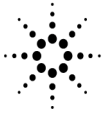
Service Guide

infiniium DCA
Agilent 86100A/B
Mainframe



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Caution denotes a hazard. It calls attention to a procedure that, if not correctly performed or adhered to, could result in damage to or destruction of the product. Do not proceed beyond a caution note until the indicated conditions are fully understood and met.

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Warning denotes a hazard. It calls attention to a procedure which, if not correctly performed or adhered to, could result in injury or loss of life. Do not proceed beyond a warning sign until the indicated conditions are fully understood and met.


The instruction documentation symbol. The product is marked with this warning symbol when it is necessary for the user to refer to the instruction in the documentation.


The AC symbol is used to indicate the required nature of the line module input power.


The ON symbols are used to mark the positions of the instrument power line switch.


The Standby symbol is used to mark the position of the instrument power line switch.


The OFF symbols are used to mark the positions of the instrument power line switch.


The CE mark is a registered trademark of the European Community.


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

ISM1-A This is a symbol of an Industrial Scientific and Medical Group 1 Class A product..

Typographical Conventions.
The following conventions are used in this book:

key type for keys or text located on the keyboard or instrument.

softkey type for key names that are displayed on the instrument's screen.

`display type` for words or characters displayed on the computer's screen or instrument's display.

user type for words or characters that you type or enter.

emphasis type for words or characters that emphasize some point or that are used as place holders for text that you type.

Servicing—At a Glance

This manual documents the service and repair of the Agilent 86100A/B to the assembly level. Before servicing the mainframe, you should be aware that amplitude calibration data can only be installed by the factory.

Servicing requires special tools

The tools listed below are required to repair all versions of the Agilent 86100A/B.

- T-6 screwdriver p/n 8710-1618
- T-8 screwdriver p/n 8710-1614
- T-10 screwdriver p/n 8710-1623
- T-25 screwdriver p/n 8710-1617
- T-15 screwdriver p/n 8710-1622
- wire cutter p/n 8710-0012
- small pozidrive screwdriver p/n 8710-0899
- long-nose pliers p/n 8710-1107
- Flexure Lock p/n 5022-0115
- 4-mm allen driver
- 5/64 allen driver

General Safety Considerations

This product has been designed and tested in accordance with IEC Publication 1010, Safety Requirements for Electronic Measuring Apparatus, and has been supplied in a safe condition. The instruction documentation contains information and warnings which must be followed by the user to ensure safe operation and to maintain the product in a safe condition.

WARNING **If this product is not used as specified, the protection provided by the equipment could be impaired. This product must be used in a normal condition (in which all means for protection are intact) only.**

WARNING **No operator serviceable parts inside. Refer servicing to qualified personnel. To prevent electrical shock, do not remove covers.**

Contents

1

General Information

General Information

In this chapter, you will find general information on caring for your optical devices.

Safety first!
Before servicing the mainframe, familiarize yourself with the safety markings on the instrument and the safety instructions in this manual. This instrument has been manufactured and tested according to international safety standards. To ensure safe operation of the instrument and the personal safety of the user and service personnel, the cautions and warnings in this manual must be heeded. Refer to the summary of safety considerations at the front of this manual.

WARNING **These servicing instructions are for use by qualified personnel only. To avoid electrical shock, do not perform any servicing unless you are qualified to do so.**

WARNING **The opening of covers or removal of parts is likely to expose dangerous voltages. Disconnect the instrument from all voltage sources while it is opened.**

WARNING **The power cord is connected to internal capacitors that may remain live for five seconds after disconnecting the plug from its power supply.**

WARNING **The detachable power cord is the instrument disconnecting device. It disconnects the mains circuits from the mains supply before other parts of the instrument. The front panel switch is only a standby switch and is not a LINE switch (disconnecting device).**

WARNING **This is a Safety Class 1 Product (provided with a protective earthing ground incorporated in the power cord). The mains plug shall only be inserted in a socket outlet provided with a protective earth contact. Any interruption of the protective conductor inside or outside of the product is likely to make the product dangerous. Intentional interruption is prohibited.**

NOTE The warranty is null and void on instruments that have had the seals broken by the customer. The instrument should only be disassembled by Agilent Technologies Customer Engineers.

WARNING **Use of controls or adjustment or performance of procedures other than those specified herein may result in hazardous radiation exposure.**

General Reference

Whenever you contact Agilent Technologies about your mainframe, have the complete serial number and option designation available. This will ensure you obtain accurate service information.

- Refer to Table 1-1 for a list of internal labels.

Clean the cabinet using a damp cloth only.

Protect against ESD damage
Electrostatic discharge (ESD) can damage or destroy electronic components. All work on electronic assemblies should be performed at a static-safe work station. Refer to "Electrostatic Discharge Information" on page 1-9 for more information on preventing ESD.

Table 1-1. Internal Labels

	This label warns you about hazardous voltages present on the power supply. Use extreme caution.

Cleaning Optical Connectors

Accurate and repeatable measurements require clean connections. Use the following guidelines to achieve the best possible performance when making measurements on a fiber-optic system:

- Keep connectors covered when not in use.
- Use dry connections whenever possible.
- Use the cleaning methods described in this section.
- Use care in handling all fiber-optic connectors.
- When inserting a fiber-optic connector into a front-panel adapter, make sure that the fiber end does not touch the outside of the mating connector or adapter.

Because of the small size of cores used in optical fibers, care must be used to ensure good connections. Poor connections result from core misalignment, air gaps, damaged fiber ends, contamination, and improper use and removal of index-matching compounds.

Use dry connections. Dry connectors are easier to clean and to keep clean. Dry connections can be used with physically contacting connectors (for example, Diamond HMS-10/HP, FC/PC, DIN, and ST). If a dry connection has 40 dB return loss or better, making a wet connection will probably not improve, and can actually degrade, performance.

CAUTION Agilent Technologies strongly recommends that index matching compounds *not* be applied to their instruments and accessories. Some compounds, such as gels, may be difficult to remove and can contain damaging particulates. If you think the use of such compounds is necessary, refer to the compound manufacturer for information on application and cleaning procedures.

Table 1-2. Cleaning Accessories

Item	Agilent Part Number
Pure isopropyl alcohol	—
Cotton swabs	8520-0023
Small foam swabs	9300-1223
Compressed dust remover (non-residue)	8500-5262

Table 1-3. Dust Caps Provided with Lightwave Instruments

Item	Agilent Part Number
Laser shutter cap	08145-64521
FC/PC dust cap	08154-44102
Biconic dust cap	08154-44105
DIN dust cap	5040-9364
HMS10/HP dust cap	5040-9361
ST dust cap	5040-9366

Inspecting Fiber-Optic Cables

Consistent measurements with your lightwave equipment are a good indication that you have good connections. However, you may wish to know the insertion loss and/or return loss of your lightwave cables or accessories. If you test your cables and accessories for insertion loss and return loss upon receipt, and retain the measured data for comparison, you will be able to tell in the future if any degradation has occurred.

Connector (or insertion) loss is one important performance characteristic of a lightwave connector. Typical values are less than 0.5 dB of loss, and sometimes as little as 0.1 dB of loss with high performance connectors. Return loss is another important factor. It is a measure of reflection: the less reflection the better (the larger the return loss, the smaller the reflection). The best physically contacting connectors have return losses better than 50 dB, although 30 to 40 dB is more common.

Visual inspection of fiber ends

Although it is not necessary, visual inspection of fiber ends can be helpful. Contamination or imperfections on the cable end face can be detected as well as cracks or chips in the fiber itself. Use a microscope (100X to 200X magnification) to inspect the entire end face for contamination, raised metal, or dents in the metal as well as any other imperfections. Inspect the fiber for cracks and chips. Visible imperfections not touching the fiber core may not affect performance (unless the imperfections keep the fibers from contacting).

To clean a non-lensed connector

CAUTION Do not use any type of foam swab to clean optical fiber ends. Foam swabs can leave filmy deposits on fiber ends that can degrade performance.

1 Apply isopropyl alcohol to a clean, lint-free cotton swab or lens paper.

Cotton swabs can be used as long as no cotton fibers remain on the fiber end after cleaning.

2 Before cleaning the fiber end, clean the ferrules and other parts of the connector.

3 Apply isopropyl alcohol to a new, clean, lint-free cotton swab or lens paper.

4 Clean the fiber end with the swab or lens paper. Move the swab or lens paper back and forth across the fiber end several times.

Wiping or mild scrubbing of the fiber end can help remove particles when application of alcohol alone will not remove them. This technique can remove or displace particles smaller than one micron.

5 Immediately dry the fiber end with a clean, dry, lint-free cotton swab or lens paper.

6 Blow across the connector end face from a distance of 6 to 8 inches using filtered, dry, compressed air. Aim the compressed air at a shallow angle to the fiber end face.

Nitrogen gas or compressed dust remover can also be used.

CAUTION Do not shake, tip, or invert compressed air canisters, because this releases particles in the can into the air. Refer to instructions provided on the compressed air canister.

7 As soon as the connector is dry, connect or cover it for later use.

To clean an adapter

1 Apply isopropyl alcohol to a clean foam swab.

Cotton swabs can be used as long as no cotton fibers remain after cleaning. The foam swabs listed in this section's introduction are small enough to fit into adapters.

Although foam swabs can leave filmy deposits, these deposits are very thin, and the risk of other contamination buildup on the inside of adapters greatly outweighs the risk of contamination by foam swabs.

2 Clean the adapter with the foam swab.

3 Dry the inside of the adapter with a clean, dry, foam swab.

4 Blow through the adapter using filtered, dry, compressed air.

Nitrogen gas or compressed dust remover can also be used. Do not shake, tip, or invert compressed air canisters, because this releases particles in the can into the air. Refer to instructions provided on the compressed air canister.

Cleaning Electrical Connections

The following list includes the basic principles of microwave connector care.

Handling and Storage

- Keep connectors clean
- Extend sleeve or connector nut
- Use plastic endcaps during storage
- Do *not* touch mating plane surfaces
- Do *not* set connectors contact-end down

Visual Inspection

- Inspect all connectors carefully before every connection
- Look for metal particles, scratches, and dents
- Do *not* use damaged connectors

Cleaning

- Try cleaning with compressed air first
- Clean the connector threads
- Do *not* use abrasives
- Do *not* get liquid onto the plastic support beads

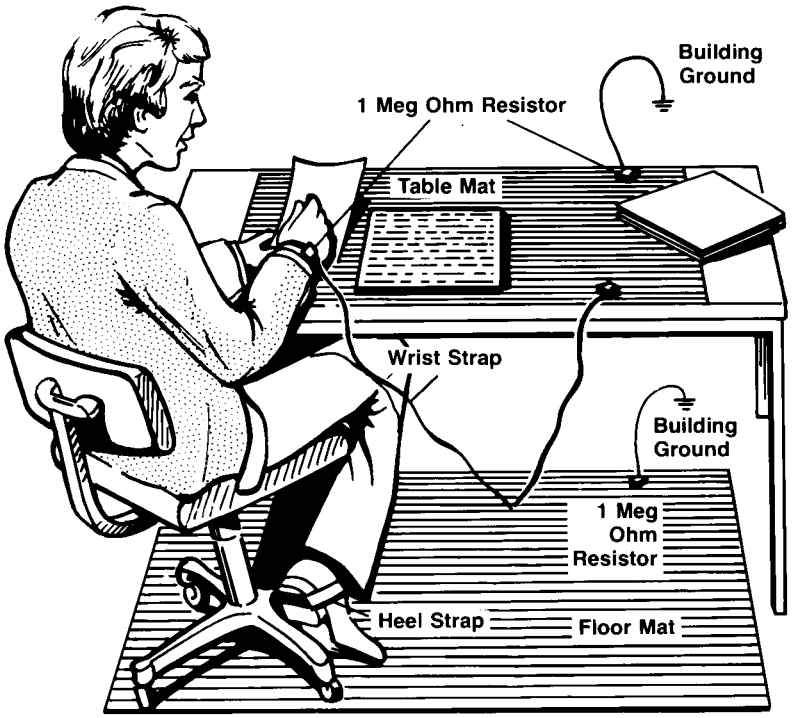
Making Connections

- Align connectors carefully
- Make preliminary connection lightly
- To tighten, turn connector nut *only*
- Do *not* apply bending force to connection
- Do *not* overtighten preliminary connection
- Do *not* twist or screw in connectors
- Do *not* tighten past the “break” point of the torque wrench

Electrostatic Discharge Information

Electrostatic discharge (ESD) can damage or destroy electronic components. All work on electronic assemblies should be performed at a static-safe work station. The following figure shows an example of a static-safe work station using two types of ESD protection:

- Conductive table-mat and wrist-strap combination.
- Conductive floor-mat and heel-strap combination.



