Agilent Technologies 11575J Performance Upgrade Package

Installation Manual

8510C Operating System Upgrade to Firmware Revision C.07.00 or Greater

This upgrade package applies to 8510C network analyzers with an 85101C equipped with a CRT display serial prefix 3936A and below.

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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			
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Documentation Warranty

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.
1SM1-A	This text indicates that the instruments an Industrial Scientific and Medical Group 1 Class A product (CISPER 11, Clause 4).
ICES/NMB-001	This ISM device complies with Canadian ICES-001. Cet appareil ISM est conforme a la norme NMB-001 du Canada.
	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.

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.

Contents

Contents

11575J Performance Upgrade

The Upgrade Package

Use this package to upgrade an Agilent 8510C from Revision C.06.XX operating system firmware to revision C.07.XX. Use the appropriate version of the firmware disk provided in the upgrade package, that is, the firmware disk for an 8510C network analyzer equipped with a cathode ray tube (CRT) display in the 85101C display/processor.

Table 1 Upgrade Package Contents

Item	Quantity	Agilent Part Number
8510C Operating System Disk	1	85101-80116
IC	1	85101-80114
Upgrade Installation Manual	1	11575-90023
C.07.XX New Features Manual	1	11575-90024
8510 Quick Reference Guide	1	08510-90292

Upgrade Requirements

Table 2 lists the instrument and firmware revision requirements of this operating system upgrade.

Table 2 Upgrade Package Requirements

Upgrade Package	Firmware Revision Provided	Analyzer Model Required	Firmware Revision Required
Agilent 11575J	Current revision	8510C[a]; 85101C equipped with a CRT display with serial prefix 3936A and below	C.06.XX[b]

a. This also applies to any 8510A or 8510B that has been upgraded to an 8510C.
b. You can determine your instrument's current firmware revision at power up when the firmware revision number is displayed.

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.

Upgrade Features

Upgrade Package	Added Features
Agilent 11575J	• Limit-line testing capability • Receiver calibration capability • Dissimilar connector compensation • Color printer compatibility • Power domain measurements (includes power sweep)

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."

NOTE Agilent 8340, 8341, and 8350 series sources are out of support life and are no longer recommended for use in 8510C systems.

Please consult with your Agilent customer support engineer for more information on upgrading a network analyzer and source firmware.

Procedure Overview

Step 1. Check the upgrade package contents.

Check the package contents for completeness (see Table 1). If an item is missing, refer to "Contacting Agilent" for assistance.

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

If needed, obtain the required items listed in Table 3 for your upgrade that are not supplied in the package.

Step 3. Check the 8510C system.

Use the instructions in "Checking the 8510C Operation" to check that the system that you plan to upgrade functions properly.

Step 4. Follow the upgrade instructions.

Follow the instructions provided in the the following sections to install and check your upgrade installation.

- Checking the 8510C Operation
- Installing the IC

- Upgrading an 8360 Source
- Loading the 8510C Operating System
- Checking the IC Installation
- Backing Up the Operating System
- Verifying Instrument State Files

Table 3 Equipment Required but Not Supplied

Item	Agilent Part Number
Source	8360 series
Test Set	8511A/B, 8514B, 8515A, 8517A/B, or 85110A/L
GPIB cables	10833A
Static control mat	9300-0797
Wrist strap	9300-1367
Wrist-strap-to-mat cord (5 ft)	9300-1980
Pozi-drive screwdriver(#2)	8710-0900
Torx T-15 screwdriver	8710-1622
For 8511A Only:	
Power splitter	5086-7408
Semi-rigid cable	08510-20005[a]
Semi-rigid cable	08510-20006[a]

