Service Guide

**Agilent Technologies
8564EC and 8565EC
Spectrum Analyzers**

Agilent Technologies

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8564ec user manual

CAUTION Do not use too much liquid in cleaning the optical spectrum analyzer. Water can enter the frontpanel keyboard, damaging sensitive electronic components. The 4300 Handheld FTIR is the first of its kind employing lightweight ergonomics, ease of use, ruggedness, and flexibility into one system. The 4300 weighs in at approximately 2kg. Find great deals on eBay for hp 8564 spectrum analyzer. Shop with confidence. Skip to main content.Shop by category. Enter your search keyword The Agilent 8560 EC Series spectrum analyzers have a color display, offer standard digitized fast time domain sweeps Option 856xE007 on the 8560 E Series, and are Class 3 MILrugged. The 8560 EC Series is identical to the 8560E Series in all other respects. Agilent 8560EC 30 Hz to 2.9 GHz Agilent 8561EC 30 Hz to 6.5 GHz 1 The Agilent 8564EC portable, color display millimeter wave spectrum analyzer offers the measurement capability and performance previously found in larger, more expensive benchtop analyzers. You can measure signals from 30 Hz to 40 GHz preselected above 2.75 GHz with a single coaxial connection. The 8590 ESeries and LSeries spectrum analyzers, 8591C cable TV analyzers, and 8594Q QAM analyzers provide measurement capabilities over the RF and Microwave frequency ranges. Download free Agilent Technologies user manuals, owners manuals, instructions, warranties and installation guides, etc.Printer compatibility chart Manuals, Service Notes, Brochures, and Data Sheets The historic rollout of HewlettPackard equipment is detailed below, along with our archive of equipment manuals, service notes, data sheets, brochures, and any available collector references. The dates below mark the first and last year of appearance for an item in printed catalogs, or price lists. Ask for a quote on a Used Agilent HP 8564EC Portable Spectrum Analyzers from Top Dog Test at usedline.com today. Toggle navigation Agilent HP 8564EC.http://saioneers.com/test/fckeditor/cam-wave-hd-manual.xml

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percentage.

Application Note Application Note Memory Clearing Operations for Agilent Test and Measurement Instruments The following table provides detailed instructions to clear storage on various Agilent instruments. Product Number Storage 32220A, N6700A USB port 548XX, 16900, 167X, 168X How to Clear Storage The Agilent function generator 33220A and new modular power supply N6700A both have a USB 2.0 port as standard, but only support device side USB. The only way to extract data from the USB port would be to use an external PC and use a PC application. In addition, the USB connector on these products does not use the standard computer side USB connector and current available memory sticks will not plug in to either of these products. They have fully functioning PCs inside with harddrives and memory. The products use one of two PC boards, either a VP22 Infiniium and the sixslot 16900 models and the threeslot 16900, 167X and 168X use an SC815. Infiniium is moving to the SC815 in September 2004. Select "Set Supervisor Password". You need to manually clear it. Power off clears volatile memory. The software offers three levels of security. This document contains the recommended procedure for performing a security erase on a PSA Series spectrum analyzer. NOTE It is strongly recommended that these instructions are read before using any of the PSA Security functions. Failure to read and follow these instructions exactly may render your PSA inoperable, and it will be necessary to send the PSA to an Agilent Service Center to have it restored to operational condition. 2. "ScreenBlank.EXE" contains disk one, Screen Blanking Functionality. This functionality is standard and does not need to be downloaded if your PSA has firmware revision A.04.05 and newer. Download this file to a freshly formatted 3.5" floppy disk and execute it it will extract the Screen Blanking files to be installed in your PSA. Refer to the user instructions for detailed installation instructions. 3. "EraseUserFiles.