Both types, when used together, provide a significant level of ESD protection. Of the two, only the table-mat and wrist-strap combination provides adequate ESD protection when used alone.

To ensure user safety, the static-safe accessories must provide at least 1 MΩ of isolation from ground. Refer to Table 1-4 for information on ordering static-safe accessories.

WARNING **These techniques for a static-safe work station should not be used when working on circuitry with a voltage potential greater than 500 volts.**

Table 1-4. Static-Safe Accessories

HP Part Number	Description
9300-0797	3M static control mat 0.6 m × 1.2 m (2 ft × 4 ft) and 4.6 cm (15 ft) ground wire. (The wrist-strap and wrist-strap cord are not included. They must be ordered separately.)
9300-0980	Wrist-strap cord 1.5 m (5 ft).
9300-1383	Wrist-strap, color black, stainless steel, without cord, has four adjustable links and a 7 mm post-type connection.
9300-1169	ESD heel-strap (reusable 6 to 12 months).

Returning the Instrument for Service

The instructions in this section show you how to properly return the instrument for repair or calibration. Always call the Agilent Instrument Support Center first to initiate service *before* returning your instrument to a service office. This ensures that the repair (or calibration) can be properly tracked and that your instrument will be returned to you as quickly as possible. Call this number regardless of where you are located. Refer to "Agilent Technologies Service Offices" on page 1-13 for a list of service offices.

Agilent Instrument Support Center . . . . . (800) 403-0801

If the instrument is still under warranty or is covered by an Agilent maintenance contract, it will be repaired under the terms of the warranty or contract (the warranty is at the front of this manual). If the instrument is no longer under warranty or is not covered by an Agilent maintenance plan, Agilent Technologies will notify you of the cost of the repair after examining the unit.

When an instrument is returned to an Agilent Technologies service office for servicing, it must be adequately packaged and have a complete description of the failure symptoms attached. When describing the failure, please be as specific as possible about the nature of the problem. Include copies of additional failure information (such as the instrument failure settings, data related to instrument failure, and error messages) along with the original calibration data disks and the instrument being returned.

Preparing the instrument for shipping

1. Write a complete description of the failure and attach it to the instrument. Include any specific performance details related to the problem. The following information should be included with the instrument being returned for service:
   - Type of service required.
   - Date instrument was returned for repair.
   - Description of the problem:
     - Whether problem is constant or intermittent.
     - Whether instrument is temperature-sensitive.
     - Whether instrument is vibration-sensitive.
     - Instrument settings required to reproduce the problem.
     - Performance data.
   - Company name and return address.
   - Name and phone number of technical contact person.
   - Model number of returned instrument.
   - Full serial number of returned instrument.
   - List of any accessories returned with instrument.
2. Cover all front or rear-panel connectors that were originally covered when you first received the instrument.

CAUTION Cover electrical connectors to protect sensitive components from electrostatic damage. Cover optical connectors to protect them from damage due to physical contact or dust.

CAUTION Instrument damage can result from using packaging materials other than the original materials. Never use styrene pellets as packaging material. They do not adequately cushion the instrument or prevent it from shifting in the carton. They may also cause instrument damage by generating static electricity.

3 Pack the instrument in the original shipping containers. Original materials are available through any Agilent Technologies office. Or, use the following guidelines:

- Wrap the instrument in antistatic plastic to reduce the possibility of damage caused by electrostatic discharge.
- For instruments weighing less than 54 kg (120 lb), use a double-walled, corrugated cardboard carton of 159 kg (350 lb) test strength.
- The carton must be large enough to allow approximately 7 cm (3 inches) on all sides of the instrument for packing material, and strong enough to accommodate the weight of the instrument.
- Surround the equipment with approximately 7 cm (3 inches) of packing material, to protect the instrument and prevent it from moving in the carton. If packing foam is not available, the best alternative is S.D-240 Air Cap™ from Sealed Air Corporation (Commerce, California 90001). Air Cap looks like a plastic sheet filled with air bubbles. Use the pink (antistatic) Air Cap™ to reduce static electricity. Wrapping the instrument several times in this material will protect the instrument and prevent it from moving in the carton.

4 Seal the carton with strong nylon adhesive tape.

5 Mark the carton “FRAGILE, HANDLE WITH CARE”.

6 Retain copies of all shipping papers.

Agilent Technologies Service Offices

Before returning an instrument for service, call the Agilent Technologies Instrument Support Center at (800) 403-0801, visit the Test and Measurement Web Sites by Country page at http://www.tm.agilent.com/tmo/country/English/index.html, or call one of the numbers listed below.

Agilent Technologies Service Offices

Austria	01/25125-7171
Belgium	32-2-778.37.71
Brazil	(11) 7297-8600
China	86 10 6261 3819
Denmark	45 99 12 88
Finland	358-10-855-2360
France	01.69.82.66.66
Germany	0180/524-6330
India	080-34 35788
Italy	+39 02 9212 2701
Ireland	01 615 8222
Japan	(81)-426-56-7832
Korea	82/2-3770-0400
Mexico	(5) 258-4826
Netherlands	020-547 6463
Norway	+47 22 73 57 59
Russia	+7-095-797-3930
Spain	(34/91) 631 1213
Sweden	08-5064 8700
Switzerland	(01) 735 7200
Taiwan	(886 2) 2-712-0404
United Kingdom	01 344 366666
United States and Canada	(800) 403-0801

Specifications

Refer to the 86100A/B on-line help for information on mainframe, horizontal (time-base), trigger, and front/rear panel input and output specifications. Touch/click Help, Contents, Specifications for a menu of the desired specifications.

Recommended Test Equipment

The following table is a list of the test equipment required to test performance, calibrate, adjust, and troubleshoot this instrument. The table indicates the critical specification of the test equipment and for which procedure the equipment is necessary. Equipment other than the recommended model may be used if it satisfies the critical specification listed in the table.

Table 1-5. Recommended Test Equipment

Equipment Required	Critical Specifications	Recommended Model	Use[a]
DMM	6 1/2 digit, 0.1 mV resolution, DC accuracy 0.05% or better	Agilent 3458A	P
Adapter	BNC (f) to dual banana (m)	Agilent 1251-2277	P
Plug-in Module	54750A, 82480A, or 86100A series plug-in with dual electrical inputs	Agilent 54751A, 83483A, 86112A	P, A
Synthesized CW Generator	No Substitution	Agilent 83712B Required Options: 1E5 High Stability Timebase Recommended Options: 1E1— Output Step Attenuator 1E8 — 1 Hz Frequency Res. 1E9 — 3.5 mm RF Out Connector	P, A
Timing Generator	No Substitution	Agilent 8133A standard or Option 002	P, A
Function Generator	10 MHz square wave, 120 mV output, stability 0.05 ppm/yr	Agilent 3325B Option 001 or Agilent 33250A	P
Attenuator	20 dB, DC to 18 GHz	Agilent 33340C (for Agilent 83712B without built-in attenuator)	P
Power Splitter (2)	DC to 18 GHz	Agilent 11667B	P
Transition Time Converter	2000 ps	Agilent 15438A	P, A
Cable, BNC	50 Ω, 122 cm (48 in)	Agilent 10503A	P, A
Adapter, BNC (m) to SMA (m)	50 Ω	Agilent E9633A BNC (m) to SMA (m), 50 Ω	P, A
Cable Assembly, 3.5 mm (m) to 3.5 mm (m) (2 each)	61 cm (24 in); Frequency range to DC to 26.5 GHz	Agilent 11500E	P, A

Table 1-5. Recommended Test Equipment

Equipment Required	Critical Specifications	Recommended Model	Use[a]
Adapter, 3.5 mm (f) to 3.5 mm (f) (2 each)	DC to 34 GHz	Agilent 1250-1749	P

a. P = Performance Tests, A = Adjustment Tests, T= Troubleshooting

Preventative Maintenance

The following tasks should be performed at the yearly calibration interval.

Perform Mainframe Modification Inspection—86100A

Verify that the following modifications have been installed on your 86100A DCA.

Intermittent Front Panel Keypads

Service Note 86100A-01

Serial Number: US4032 and below

Early production units had keypad assemblies with carbon ink on the printed circuit boards together with silver contacts on the rubber keypads. Over time resistance builds up on the contacts. Newer keypads have carbon contacts.

This modification involves replacing the entire A7 Front Panel Assembly with the exchange front panel assembly (refer to ”Replaceable Parts—86100A” on page 5-1 for the A7 Front Panel Assembly part number). The defective assembly must be returned to Agilent for credit.

Refer to ”To Remove the Mainframe Front Panel” on page 4-7 as applicable.

Intermittent or Slow Floppy Disk Reads

Service Note 86100A-02

Serial Number: US4106 and below

On early DCA mainframes, the LS-120 disk drive would occasionally experience difficulty with read and write operations.

A new ground connection was added on the A16 LS-120 Adapter Board Assembly. Replace the A16 (part number 86100-66505) with the newer assemblies. Some DCAs may have already received this modification; refer to Figure 4-15 on page 4-13. The new board assemblies have a large ground trace added to the connector.

Refer to ”LS-120 Disc Drive Modification (86100A Only)” on page 4-12 as applicable.

Intermittent Problems with Vertical Calibrations or Vertical Trace

Service Note 86100A-03

Serial Number: US4032 and below

On early DCA mainframes, the PLDs on the A13 Acquisition Assembly would occasionally go into a write mode on power up. This will cause various symptoms such as vertical cal failure, vertical trace at top or bottom screen, and loss of control of the vertical trace. Sometimes the DCA fails to completely boot up leaving just the splash screen and the DCA buttons displayed. Rebooting the DCA fixes the problem. If the DCA boots up properly, the problem will not appear again.

Installing a PLD header plug on a connector on the A13 Acquisition Assembly can solve the PLD lockup problem.

Refer to ”A13 Acquisition Board PLD Header Modification (86100A Only)” on page 4-36 as applicable.

Plug-in Modules Not Recognized by the DCA Mainframe

Service Note 86100A-04

Serial Numbers below US4017:

On early DCA mainframes, some modules are not recognized by the DCA. Usually the problem occurs when a clock recovery module is installed together with another module.

Various modifications were performed on the A13 Acquisition board assembly to solve this problem. The modifications are not possible in the field.

To determine whether the A13 Acquisition board assembly has been modified, remove it from the mainframe and examine U55 (see Figure 1-1). If U55 is a Motorola part, the board assembly has not been modified and must be replaced.

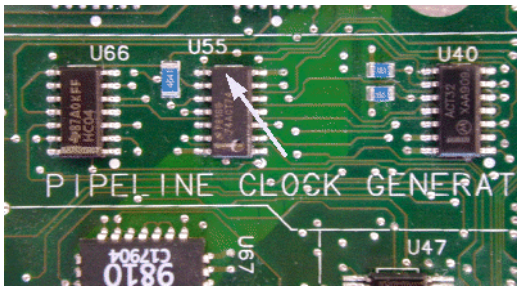


Figure 1-1. U55 location

Replace the entire A13 Acquisition board assembly with the A13 exchange assembly. DCAs with option 001 (divided trigger) will need to have the option 001 replacement assembly. Look at the serial tag on the rear panel to see if option 001 is installed.

Refer to "To Remove the A13 Acquisition (Option 001)" on page 4-32 as applicable.

Perform Mainframe Maintenance—86100A and 86100B

Perform a Mainframe Timebase Adjustment

For users who need pre-data at the yearly calibration interval, a verification process must be done first. Otherwise, a yearly Horizontal Timebase Adjustment is recommended before performance verification is started. Refer to "86100A/B Mainframe Timebase Adjustment" on page 3-3.

