Keysight Technologies FieldFox Handheld Analyzer

This document applies to the following models with serial number prefixes ≥5607 (except where indicated):

N9912A, N9913A, N9914A, N9915A, N9116A, N9917A,

N9918A, N9923A, N9923AN, N9925A, N9926A, N9927A,

N9928A, N9935A, N9936A, N9937A, N9938A

N9950, N9951A, N9952A (All N995xA models)

N9960A, N9961A, N9962A (All N996xA models)



Security Features and Volatility

Documentation

Notices

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CAUTION

A CAUTION notice denotes a hazard. It calls attention to an operating procedure, practice, or the like that, if not correctly performed or adhered to, could result in damage to the product or loss of important data. Do not proceed beyond a CAUTION notice until the indicated conditions are fully understood and met.

WARNING

A WARNING notice denotes a hazard. It calls attention to an operating procedure, practice, or the like that, if not correctly performed or adhered to, could result in personal injury or death. Do not proceed beyond a WARNING notice until the indicated conditions are fully understood and met.

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Security Features and Volatility Documentation

1 Contact Keysight Sales and Service Offices

Assistance with test and measurements needs and information on finding a local Keysight office is 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 conversation, refer to the product 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.



Contact Keysight Sales and Service Offices

Security Features and Volatility Documentation

2 Product Declassification and Security

Model Number: N9912A, N9913A, N9914A, N9915A, N9116A, N9917A, N9918A, N9923A, N9923AN, N9925A, N9926A, N9927A, N9928A, N9935A, N9936A, N9937A, N9938A, N9950A, N9951A, N9952A, N9960A, N9961A, N9962A.

Product Name: FieldFox Handheld Analyzer

CAUTION

IMPORTANT: Before storing any data on the FieldFox, if you are in a secure location and or require sanitization of your data, verify that the FieldFox **Preferences** > **User Device** value is set to **External**. Sanitizing **Internal** memory requires the physical removal of internal instrument memory, which is not recommended due to the potential of damaging the FieldFox. Refer to your model's User's Guide on www.keysight.com.

NOTE

This document only applies to N991xA, N992xA, and N993xA models with serial number prefixes 5607 or greater.

Introduction

This document describes instrument security features and the steps to declassify an instrument through memory sanitization or removal. For additional information please go to http://www.keysight.com/find/ad and click on the security instrument tab.

- Service Guide N9912A (N9912-90003)(http://cp.literature.keysight.com/litweb/pdf/N9912-90003.pdf)
- Service Guide N9923A, N9923AN (N9923-90018)(http://cp.literature.keysight.com/litweb/pdf/N9923-90018.pdf)
- Service Guide N9913A, N9914A, N9915A, N9916A, N9917A, N9918A,
 N9925A, N9926A, N9927A, N9928A, N9935A, N9936A, N9937A, N9938A,
 N9950A, N9951A, N9952A, N9960A, N9961A, N9962A (N9927-90003)
 (http://cp.literature.keysight.com/litweb/pdf/N9927-90003.pdf)
- User's Guide N9912A (N9912-90001)(http://cp.literature.keysight.com/litweb/pdf/N9912-90001.pdf)



Product Declassification and Security Introduction

- User's Guide N9923A (N9923-90001)(http://cp.literature.keysight.com/litweb/pdf/N9923-90001.pdf)
- User's Guide N9913A, N9914A, N9915A, N9916A, N9917A, N9918A,
 N9925A, N9926A, N9927A, N9928A, N9935A, N9936A, N9937A, N9938A,
 N9950A, N9951A, N9952A, N9960A, N9961A, N9962A (N9927-90001)
 (http://cp.literature.keysight.com/litweb/pdf/N9927-90001.pdf)

Security Features and Volatility Documentation

3 Terms and Definitions

CAUTION

IMPORTANT: Before storing any data on the FieldFox, if you are in a secure location and or require sanitization of your data, verify that the FieldFox **Preferences** > **User Device** value is set to **External**. Sanitizing **Internal** memory requires the physical removal of internal instrument memory, which is not recommended due to the potential of damaging the FieldFox. Refer to your model's User's Guide on www.keysight.com.