EXE" contains disk two, the "Erase User Files" Routine. The user file erase routine will eliminate several user files in the PSA memory. The instrument's display will indicate the removal of the respective files as they are being removed. The memory consists of TRACE, STATE, LIMITS, SCREEN CORRECTION AND LAST STATE information. The user erase selectively erases all of the user information that is stored on internal FLASH memory. Erase is defined as writing the single character "1" over these memory locations. Download this file to a freshly formatted 3.5" floppy disk and execute it it will extract the Erase User Files required to remove all user files from your PSA. Refer to the user instructions for detailed installation instructions. 4 "WIPESA.EXE" contains disk three, the "WIPESA" Routine. The WIPESA routine erases the PSA's operating system, which will render the instrument inoperable. Disk three also performs the disk two routine as well. It is strongly recommended to perform a backup of your intrument as described in the user instructions. Download this file to a freshly formatted 3.5" floppy disk and execute it it will extract the WIPESA files required to render your PSA inoperable. Refer to the user instructions for detailed installation instructions. CAUTION This routine will render your PSA inoperable if you fail to follow the directions in the user instructions, your PSA will need to be sent to an Agilent Service Center to be restored to operating condition. The functionality and usage of disks one, two, and three are fully described in the user instructions. When the memory is cleared for security purposes, both the volatile and nonvolatile chunks of the SRAM are erased. The FLASH EEPROM is not erased during this procedure, as it is only used to store the instrument firmware it does not contain any user data, and is therefore not a security concern. 4. The EPMP Series power meters have a total memory capacity of 3 Mb.

This comprises of 2 Mb SRAM and 1 Mb FLASH EEPROM. The 2 Mb SRAM is further divided into two 1 Mb chunks, one of which may be considered nonvolatile due to the onboard lithium backup battery. When the memory is cleared for security purposes, both the volatile and nonvolatile chunks of the SRAM are erased. The FLASH EEPROM is not erased during this procedure, as it is only used

to store the instrument firmware it does not contain any user data, and is therefore not a security concern. Assy 1 M "V" RAM Intfc. Assy 1 M "V" RAM Disp. This process insures a generic setup in batterybacked nonvolatile RAM on the scope interface assembly and generic setup in nonvolatile hard disc drive. 3. Remove the hard disc drive from the instrument completely. Replace with a separate hard disc drive an Infiniium hard drive containing no security issues. Refer to the service manual for the part numbers for the hard disc drive for your scope. The hard disc drive contains the Windows operating system, Scope operating system, setups, waveform memories, waveform files, screen images, and calibration data for the scope and probes. All RAM information is duplicated on hard disc drive. This enables proper startup and operation after a shut down. 6 This procedure declassifies all of the RAM as listed below There are 64 MB of RAM on the mother board. There is also 32 K of nonvolatile RAM on the scope interface assembly, which stores the last scope setting prior to power down. Switching to default setups insures that a known and consistent set of information is stored in this RAM. Finally, there is volatile RAM on the display assembly. There is 1 MB volatile video RAM for save waveform display data and 1 MB volatile display RAM for screen colors. This RAM is used to aid in multiplexing the graticule and alphanumeric information with the dynamic waveform information of the acquisition section of the oscilloscope. Assy 1 MK "V" RAM Intfc. Assy 1 MK "V" RAM Disp.

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The Agilent Infiniium oscilloscope can be declassified by performing three steps 1. Cycle power on the scope. This process insures a generic setup in batterybacked nonvolatile RAM on the scope interface assembly and generic setup in nonvolatile hard disc drive. 3. Remove the hard disc drive from the instrument completely. Replace with a separate hard disc drive an Infiniium hard drive containing no security issues. Refer to the service manual for part number of the hard disc drive part for your scope. The hard disc drive contains the Windows operating system, Scope operating system, setups, waveform memories, waveform files, screen images, and calibration data for the scope and probes. All RAM information is duplicated on hard disc drive. This enables proper startup and operation after a shut down. This procedure declassifies all of the RAM as listed below There are 512 MB of RAM on the mother board. There is also 32 K of nonvolatile RAM on the scope interface assembly, which stores the last scope setting prior to power down. Switching to default setups insures that a known and consistent set of information is stored in this RAM. 7 Finally, there is volatile RAM on the display assembly. There is 1 MB volatile video RAM for save waveform display data and 1 MB volatile display RAM for screen colors. This RAM is used to aid in multiplexing the graticule and alphanumeric information with the dynamic waveform information of the acquisition section of the oscilloscope. This procedure will insure that all setup and measurement information is removed from all models of the Infiniium oscilloscopes. Assy 1 MK "V" RAM Intfc. Assy 1 MK "V" RAM Disp. Assy This procedure is applicable to Agilent Infiniium oscilloscope models 54852A, 54853A, 54854A, and 54855A. The Agilent Infiniium oscilloscope can be declassified by performing three steps 1. Cycle power on the scope.