Perform a Touch Screen Alignment

1. On the DCA screen, click/touch Utilities, Touch Screen Config, Calibration, Calibrate.
2. Using a touch screen stylus, such as Agilent Part Number 1535-5214, follow the on-screen instructions and click on the three alignment dots.
3. Close the dialog boxes when the tests are complete.

Perform Front Panel Knob and Key Test

1. On the DCA screen, click/touch Help and About.
2. On the DCA front panel, press the Local hardkey 5 times (until Service Mode enabled is displayed).
3. On the DCA screen, click/touch Utilities, Service, and Self Test.
4. Perform all self-tests starting with the front panel test. Select Front Panel and press Start Test.

5 Check that all keypads are working properly. If any are intermittent, the keypads will need to be replaced.

6 Continue with the Screen Test, Touch Screen, and All Non-interactive.

Run Scan Disk

1 On the DCA screen, click/touch Help and About 86100A(or B).

2 On the DCA front panel, press the Local hardkey 5 times (until Service Mode enabled is displayed).

3 On the DCA screen, click/touch Utilities, Service, Exit Scope.

4 On the DCA screen, click/touch Start, Programs, Accessories, System Tools, Scan Disk.

5 Select Standard Test and click/touch Start.

6 If there are any errors after the completion of the test, select Repair the Errors and press OK.

7 Close the dialog boxes and cycle power.

Mainframe Serial Number Entry

(Perform this procedure if the hard drive has been replaced)

1 On the DCA screen, click/touch About 86100A(or B) under the Help menu.

2 On the DCA front panel, press the Local hardkey 5 times (until Service Mode enabled is displayed).

3 On the DCA screen:

a Close the About 86100A(or B) dialog box (Click/touch Close).

b Click/touch Utilities, Service, Frame.

c Click/touch the entry field in the Frame dialog box (the touch screen keypad opens).

d Enter the mainframe serial number (from the rear panel serial tag).

e Click/touch OK.

f Click/touch Save.

4 Check the serial number entered:

a Click/touch Help

b Click/touch About 86100A(or B).

Confirm the new serial number appears in the dialog box.

Clean Display

Use a soft cloth and multi-purpose anti static cleaner for computers. Spray cleaner on the cloth (not directly on the screen), and clean the screen with the cloth.

Clean Fans

Remove the cover and vacuum the fans using a small vacuum designed for computer systems.

2

Performance Verification

Performance Verification

This chapter documents the performance tests. Equipment required for individual tests is listed in the test descriptions in this chapter. Equipment satisfying the critical specifications listed may be substituted for the recommended model.

Performance Testing Interval

The performance test procedures may be performed for incoming inspection of the instrument and should be performed periodically thereafter to ensure and maintain peak performance. The recommended test interval is yearly or every 2,000 hours of operation.

Specifications

The specifications that apply to a particular test are listed in chapter 1 of this manual. Refer to the 86100A/B on-line help for specifications.

Performance Test Record

You may record the results of the performance tests in the Performance Test Record provided at the end of this chapter. The Performance Test Record lists the performance tests and provides an area to mark test results. You can use the results recorded at incoming inspection for later comparisons during periodic maintenance, troubleshooting, and after repairs or adjustments.

Before Testing

- Warm up the system for at least 60 minutes prior to beginning the performance tests.
- After sufficient warm up, perform a vertical calibration on the system.
- Avoid damage to plug-in front panel connectors. Use 2.4 mm and 3.5 mm connector savers. These connector savers are a supplied accessory.
- Minimize connector swapping during the procedures to avoid connector wear. All connectors on test tools and adapters should be inspected both visually and mechanically every few calibrations.
- All connectors should be clean and undamaged to ensure accurate measurements. All 2.4 mm and 3.5 mm connectors should be mechanically and visually checked before inserting any calibration test tool into them. Damaged connectors or loose connectors may cause the performance verification tests to fail.
- Avoid sharp bends in 2.4 mm, 3.5 mm, SMA, and optical cables. When mating 2.4 mm to 2.4 mm or 3.5 mm to 3.5 mm, torque all connections to 8 in/lbs. When mating 3.5 mm to SMA or SMA to SMA, torque all connections to 5 in/lbs.

CAUTION

The module inputs are very sensitive to static discharge. Failure to observe proper antistatic procedures may damage the gallium arsenide samplers. ESD damage is not covered under the warranty. All maintenance or operation should be performed with an antistatic mat and wrist strap. Refer to “Electrostatic Discharge Information” on page 1-9 for further information.

CAUTION

Electrostatic discharge can seriously damage the module’s electrical inputs. To eliminate any electrostatic build up from a cable you’re connecting to the module, connect a female short to either end of the cable. Touch the short to an input connector hex nut on the module to discharge any static build up to ground. Remove the short. Use this procedure for all cables before connecting them to the module.

Time Interval Accuracy Performance Test

The horizontal time interval accuracy of the mainframe and plug-in modules are compared to a known reference.

Equipment Required

Equipment	Critical Specifications	Recommended Model/Part
Plug-in Module	54750A, 82480A, or 86100A series plug-in with electrical input	Agilent 54751A, 83483A, 86112A
Synthesized CW Generator	No substitution	Agilent 83712B Required Options: 1E5 High Stability Timebase Recommended Options: 1E1— Output Step Attenuator 1E8 — 1 Hz Frequency Res. 1E9 — 3.5 mm RF Out Connector
Timing Generator	No substitution	Agilent 8133A standard or Option 002
Function/Arbitrary Waveform Generator	10 MHz square wave, 120 mV output, stability 0.05 ppm/yr	Agilent 3325B Option 001 or Agilent 33250A
Transition Time Converter	2000 ps	Agilent 15438A
Cable, BNC	50 Ω, 122 cm (48.in)	Agilent 10503A
Adapter, BNC (m) to SMA (m)	50 Ω	Agilent E9633A BNC (m) to SMA (m), 50 Ω
Cable Assembly, 3.5 mm (m) to 3.5 mm (m) (2 each)	61 cm (24 in); Frequency range of dc to 26.5 GHz	Agilent 11500E
Adapter, 3.5 mm (f) to 3.5 mm (f) (2 each)	dc to 34 GHz	Agilent 1250-1749

Period Accuracy for Delay Settings

Procedure

1. Warm up the system for at least 60 minutes, then perform a vertical calibration.
2. Connect the equipment as shown in Figure 2-1.

a Connect the synthesized CW generator's 10 MHz OUT to the timing generator's timebase EXTERNAL INPUT.

b Connect the 2000 ps transition time converter to the timing generator's CHANNEL 2 output.

c Connect the 2000 ps transition time converter to the DCA front panel trigger input, using the cable and adapters.

d Connect the synthesized CW generator OUTPUT to the desired module electrical channel.

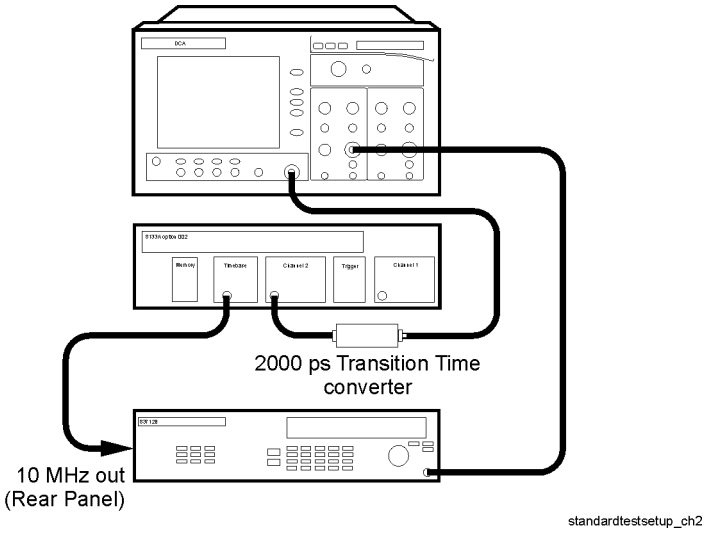


Figure 2-1. Time Interval Accuracy Setup

3 Set the timing generator controls as follows:

a Turn on the timebase EXT and EXT DIVIDE, and set to divide by one.

b Set the CHANNEL 2 output as follows:

SQUAR	ON
AMPL	2.5 V
OFFS	0
DISABLE	OFF

4 On the synthesized CW generator, press PRESET, then set the controls as follows:

FREQ	19.98 GHz
POWER LEVEL	0 dBm
RF ON/OFF	OFF

5 On the DCA front panel, press the Default Setup hardkey.

6 On the DCA screen, press Time Delay, set the scale to 10 ps/div, and set the Delay From Trigger to 24 ns. See Figure 2-2.

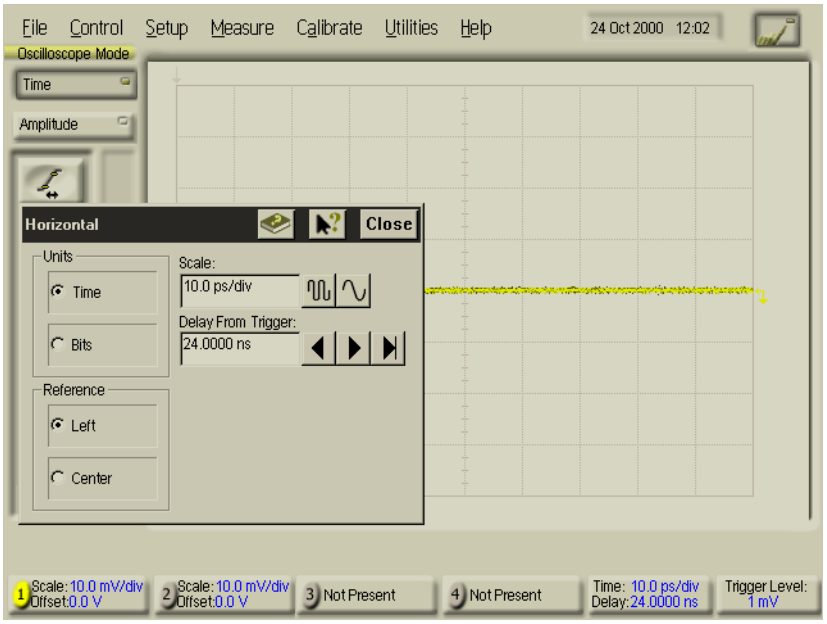


Figure 2-2. Setting Time and Delay for Measuring Time Interval Accuracy

7 Ensure that the correct channel is enabled.

8 Turn all other channels off.

9 On the DCA screen, press Scale Offset for the channel in use, then set the scale (vertical) to 60 mV/div and the offset to 0 V. See Figure 2-3. Close dialog box.

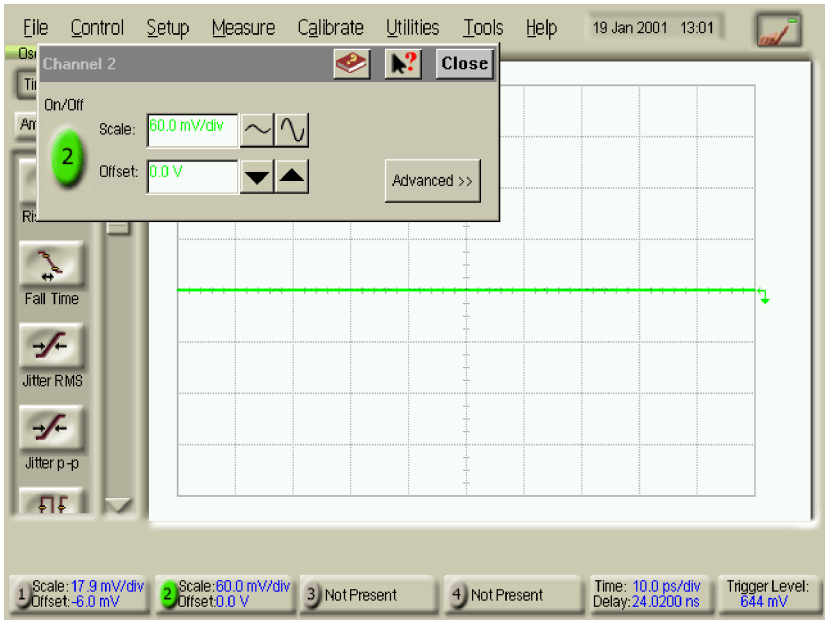


Figure 2-3. Setting Scale and Offset for Measuring Time Interval Accuracy

10 On the DCA screen, press Setup, Acquisition, Enable Averaging, and set the number of averages to 64. See Figure 2-4. Close dialog box.

