

Agilent Technologies
85103F
Network Analyzer
Performance Upgrade
Installation Manual



Agilent Technologies

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What You'll Find in This Manual...

Using this document and an Agilent Technologies 85103F upgrade package, a trained Agilent Technologies service engineer can upgrade an Agilent Technologies 8510A (with serial number 03000 or greater) or 8510B to full Agilent Technologies 8510C capability.

Agilent Technologies does not recommend customer installation.

The Agilent Technologies 85103F performance upgrade package comes with prepaid installation. Please contact Agilent to arrange for a service engineer to install the upgrade kit. Refer to [“Contacting Agilent” on page iv](#).

Certification

Agilent Technologies certifies that this product met its published specifications at the time of shipment from the factory. Agilent Technologies further certifies that its calibration measurements are traceable to the United States National Institute of Standards and Technology (NIST, formerly NBS) to the extent allowed by the Institute's calibration facility, and to the calibration facilities of other International Standards Organization members.

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Assistance

Product maintenance agreements and other customer assistance agreements are available for Agilent Technologies products.

For assistance, refer to “[Contacting Agilent](#)” on page iv.

Contacting Agilent

Any adjustment, maintenance, or repair of this product must be performed by qualified personnel. Contact Agilent for assistance.

Online assistance: www.agilent.com/find/assist			
United States (tel) 1 800 452 4844	Latin America (tel) (305) 269 7500 (fax) (305) 269 7599	Canada (tel) 1 877 894 4414 (fax) (905) 282-6495	Europe (tel) (+31) 20 547 2323 (fax) (+31) 20 547 2390
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Malaysia (tel) 1 800 828 848 (fax) 1 800 801 664	Philippines (tel) (632) 8426802 (tel) (PLDT subscriber only): 1 800 16510170 (fax) (632) 8426809 (fax) (PLDT subscriber only): 1 800 16510288	Thailand (tel) outside Bangkok: (088) 226 008 (tel) within Bangkok: (662) 661 3999 (fax) (66) 1 661 3714	Hong Kong (tel) 800 930 871 (fax) (852) 2506 9233
Taiwan (tel) 0800-047-866 (fax) (886) 2 25456723	People's Republic of China (tel) (preferred): 800-810-0189 (tel) (alternate): 10800-650-0021 (fax) 10800-650-0121	India (tel) 1-600-11-2929 (fax) 000-800-650-1101	

Safety and Regulatory Information

Review this product and related documentation to familiarize yourself with safety markings and instructions before you operate the instrument. This product has been designed and tested in accordance with international standards.

WARNING

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

CAUTION

The **CAUTION** notice denotes a hazard. It calls attention to an operating procedure, practice, or the like, which, 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.

Instrument Markings



When you see this symbol on your instrument, you should refer to the instrument's instruction manual for important information.



This symbol indicates hazardous voltages.



The C-tick mark is a registered trademark of the Spectrum Management Agency of Australia.



This symbol indicates that the instrument requires alternating current (ac) input.



The CE mark is a registered trademark of the European Community. If it is accompanied by a year, it indicates the year the design was proven.



The CSA mark is a registered trademark of the Canadian Standards Association.

ISM1-A

This text indicates that the instrument is an Industrial Scientific and Medical Group 1 Class A product (CISPER 11, Clause 4).



This symbol indicates that the power line switch is ON.



This symbol indicates that the power line switch is OFF or in STANDBY position.



Safety Earth Ground

This is a Safety Class I product (provided with a protective earthing terminal). An uninterruptible safety earth ground must be provided from the main power source to the product input wiring terminals, power cord, or supplied power cord set. Whenever it is likely that the protection has been impaired, the product must be made inoperative and secured against any unintended operation.

Before Applying Power

Verify that the product is configured to match the available main power source as described in the input power configuration instructions in this manual. If this product is to be powered by autotransformer, make sure the common terminal is connected to the neutral (grounded) side of the ac power supply.

Battery Information

The 8510C uses a lithium polycarbon monofluoride battery to power the instrument clock. The battery is located on the A7 I/O board of the 85101C display/processor. This battery is not field replaceable. Replace the A7 I/O board if the battery requires replacement.

WARNING

Danger of explosion if battery is incorrectly replaced. Replace only with the same or equivalent type recommended. Discard used batteries according to manufacturer's instructions.



DO NOT THROW BATTERIES AWAY BUT
COLLECT AS SMALL CHEMICAL WASTE.

Typeface Conventions

Italics

- Used to emphasize important information:
Use this software *only* with the Agilent Technologies xxxxxX system.
- Used for the title of a publication:
Refer to the *Agilent Technologies xxxxxX System-Level User's Guide*.
- Used to indicate a variable:
Type LOAD BIN *filename*.

Instrument Display

- Used to show on-screen prompts and messages that you will see on the display of an instrument:
The Agilent Technologies xxxxxX will display the message
CAL1 SAVED.

Keycap

- Used for labeled keys on the front panel of an instrument or on a computer keyboard:
Press **Return**.

[Softkey]

- Used for simulated keys that appear on an instrument display:
Press **[Prior Menu]**.

User Entry

- Used to indicate text that you will enter using the computer keyboard; text shown in this typeface must be typed *exactly* as printed:
Type LOAD PARMFILE
- Used for examples of programming code:
#endif//ifndef NO_CLASS

Path name

- Used for a subdirectory name or file path:
Edit the file *usr/local/bin/sample.txt*

Computer Display

- Used to show messages, prompts, and window labels that appear on a computer monitor:
The **Edit Parameters** window will appear on the screen.
- Used for menus, lists, dialog boxes, and button boxes on a computer monitor from which you make selections using the mouse or keyboard:
Double-click **EXIT** to quit the program.

The 85103F Upgrade Package (8510A/B to 8510C)

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The 85103F Upgrade Package (8510A/B to 8510C)

Installing the Upgrade

Use this package to upgrade an 8510A (with serial number 03000 or greater) or 8510B to an 8510C. With this package, you will do the following:

- Check the 8510A/B operation.
- Transfer data from tape to disk.
- If required, replace the A20 assembly.
- Attach new labels.
- If required, upgrade the 8360.
- Reconnect the system.
- Load the 8510C operating system.
- Check the 8510C operation
- Load and check the calibration kit definitions.

NOTE	<i>Agilent Technologies does not recommend customer installation of this upgrade. The 85103F performance upgrade package comes with prepaid installation. Refer to “Contacting Agilent” on page iv to arrange for a service engineer to install the upgrade package.</i>
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Warranty Information

Installation of an upgrade does not affect the existing instrument warranty in any way. Specifically, it does not extend the current instrument warranty. Any parts supplied in an upgrade package carry a 90-day replacement-part warranty.

