S E R V I C E   N O T E

SUPERSEDES: None

8591E Spectrum Analyzer

Serial Numbers: 3506A00000 / 9999A99999

Firmware Revision K, datecode 95.09.14

Duplicate Service Notes:
8590L-04
8591C-07
8591E-09
8592L-04
8593E-11
8594E-11
8595E-11
8596E-11

To Be Performed By: Agilent-Qualified Personnel or Qualified Customer Personnel

Parts Required: Firmware Replacement Kit, part number 08590-60394

Continued

DATE: January 1996

ADMINISTRATIVE INFORMATION

SERVICE NOTE CLASSIFICATION:

MODIFICATION RECOMMENDED

ACTION CATEGORY:	☐ IMMEDIATELY ■ ON SPECIFIED FAILURE ☐ AGREEABLE TIME	STANDARDS: Labor 0.5 Hour			
LOCATION CATEGORY:	■ CUSTOMER INSTALLABLE ☐ ON-SITE ■ SERVICE CENTER	SERVICE INVENTORY:	☐ RETURN ■ SCRAP ☐ SEE TEXT	USED PARTS:	☐ RETURN ■ SCRAP ☐ SEE TEXT
AVAILABILITY:	PRODUCT'S SUPPORT LIFE	AGILENT RESPONSIBLE UNTIL: January 1998			
AUTHOR: PS	ENTITY: 5320	ADDITIONAL INFORMATION:			

Agilent Technologies

Situation:

This section covers the primary problems noted with the introduction of Revision I, datecode 95.02.21. The problems listed in this section are the most common seen in the field. Refer to "Firmware Details" for additional information, which includes enhancements.

A. MEMORY CARD: Card will not catalog even though card was formatted and information stored on the card.

B. Default 48.

C. Loss of Cal data.

D. Loss of flatness data.

E. Blank screen.

F. Front panel locked up.

G. Difficulty purging Trace Data.

Solution/Action:

Replace the firmware with Revision K firmware, datecode 95.09.14. No adjustments or calibration is required as a result of the replacement of the firmware.

Firmware Details:

1. HEALING MEMORY CARD CATALOG FIX: Previous code would not catalog a card if the first byte on the card was not the specified value of 128. It is suspected that power down/up with a memory card in the box can sometimes write the first byte on the card to a 0. This firmware will read the first byte and if it is the 128 value, the catalog operates as before. If the first byte is NOT 128, it reads some nearby memory data that is written to the same value by 9xe, MSA and 6x. If the memory data matches the expected values, the first byte is corrected to 128 (if the card is not in write protect) and the catalog continues. So the card is "healed" if it is not in write protect. A write protected card will catalog, but will not be "healed."

2. PENTAX RS232 PRINTER THROWS OUT CHARACTERS RECEIVED WHILE PRINTER DUMPING: The Pentax PocketJet printer sends back characters to the analyzer which are treated as remote commands. This firmware discards any characters received over RS232 during a front panel printer dump directed to the

RS232 port.

3. CAL DATA MEMORY MOVE ON ADDRESS ERROR FIXED: An M68000 address error generated by an invalid DLP or by a power up sequence in some analyzers will cause CAL memory to be overwritten. See item 4 for an invalid DLP that did cause an exception.

Some history:

Brain-dead memory erasure is in the firmware to increase the percentage of processor boards that power up successfully the first time. The analyzer determines when to run brain dead by comparing a RAM copy of the firmware revision code to the ROM copy of the revision code. If the RAM copy ROM copy then the analyzer knows that either the ROMs have been changed or the analyzer processor board is being powered up for the first time. However, the 9xe's M68000 generates exceptions when it detects invalid conditions. As a fail-safe measure, since 911206, the ROMs forced a "brain-dead" memory erasure, since M68000 should never occur.

One M68000 exception is an address error caused by trying to read a 16 bit word at an odd address. This operation is invalid, so the M68000 forces an "address error" exception. The analyzer should not generate address errors once ROMs are installed and one power up is successful. Analyzers with firmware revision codes before 940822 responded to M68000 exceptions by modifying the RAM copy of the firmware revision code to 0 to force a "brain-dead" memory erasure. The firmware then did a global memory erase that would remove the serial number, some option information (option 105), and any installed DLP's.

CAL data was NOT erased however. The 940822 ROMs changed this somewhat by overwriting the RAM copy of the revision code to a reserved value corresponding to the year 92, 258th day and then doing a global memory erase that left DLP's, serial number and option information untouched.