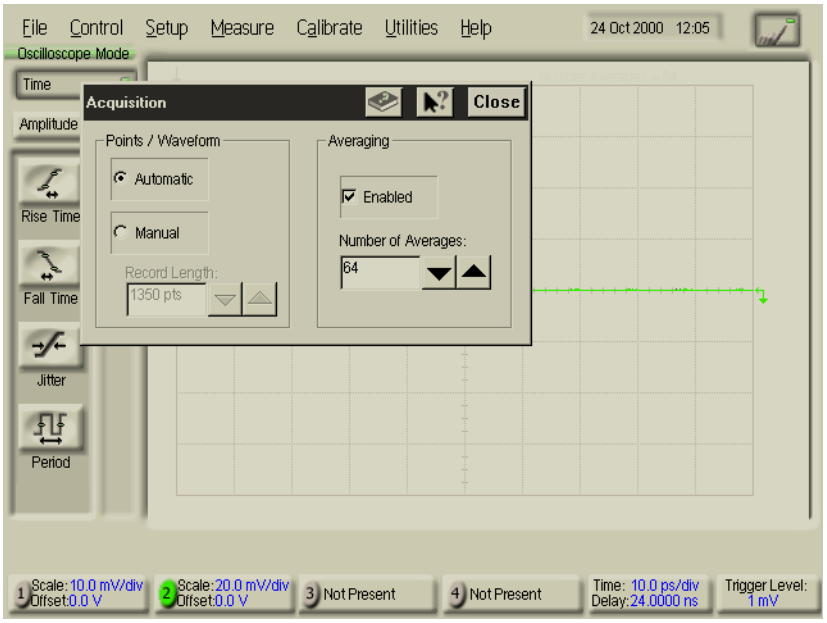


Figure 2-4. Setting Averaging for Measuring Time Interval Accuracy

11 On the Synthesized CW Generator, turn the RF ON/OFF to ON.

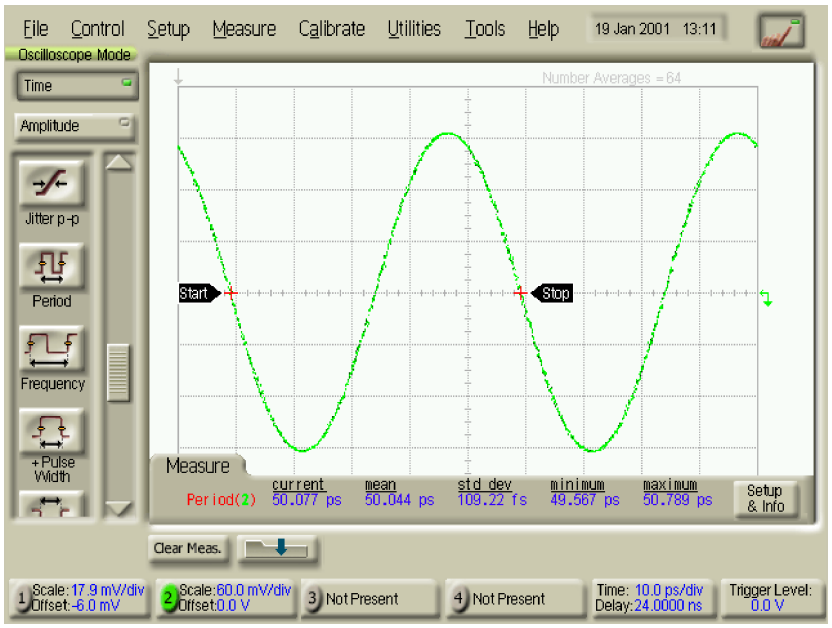


Figure 2-5. Setting Period for Measuring Time Interval Accuracy

12 On the DCA screen, press Period. See Figure 2-5.

13 On the 86100A/B, adjust the vertical scale so that the signal is on the screen.

14 On the 86100A/B, press the Clear Display hardkey.

15 Record the current DCA period readout in the Performance Test Record for each delay setting in Table 2-1.

16 On the DCA screen, press Time Delay to set the Delay. See Figure 2-6. After changing the delay, press the Clear Display hardkey before making the next measurement.

Table 2-1. Period Accuracy for Delay Settings

Delay Setting in ns
24
27.95
35.95
59.95

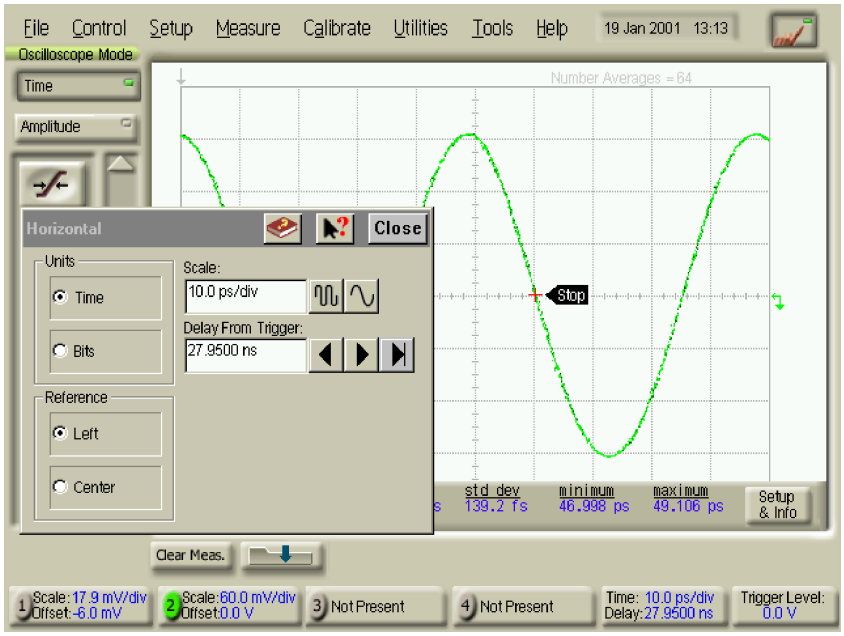


Figure 2-6. Delay Settings for Measuring Time Interval Accuracy

Period Accuracy for Scale Settings

17 On the DCA screen, press Time Delay and set Delay From Trigger to 24 ns.

18 On the DCA screen, press Setup, the channel in use, then press Advanced. See Figure 2-7.

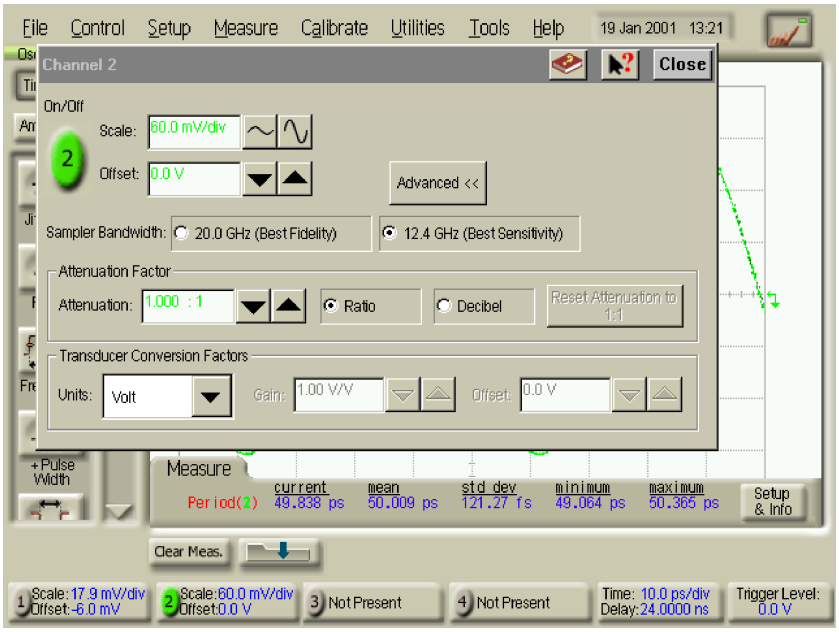


Figure 2-7. Setting Best Sensitivity for Measuring Time Interval Accuracy

19 Select the Best Sensitivity Sampler Bandwidth. Close dialog box.

20 On the DCA screen, press Time Delay, then check the period at the scale and synthesized CW generator settings shown in Table 2-2 and record the results in the Performance Test Record.

a Press the Clear Display hardkey and wait for the averaging to complete before recording the current results.

b Adjust the vertical scale as necessary to keep the signal on the screen.

Table 2-2. Period Accuracy for Horizontal Scale Settings from 20 ps to 10 ns

Horizontal Scale Setting	Synthesized CW Generator Setting
20 ps/div	10 GHz
50 ps/div	5 GHz
100 ps/div	2 GHz
200 ps/div	1 GHz
500 ps/div	500 MHz
1 ns/div	200 MHz
2 ns/div	100 MHz
5 ns/div	50 MHz
10 ns/div	20 MHz

21 On the DCA screen, press Trigger Level and set the Trigger Level to 500 mV. See Figure 2-8. Alternatively use the Trigger knob and adjust the Trigger Level to 500 mV.

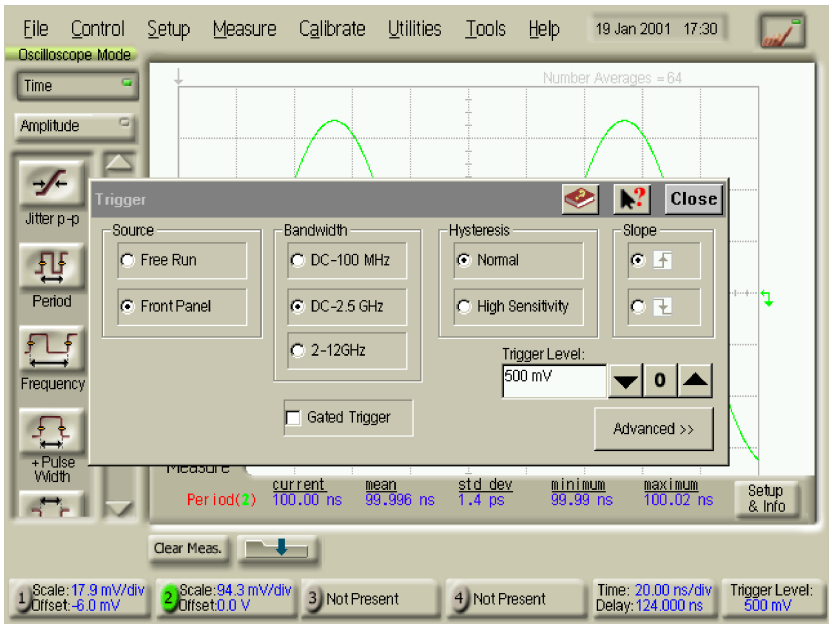


Figure 2-8. Setting Trigger Level for Measuring Time Interval Accuracy

22 Connect the equipment as shown in Figure 2-9.

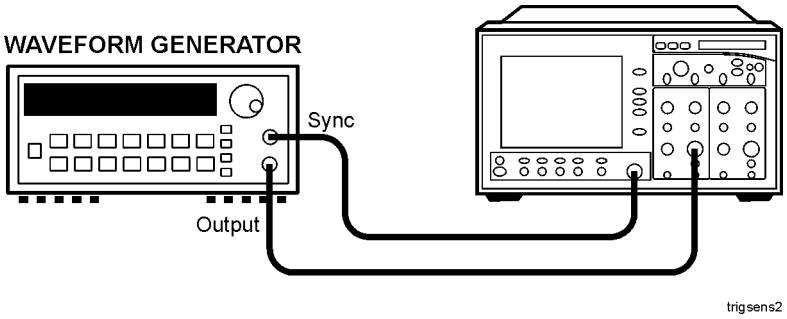


Figure 2-9. Time Interval Accuracy Setup from 20 ns/div to 20 µs/div

Time Interval Accuracy 20 ns/div to 20µs/div

23 Set the Waveform Generator's frequency to 10 MHz; set the amplitude to 400 mV pp, offset 0V, square wave.

24 On the DCA screen, press Time Delay. Ensure that the delay is set to 24 ns, then check the period at the Function/Arbitrary Waveform Generator and scale settings shown in Table 2-3 and record them in the Performance Test Record.