Source Compatibility

For complete compatibility with revision C.07.00 or greater firmware, your source must be an Agilent 8360 series source. If an 8360 series source is not used, power domain and receiver calibration functions will not work.

The 8510C works with all 8360 synthesized sweeper models. However, some 8360 instruments must be upgraded to take advantage of two 8510C system features (quick step mode and test port power flatness correction). Refer to [“Upgrading an 8360 Source” on page 16](#).

Performance Verification

Performance verification of the system is not included in the upgrade package. If you wish to do a performance verification of your upgraded system, this additional service can be arranged with the Agilent service engineer installing your upgrade.

NOTE	A functional check of the 85101C and the 85102 is performed in the section “Checking the 8510C” on page 19 .
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Time Domain Option

If your existing 8510 is equipped with the time domain option (Option 010), either originally or through an upgrade, then the upgrade package that was ordered should also be equipped with Option 010. (If there is a discrepancy, contact the Agilent sales engineer who placed the order.) Refer to [“Time Domain Option Functional Check” on page 24](#) to verify that it has been properly installed.

Procedure Overview

Step 1. Check the upgrade package contents.

Refer to [Table 1](#). If an item is missing, refer to “[Contacting Agilent](#)” on page iv for assistance.

Step 2. Assemble items not included in the upgrade package.

If needed, obtain the required items listed in [Table 2](#) for your upgrade that are not supplied in the package.

Step 3. Be sure you have a static safe work station.

Check for the following:

- The static mat sits on a clean, flat, sturdy surface.
- The static mat has a connection to earth ground.
- The static mat has a wrist strap connected to it.

Step 4. Familiarize Yourself with the Upgrade Requirements.

Refer to “[Installing the Upgrade](#)” on page 2 for an overview of the required upgrade steps.

Step 5. Follow the Upgrade Instructions.

Follow the detailed instructions provided beginning with “[Checking 8510 System Operation](#)” to install and check your upgrade installation.

Step 6. Recycle/Dispose of the Replaced 85101A/B Display/Processor

Recycle or dispose of the 85101A/B display/processor according to your state or local requirements. The battery on the A7 I/O board and the A11 display (CRT) may have special requirements. When disposing of the cathode ray tube (CRT display), observe the following precautions:

WARNING	The CRT can pose a shock hazard if not properly discharged. Explosion or implosion of the CRT may cause personal injury. Only a properly trained individual should release the vacuum.
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Table 1 85103F Performance Upgrade Package Contents

Item	Quantity	Part Number
Assemblies		
A20 sweep ADC	1	85102-60234
85102 emulator	1	85101-60209
Labels		
8510C Network Analyzer (aluminum panel)	1	08510-80030
8510C Network Analyzer (plastic panel)	1	85102-80118
Serial Tag (old) Sys#	1	5180-8444
Serial Tag (new)	1	9320-5959
Installation Date (B to C)	2	9320-5958
Cables		
85101C cables	5	p/o 85101C
BNC (2)		
GPIB (1)		
IF Display Interconnect (1)		
RS-232 (1)		
SMB(f) to BNC(m)	1	5062-7230
Documentation		
Upgrade Installation Manual	1	85103-90014
8510C Manual set contains:		p/o 85101C
8510C Keyword Dictionary	1	08510-90275
8510C Operating and Programming Manual	1	08510-90280
8510C On-Site Service Manual	1	08510-90281
		08510-90282
Software		
8510C software kit contains:		p/o 85101C
Performance/verification disk	1	85101-60271
Master cal constants disk	1	08510-10033
Service adjustments disk	1	08510-10034
Software tool kit disk	1	08510-10024
Operating system disk for 8510C	1	85103-10002
		85101-80116
Blank data disks (2 black, 2 gray)	4	85103-60002
Miscellaneous		
SMB adapter tee	1	1250-1391
7-inch rack mount flange kit (w/o handles)	1	5062-4072
85102 service adapter	1	85102-60210
85101C display/processor	1	85101C
Accessory tray	1	08510-40001
DISC key	1	5041-4512
USER PRESET key	1	5041-4903

Table 2 Equipment Required but Not Supplied

Item	Agilent Part Number
Source	8350B with plug-in, 8340A/B, 8341A/B, or 8360-series
Test Set	8511A/B, 8512A, 8513A, 8514A/B, 8515, 8516A, or 8517A
Static control table mat	9300-0797
Wrist strap	9300-1367
Wrist-strap-to-mat cord (5 ft)	9300-1980
Disk drive	9122C
Controller	HP 9000 series 200/300 ^a
GPIB cables	10388A
Alligator clip leads	N/A
For 8511A Only:	
Power splitter	5086-7408
Semirigid cable	08510-20005 ^b
Semirigid cable	08510-20006 ^b

a. Except for an 9826A.

b. From an 8510 service kit or 8511A test set.

Checking 8510 System Operation

Use this procedure to ensure that the 8510A system works properly.