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This process insures a generic setup in batterybacked nonvolatile RAM on the scope interface assembly and generic setup in nonvolatile hard disc drive. 3. Remove the hard disc drive from the instrument completely. Replace with a separate hard disc drive an Infiniium hard drive containing no security issues. Refer to the service manual for the hard disc drive for your scope. The hard disc drive contains the Windows operating system, Scope operating system, setups, waveform memories, waveform files, screen images, and calibration data for the scope and probes. All RAM information is duplicated on hard disc drive. This enables proper startup and operation after a shut down. This procedure declassifies all of the RAM as listed below There are 512 MB of RAM on the mother board. There is also 32 K of nonvolatile RAM on the scope interface assembly, which stores the last

scope setting prior to power down. Switching to default setups insures that a known and consistent set of information is stored in this RAM. 8 Finally there is volatile RAM on the display assembly. There is 1 MB volatile video RAM for save waveform display data and 1 MB volatile display RAM for screen colors. This RAM is used to aid in multiplexing the graticule and alphanumeric information with the dynamic waveform information of the acquisition section of the oscilloscope. This procedure will insure that all setup and measurement information is removed from all models of the Infiniium oscilloscopes. This memory contains only calibration constants and operational firmware. It does not store any measurement data whatsoever and erasing it would require complete recalibration of the instrument. 2. Volatile RAM Instrument state info. This memory is erased when power is removed from the instrument. N550xA downconverters contain two types of memory 1. Nonvolatile EEPROM this memory contains only calibration constants, calibration instrument interface address info, YTF cal data, and operational firmware.

It does not store any measurement data whatsoever and erasing it would require complete recalibration of the instrument. 2. Volatile RAM Instrument state info. This memory is erased when power is removed from the instrument. It contains two types of memory 1. Nonvolatile EEPROM this memory contains only calibration constants, reference source interface address info but no frequency information, YTF cal data and operational firmware. It does not store any measurement data whatsoever and erasing it would require complete recalibration of the instrument. 2. Volatile RAM Instrument state info. These supplies will always come up at turn on to the state stored in state zero. The calibration of voltage and current occupy 256 K of ROM and are password secured during calibration. The remainder of ROM is power supply firmware and is not customer accessible. N6700A Mainframe 1 KB EEPROM 8 MB Flash 32 MB RAM Each module 2 KB EEPROM 8114A 6 128 K by 8 bit EPROM The EPROM's contain no customer data. The RAM has nine locations 2 128 K by 8 bit RAM for customer data. Then store the settings in the other nine registers. Another method would be to remove the battery and leave power off for at least one hour. The 2M RAM can be increased depending on options. The 81101A has 10 memory locations, 09. Memory location zero holds the default setup. Memory locations 19 can be used to store any other setups. By recalling locations 19 and overwriting them with information in memory location zero, the generator is not holding any user setup but the default one. N897xA Floppy drive Noise figure analyzers NFA Flash EEPROM, DRAM 1. There is a floppy drive on the NFA this cannot be removed easily or disabled. 2. There is not a USB on the NFA. 3. The instrument security documentation can be found on the Web site. 4. The N897xA NFA Series contains 8 MB of Flash EEPROM, which is used to store the instrument firmware and any files the user has saved to internal memory.

The N897xA NFA Series also contains 16 M of DRAM which is used during normal operation. The instrument firmware is loaded from Flash into DRAM on power up. Agilent cannot be held responsible for any lost files or data resulting from the clearing of memory. This is where the instrument stores In most cases there will be no user prompts to confirm the clearing or deleting of files or instrument memory. This is the memory that the instrument uses to run its processes out of.All you have to do is remove the power to the instrument and all data stored in it will be lost.However, there is a procedure that can be used to have the instrument clear most of this memory itself. Information such as the current time and date will not be erased by this procedure. FLASH This type of memory will hold its information indefinitely without any backup supply. It will have to be erased electronically. There is a procedure that can be used to make the instrument completely clear this memory itself. You will need to refer to the section below to determine what is needed to return it to an operating condition. License keys will need to be saved for all licensed options listed. 13 Recovering from clearing the instrument memory DRAM FLASH No recovery required. The information in this memory is built by the instrument every time it is turned on. At this point the instrument will not function, as there is no operating system installed. SRAM Once the SRAM is cleared and the instrument has finished powering up, cycle the power once again to load all

installed measurements. The "System, Alignments, Align Now, All Required" message will be displayed on the screen. You will need to manually perform a front panel alignment of the instrument before using it. Follow the key press sequence in the onscreen message to do this, being sure to connect the AMPTD REF OUT to the RF INPUT if the instrument is equipped with one.