25 Press the Clear Display hardkey before recording the new reading.

Table 2-3. Period Accuracy for Scale Settings from 20 ns to 20 µs

Horizontal Scale Setting	Function/Arbitrary Waveform Generator Settings
20 ns/div	10 MHz
50 ns/div	5 MHz
100 ns/div	2 MHz
200 ns/div	1 MHz
500 ns/div	500 kHz
1.0 µs/div	200 kHz
2.0 µs/div	100 kHz
5 µs/div	50 kHz
10 µs/div	20 kHz
20 µs/div	10 kHz

Front Panel Cal Signal

Equipment Required

Equipment	Critical Specifications	Recommended Model/Part
DMM	6 1/2 digit, 0.1mV resolution, dc accuracy 0.05% or better	Agilent 3458A
Cable	BNC	Agilent 10503A
Adapter	BNC (f) to dual banana (m)	Agilent 1251-2277

Procedure

1 Set the DMM to measure DC volts and use the cable and adapter to connect the DMM to the front panel CAL output.

2 On the DCA screen, press Calibrate, then press Front Panel Cal Output. See Figure 2-10.

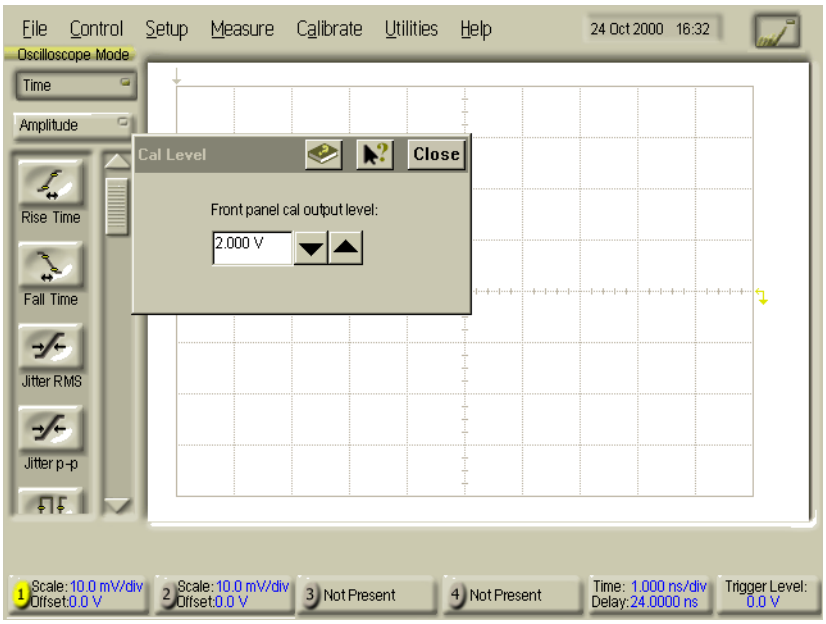


Figure 2-10. Front Panel Cal Output Level

3 Enter 2.0 V and record the first reading.

_____Vdc

4 Enter –2.0 V and record the second reading.

_____Vdc

5 Subtract the second reading from the first reading, then divide the result by 4.

For example, if the first reading is +1.980 V and the second reading is -1.970 V, then:

$$\frac{+1.980\ \text{V} - (-1.970\ \text{V})}{4\ \text{V}} = 0.9875$$

Record the result in the Performance Test Record.

Jitter Performance Test

Jitter is measured at 2.5 GHz with the triggering level adjusted for optimum trigger. The jitter test measures the oscilloscope's internal jitter on a 2.5 GHz sine wave. The instrument's jitter is less with fast rise time input signals.

A 24 ns delay line is added to delay the input signal so that the trigger point is on screen. The delay setting is determined and used to calculate the specification limit. A histogram is used to increase the accuracy of the RMS jitter measurement.

NOTE The 86100A/B DCA has an additional 2 ns of delay compared to the Agilent 83480A or 83750A.

Equipment Required

Equipment	Critical Specifications	Recommended Model/Part
Plug-in Module	54750A, 82480A, or 86100A/B series plug-in with electrical input	Agilent 54751A, 83483A, 86112A
Synthesized CW Generator		Agilent 83712B Required Options: 1E5 High Stability Timebase Recommended Options: 1E1— Output Step Attenuator 1E8 — 1 Hz Frequency Res. 1E9 — 3.5 mm RF Out Connector
Delay Line	24 ns	Agilent 54008B
Power Splitter	Frequency range of dc to 18 GHz	Agilent 11667B
Cable, BNC	50 Ω, 122 cm (48.in)	Agilent 10503A
Adapter, BNC (m) to SMA (m)	50 Ω	Agilent E9633A BNC (m) to SMA (m), 50 Ω
Cable Assembly, 3.5 mm (m) to 3.5 mm (m) (3 each)	61 cm (24 in); Frequency range of dc to 26.5 GHz	Agilent 11500E

Procedure

1. Warm up the system for at least 60 minutes, then perform a vertical calibration.
2. Connect the equipment as shown in Figure 2-11.
   - **a** Connect the synthesized CW generator's OUTPUT to the Power Splitter's INPUT.
   - **b** Connect one output port of the Power Splitter to the DCA front panel trigger input.
   - **c** Connect the other output port of the Power Splitter to the Delay Line.
   - **d** Connect the Delay Line to the desired module electrical channel.

3 Set the synthesizer's FREQ to 2.5 GHz and POWER LEVEL to 0 dBm. Make sure the RF ON/ OFF is set to ON.

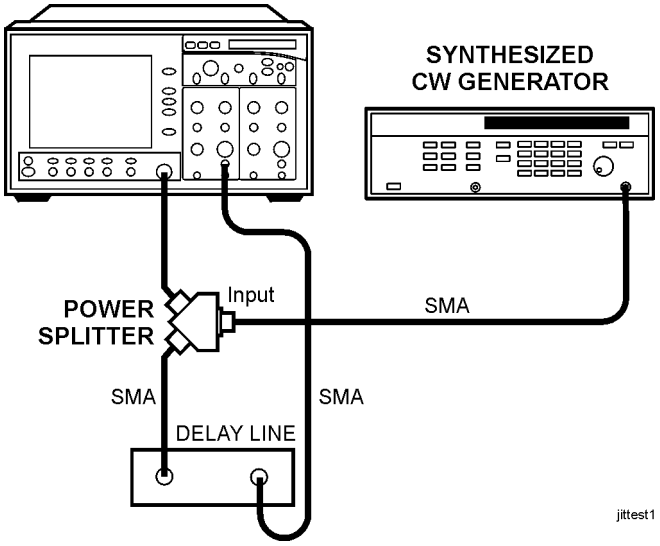


Figure 2-11. Jitter Performance Test Setup

4 On the front panel, press the Default Setup hardkey.

5 Ensure that the correct channel is enabled.

6 Turn all other channels off.

7 On the DCA screen, press Scale Offset for the channel in use, then set the scale (vertical) to 30 mV/div and the offset to 0.0 V.

8 On the DCA screen, press Time Delay, set the Reference to center, set the Scale to 500 ps/div, and set the Delay From Trigger to 26.5 ns.

9 On the DCA screen, press Setup, Display, then set the persistence to Infinite.

10 On the DCA screen, press Trigger Level and set the Hysteresis to High Sensitivity.

11 Slightly change the frequency of the Synthesized CW Generator above and below 2.5 GHz.

12 Look for a part of the waveform that does not expand or contract as the frequency is varied.

NOTE You may have to adjust the delay setting on the Agilent 86100A/B until you find the trigger point. Use the horizontal delay knob.

13 Place a marker on this point. Adjust the horizontal delay until the marker is centered on the screen. Refer to Figure 2-12.

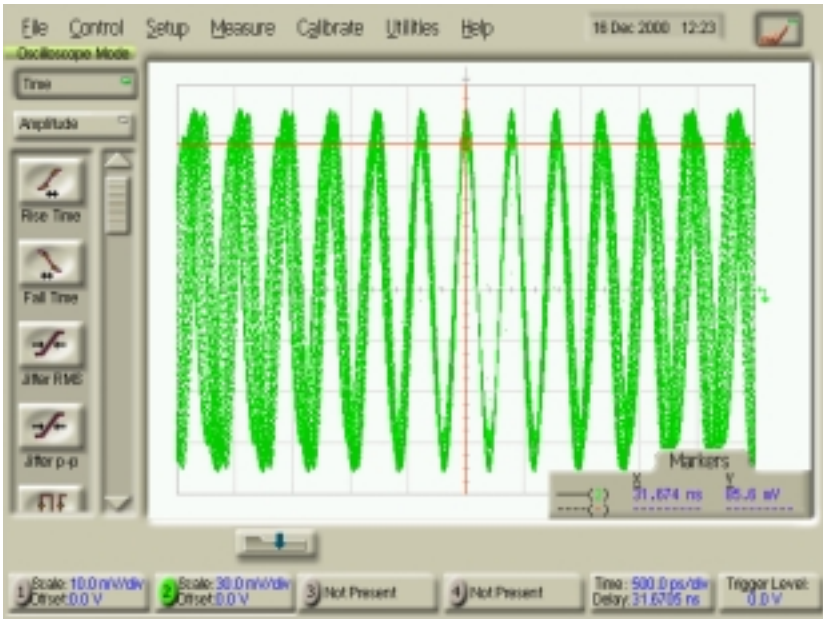


Figure 2-12. Centered Marker

14 Being careful to keep the marker centered on the screen, press Time Delay on the DCA screen and set the Scale to 50 ps/div.

15 Record the Delay Setting:

Horizontal Delay = _____ ns

16 Turn the marker off.

17 On the DCA screen, press Time Delay and set the Scale (horizontal) to 10 ps/div.

18 On the DCA screen, press Scale Offset and set the Scale (vertical) to 10 mV/div.

19 On the DCA front panel, slowly rotate the Horizontal Position knob clockwise until the rising edge of the signal intersects the center of the screen. See Figure 2-13.