Procedure

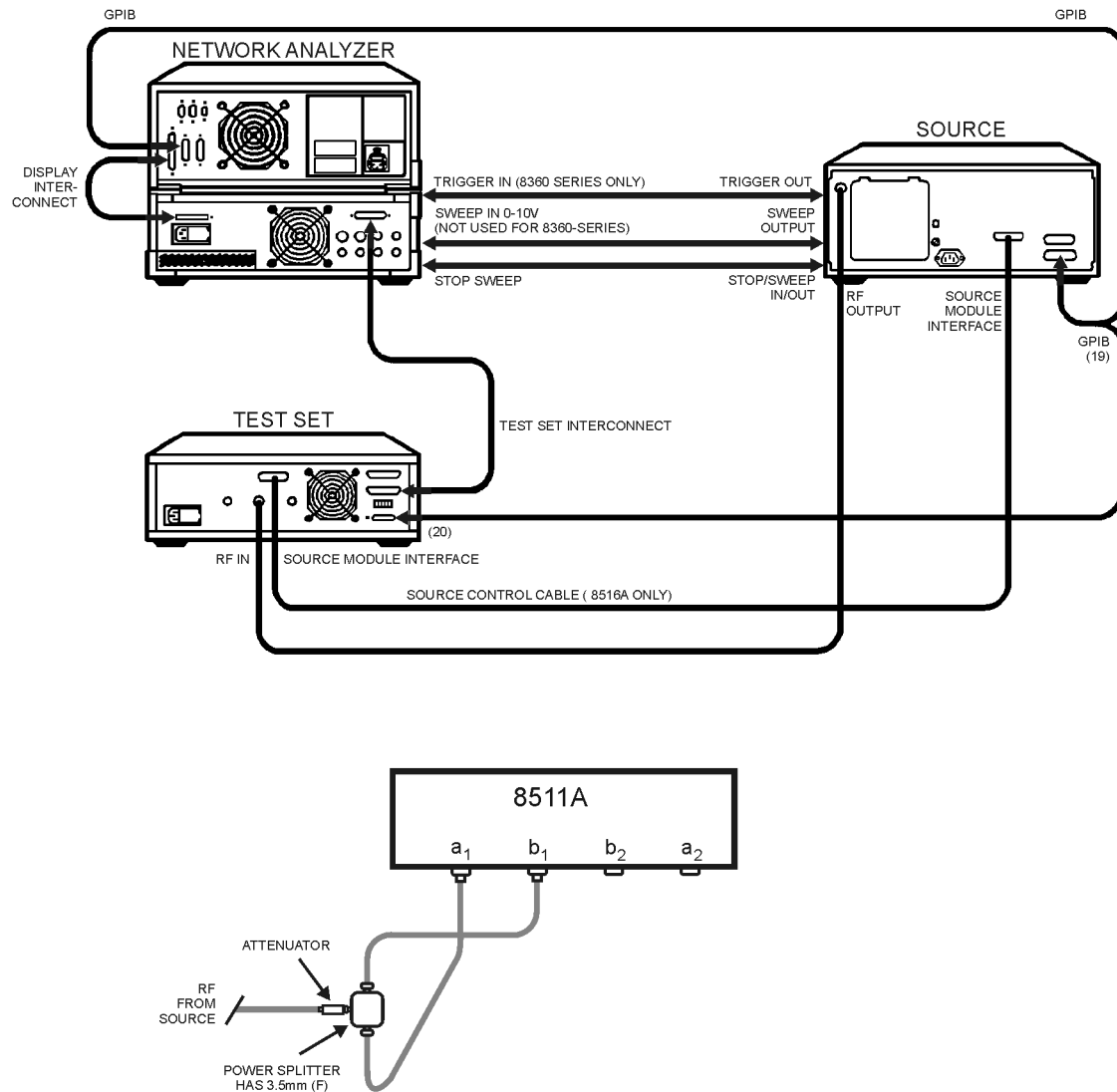
1. Configure the system as shown in [Figure 1](#).
2. Turn on the instruments in the following order:
 - a. Source (be sure to turn the switch to power on, not standby)
 - b. Test set
 - c. Analyzer
3. On the 85102, press the green preset key.
4. Does the system pass self-test (85101 self tests, 85102 running error messages, and test set unratio power tests) and display a log MAG S_{11} trace? If not, do not perform the upgrade until the system has been serviced.
5. Initialize a blank or used tape (customer supplied), as follows:
 - a. Load the tape (with write-protect off).
 - b. On the 85102, press **AUXILIARY MENUS TAPE**.
 - c. On the 85101, select **INITIALIZE TAPE YES**.
6. Does the system initialize the tape (this takes approximately three minutes) and display `TAPE INITIALIZED ?`

NOTE	The tape drive must be working to transfer information from tape to disk.
-------------	---

7. If the system displays a self-test,¹ running error message, or unratio power test failure, check the equipment setup. Do not perform the upgrade until either you correct the setup problem, or you have the system serviced.
8. Continue with [“Converting Files from Tape to Disk.”](#)

1. You may have to rely on the red LEDs rather than the display.

Figure 1 Typical Equipment Setup and 8511A-Specific Connections



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Converting Files from Tape to Disk

Each performance upgrade package includes a tape to disk conversion program. Use this program to convert DATA, MEMORY, MEMORY ALL, and DELAY TABLE files from tape to disk. This conversion will make these files available to the 8510C.

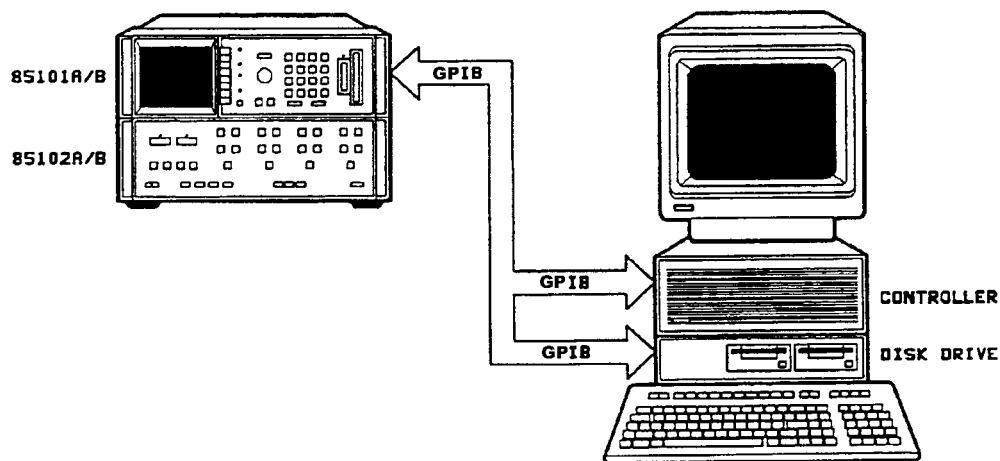
The utility program creates CITIfile versions of the tape files on a standard double-sided (720 kByte) or a high-density (1.4 MByte) 3.5-inch diskette. For best performance, we recommend that you use a 9122C drive and high-density diskettes.

NOTE	You <i>cannot</i> convert instrument and hardware state files, or calibration kit files under this procedure. Refer to “Converting Cal Kit Files” at the end of this procedure. The 8510C <i>cannot</i> use the learn strings of earlier analyzer versions.
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Procedure

1. Connect the equipment as shown in [Figure 2](#).
2. Turn the equipment on.
3. On the 8510, press INSTRUMENT STATE RECALL and select [MORE], [FACTORY PRESET].

Figure 2 **Equipment Setup for Data Transfer**



Re101

4. Insert the Software Tool Kit disk included in the upgrade kit into drive 0 of the 9122 disk drive.

5. On the controller, load the program:
 - a. Type GET "TAPE_DISC", and press **Return**.
 - b. Wait approximately 2 minutes.