Refer to your instrument's Getting Started Guide if further instructions are required on how this is done. If the instrument has a remote interface, and it was configured to anything other than the default settings, it will need to be reconfigured. The "System, Alignments, Align Now, All Required" message will be displayed on the screen. You will need to manually perform a front panel alignment of the instrument before using it. Follow the key press sequence in the onscreen message to do this, being sure to connect the AMPTD REF OUT to the RF INPUT if the instrument is equipped with one. Refer to your instrument's Getting Started Guide if further instructions are required on how this is done. If optional measurement personalities were installed ESA analyzers only you will now need to reinstall them and their license keys. Refer to the User's Guide for these measurement personalities for detailed instructions on how this is done. Before reinstalling any measurement personalities it would be best to verify that the latest versions are being used. To find a listing of all the latest versions go to Deleting user information without clearing memory This is a list of all of the different places that user information could be saved, as well as information on how to delete it without totally erasing the instrument memory. Of course, this may not be as secure of an erase as clearing the memory would be, but it will help to find all of the information that could contain classified information. There are three main areas which must be considered when determining appropriate security measures in relation to the generator 's use. Storage media Storage media, or memory for user information, can be categorized into two groups explicit Memory description 16 and implicit. Explicitly stored information consists of data enter by the user. Implicitly stored information includes items such as IQ calibration data, user flatness, table editor files, and last state information.

This information is stored in various memory devices within the signal generator. Understanding the memory devices used within the signal generator enables users to define bestpractice security measures for their application needs. Contents Location Persistence DRAM Running firmware code temporary operational storage Processor board, baseband Memory contents are completely erased when powered off for longer than a few seconds. SRAM Certain usereditable data table editors, last state and last state backup, state storage Generator board Memory contents do not get erased by turning off the power because the memory is connected to a backup battery. The battery is located on the processor board in the E82x7C, or on the mother board in the E4438C. CPU flash User files including flatness calibration, IQ calibration, instrument states, waveforms, modulation definitions, sweep lists, firmware code and factory calibrations Processor board Memory contents cannot be removed by turning off power. A lowlevel erase procedure will completely clean the contents in a single cycle. Note since this memory contains both factory data and user data, a full chip erase is not desirable. However, user data areas can be selectively and completely sanitized. Other flash Factory calibration and information files, code images, and self test limits RF boards, baseband generator board, motherboard Memory remains intact through power cycles, however, there is no security concern because there is no user information in this memory. Hard disk User files including flatness calibrations, IQ calibration, instrument states, waveforms, modulation definitions, and sweep lists. Note the hard disk is an option and is therefore not present in some instruments. If it is present, the listed files are stored on the hard disk instead of in flash memory. Instrument chassis controlled by processor board Memory contents cannot be removed by turning off power.

The magnetic residue will require several rewrite cycles or drive removal and destruction. Display The second element to consider in generator security is the display, as it can reveal sensitive information. To prevent unauthorized people from reading the instrument display, it can be blanked. In this mode, no information appears on the display. Once the display is blanked, one must cycle the

power on the instrument to reenable the display. In the reboot sequence, the Erase All action described later in this document, is performed to remove all user information so that the stored states cannot be retrieved. These ports, which provide access to all user settings, user states, and display images, include the GPIB, LAN, and RS232. To prevent remote access to these ports, the physical area around these connections must be tightly controlled. There is also a "ping" service, which presently cannot be selectively disabled. The concern here might be that it is possible to discover IP addresses of connected instruments in order to query their setups over the Internet, or break into the code. Application environments To illustrate how to safeguard the content on signal generators, four use scenarios are provided. 1. The instrument is moved between users or shared by many users In this instance, security measures may necessitate that all user files and information be cleared to prohibit other users from accessing this information through the instrument interface. In this scenario, we assume that other people will not take the instrument apart and analyze the internal chips or storage media. For this scenario, use the Erase All feature described in Using Security Commands. 2. The instrument is used in a secure area In this circumstance, people walking past should not be able to access the instrument or read any information from the display. The information should not be recoverable even if someone takes the instrument apart and analyzes the storage media.