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. (The instrument is declassified) 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).



Terms and Definitions Definitions

Security Features and Volatility Documentation

4 System Components

CAUTION

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Product/System includes the following components:

Model number	Name	Description	Reference/Remarks
N9912A	FieldFox Handheld Analyzer	Handheld Cable and Antenna Analyzer	Volatile and Non volatile memory on SOM board, system board and RF board
N9913A	FieldFox Handheld Analyzer	Vector Network Analyzer and Spectrum Analyzer	Volatile and Non volatile memory on SOM board, system board and RF board
N9914A	FieldFox Handheld Analyzer	Vector Network Analyzer and Spectrum Analyzer	Volatile and Non volatile memory on SOM board, system board and RF board
N9915A	FieldFox Handheld Analyzer	Vector Network Analyzer and Spectrum Analyzer	Volatile and Non volatile memory on SOM board, system board and RF board
N9916A	FieldFox Handheld Analyzer	Vector Network Analyzer and Spectrum Analyzer	Volatile and Non volatile memory on SOM board, system board and RF board
N9917A	FieldFox Handheld Analyzer	Vector Network Analyzer and Spectrum Analyzer	Volatile and Non volatile memory on SOM board, system board and RF board
N9918A	FieldFox Handheld Analyzer	Vector Network Analyzer and Spectrum Analyzer	Volatile and Non volatile memory on SOM board, system board and RF board
N9923A	FieldFox Handheld Analyzer	Vector Network Analyzer and Cable Tester	Volatile and Non volatile memory on SOM board, system board and RF board
N9925A	FieldFox Handheld Analyzer	Vector Network Analyzer	Volatile and Non volatile memory on SOM board, system board and RF board



Model number	Name	Description	Reference/Remarks		
N9926A	FieldFox Handheld Analyzer	Vector Network Analyzer	Volatile and Non volatile memory on SOM board, system board and RF board		
N9927A	FieldFox Handheld Analyzer	Vector Network Analyzer	Volatile and Non volatile memory on SOM board, system board and RF board		
N9928A	FieldFox Handheld Analyzer	Vector Network Analyzer	Volatile and Non volatile memory on SOM board, system board and RF board		
N9935A	FieldFox Handheld Analyzer	Spectrum Analyzer	Volatile and Non volatile memory on SOM board, system board and RF board		
N9936A	FieldFox Handheld Analyzer	Spectrum Analyzer	Volatile and Non volatile memory on SOM board, system board and RF board		
N9937A	FieldFox Handheld Analyzer	eldFox Handheld Spectrum Analyzer Volatile and			
N9938A	FieldFox Handheld Analyzer	Spectrum Analyzer	Volatile and Non volatile memory on SOM board, system board and RF board		
N9950A	FieldFox Handheld Analyzer	Spectrum Analyzer	Volatile and Non volatile memory on SOM board, system board and RF board		
N9951A	FieldFox Handheld Analyzer	Spectrum Analyzer	Volatile and Non volatile memory on SOM board, system board and RF board		
N9952A	FieldFox Handheld Analyzer	Spectrum Analyzer	Volatile and Non volatile memory on SOM board, system board and RF board		
N9960A	FieldFox Handheld Analyzer	Spectrum Analyzer	Volatile and Non volatile memory on SOM board, system board and RF board		
N9961A	FieldFox Handheld Analyzer	Spectrum Analyzer	Volatile and Non volatile memory on SOM board, system board and RF board		
N9962A	FieldFox Handheld Analyzer	Spectrum Analyzer	Volatile and Non volatile memory on SOM board, system board and RF board		

Security Features and Volatility Documentation

5 Instrument Memory and Volatility Information

CAUTION

IMPORTANT: Before storing any data on the FieldFox, if you are in a secure location and or require sanitization of your data, verify that the FieldFox **Preferences** > **User Device** value is set to **External**. Sanitizing **Internal** memory requires the physical removal of internal instrument memory, which is not recommended due to the potential of damaging the FieldFox. Refer to your model's User's Guide on www.keysight.com.