NOTE	You can store a version of this program so that it loads faster for future use. See "Storing a Binary Version" at the end of this procedure.
-------------	--

- c. Select **Run**.
 - d. In approximately 10 seconds, the analyzer presets and the controller displays:

```
HP 8510A/B TO HP 8510C TAPE FILE CONVERSION UTILITY
```
6. Read and follow the main menu instructions displayed on the controller.
7. Replace the tool kit disk with a blank, initialized disk (the data disk).
8. Place the data tape you want to convert to disk into the 8510A/B tape drive.
9. If you wish the conversion process to run unattended, select **Convert**. If not, see ["Attended Mode."](#) The controller shows the transfer activity, and displays a conversion summary when the transfer completes. A complete tape to disk conversion can take from 1 to 20 minutes.

NOTE	When transfer completes, you can use the [RENAME] softkey to rename disk files. Because transferred files overwrite existing disk files, you <i>must</i> rename files if you transfer the contents of more than one tape to a single disk.
-------------	---

10. Remove the data disk from the disk drive and label it appropriately.
11. When you have completed the upgrade to 8510C, verify that the necessary files have been transferred:
 - a. Insert the data disk into the 8510C disk drive.
 - b. Press **AUXILIARY MENUS TAPE (or DISC)** and select the **[DIRECTORY]**.

Attended Mode

If you want to recall special instrument states before you recall each file from tape (to include S-parameter and frequency information), select **ConvertMode Attended**. The program prompts you to recall or set up the correct instrument state (for example S₁₁, at 2 to 20 GHz) before the data loads from tape and transferred to disk. (In **Normal** conversion mode, all data files convert to User 1, and the preset frequency range.)

Storing a Binary Version

To store a binary version of the utility program for faster loading in the future:

1. Type `STORE "TAPEDISC"`.
2. To load this program in the future, type `LOAD "TAPEDISC"`.

Converting Cal Kit Files

You can convert cal kit tape files to disk by connecting the disk drive to the analyzer system interconnect bus on the rear panel, and using the 8510 capability to store directly to disk (8510B only).

Cal kits stored to disk this way can be read by an 8510C. For details on this procedure, see the analyzer documentation.

Continue with [“Replacing the A20 Assembly.”](#)

Replacing the A20 Assembly

If the system has a firmware revision *earlier than* 5.0, or if the 85102 has an A20 assembly that does not have part number 85102-60234, use the following procedure to replace the A20 assembly in the 85102. If the system has a firmware revision 5.0, *and* the 85102 has an A20 assembly with part number 85102-60234, continue with [“Attaching New Labels.”](#)

NOTE	Refer to the analyzer documentation for instructions on how to determine the operating system revision. If the system does not require the A20 assembly provided in the upgrade kit, please return the assembly to an Agilent service engineer for reuse.
------	---

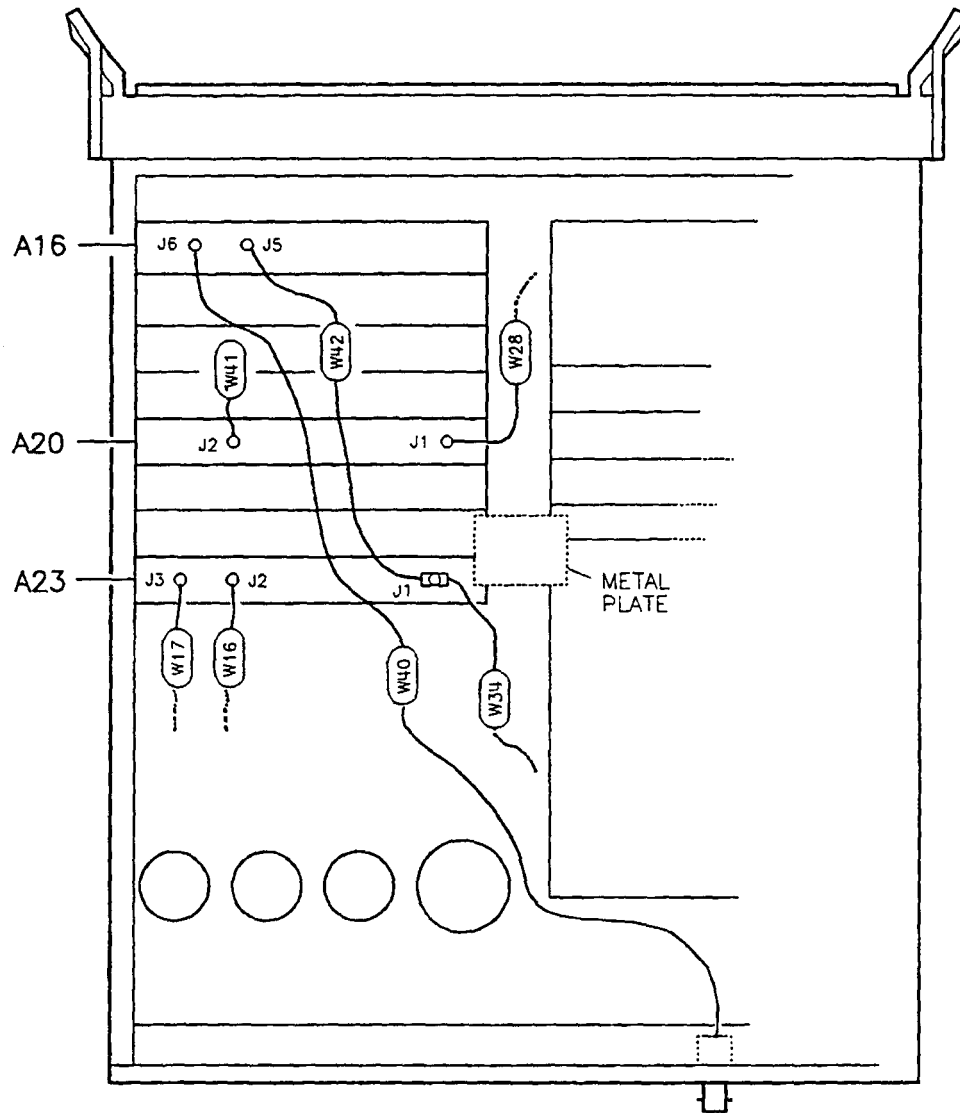
CAUTION	Static electricity can damage this assembly. Wear an anti-static wrist strap connected to earth ground. Place the instrument top cover (connected to earth ground) near the work area with the bare metal side facing up. When you must put them down, place assemblies on the metal surface.
---------	---

1. Refer to [Figure 3](#) for part locations in the following steps.
2. Remove the machine screws that hold the metal cover of the A20 sweep ADC assembly .

