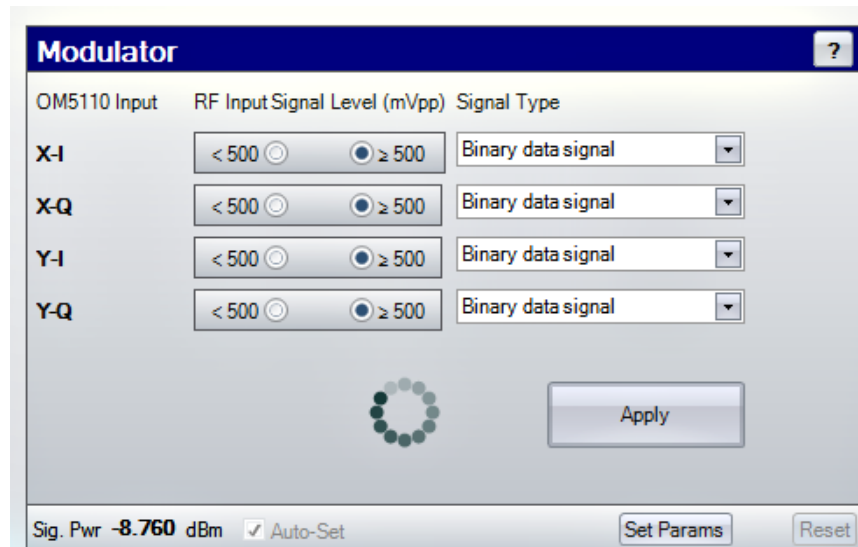**RF Amplifier Bias board (OM5110 only)**

The RF Amplifier Bias Board uses 16 digital potentiometers which retain their values using 15 bytes of data. These cannot be cleared or sanitized by the end user. You can replace the data stored in the RF Amplifier Bias Board with a generic configuration following this procedure:

1. Connect to the OM5110 using the LRCP software.

2. Record the settings in the Driver Amp area if it is desired to restore these settings later.

3. In the Driver Amp area of the LRCP control panel, select Voltage Settings/ Restore to Factory Defaults.

4. In the Driver Amp area of the LRCP control panel, select Voltage Settings/ Save current settings as power on defaults.
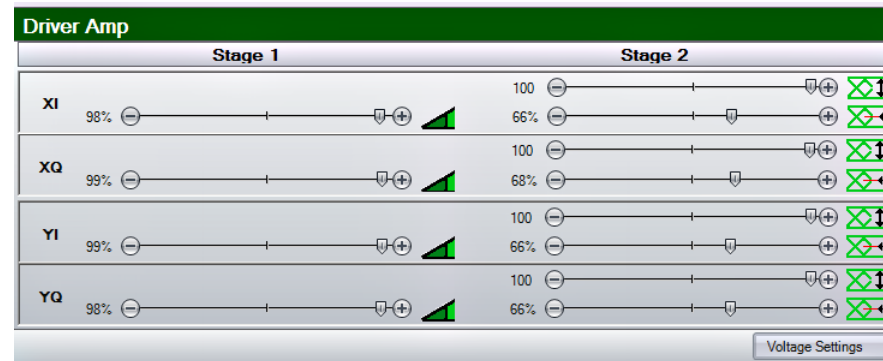
The RF Amplifier Bias Board also stores the prior use-state of the instrument. This can't be cleared or sanitized, but you can make the prior-use state generic by following this procedure:

1. Connect to the OM5110 using the LRCP software.

2. In the Modulator control area, check the box called Auto Set.

3. Set up the Modulator control values as shown in the following image.

Modulator			?
OM5110 Input	RF Input Signal Level (mVpp)	Signal Type	
X-I	< 500 ◎ ◉ ≥ 500	Binary data signal ▾	
X-Q	< 500 ◎ ◉ ≥ 500	Binary data signal ▾	
Y-I	< 500 ◎ ◉ ≥ 500	Binary data signal ▾	
Y-Q	< 500 ◎ ◉ ≥ 500	Binary data signal ▾	

Apply

Sig. Pwr **-8.760** dBm   ✓ Auto-Set   Set Params   Reset

4. Click Apply

Optical Bias Controller board (OM5110 only)

The Optical Bias Controller Board has program memory for the optical bias control function. The memory can't be altered by the end user. This board also contains calibration data which can be configured by the end user. This data can be over-written with generic data following this procedure:

1. Connect to the OM5110 using the LRCP software.

2. Click **Set Params** in the Modulator control area.

3. Record the values if it is desired to restore them later. You can also make a back-up copy of the InitialState.xml file in the C:\Program Files\TekApplications\LRCPinstallation directory.