Table 5-1 Summary of instrument memory - base instrument

Memory Type and Size	Is Memory user accessible as a mass storage device?	Writable During Normal Operation?	Data Retained When Powered Off?	Purpose/Contents	Data Input Method	Location in Instrument and Remarks	Sanitization Procedure
32 MB NAND Flash	No	No	Yes	Factory setting	Volatile and Non volatile memory on SOM board, system board and RF board		Factory Data is not user accessible.



Table 5-1 Summary of instrument memory - base instrument

Memory Type and Size	Is Memory user accessible as a mass storage device?	Writable During Normal Operation?	Data Retained When Powered Off?	Purpose/Contents	Data Input Method	Location in Instrument and Remarks	Sanitization Procedure
Flash memory (microSD), 8 GB	Yes	Yes	Yes	Vector Network Analyzer and Spectrum Analyzer	Volatile and Non volatile memory on SOM board, system board and RF board	System board 8GB microSD is only used in FieldFox models with serial number prefixes ≥5607 (except where indicated) N9913A, N9914A, N9915A, N9916A, N9917A, N9918A, N9925A, N9926A, N9926A, N9928A, N9935A, N9938A, and in all of the following models: N9950A, N9951A, N9952A, N9960A, N9961A, N9962A Only the UserData partition is accessible by the user.	User Data: Memory erase procedure User Data: Memory erase procedure
RAM, volatile memory 512MB	Yes	Yes	No	Vector Network Analyzer and Spectrum Analyzer	Firmware operating memory	SOM board	External power and main battery both removed
Flash memory, 32 Kb and volatile memory 1 Kb	No	No	Yes	System monitor micro-controller.	Factory default setting	System board	Not writable by the user
Flash memory, 128 bytes	No	No	Yes	PCA identification and revision information.	Factory default setting	System board and RF board Each PCA has an ID EPROM that stores PCA identification and revision information	Not writable by the user

Table 5-1 Summary of instrument memory - base instrument

Memory Type and Size	Is Memory user accessible as a mass storage device?	Writable During Normal Operation?	Data Retained When Powered Off?	Purpose/Contents	Data Input Method	Location in Instrument and Remarks	Sanitization Proced ure	
Flash memory, 16 Kb, and volatile memory, 2 Kb	No	No	Yes	Front panel interface board micro-controller.	Factory default setting	Front panel interface board.	Not writable by the user	
Flash memory, 1Kb	No	No	Yes	Vector Network Analyzer and Spectrum Analyzer	Factory default setting	Main battery	Not writable by the user	

Instrument Memory and Volatility Information

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6 Memory Clearing, Sanitization and/or Removal Procedures

CAUTION

IMPORTANT: Before storing any data on the FieldFox, if you are in a secure location and or require sanitization of your data, verify that the FieldFox **Preferences** > **User Device** value is set to **External**. Sanitizing **Internal** memory requires the physical removal of internal instrument memory, which is not recommended due to the potential of damaging the FieldFox. Refer to your model's User's Guide on www.keysight.com.

This section explains how to clear, sanitize, and remove memory from you instrument for all memory that can be written to during normal operation and for which the clearing and sanitization procedure is more than trivial such as rebooting your instrument.

- Sanitization Level Type
 - Remove (Only): Removes all User Data.
 - Scrub Data: Not applicable
 - Format Media: Not applicable
 - Full Wipe: Replace all existing date with 1's and 0's multiple times (Not applicable)

Legend for Table 6-1 and Table 6-2 on page 18

- ✓ Erased
- × Preserved
- ♦ Lost when power or battery is removed.
- ◆ Data Lost all power of battery removed AND removed from System Board, OR Front Panel Board disconnected from System Board, OR Coin Cell removed from Front Panel board.