NOTE	In the following step, be careful not to damage the metal gasket (located under the metal cover) when you remove the assembly.
------	--

3. Disconnect the cables from the A20 assembly, and remove the assembly from the instrument.
4. Install the new A20 assembly from the upgrade package.
5. Reconnect the cables to the new A20 assembly.
6. Reinstall the assembly cover.
7. Replace the instrument top cover and lock feet.
8. Continue with [“Attaching New Labels.”](#)

Figure 3 **85102 A20 Assembly Location**



Re106

Attaching New Labels

Procedure

There are two grey labels in the upgrade kit, but you will use only one depending on the front dress panel of the analyzer (check the label size). The rest of the labels are metallic silver.

NOTE	You may not need all the labels supplied in your kit. If you wish, use the supplied optional serial tags to note the original 85101 and 85102 serial numbers. If not, dispose of the unused tags.
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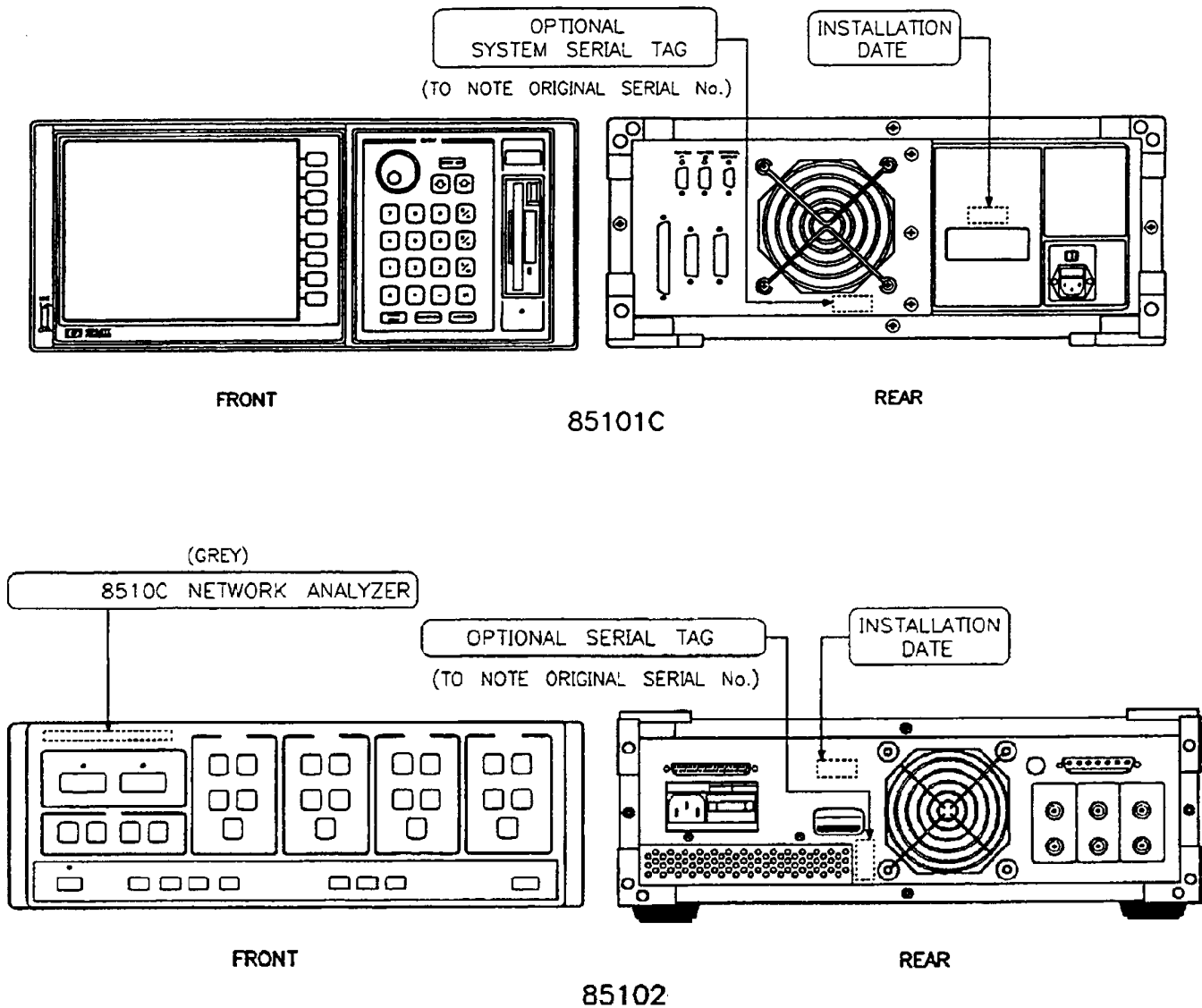
Using [Figure 4](#) for reference, attach the new labels as appropriate on the 85101C and the newly upgraded 85102.

1. Place the appropriate *grey* label on the front panel of the 85102.
2. Affix the remaining labels as shown in [Figure 4](#).
3. Write the installation date (in ink) on the two installation date labels.

NOTE	<p>While a DISC hardkey is supplied with the upgrade kit, unless absolutely necessary, do not try to replace the TAPE key. You can easily break the key holder behind the front panel when you remove the old key. This also applies to the USER PRESET hardkey.</p> <p>If replacing the hardkeys is absolutely necessary, the 85102 front panel should be disassembled and great care taken to minimize the chance for breakage.</p>
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4. If the system has an 8360 as the source, continue with [“Upgrading an 8360 Source.”](#) If not, continue with [“Reconnecting the System.”](#)

Figure 4 **Location of New Labels**



dv401f

NOTE If you do not use the supplied optional serial tags to note the original 85101 and 85102 serial numbers, dispose of the unused tags.

Upgrading an 8360 Source

Refer to the chapter, “*Main Troubleshooting Procedure*,” in the *8510C Network Analyzer On-Site Service Manual* (p/n 08510-90282).