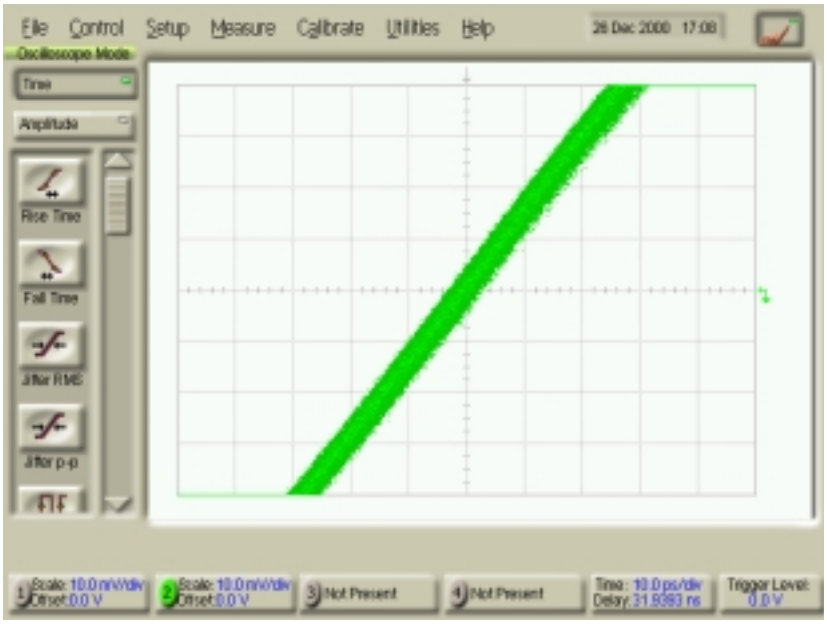


Figure 2-13. Rising Signal Intersecting with Center of Screen

20 On the DCA screen, press Measure, Histograms, Histogram Windowing.

21 Adjust the four marker knobs as follows:

Marker 1	Full Left Screen
Marker 2	+300 µV
Marker 3	Full Right Screen
Marker 4	–300 µV

22 Close the Histogram Windowing Dialog Box and set the Histogram State to ON.

23 The display should appear as shown in Figure 2-14.

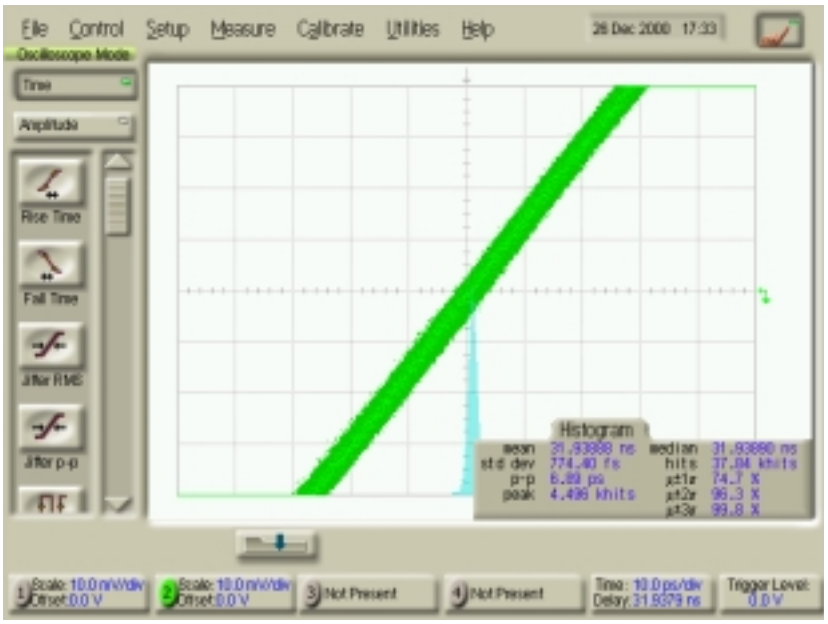


Figure 2-14. Histogram Setup

24 Record the value of the standard deviation as Jitter RMS.

Jitter RMS = _____ ps

25 Calculate the test limit:

For 86100A instrument serial prefix numbers below US4051 (without option K10):
Test Limit = <2.5 ps + (Horizontal Delay from Step 15 multiplied by $5*10^{-5}$)

Test Limit = _____ps

For 86100A instrument serial prefix numbers below US4051 <u>with</u> option K10:
Test Limit = <1.5 ps + (Horizontal Delay from Step 15 multiplied by $5*10^{-5}$)

Test Limit = _____ps

For all 86100B serial numbers, and 86100A instrument serial prefix numbers US4051 and above:
Test Limit = <1.5 ps + (Horizontal Delay from Step 15 multiplied by $5*10^{-5}$)

Test Limit = _____ps

Example for a Delay Setting of 31.67 ns and test limit of <2.5 ps:

Test Limit = $\leq 2.5*10^{-12} + (31.67*10^{-9} \times 5*10^{-5})$

$\leq 2.5*10^{-12} + 1.58*10^{-12}$

≤ 4.08 ps

26 Compare the results of Jitter RMS to the Test Limit. Record both values in the Performance Test Record.

Trigger Verification (Standard and Option 001)

The sensitivity test measures the high and low frequency sensitivities by applying a 100 MHz sine wave and a 2.5 GHz sine wave. If the oscilloscope triggers at 2.5 GHz, it will also trigger on a 200 ps pulse width at 200 mV.

Equipment Required

Equipment	Critical Specifications	Recommended Model/Part
Plug-in Module	54750A, 82480A, or 86100A/B series plug-in with electrical input	Agilent 54751A, 83483A, 86112A
Synthesized CW Generator	10 MHz to 20 GHz	Agilent 83712B Required Options: 1E5 High Stability Timebase Recommended Options: 1E1— Output Step Attenuator 1E8 — 1 Hz Frequency Res. 1E9 — 3.5 mm RF Out Connector
Function/Arbitrary Waveform Generator	10 MHz square wave, 120 mV output, stability 0.05 ppm/yr	Agilent 3325B Option 001 or Agilent 33250A
Power Splitter (2 each)	Frequency range of dc to 18 GHz	Agilent 11667B[a]
BNC (male) Termination	50 Ω	
Delay Line		Agilent 54008B
Adapter, BNC (m) to SMA (m) (2 each)	50 Ω	Agilent E9633A
Adapter, BNC (f) to BNC (f) (2 each)	50 Ω	Agilent 1250-0080
Cable, BNC (2 each)	50 Ω, 122 cm (48 in)	Agilent 10503A
Cable Assembly, 3.5 mm (m) to 3.5 mm (m) (4 each)	61 cm (24 in); Frequency range dc to 26.5 GHz	Agilent 11500E

a. Testing Option 001 requires an extra power splitter and a dual electrical module

Low Frequency Trigger Hysteresis

A signal is applied to a power splitter whose outputs are connected to the module's electrical channel and the front panel trigger input. The trigger level is adjusted to positive and negative until it stops triggering. These positive and negative values are subtracted from 100 mV p-p to give the Trigger Hysteresis value.

Procedure

1. Warm up the system for at least 60 minutes, before verifying performance.
2. Disconnect everything from the channel inputs on the DCA.
3. On the DCA screen, press Calibrate, All Calibrations, Vertical (Amplitude), and Calibrate Left Module.
4. Wait for the completion of the vertical calibration.
5. Set the Function/Arbitrary Waveform Generator as follows:
   - **a** Set the Frequency to a 100 kHz sine wave
   - **b** Set the output to 180 mV pp
6. Connect the equipment as shown in Figure 2-15.
   - **a** Connect the Function/Arbitrary Waveform Generator's OUTPUT to the Power Splitter's INPUT.
   - **b** Connect one output port of the Power Splitter to the DCA front panel trigger input.
   - **c** Connect the other output port of the Power Splitter to the desired module electrical channel.

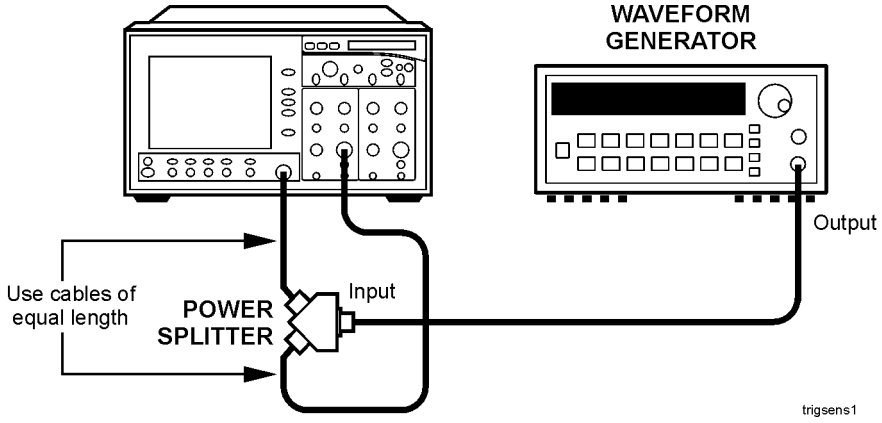


Figure 2-15. Trigger Sensitivity Equipment Setup

7. On the front panel, press the Default Setup hardkey.
8. Ensure that the correct channel is enabled.
9. Turn all other channels off.
10. On the DCA screen, press Scale Offset for the channel in use, then set the scale (vertical) to 20 mV/div and the offset to 0.0 V.
11. On the DCA screen, press Time Delay, set the Scale (horizontal) to 1 µs/div.
12. On the DCA screen, press Setup, Acquisition, Enable Averaging.
13. On the DCA screen, press Amplitude then V p-p.
14. On the Function/Arbitrary Waveform Generator, adjust the output level for a 100 mV p-p ± 1 mV reading on the DCA.
15. Adjust the Trigger Level knob clockwise until the DCA just stops triggering, as indicated by the Trig'd light going off.

16 Record the value of the trigger level as V pos:

V pos _____ mV

17 Return the trigger level to 0 volts, then slowly adjust the trigger level counterclockwise until the DCA just stops triggering.

18 Record the value of the trigger as V neg:

V neg _____ mV

19 Calculate the Hysteresis as follows:

Hysteresis = 100 mV – (V pos – V neg)

20 Record the result in the Performance Test Record as Hysteresis.

Trigger Sensitivity

On the following tests, the 100 MHz and 2.5 GHz signals are used. The trigger level is adjusted positive and negative as in the preceding test.

100 MHz

To perform the Trigger Sensitivity test with a 100 MHz signal, follow these steps.

1 Replace the Function/Arbitrary Waveform Generator with the Synthesized CW Generator.

2 On the DCA front panel, set the trigger level to 0 V.

3 On the DCA screen, press Time Delay, set the Scale (horizontal) to 2 ns/div.

4 Set the Synthesized CW Generator FREQ to 100 MHz and adjust the POWER LEVEL for a current reading of 150 mV ±1 mV on the DCA.

5 On the DCA front panel, adjust the Trigger Level knob clockwise until the DCA just stops triggering as indicated by the Trig'd light going off.

6 Record the trigger value below as V pos:

V pos _____ mV

7 Return the Trigger Level to 0 V.

8 On the DCA front panel, adjust the Trigger Level knob counterclockwise until the DCA just stops triggering as indicated by the Trig'd light going off.

9 Record the trigger value below as V neg:

V neg _____ mV

10 Calculate the Sensitivity as follows:

Vsense 100 MHz = 150 mV – (V pos – V neg)

11 Record the result in the Performance Test Record as 100 MHz Sensitivity.

2.5 GHz

To perform the Trigger Sensitivity test with a 2.5 GHz signal, follow these steps.

12 On the DCA screen, press Trigger Level and set the Hysteresis to High Sensitivity.

13 On the DCA screen, press Time Delay, set the Scale (horizontal) to 100 ps/div.

14 On the DCA screen, press Scale Offset, set the Scale (vertical) to 50 mV / div.

15 Set the Synthesized CW Generator FREQ to 2.5 GHz and adjust the POWER LEVEL for a current reading of 200 mV ± 2 mV on the DCA.

16 On the DCA front panel, adjust the Trigger Level to 0 V.

17 On the DCA front panel, adjust the Trigger Level knob clockwise until the DCA just stops triggering as indicated by the Trig'd light going off.

18 Record the trigger value below as V pos:

V pos _____ mV

19 Return the Trigger Level to 0 V.

20 On the DCA front panel, adjust the Trigger Level knob counterclockwise until the DCA just stops triggering as indicated by the Trig'd light going off.

21 Record the trigger value below as V neg:

V neg _____ mV

22 Calculate the sensitivity as follows:

Vsense 2.5 GHz = 200 mV – (V pos – V neg)

23 Record the result in the Performance Test Record as 2.5 GHz Sensitivity.

Gated Trigger

This test verifies the functionality of the gated trigger circuitry by connecting a BNC termination to the TRIGGER GATE input on the rear panel. The DCA should stop triggering with this termination attached.

1 On the DCA screen, press Trigger Level and set the trigger level to 0 V, Hysteresis to Normal, and enable the Gated Trigger.

2 Confirm that the DCA is triggered as indicated by the lit Trig'd light.

3 Connect a BNC termination to the TRIGGER GATE input on the DCA's rear panel.

4 Check that the DCA is not triggered as indicated by the Trig'd light going off.

Option 001 Divided Trigger Sensitivity

NOTE Perform this test only if the Agilent 86100A/B has option 001 installed. To see if option 001 is installed, touch/click Help, About. Option 1: 12.5 GHz will be displayed next to the serial number.