Table 6-1 Sanitization Level Overview

				SO		System Board			RF Board		Front Panel		Battery			
Sanitation Level	8 GB uSDC NANE FLASI)	32 M	B NAND I	Flash											
Sani	User Data	System	Boot	Factory Data	Persistent Data	RAM	EEPROM	RAM (Real Time Clock)	FPGA	EEPROM	MSP430	FPGA	EEPROM	EEPROM	FLASH	FLASH
Remove (Only)	1	×	×	×	×	\$	×	+	×	×	×	×	×	×	×	×
Scrub Data	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Format Media	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Full Wipe	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Table 6-2 Install Memory Effects Overview

	ѕом							System Board		RF Board		Front Panel		Battery		
Sanitation Level	8 GB uSDC NAND FLASI)	32 M	B NAND F	Flash			Clock)								
Sani	User Data	System	Boot	Factory Data	Persistent Data	RAM	EEPROM	RAM (Real Time Cl	FPGA	EEPROM	MSP430	FPGA	EEPROM	EEPROM	FLASH	FLASH
Install	×	×	×	1	×	1	\$	1	1	×	1	1	×	×	1	×

Table 6-3 32 MB NAND Flash Memory

Description and purpose	Not accessible by the user.
Size	32 MB
Memory clearing	Memory Erase function
Memory sanitization	N/A
Memory removal	This memory can not be removed without damaging the instrument
Write protecting	N/A
Memory validation	See Remarks
Remarks	Instrument use only. Reserved for system maintenance information.
	There is no "full chip erase" function available on the memory chips used for the flash memory on the SOM board.

Table 6-4		8 GB	inte	rna	al m	nicro	SL	Ca	ard	
	۱	_		_						

Description and purpose	Stores Operating System, Application Firmware and some User Data. Only the User Data is accessible by the user
Size	8 GB
Memory clearing	The following process completely clears all user accessible data on the FieldFox instrument. This process requires firmware revision A.03.02 or later.
	Erase User Data only erases data so it is not accessible from the front panel. Data is still on the internal and or external memory (i.e., USB and SD).
	Press the following keys:
	1. System(7)
	2. Service Diagnostics
	3. Advanced
	4. Erase User Data
	5. Confirm Erase
	Wait for the instrument to reboot and begin normal operation.
	The process will completely erase the UserData on the 8GB Internal microSD Card and reboot the instrument. When the reboot is completed, the instrument will be ready for normal operation.
Memory sanitization	N/A
Memoryremoval	This memory can not be removed without damaging the instrument
Write protecting	N/A
Memory validation	N/A
Remarks	8GB microSD is only used in FieldFox model N9913A, N9914A, N9915A, N9916A, N9917A, N9918A, N9925A, N9926A, N9927A, N9928A, N9935A, N9936A, N9937A, N9938A, N9950A, N9951A, N9952A, N9960A, N9961A, N9962A

Table 6-5	512 MB RAM
Description and purpose	Firmware operating memory
Size	512 GB
Memory clearing	External power and main battery removed
Memory sanitization	External power and main battery removed
Memoryremoval	This memory can not be removed without damaging the instrument
Write protecting	N/A
Memory validation	N/A
Remarks	
Table 6-6	System Board Micro-Controller, 32 Kb Flash Memory, 1 Kb Volatile Memory
Description and purpose	For System Board System Monitor Micro-Controller
Size	32 Kb Flash Memory, 1 Kb Volatile Memory
Memory clearing	Not writable by the user
Memory sanitization	N/A
Memory removal	This memory can not be removed without damaging the instrument
Write protecting	N/A
Memory validation	N/A
Remarks	
Table 6-7	EPROM 128 Bytes
Description and purpose	PCA identification and revision information
Size	128 bytes
Memory clearing	Not writable by the user
Memory sanitization	N/A
Memoryremoval	This memory can not be removed without damaging the instrument
Write protecting	N/A
Memory validation	N/A