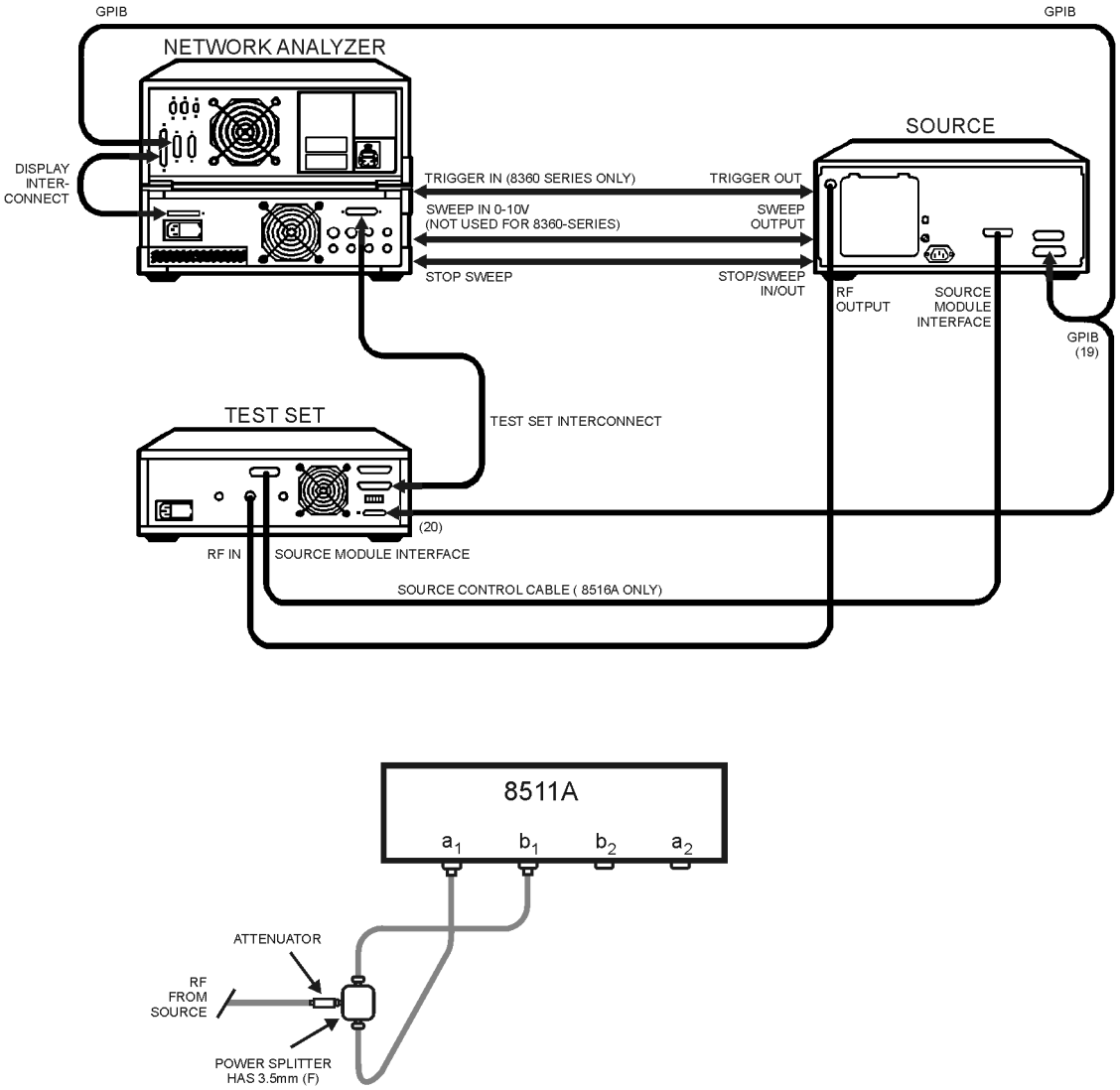
a. From 8510 service kit or 8511A test set.

Checking the 8510C Operation

Procedure

1. Configure the system as shown in Figure 1.
2. Turn on the instruments in the order given below:
   a. Source
   b. Test set
   c. 85102 IF/detector
   d. 85101 display/processor
3. On the 85101, press **INSTRUMENT STATE RECALL, [MORE], [FACTORY PRESET].**
4. Check that the system passes self-test (85101 self tests, 85102 running error messages, and test set unratio power tests) and displays a log MAG S11 trace. If not, do not perform the upgrade until the system has been serviced.
5. Initialize a blank disk.
   a. Disable the disk write-protect (move the write-protect tab near the disk corner that closes the rectangular hole in the disk).
   b. Insert the disk in the 85101 disk drive.
   c. Press **AUXILIARY MENUS DISC**, and select **[SETUP DISC], [INITIALIZE DISK]**.
6. Does the system initialize the disk (this takes approximately one minute) and display `DISC INITIALIZED`? If not, the instrument may have a defective disk drive. If needed, refer to "Contacting Agilent" on page iii for assistance.
7. Is there a self test, running error message, or unratio power test failure displayed? If so, check the equipment setup, and do not perform the upgrade until the setup problem is corrected or until the system has been serviced.
8. Continue with the upgrade instructions.