4. Replace the Null Voltages with zeros. Replace the Vpi voltages with 7.5 V.
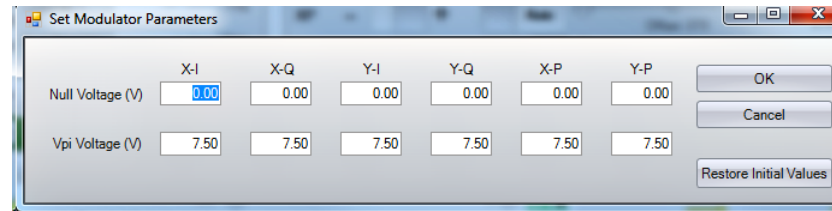
5. Click **OK**.

Media and data export devices

The following table lists the data export devices in the standard instrument and listed options. Detailed procedures to disable these devices, if any, are shown following the table.

Table 3: Media and data export devices

Type and min. size	Function	Method of modification	Data Input method	Location	User accessible	Process to disable
LAN Ethernet connector	Transfer data, instrument control	Directly	The controller PC	Rear panel	Yes	N/A

Built-In security features

This product does not have any built-in security or memory erase functions.

Tektronix OM5000, OM4000, OM2000 Declassification and Security Instructions

Troubleshooting

How to clear or sanitize a nonfunctional 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.

Board removal guidelines:

- Removal and installation should only be performed by trained personnel.

- Perform this procedure in a static controlled work area with proper operator grounding.

- Disconnect the AC line cord. Board removal procedures expose the technician to AC wiring.

Microcontroller board Remove the microcontroller board and return the product to Tektronix. A new microcontroller board will be installed, and the instrument will be repaired and adjusted as necessary.

To remove the microcontroller board:

1. Disconnect the AC line cord and observe all warnings in the product user documentation.

2. Remove the instrument cover. The cover should only be removed by trained personnel.

3. Locate the microcontroller board. The microcontroller board is the board with the Ethernet connector.

4. Remove the two screws located near the Ethernet connector.
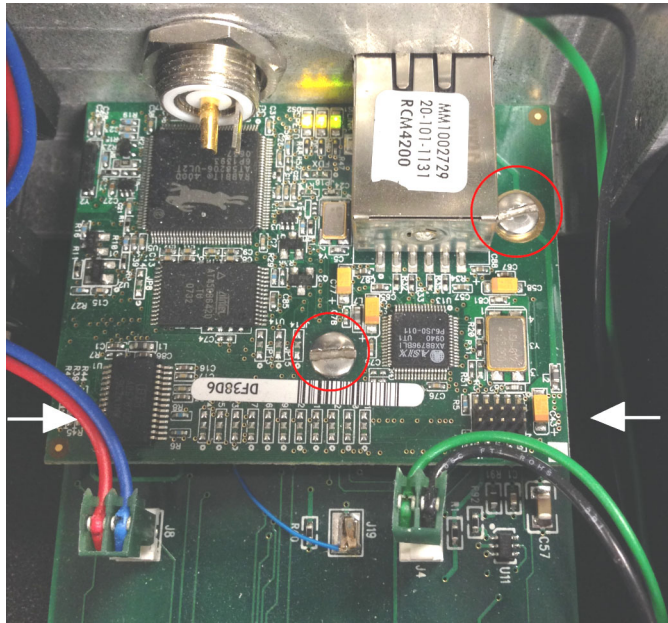
5. Firmly hold the microcontroller board on the left and right sides at the indicated holding points and pull straight up. Avoid contacting the connector directly above the board (if present).

6. After removal of the microcontroller board, refer to your company's internal policies regarding storage or disposal of the board.

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

How to recover from nonvolatile clear or sanitize

Microcontroller board

The instrument should be returned with a new microcontroller board programmed at the factory.

RF Amplifier Bias board (OM5110 only)

1. Connect to the OM5110 using the LRCP software.

2. Use the values recorded previously to return the sliders in the Driver Amp control area to their prior values.

3. If desired to save these values, click Voltages/ Save current voltages as power on defaults.

Optical Bias Controller board (OM5110 only)

1. Connect to the OM5110 using the LRCP software.

2. Wait for the LRCP to complete downloading settings from the OM5110. To use the new factory settings, the procedure is complete. To use the old settings recorded before sanitization, continue this procedure.

3. To restore the prior settings, close the LRCP and move the InitialState.xml file found in C:\Program Files\TekApplications\LRCPinstallation to a backup location. This file contains the new OM5110 settings as found on initial connection. Move the file backed up before sanitization to this directory to replace the new one just removed. It should have the identical file name and location so that it is found by the LRCP.

4. Connect to the OM5110 using the LRCP software.

5. Click Set Params in the Modulator control area.

6. Click Restore Initial Values on the pop-up dialog box. The values shown should match those previously recorded to within 0.1 V.

Change log

Provide a brief description of changes for each release of the document.

Document part number	Revision date	Change description
077-0992-00	April 2014	Initial release version.

Tektronix OM5000, OM4000, OM2000 Declassification and Security Instructions