Table 6-7	EPROM 128 Bytes			
Description and purpose	PCA identification and revision information			
Remarks				
Table 6-8	Front Panel Interface Board Micro-Controller, 16 Kb Flash Memory, 2 Kb Volatile Memory			
Description and purpose	Front panel interface board micro-controller			
Size	16 Kb Flash Memory, 2 Kb Volatile Memory			
Memory clearing	Not writable by the user			
Memory sanitization	N/A			
Memory removal	This memory can not be removed without damaging the instrument			
Write protecting	N/A			
Memory validation	N/A			
Remarks				
Table 6-9	Flash Memory on Main Battery, 1 Kb			
Description and purpose	Smart battery, to maintain information about battery usage and current condition			
Size	1 Kb			
Memory clearing	Not writable by the user			
Memory sanitization	N/A			
Memory removal	This memory can not be removed without damaging the instrument			
Write protecting	N/A			
Memory validation	N/A			
Remarks				

Security Features and Volatility Documentation

7 User and Remote Interface Security Measures

CAUTION

IMPORTANT: Before storing any data on the FieldFox, if you are in a secure location and or require sanitization of your data, verify that the FieldFox **Preferences** > **User Device** value is set to **External**. Sanitizing **Internal** memory requires the physical removal of internal instrument memory, which is not recommended due to the potential of damaging the FieldFox. Refer to your model's User's Guide on www.keysight.com.

Screen and Annotation Blanking

For security reasons, frequency information can be prevented from appearing on the FieldFox by following below procedure. The same information is available in the User's Guide.

How to set Security Level

- 1. Press System 7
- 2. Then System Configuration
- 3. Then Security Level
- 4. Then choose from the following:
- None All frequency settings are visible.
- High Frequency information is blanked from the following:
 - Display annotation
 - Softkeys
 - Marker display and marker table
 - Calibration properties
 - All settings tables
 - Limit line tables
 - All saved .png files



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User and Remote Interface Security Measures Screen and Annotation Blanking

How to set Security Level

Any of the following will re-display frequency information:

- Set to **None**, Preset, Mode Preset, or FieldFox restart.

USB/SD Card Removable Mass Storage Device Security

There is no capability to control removable USB/SD card mass storage permissions from the FieldFox user interface at this time. The customer is responsible for managing removable storage media in secure locations.

Remote Access Interfaces

The user is responsible for providing security for the LAN port for remote access by controlling physical access to the LAN port. The LAN port must be controlled because they provide access to all user settings, user states and the display image.

The LAN port provides the following services:

- ftp
- sockets
- mini-USB (SCPI commands)

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8 Procedure for Declassifying a Faulty Instrument

CAUTION

IMPORTANT: Before storing any data on the FieldFox, if you are in a secure location and or require sanitization of your data, verify that the FieldFox **Preferences** > **User Device** value is set to **External**. Sanitizing **Internal** memory requires the physical removal of internal instrument memory, which is not recommended due to the potential of damaging the FieldFox. Refer to your model's User's Guide on www.keysight.com.

If the instrument is not functioning and you are unable to use the security functions to clear the User Data, you must physically remove the SOM board and discard and destroy it. And send the instrument to a repair facility. If the repair facility determines that a new SOM board fixes the problem and the instrument is still under warranty, you will not be charged for the new board. If they determine that the failure was caused by something other than the SOM board, you will be charged for the new board even though the instrument is still under warranty.

The 8GB microSD resides in System Board. If the instrument is not functioning and you are unable to use the security functions to clear the User Data, you must physically remove the microSD from the System Board and keep it within secure environment. And send the instrument to a repair facility. If the repair facility determines that a new System Board fixes the problem and the instrument is still under warranty, you will not be charged for the new board. If they determine that the failure was caused by something other than the System Board, you will be charged for the new board even though the instrument is still under warranty.

The customer is responsible for removing and replacing the storage media assemblies at their secure location. Refer to the service guide for assembly replacement procedures.



Procedure for Declassifying a Faulty Instrument

