8753ET/ES and 8719D/ET/ES, 8720D/ET/ES and 8722D/ET/ES Network Analyzer Security Features

This document applies to the following Agilent Network Analyzers:

- 8753ET (Discontinued)
- 8753ES (Discontinued)
- E8719D (Discontinued)
- E8720D (Discontinued)
- E8722D (Discontinued)
- E8719ET (Discontinued)
- E8720ET (Discontinued)
- E8722ET (Discontinued)
- E8719ES (Discontinued)
- E8720ES (Discontinued)
- E8722ES (Discontinued)

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Introduction

Consult the following instrument manuals for complete information concerning the structure, use, and clearing of user accessible memory inside the 8753ET/ES and 8719D/ET/ES, 8720D/ET/ES, and 8722D/ET/ES Network Analyzers.

- Service Guide 8753ES Option 011 Network Analyzers (08753-90485)
- Service Guide 8753ET/ES Network Analyzers (08753-90484)
- Reference Guide 8753ES Option 011 Network Analyzers (08753-90480)
- Reference Guide, 8753ET/ES Network Analyzers (08753-90473)
- Service Guide 8719D/20D/22D Network Analyzers (08720-90292)
- User's Guide 8719D/20D/22D Network Analyzers (08720-90288)
- Service Guide 8719ET/ES /20ET/ES /22ET/ES (08720-90397)

Memory Implementation

The following memory components are implemented on the A7 CPU Board Assembly for the 8753ET/ES and 8719D/ET/ES, 8720D/ET/ES, and 8722D/ET/ES Network Analyzers. This is the only internal memory contained in the instruments.

2MB Flash Memory

Used for storage of firmware. Main processor and Digital Signal Processor (DSP) code both reside in this area. DSP code is downloaded in hex format from this area into the DSP RAM for execution. This memory can be changed only by booting the instrument with a new floppy disk boot image (standard firmware upgrade method). Only factory provided images will function in this capacity. The parts are two 512K X 16 Flash memory chips.

128K BOOT Memory

Used for power-on initialization of the instrument. The code found here provides some power-on testing, including memory testing. It also manages the firmware upgrade process if a disk is present in the floppy with a correctly formed firmware image, and starts the main instrument code.

NOTE: Even though the part is a flash part, it is not writable when installed in the instrument. No provision for write control is present at the device when installed. The part must be removed and programmed in an EEPROM burner

in order to change the code residing on it. This part is a 128K X 1 Byte chip.

4MB DRAM

Provides the RAM space for the main processor. Holds the operating system state, process stacks, and global memory. NOTE: 128K bytes of the memory are read/written by the DSP for data transfer and control from host to DSP. This memory does not persist after powering-down the instrument. The parts are two 1M X 16 chips

2 MB CMOS SRAM

Normal use of the SAVE/RECALL features will store frequencies, power, and/or calibrations in this memory area. Agilent provides a method to absolutely clear this memory. It is the Memory Reset option, which is accessed by the System hard key, followed by the soft-key sequence:

Service->PEEK/POKE->Memory Reset.

This MUST be followed by an instrument Preset (green button). Clearing memory this way also removes the UPRESET (user preset) register that may have been in the RAM disc.

Note that normal power-up (and Preset) behavior is to copy some data from EEPROM into this CMOS area. Thus, even though you may clear all CMOS with the Memory Reset sequence above, the next boot-up of the instrument will re-populate a few memory locations with default values.

These items are internal instrument setup values such as display colors, and factory default calibrations. No customer specific info is here, (other than options and serial number), and the customer is unable to modify the EEPROM source of this internal information. The parts are four 512K X 8 SDRAM chips

8K EEPROM

Used to hold factory calibration and option configuration. Not writable by the customer. The part is an 8K X 1Byte EEROM chip.

Security Concerns

The only non-volatile memory that presents any security concern is the 2M of CMOS SRAM. No other memory components are used to store front panel

settings, traces or user information, and no other components are user accessible.

In the Service Guides, Chapter 12 (“Theory of Operation”) states "Front panel settings are stored in SRAM, with a battery providing at least 5 years of backup storage when external power is off."

The “Clearing and Sanitization Matrix” provided by Defense Security Service (DSS) says that this type of nonvolatile memory can be sanitized by methods c and f:

c. Overwrite all addressable locations with a single character.

f. Each overwrite must be resident in memory for a period longer than the classified data resided.

Refer to the Defense Security Service Website for more information.

In both of the 8753 Reference Guides and in the 8718D/20D/22D User's Guide, the chapter titled "Preset State and Memory Allocation" explains what is put into the nonvolatile CMOS SRAM. NOTE: The 2M of CMOS SRAM is divided into two blocks, the user accessible and the fixed block. The fixed block contains no user data at all and it is not accessible by the user in any mode of operation. It contains only internal data needed for instrument operation. The user accessible block of this memory is cleared and sanitized by the Memory Reset option, which is accessed by the System hard key, followed by the soft-key sequence:

Service->PEEK/POKE->Memory Reset.

This MUST be followed by an “Instrument Preset” (green button).

When you press the peek/poke memory reset, the user accessible block of the SRAM memory is cleared to all zeros. All other memory areas are either not accessible by users (such as the boot ROM and the FLASH) or are volatile, such as the 4MB of RAM.

It is the position of Agilent Technologies that all user information generated by the 8753ET/ES and 8719D/ET/ES, 8720D/ET/ES, and 8722D/ET/ES Network Analyzers is sanitized by properly performing the “PEEK-POKE” procedure described above. No other procedure is required to completely remove sensitive or classified information from the internal non-volatile memory components of the 8753ET/ES and 8719D/ET/ES, 8720D/ET/ES, and 8722D/ET/ES Network Analyzers.