Figure 1 Equipment Setup and 8511A-Specific Connections



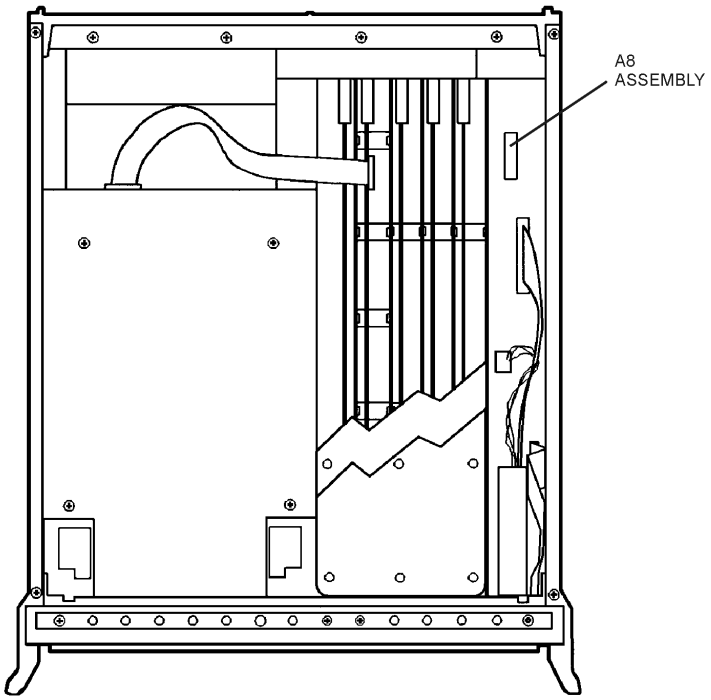
jp502j

Installing the IC

Procedure

1. At a static-free workstation, check that:
   a. The static mat sits on a clean, flat, sturdy surface.
   b. The static mat has an earth ground connection.
   c. The static mat has a connected wrist strap.
2. Install the IC.
   a. Remove the 85101C display/processor from the system.
   b. Remove the top cover of the display/processor.
   c. Remove the A8 assembly by grasping the knob on the A8 assembly board and pulling outward and upward. Figure 2 shows its location.

Figure 2 A8 Assembly Location



d. Insert the IC from the upgrade kit in any one of the empty IC sockets on the A8 assembly (see Figure 3).

NOTE If an IC socket needs to be opened, remove the IC containing the previous revision system firmware. All of the sockets can be filled without any adverse effects to system performance.

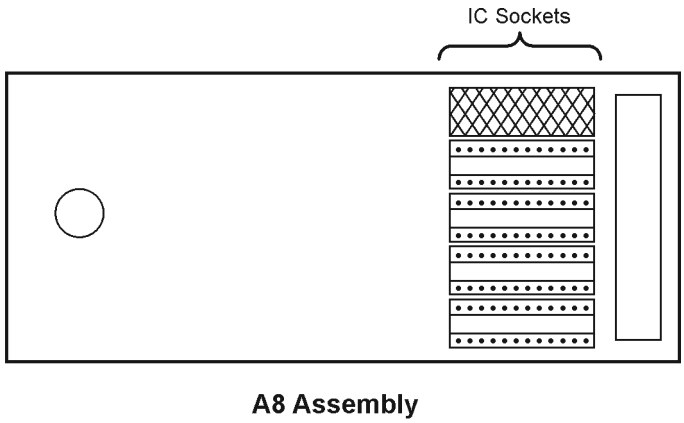
e. Replace the A8 assembly. Push down firmly on the board and inward on the knob until it snaps in place.

f. Replace the top cover of the 85101C.

g. Return the display/processor to the system and reconnect all cables and line cords (see Figure 1).

h. Continue with "Upgrading an 8360 Source."

Figure 3 IC Installation Location on A8 Assembly



Upgrading an 8360 Source

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

After upgrading the source(s), continue with “Loading the 8510C Operating System,” next.

Loading the 8510C Operating System

This procedure 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. Loading the appropriate operating system supplied in the upgrade package ensures that you receive the latest operating system at the time of shipment.

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. 85102 IF/detector

   d. 85101 display/processor

   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 and insert the operating system disk into the network analyzer disk drive and press **1**, **9**, **=MARKER**.

3. Select the file named `PG_8510C`, and then select **[LOAD FILE]**.

   The program loads in three to four minutes. The system is then available for normal operation.

4. Confirm that the current firmware revision number displayed in the title line on the screen matches the number on your system's operating disk label. If these numbers do not match, refer to "Contacting Agilent" for assistance.

5. Press **INSTRUMENT STATE RECALL** and select **[MORE]**, **[FACTORY PRESET]**.

Checking the IC Installation

Check that the IC has been properly installed on your system.

Procedure

On the 85102:

1. Press **INSTRUMENT STATE RECALL**, **[MORE]**, **[FACTORY PRESET]**.
2. Press **MENUS DOMAIN** and select **[POWER]**. Does the instrument display the Frequency menu? If so, the Power Domain option is installed properly. If not, recheck the IC installation.
3. Press **MENUS DISPLAY** and select **[LIMIT LINES]**.