After upgrading source(s), continue with “[Reconnecting the System.](#)”

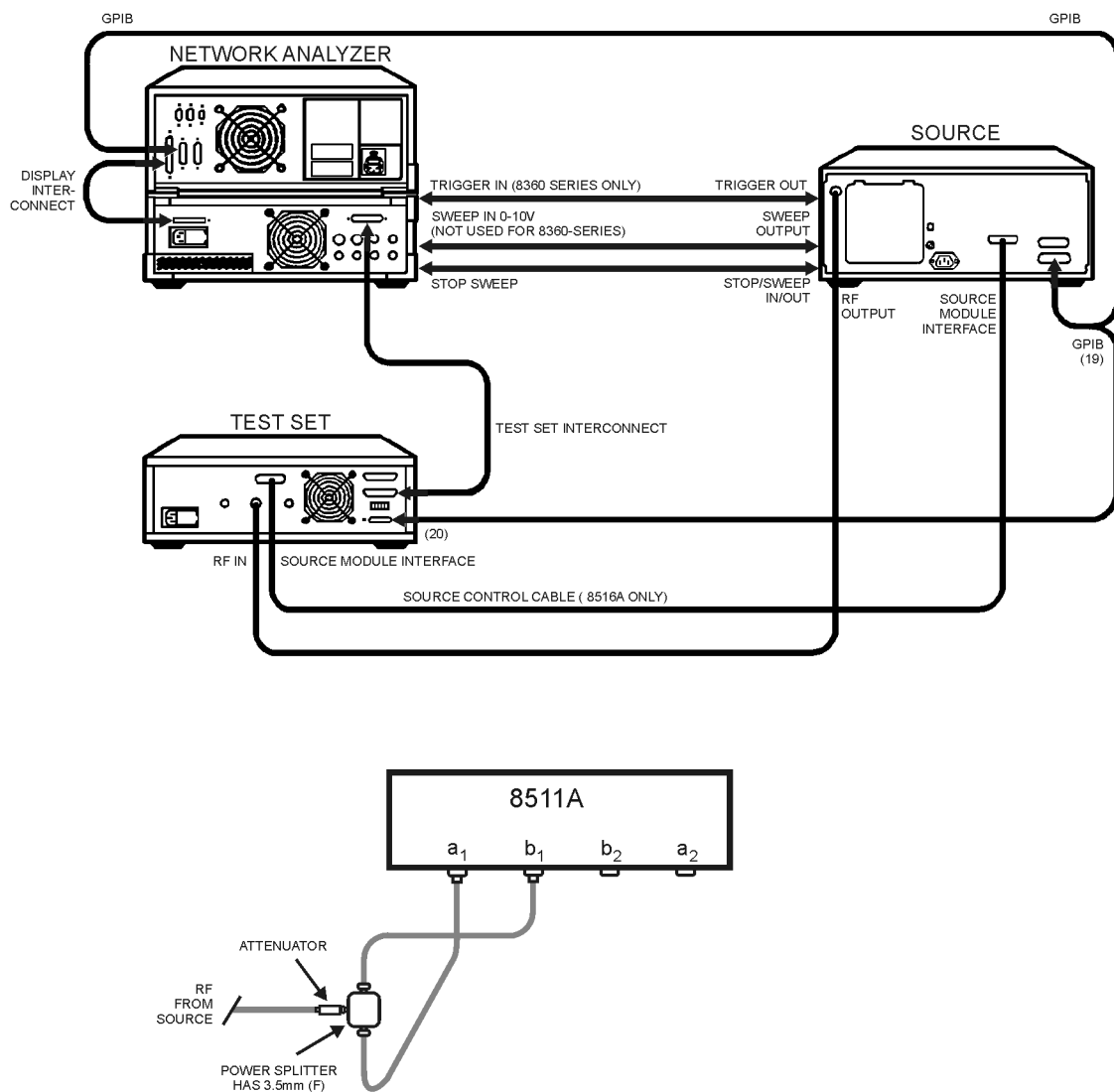
Reconnecting the System

Procedure

Use the following procedure to connect the 8510C system:

1. Using the 85101C and the newly upgraded 85102C, connect the system as shown in [Figure 5](#).
2. Continue with “[Loading the 8510C Operating System.](#)”

Figure 5 Typical 8510 System Connections



jp502j

Loading the 8510C Operating System

After you load the operating system, you will have an 8510C network analyzer, and it will be referenced as such. Often the letter designation “C” at the end of the 8510C model number is omitted.

The procedure for loading the operating system differs from the usual disk loading procedure. This method allows you to load a disk with or without an operating system previously loaded in the analyzer, and requires fewer keystrokes.

Selecting the appropriate 8510C operating system (CRT or LCD version) supplied in the upgrade package will ensure that the proper operating system is loaded. The time domain option firmware is included in both 8510C operating system versions and is enabled by the time domain option security key IC.

Procedure

1. While holding down the **=MARKER** key, turn on the system instruments in the following order:
 - a. Source (turn the switch to power on, not standby)
 - b. Test set
 - c. Analyzer

This causes the instrument to detect an apparent keyboard failure and display self-test error 14, subtest 2. Ignore this error.

2. Press **=MARKER** again.
3. Insert the operating system disk into the analyzer disk drive, and press **1, 9, =MARKER**.
4. Select the file named **PG_8510C**, then select **[LOAD FILE]**.

The disk loads in three to four minutes, and the system begins normal operation. The screen displays: **S11 Log Mag**.

5. Press **INSTRUMENT STATE RECALL** and select **[MORE]**, **[FACTORY PRESET]**.
6. Continue with [“Checking the 8510C.”](#)

Checking the 8510C

85101C Functional Check

Does the analyzer display any internal self-test failure on the self-test status LEDs or display? If not, the instrument passed the internal self tests, and functions fully. If a self-test fails, or a running error is displayed, refer to the *Agilent Technologies 8510C On-Site Service Manual*.

85102 Functional Check

Use these procedures to check that the LO phase lock-out and trigger-in are functioning properly.