However, the 950221 and 950308 ROMs to support Dual I/O and 1x,2x,4x memory sizes required a change in the memory map so that CAL data could be stored at the same address location in all memory sizes. This location was different than that used by previous firmware revisions. To allow the new ROMs to be installed in analyzers that had 940822 or earlier ROMs installed, code was added to the 950221/950308 ROMs to read the RAM copy of the firmware rev code and if it passed a validity check, move the old firmware revision cal data to the new location. This was to be executed only once, when new ROMs were installed in an older analyzer. Unfortunately, an M68000 exception in the 950221/950308 ROMs generates a "valid" old firmware revision temporarily which causes a cal data memory move to be executed, overwriting GOOD cal data with garbage. New ROMs avoid this cal data move under exception conditions.

4. Illegal names trapped in TRCADRS/STORVAL (see Cal data memory move). An illegal ACTDEF caused an address error which led to CAL data being overwritten. Both the cause of the address error and the effect (item 3) were repaired.

5. Bug in cexpression handler observed by QMD in Pizza was repaired. Out of sequence execution of "C" style DLPs with remote commands was repaired.

6. Fix key 131 so it will turn off analog+ when CF is 0. Missing "(" caused problem per Marzalek.

7. Added enhancement to DDMD system per Gordon Yule. To quote a message from Gordon: "The change is minor - it relates to range checking of parameter values passed to the digital demod DSP. Rob Bordow has reviewed the concept of the change, and Hal (Watts) has reviewed the implementation."

8. New RS232 break left the SuperIO interrupts off, always force the interrupts ON. This applies only to the new dual I/O hardware with the RS232 option.

9. Added command CTMADC per Mark Slovick. CTMADC(DST: ALPHA;SRC: REAL;TPOS:INTEGER); & Convert DBM/nanov to ADC units at trace position & CTMADCN_EWVAR,-30,201; convert -30dbm to adc units at frequency corresponding to bucket 201.

10. Added "Pizza" no I/O installed detection code to reliably identify the no I/O installed case. It was observed that Pizza "C" firmware did not reliably detect the no I/O case. An algorithm was added to the Pizza firmware to fix this. The same algorithm was added to these Wheelgol bits.

11. XON/XOFF code fixed but command was not activated.

12. BAUD RATE active function display was made one character wider to properly display 115200 baud.

13. BAUD RATE active function is now steppable over normal values from 110 to 115200 baud. The allowable values are 110, 300, 600, 1200, 2400, 4800, 9600, 19200, 38400, 57600, 115200.

14. Every time the analyzer is preset/powered up, the current baudrate is checked for validity. If it doesn't match one of the normal baudrates, it is set to 1200 baud.

15. An analyzer hang bug that one customer was able to cause was repaired. This depended on powering down/presetting the analyzer with a display line on while a particular bit was set. Any subsequent power up/preset would draw the display line and hang. There is no way without changing ROMs to a different version to force a memory zeroing/shorting the supercap to recover from this state. The bug has been in the analyzer for a while, but it is contingent on power cycling/presetting while in a narrow interval in time.

16. PURGET (purge internal trace) had an off by one bug in the 950221/950308 ROMs. Trace register 0 could not be purged and trace register 2 had to be purged by purging trace 1, etc. This would matter only to a front panel user, since the remote command, PURGET, is NOT customer documented. Purging of a trace is not required to use the trace registers, since they can be overwritten without first purging.

17. The "Print Screen" button on the external Vectra keyboard previously sent print data, while in the DLP editor, to the remote port only. The new dual I/O parallel

port was not supported. This applies ONLY while in the DLP editor, so the defect would not be seen often. It is fixed in these ROMs.

18. The name and operation of some printer configuration keys was changed somewhat: in the black/white printer configuration menu:

B&W Printer	is now	Set B&W Printer	B&W Printer
B&W DJ540	is now	B&W EXPAND	

and in the color printer configuration menu

Paintjet Printer	is now	Set Colr Printer	Paintjet Printer
DESKJET 310/550C	is now	DESKJET COLOR	
DESKJET 540	is now	DESKJET EXPAND	

In this firmware, two printer information blocks appear in the active function are a when some configure keys are pressed.

Pressing:
B&W   or   DESKJET
PRINTER   or   COLOR
Displays: "Print 3 images/page on printers supporting 100dots/inch."

Pressing:
B&W   or   DESKJET
EXPAND   EXPAND
Displays: "Print 3 images/page on printers supporting 300dots/inch."