   Does the instrument display the Limit Lines menu? If so, the Limit Line option is correctly installed. If not, recheck the IC installation.

Backing Up the Operating System

Be sure to make a working copy of the instrument firmware *after* you install it. Store the original in a safe place.

Procedure

1. Initialize a blank disk.
   a. Insert a blank disk into the 85101C disk drive.
   b. Locate the AUXILIARY MENUS keys and press **SYSTEM**.
   c. From the displayed menu, press **[MORE]**, **[SERVICE FUNCTIONS]**, **[TEST MENU]**.
   d. When the system displays the `MAIN SERVICE FUNCTIONS MENU`, enter **2, 1** (labeled `INITIALIZE DISC`).
   e. Press **=MARKER** to initialize the blank disk.
2. With the initialized disk still in the 85101C disk drive, copy the operating system.
   a. Enter **2**, **0** (labeled `RECORD PROGRAM DISC`). Press **=MARKER**.
   b. Use the RPG knob to select an instrument program file name, such as 8510C.
   c. Press **[STORE FILE]**.
3. Remove the disk, attach a label, and write protect the disk file.
4. Continue with "Verifying Instrument State Files Compatibility."

Verifying Instrument State Files Compatibility

Not all instrument state files are interchangeable between the various firmware revisions. Be aware that if you save instrument state files (on tape or disk) on an analyzer with a given firmware revision, you may not be able to use those files in an instrument having a more recent firmware version.

To check compatibility, find the firmware revision number under which your work files were created in the first column of Table 4, and read the response under the current firmware revision that you have installed.

- A "Yes" indicates your previously saved disk information is saved with a compatible operating system.
- A "No" indicates that the data from your work disk must be recreated and saved under the new operating system.

CAUTION The analyzer successfully *loads* incompatible instrument state files. However, when the incompatible file is *recalled*, the display blanks, and the front panel does not respond. *Do not* press **USER PRESET**. See "Recovering from an Error State" for instructions about recovering properly from a crashed system.

Table 4 8510C Operating System File Compatibility

Revisions	Firmware Revision C.06.00	Firmware Revision C.06.50 or greater C.06.XX
C.06.00-system stored files	Yes	No (must be recreated)
C.06.50-system stored files	Yes	Yes

Recovering from an Error State

To recover an instrument from the error state described above:

1. Using a narrow tool (such as a small screwdriver), press the **TEST** button on the analyzer front panel.
2. To clear the incompatible instrument state, press **INSTRUMENT STATE SAVE** and then select each instrument state register.

NOTE Do not press **USER PRESET**. Although pressing **USER PRESET** may allow the instrument to partially recover, the data may remain corrupted and cause the analyzer to fail at a later time.

Do not cycle power. This does not work if the incompatible instrument state was loaded into instrument state 8.

Recreating the Instrument State

In case of file incompatibility as described in Table 4, you must manually recreate the desired instrument state and then reload it on disk.

If you encounter an incompatibility problem after upgrading your instrument to a new firmware revision, and you do not have time to recreate earlier instrument states, reload the old firmware. This gives you full use of instrument state files created on an instrument with the earlier firmware revision.

NOTE Remember that machine dump files contain instrument states, and have the same compatibility rules.

8510 Millimeter-Wave Systems

CAUTION The analyzer successfully *loads* incompatible instrument state files. However, when the incompatible file is *recalled*, the display blanks, and the front panel does not respond. *Do not* press **USER PRESET**. See "Recovering from an Error State" for instructions about recovering properly from a crashed system.

Table 5 summarizes the compatibility of 85106D configuration disk revision versus analyzer firmware revisions.

Table 5 85106D mm-Wave Configuration File Compatibility (Machine Dump File)

85106 mm-Wave Config Disk Revision Part Number	Firmware Revision C.06.00	Firmware Revision C.06.50 or greater C.06.XX	Firmware Revision C.07.00	Firmware Revision C.07.10 or greater
Revision 1.0 (85106-10006)	Yes	No (must be recreated)	No	No
Revision 2.0 (85106-10011)	Yes	Yes	No	No
Revision 1.0 (85106-10012)	No	No	Yes	No
Revision 1.0 (85106-10013)	No	No	No	Yes

If the network analyzer in your 85106D millimeter-wave system fails after you load the system configuration disk, order the millimeter-wave system configuration disk revision that is correct for your firmware, or manually recreate the machine dump file on a system configuration disk using the instructions provided in the *85106D System Manual*.