1 Connect the equipment as shown in Figure 2-16.

a Connect the Synthesized CW Generator's OUTPUT to the INPUT of a Power Splitter.

b Connect one output port of the Power Splitter to the Delay Line.

c Connect the other output port of the Power Splitter to the INPUT of a second Power Splitter.

d Connect one output port of the second Power Splitter to channel two of the electrical module.

e Connect the other output port of the second Power Splitter to the DCA trigger input.

f Connect the Delay Line to channel one of the electrical module.

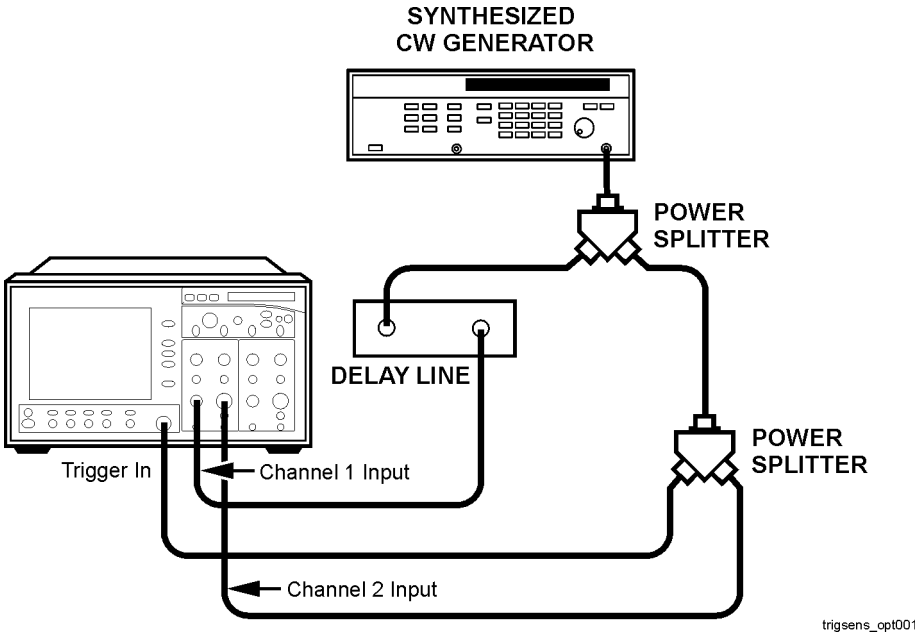


Figure 2-16. Option 001 Trigger Sensitivity

2 On the front panel, press the Default Setup hardkey.

3 Turn on the electrical channel 2.

4 Turn all other channels off by pressing the corresponding hardkey.

5 On the DCA screen, press Trigger Level and set the Trigger Bandwidth to 2-12 GHz.

6 On the DCA screen, press Time Delay, set the reference to center screen, set the Scale (horizontal) to 500 ps/div, and set the Delay From Trigger to 26.5 ns.

7 On the DCA screen, press Channel 2 Scale Offset and set the Scale (vertical) to 30 mV/div and Offset to 0 V.

8 On the DCA screen, press Time then Jitter RMS.

9 On the DCA screen, press Amplitude, V p-p, and select Channel 2 as a source.

10 Set the Synthesized CW Generator FREQ and POWER LEVEL to the settings shown in Table 2-4, Column 1 and Column 2.

11 Make sure Channel 2 ON and that Channel 1 is OFF.

12 On the DCA screen, press Time Delay and temporarily set the Scale (horizontal) to approximately 100 ps/div in order to adjust the power level in the following step.

13 Adjust the Synthesized CW Generator's POWER LEVEL so that the reading on the DCA Channel 2 is 200 mV p-p ± 1 mV.

14 Turn Channel 2 OFF and turn Channel 1 ON.

15 On the DCA, set the Scale (horizontal) as shown in Table 2-4, Column 3 for the FREQ in Column 1.

16 On the DCA screen, press Scale Offset and set the Channel 1 Scale (vertical) to 5 mV/div.

17 On the DCA screen, press Time Delay and set the Delay From Trigger to 26 ns.

18 Adjust the delay knob counterclockwise so that the first rising zero crossing point intersects the center of the display. Refer to Figure 2-17 below.

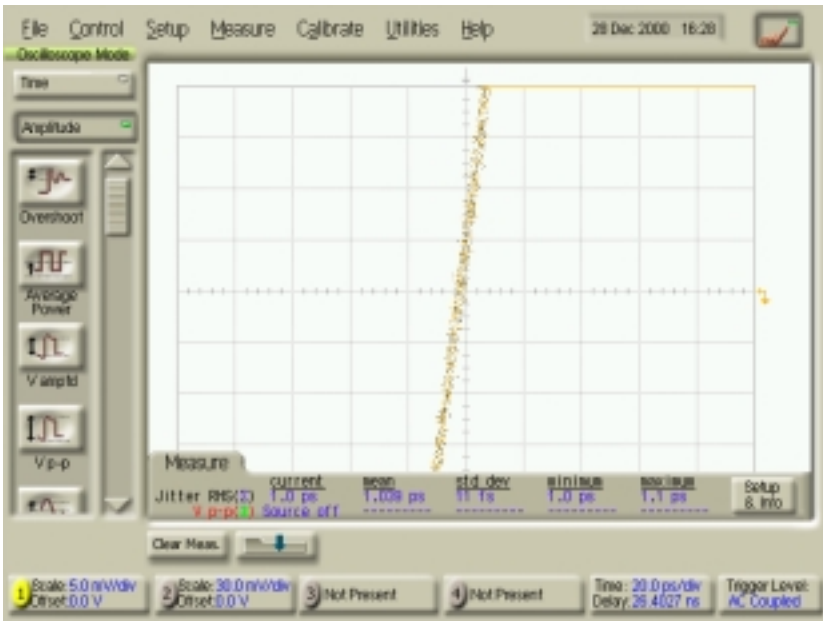


Figure 2-17. Divided Trigger Screen

19 Press Clear Display and wait for the reading to finish.

At higher frequencies it can take several seconds before enough data is collected.

20 Record the Jitter RMS in the Performance Test Record.

21 Repeat Step 10 through Step 20 for each Synthesized CW Generator FREQ setting. Set the DCA's power level and horizontal scale to the corresponding settings, as shown in Table 2-4, below.

Table 2-4. Synthesizer and DCA Horizontal Scale Settings

Column 1	Column 2	Column 3
Synthesizer FREQ (GHz)	Synthesizer POWER LEVEL (dBm)	DCA Horizontal Scale (ps/div)
2	3.8	20
2.5	3.9	20
5	5.6	5
10	7.3	2
12	7.7	2

Performance Test Record

Table 2-5. Performance Test Record

Agilent 86100A/B Series Mainframe

Firmware installed at time of calibration (Software Revision):_____

Serial Number _____

Recommended Test Interval – 1 Year/2000 hours

Recommended next testing _____

Tested by _____

Work Order No. _____

Date _____

Calibration temperature (from instrument) _____

Test	Results				
Time Interval Accuracy Performance Test	**Delay**				
	Position Settings (ns)	Min	Actual		Max
	24	41.95	_____		58.05
	27.95	41.95	_____		58.05
	35.95	41.95	_____		58.05
	59.95	41.95	_____		58.05
	Period Accuracy				
	Scale Setting	Synthesized CW Generator Setting	Min	Actual	Max
	20 ps/div	10 GHz	91.9 ps	_____	108.1 ps
	50 ps/div	5 GHz	191.8 ps	_____	208.2 ps
	100 ps/div	2 GHz	491.5 ps	_____	508.5 ps
	200 ps/div	1 GHz	0.9910 ps	_____	1.009 ns
	500 ps/div	500 MHz	1.99 ns	_____	2.010 ns
	1 ns/div	200 MHz	4.987 ns	_____	5.013 ns
	2 ns/div	100 MHz	9.982 ns	_____	10.018 ns
	5 ns/div	50 MHz	19.972 ns	_____	20.028 ns
	10 ns/div	20 MHz	49.942 ns	_____	50.06 ns

Table 2-5. Performance Test Record (Continued)

Test	Results				
Time Interval Accuracy Performance Test (cont.)	**Period Accuracy**				
	Scale Setting	Synthesizer Setting	Min	Actual	Max
	20 ns/div	10 MHz	99.89 ns	_____	100.11 ns
	50 ns/div	5 MHz	199.79 ns	_____	200.21 ns
	100 ns/div	2 MHz	499.49 ns	_____	500.51 ns
	200 ns/div	1 MHz	0.99899 µs	_____	1.00101 µs
	500 ns/div	500 kHz	1.99799 µs	_____	2.00201 µs
	1.0 µs/div	200 kHz	4.99499 µs	_____	5.00501 µs
	2.0 µs/div	100 kHz	9.98999 µs	_____	10.01001 µs
	5 µs/div	50 kHz	19.980 µs	_____	20.02001 µs
	10 µs/div	20 kHz	49.950 µs	_____	50.05001 µs
	20 µs/div	10 kHz	99.900 µs	_____	100.10001 µs
Front Panel Cal Signal	Cal Output Level				
		Min	Actual		Max
	Final Result	0.998	_____Vdc		1.002
Jitter Performance Test (Standard)	**Jitter RMS**				
			Actual		Test Limit, Max
	Test Limit		_____ ps		_____ ps
Trigger Verification (Standard and Option 001)	**Low Frequency Trigger Hysteresis**				
			Actual		Max
			Hysteresis _____ mV		40 mV
	100 MHz Trigger Sensitivity				
			Actual		Max
			Sensitivity _____ mV		40 mV
	2.5 GHz Trigger Sensitivity				
			Actual		Max
			Sensitivity _____ mV		200 mV

Table 2-5. Performance Test Record (Continued)

Test	Results		
Trigger Verification (Option 001 Only)	**Divided Trigger Sensitivity (Option 001)**		
	Synthesizer FREQ (GHz)	Jitter RMS Result	Max
	2	_____ ps	1.7 ps
	2.5	_____ ps	1.7 ps
	5	_____ ps	1.7 ps
	10	_____ ps	1.7 ps
	12	_____ ps	1.7 ps

3

Adjustments

Adjustments

This chapter provides adjustment procedures for the Agilent 86100A/B Infiniium DCA Mainframe. Equipment required for individual adjustments is listed in the adjustment descriptions in this chapter. Equipment satisfying the critical specifications listed may be substituted for the recommended model.

Adjustment Interval

The adjustment procedures should be performed yearly or after every 2,000 hours of operation.

Before Adjusting

- Warm up the system for at least 60 minutes prior to beginning the adjustments.
- Avoid damage to plug-in front panel connectors. Use 2.4 mm and 3.5 mm connector savers. These connector savers are a supplied accessory.
- Minimize connector swapping during the procedures to avoid connector wear. All connectors on test tools and adapters should be inspected both visually and mechanically every few calibrations.
- All connectors should be clean and undamaged to ensure accurate measurements. All 2.4 mm and 3.5 mm connectors should be mechanically and visually checked before inserting any calibration test tool into them. Damaged connectors or loose connectors may cause the performance verification tests to fail.
- Avoid sharp bends in 2.4 mm, 3.5 mm, SMA, and optical cables. When mating 2.4 mm to 2.4 mm or 3.5 mm to 3.5 mm, torque all connections to 8 in/lbs. When mating 3.5 mm to SMA or SMA to SMA, torque all connections to 5 in/lbs.

CAUTION

The module inputs are very sensitive to static discharge. Failure to observe proper antistatic procedures may damage the gallium arsenide samplers. ESD damage is not covered under the warranty. All maintenance or operation should be performed with an antistatic mat and wrist strap. Refer to “Electrostatic Discharge Information” on page 1-9 for further information.

CAUTION

Electrostatic discharge can seriously damage the module’s electrical inputs. To eliminate any electrostatic build up from a cable you’re connecting to the module, connect a female short to either end of the cable. Touch the short to an input connector hex nut on the module to discharge any static build up to ground. Remove the short. Use this procedure for all cables before connecting them to the module.