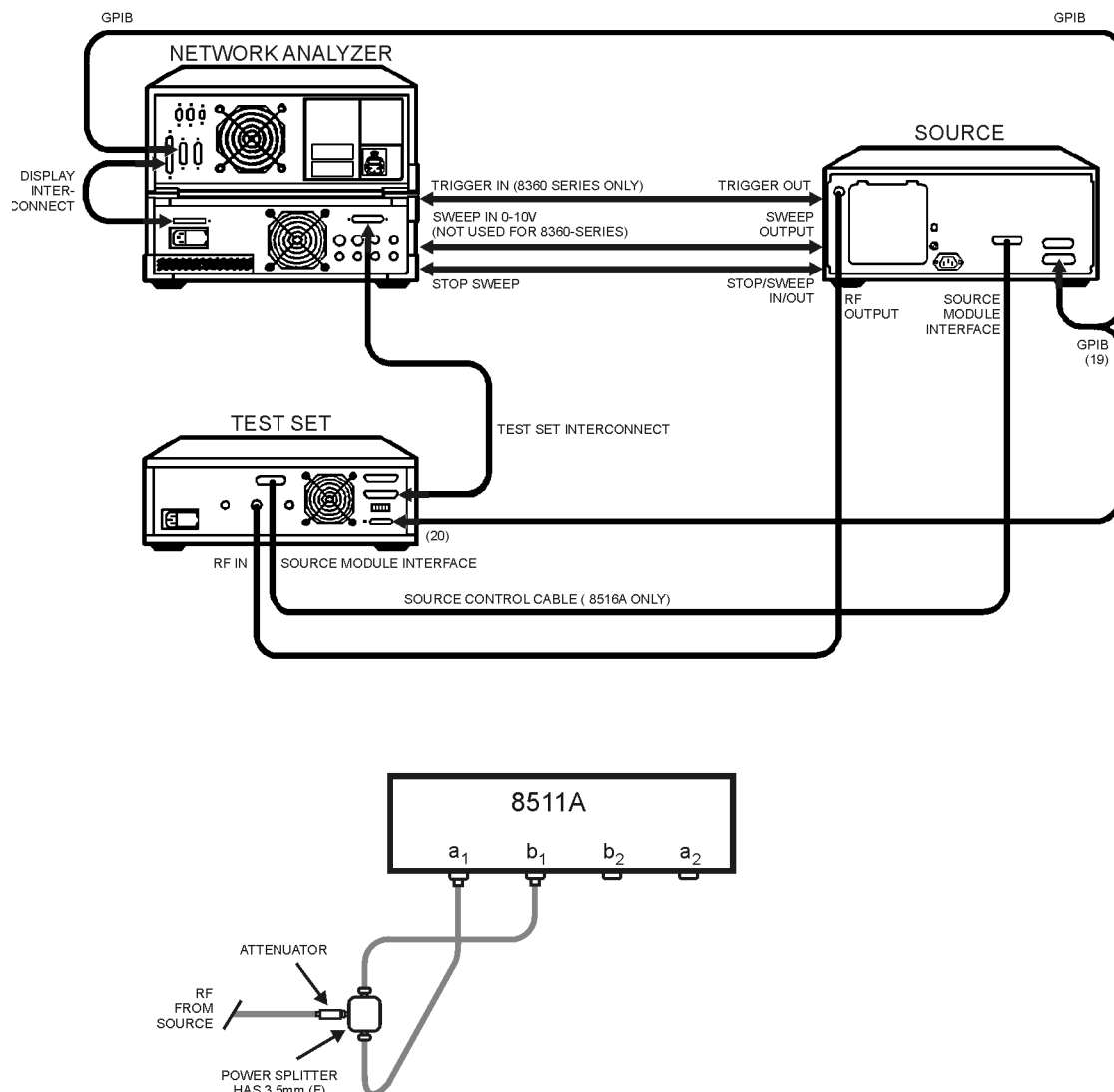
1. Turn both the 8510 and the source off (three line switches).
2. On the 85102:
 - a. From the rear panel, remove the test-set interface cable.
 - b. Plug the service adapter (supplied with the upgrade package) into J1 Test Set Interconnect (the multi-pin rear-panel connector).
 - c. Connect the BNC end of the service adapter to the rear-panel 20 MHz output.
 - d. Connect the ANALOG $\pm 10V$ BNC to the SWEEP IN 0-10V BNC (failure to do this causes an error).
3. Turn on the 8510, and ignore the system bus address error.
4. Press **AUXILIARY MENUS SYSTEM**.
5. Select **[MORE]**, **[SERVICE FUNCTIONS]**, **[TEST MENU]**.
6. Press **2, 2, =MARKER**.
7. Press **2, =MARKER**.
8. Press **=MARKER**.
9. Run all of the tests: Press **M/u** (hexadecimal B), **=MARKER**.
10. After the tests pass, return to the 8510 Log Mag display:
 - Press **=MARKER**.
 - Press **.** (hexadecimal F), **=MARKER**.
 - Press **.** (hexadecimal F), **=MARKER** again.
 - Press **1, 5, =MARKER**.
11. At this point, disregard any running error messages and continue with [“LO Phase Lock Out Functional Check.”](#)

LO Phase Lock Out Functional Check

The A16 assembly inverts the main phase lock signal to fine tune a sweep oscillator. In this check, you use the 8510C as an oscilloscope to check this function.

1. Turn the source on.
2. Connect SWEEP OUTPUT from the source to SWEEP IN on the 85102.
3. On the 85102:
 - a. Remove the service adapter.
 - b. Reconnect the test set IF interconnect cable from the 8510 to the test set.
4. Check that all connections are as shown in [Figure 6](#).

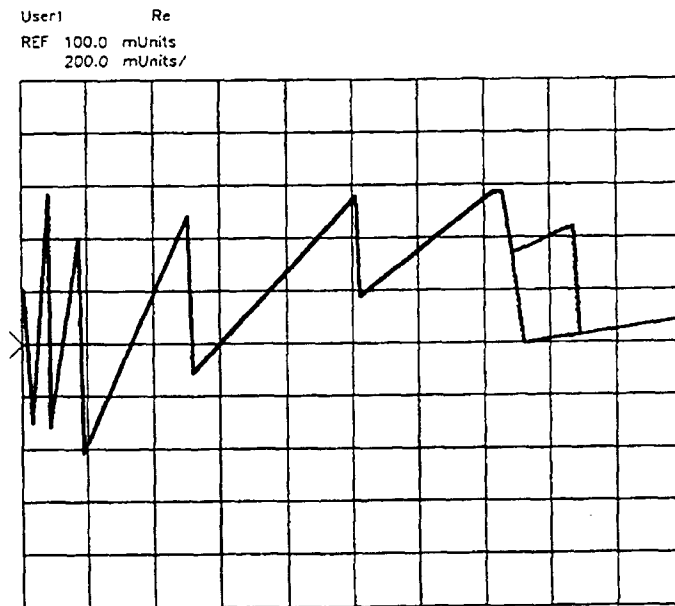
Figure 6 Typical 8510 System Connections



jp502j

5. Turn off the 8510.
6. On the 85102:
 - a. Remove the top cover.
 - b. Disconnect W24 from the A17J4 Ref X connector.
 - c. Connect the BNC-to-SMB cable provided in the upgrade package from the rear panel LO Phase Lock Out jack to the A17J4 Ref X connector.
7. Turn on the 8510.
8. Press **INSTRUMENT STATE RECALL** and select **[MORE]**, **[FACTORY PRESET]**.
9. Press **PARAMETER MENU** and select **[USER 1 a1]**.
10. Press **FORMAT MENU** and select **[REAL]**.
11. Press **RESPONSE AUTO**.
12. The signal displayed should ramp up as shown in [Figure 6-3](#).