For this scenario, use the Erase and Sanitize All feature described in Using Security Commands. 4. The instrument fails in a secure area and must leave the secure area to be repaired This case means that the instrument is not functioning and cannot clear its own storage media. None of the storage media can leave the secure area. The instrument without storage media can leave the secure area to be repaired. For this scenario, use the procedures noted in Hardware Removal. 17 Using security commands The builtin security features of Agilent signal generators are accessed by various methods, depending upon the element of the generator to be secured. Memory Memory security features are accessible by soft key menus on the front panel and by SCPI commands through the remote interface. Key entry Options for erasing memory are obtained through a series of keystrokes. SYStemSECUrityERASeall SYStemSECUrityOVERwrite SYStemSECUritySANitize These three commands perform as described below. Erase All This procedure removes all user files and user information so they are not accessible through the instrument interface. This action will remove only the file references and clear all table editors without sanitizing the memory. The instrument will appear in a similar state as it was shipped from the factory. The action will include all user files, table editor contents, user flatness calibration, and user IQ calibration. It then clears the memory according to the security standards defined by the United States' Department of Defense DOD. All addressable locations are overwritten with random characters in the SRAM, DRAM and hard disk. All addressable locations in the CPU flash also are overwritten with random characters, and then the flash blocks are erased. This is equivalent to erasing entire chip but is only done on the areas of the chip, which are no longer in use. Erase and Sanitize All The procedure undertakes the measures included in Erase and Overwrite All from above.

In clearing the SRAM, the user is required to wait at least the same amount of time the instrument was used in the secure area to comply with SRAM sanitation. Each overwrite must reside in memory for a longer period than the classified resided in memory. Alternatively, the SRAM battery could be removed and reinserted manually. See issues below. On the hard disk, all addressable locations are overwritten with a single character, its complement, then a random character, and then verified. Note this is insufficient for top secret data according to the DOD standard. For top secret data, the hard drive must be removed and destroyed. DRAM memory is overwritten with a single character; then the instrument must be powered off. Display Other security factors Blocking the display of sensitive data can be done using the generator's entry keys or using SCPI commands. Given that firmware commands are an inherent part of the virtually all electronic equipment, there are some security measures which may be impractical to implement. It should be noted that this service

makes it is possible to discover IP addresses of connected instruments in order to query their setups over the Internet, or break into the code. SRAM According to DOD sanitize standards, a backup battery should be removed. This requires opening the instrument and thus voiding the warranty. The alternative is to perform a DOD clear and then wait for a period longer then the instrument was in use. Solutions include adding a software controlled "battery switch ", adding an externally removable battery tray, or describing how to disassemble and remove the battery. FLASH Since the factory calibration files are stored along with the user files, a "chip erase " cannot be performed. However, selective block erase achieves the same purpose. DRAM This area of memory is ignored in security features since its content is lost erased after powering down the instrument.

Conclusion Aglient 's signal generators combine outstanding RF and microwave performance and baseband generation to deliver calibrated test signals at baseband, IF, and RF microwave frequencies. While the nature of the equipment requires the storage and use of data, generator features and operating practices can be combined to effectively safeguard data during the generator's use. To ensure data protection in securitysensitive applications, the information is easily erased to DODstandards using builtin utilities. In these circumstances, the hard disk and the processor board must be removed. The assemblies can be reinstalled after the instrument has been repaired, or they can be destroyed. 19 Maintaining the PNA in a secured environment Maintaining security In many cases it is imperative that the PNA be used in a secured environment. Generally these secured environments will not allow any test equipment to leave the area unless it can be proven that all devices capable of maintaining memory have been thoroughly erased. Please note that some of this information is dependent upon the CPU board used in your PNA. For purposes of this document, these are divided into "older CPU" and "newer CPU." You can easily determine which of these you have by looking at the rear panel USB port on the CPU board. If it is horizontal, it is an older CPU board, otherwise it is a newer board. All PNAs shipped since about March 2002 have the newer CPU board. Battery information There are no batteries in the PNA other than the one used to power the clock chip on the CPU board. As of this writing it is a 10 GB "laptop" hard drive. This was for possible future uses, but has not been implemented. These devices hold only 512 bytes each and are not generally user accessible. These contain information related to the installed hardware, such as board serial number, options, correction constants, offsets, DAC values, etc. This data is required to make the PNA functional.