Figure 6-3 LO Phase Lock Out and Main Phase Lock Signals



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13. On the 85102:
 - a. Remove the BNC-to-SMB cable.
 - b. Reconnect W24 to A17J4.
 - c. Leave the top cover off.

NOTE	If the trace flattens out and the display shows an IF Failed Cal message, press ENTRY OFF to clear the error. This is not a true error.
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14. Continue with “[Trigger In Functional Check](#).”

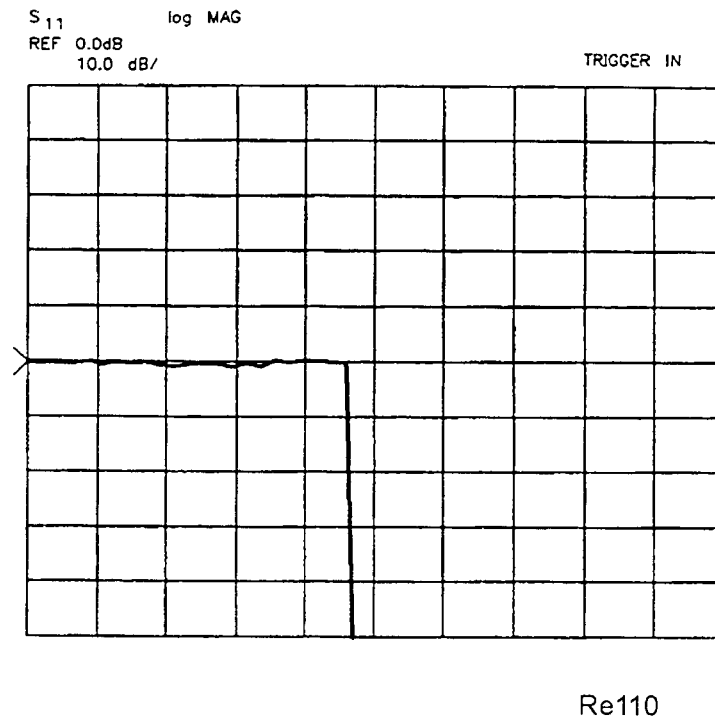
Trigger In Functional Check

This check confirms the operation of the Trigger In connector and circuit. Any triggered trace confirms the operation of the circuit.

1. Turn off the 8510.
2. On the 85102:
 - a. Disconnect W28 from A20J1.
 - b. At A10/A12J5 Test/Ref IF amplifier:
 - i. Disconnect W23.
 - ii. Connect an SMB tee in its place.
 - iii. Reconnect W23 to the tee.
 - iv. Connect the SMB-to-BNC cable between the tee and the rear panel Trigger In (if necessary, remove the trigger cable from the 8360 source to the 85102).
3. Turn on the 8510.
4. Press **INSTRUMENT STATE RECALL**, **[MORE]**, **[FACTORY PRESET]**.
5. Look for a (partial) trace similar to [Figure 7](#), and disregard any error messages. Any triggered trace means the circuit functions, no matter how short or erratic the trace.

NOTE	If the source is not an 8360 series, you can make a longer trace by increasing the sweep time to > 200 ms.
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Figure 7 Typical Partial Trace Confirming Trigger In Circuit Operation



6. Turn off the 8510.
7. On the 85102:
 - a. Remove the SMB-to-BNC cable.
 - b. For an 8360 series source, reconnect the Trigger In cable.
 - c. Reconnect W28 to A20J1.
 - d. Remove the SMB tee and reconnect W23 to A10/A12J5.
 - e. Replace the top cover.
 - f. For use with 8340 or 8350 series sources, place the BNC short over the TRIGGER IN BNC.
 - g. For use with 8360 sources, place the BNC short over the SWEEP IN 0-10V BNC.
8. Turn on the 8510.
9. Press **INSTRUMENT STATE RECALL**, **[MORE]**, **[FACTORY PRESET]**.
10. Continue with [“Time Domain Option Functional Check”](#) if you have installed the time domain option firmware (Option 010). If you did not install the time domain option firmware, proceed to [“Checking Calibration Kit Definitions.”](#)

Time Domain Option Functional Check

If the 8510A/B was equipped with the time domain option (Option 010), either originally or through an upgrade, then the 85103F upgrade package ordered should also have been equipped with Option 010. If so, there should be a serial number label on the back of the 85101C with OPT: 010 printed on it.

The time domain option firmware is included in both the LCD and CRT 8510C operating system versions. It is enabled by the time domain option security key IC inside the 85101C. Refer to the *On-Site Service Manual* for the location of this IC.

Use this procedure to verify that the time domain option has been installed properly.

1. Turn on the instruments in the following order:
 - a. Source (make sure that the switch is turned to power on and not standby)
 - b. Test set
 - c. 85102 IF/detector
 - d. 85101 display/processor
2. On the 85101:
 - a. Press **INSTRUMENT STATE RECALL** and **[MORE]**, **[FACTORY PRESET]**.
 - b. Press **DOMAIN** and select **[TIME LOW PASS]**.

Does the instrument display the Set Frequency (low pass) menu? If so, the time domain option is installed properly. If not, recheck the installation of the IC.

Checking Calibration Kit Definitions

After an upgrade, an 8510 contains calibration kit definitions that may be significantly different from those that were in the pre-upgraded analyzer. Ensure that the calibration kit definitions contained in the 8510 match the calibration kit used by reloading the definitions from disk.

Viewing Calibration Kit Labels

1. On the 85102, press **CAL**.
2. Check the calibration kits listed.
3. Load the calibration kit definition for the calibration kit used from disk.

Loading a Calibration Kit Definition

1. Insert the calibration kit data disk into the 8510 disk drive.

The master calibration constants disk (8510 Calibration Data disk, p/n 08510-10034 included in the upgrade package) contains calibration constants for many standard calibration kits. The calibration kits are listed by model number on the disk label. This disk can be used to load calibration kit definitions in case the calibration kit does not have a disk.

2. Press **AUXILIARY MENUS TAPE (or DISC)** and select **[LOAD]**.
3. Select **[CAL KIT 1-2]**.
4. Select the data file to load, normally **FILE 1**.
5. Select the calibration kit you want to replace with the definition from disk.
 - a. Using the RPG knob or up/down arrow keys, select the appropriate kit.
 - b. Select **[LOAD FILE]**.
 - c. Press **[CAL]** to verify that the calibration kit loaded properly.

NOTE	For best measurement results, the 8510 must have the proper calibration kit definition. If you have any doubt, reload the definition from disk.
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