86100A/B Mainframe Timebase Adjustment

Equipment Required

Equipment	Critical Specifications	Recommended Model/Part
Plug-in Module	54750A, 83480A, or 86100A/B Series plug-in with electrical input	Agilent 54751A, 83483A, 86112A
Synthesized CW Generator	No substitution	Agilent 83712B Required Options: 1E5 High Stability Timebase Recommended Options: 1E1— Output Step Attenuator 1E8 — 1 Hz Frequency Res. 1E9 — 3.5 mm RF Out Connector
Attenuator[a]	10 or 20 dB; Frequency range of dc to 18 GHz	Agilent 33340C
Timing Generator	No substitution	Agilent 8133A Standard or Option 002
Transition Time Converter	2000 ps	Agilent 15438A
Cable, BNC	50 Ω, 122 cm (48.in)	Agilent 10503A
Adapter, BNC (m) to SMA (m)	50 Ω	Agilent E9633A BNC (m) to SMA (m), 50 Ω
Cable Assembly, 3.5 mm (m) to 3.5 mm (m) (2 each)	61 cm (24 in); Frequency range of dc to 26.5 GHz	Agilent 11500E

a. Not needed if Option 1E1 is installed on the Agilent 83712B.

CAUTION

Before performing this procedure, you must have firmware revision A.02.00 or higher installed in the Agilent 86100A/B. Refer to the Agilent website (www.agilent.com) for instructions on obtaining the latest firmware revision).

Trying to adjust the mainframe timebase with older firmware will cause timebase accuracy failure.

After the DCA mainframe's timebase is adjusted, you can not install a version of firmware below A.02.00. Timebase failure will occur.

Procedure

1. Make sure the instrument cover is in place.
2. Set the timing generator controls as follows:

a Turn on the timebase EXT and EXT DIVIDE, and set to divide by one.

b Set the CHANNEL 2 output as follows:

SQUAR	ON
AMPL	2.4 V
OFFS	0 (If needed, adjust the offset to center the output around 0 V.)
DISABLE	OFF

c Set all other controls to zero or off.

3 On the synthesized CW generator, press PRESET, then set the controls as follows:

FREQ	500 MHz
POWER LEVEL	-14 dBm
RF ON/OFF	OFF

NOTE If the Synthesized CW Generator does not have Option 1E1 installed, insert a 10 or 20 dB attenuator at the RF OUTPUT and set the POWER LEVEL so that the power going to the electrical channel is -14 dBm. (Example: 10 dB attenuator = -4 dBm; 20 dB attenuator = +6 dBm.)

4 Install the plug-in module into the mainframe left-hand module slot, then tighten both screws.

5 Turn on the mainframe. After the boot-up is complete, press the Default Setup hardkey on the DCA front panel.

6 Turn on the electrical channel by pressing the CHANNEL 2 hardkey on the DCA front panel. Turn all other channels off.

7 On the DCA front panel, set the trigger source to Free Run by pressing the Source hardkey until Free Run is selected.

NOTE Allow all of the equipment to warm up for at least one hour in the settings specified above before you proceed.

8 Ensure that everything is disconnected from the electrical plug-in input.

9 On the DCA screen, press Calibrate, All Calibrations, Vertical (Amplitude), Calibrate Left Module, then press Continue.

10 Wait for the completion of the calibration routine.

11 Connect equipment as shown in Figure 3-1.

a Connect the synthesized CW generator's 10 MHz OUT to the timing generator's timebase EXTERNAL INPUT.

b Connect the 2000 ps transition time converter to the timing generator's CHANNEL 2 output.

c Connect the 2000 ps transition time converter to the DCA front panel trigger input, using the cable and adapters.

d Connect the synthesized CW generator RF OUTPUT to the module electrical channel.

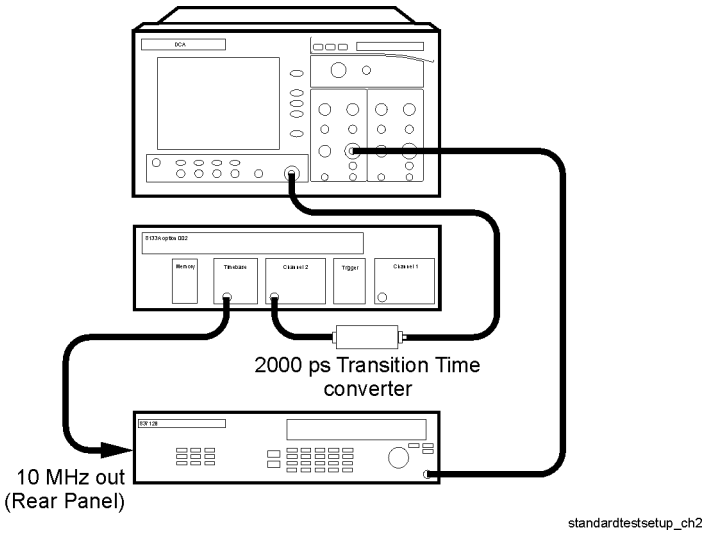


Figure 3-1. Timebase Adjustment Setup

12 On the Synthesized CW Generator, set the RF ON/OFF to ON.

13 On the DCA, set the Trigger input to Front Panel.

NOTE If everything is connected properly you should see a sine wave on the DCA screen. Make sure that the trigger is set to the front panel.

14 On the DCA screen, enable service mode by pressing Help, About 86100A/B, then pressing the Local hardkey five times, or until the message “Service mode enabled” appears in the message bar of the DCA screen.

15 On the DCA screen, press Calibrate, All Calibrations, Horizontal (Time base). See Figure 3-2.

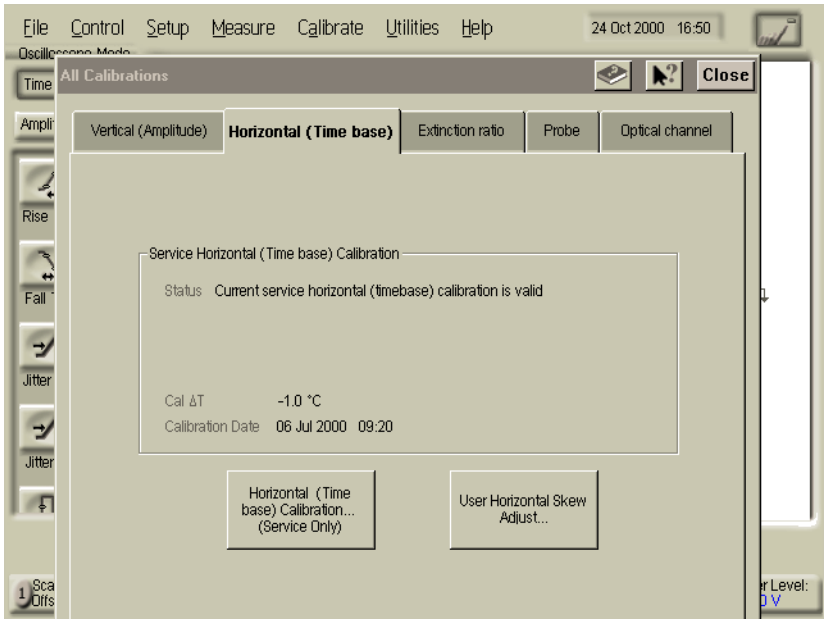


Figure 3-2. Horizontal Time Base Calibration

16 On the DCA screen, press Horizontal (Time base), Horizontal (Time base) Calibration (Service Only).

17 Follow the instructions on screen.

If it is necessary to adjust the tuning capacitor:

a Turn the DCA on it's side to locate the hole plug at the bottom. See Figure 3-3.

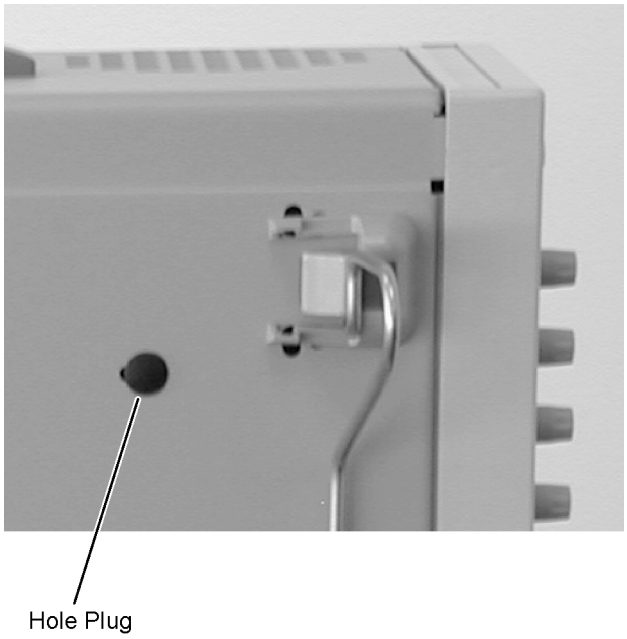


Figure 3-3. Hole Plug Location

b Rotate the hole plug while pulling to remove it from the adjustment hole.

CAUTION Be very gentle while adjusting the capacitor as it is fragile.

c Make the adjustment then pull the adjustment tool away. Be sure to check the readings; they may have changed.

d After the adjustment is complete, reinstall the hole plug. Wait the full ten minutes before you proceed.

18 When the "Change source to 2 GHz" prompt appears, set the synthesized CW generator FREQ to 2 GHz.

19 When the "Change source to 16 GHz" prompt appears, set the synthesized CW generator FREQ to 16 GHz and press continue.

20 On the Synthesized CW Generator, adjust the POWER LEVEL to 400 mV on the DCA screen's current reading.

NOTE If the Synthesized CW Generator does not have Option 1E1 installed, remove the attenuator at the RF OUTPUT.

21 The message "Calibration is complete" is displayed in the message bar when the procedure is complete.

22 Cycle the instrument power to disable the service mode.

4

Assembly Replacement

Assembly Replacement

This chapter provides step-by-step procedures to remove the replaceable components of the 86100A/B Series mainframes. Unless specified, the replacement procedures are the reverse of the removal procedures.

ESD Precautions

When using any of the procedures in this chapter you must use proper ESD precautions. As a minimum you must place the instrument on a properly grounded ESD mat and wear a properly grounded ESD wrist strap.

CAUTION Failure to implement proper antistatic measures may result in damage to the instrument.

Tools Required

The following tools are required for these procedures.

- Torx drivers: T10, T15
- Medium size (3/16-in) flat-blade screwdriver
- Open-end wrench: 5/16-in.

CAUTION Do not remove or replace any circuit board assemblies in this instrument while power is applied. The assemblies contain components which may be damaged if the assembly is removed or replaced while power is connected to the instrument.

CAUTION SHOCK HAZARD!
To avoid electrical shock, adhere closely to the following procedures. Hazardous voltages exist.

Returning the Instrument to Agilent for Servicing

Before shipping the instrument to Agilent, contact your nearest Agilent sales office for additional details.

1. Write the following information on a tag and attach it to the instrument.
   - **a** Name and address of owner
   - **b** Instrument model numbers
   - **c** Instrument serial numbers
   - **d** Description of the service required or failure indications
2. Remove all accessories from the instrument.

   Accessories include all cables. Do not include accessories unless they are associated with the failure symptoms.
3. Protect the instrument by wrapping it in plastic or heavy paper.

4 Pack the instrument in foam or other shock absorbing material and place it in a strong shipping container.

   You can use the original shipping materials or order materials from an Agilent sales office. If neither is available, place 8 to 10 cm (3 to 4 inches) of shock-absorbing material around the instrument and place it in a box that does not allow movement during shipping.

5 Seal the shipping container securely.

6 Mark the shipping container as FRAGILE.

   In any correspondence, refer to instrument by model number and full serial number.

To Remove the Mainframe Cover

CAUTION Electrostatic discharge (ESD) can damage or destroy electrostatic components. All work on electronic assemblies should be performed at a static-safe work station. See ”Electrostatic Discharge Information” on page 1-9 for more information on preventing ESD.

1 Disconnect the power cord from the instrument.

WARNING **Opening covers or removing parts is likely to expose dangerous voltages. Disconnect the instrument from all voltages before it is opened.**

2 Position the mainframe so that you have access to the back of the instrument, as shown in Figure 4-1.

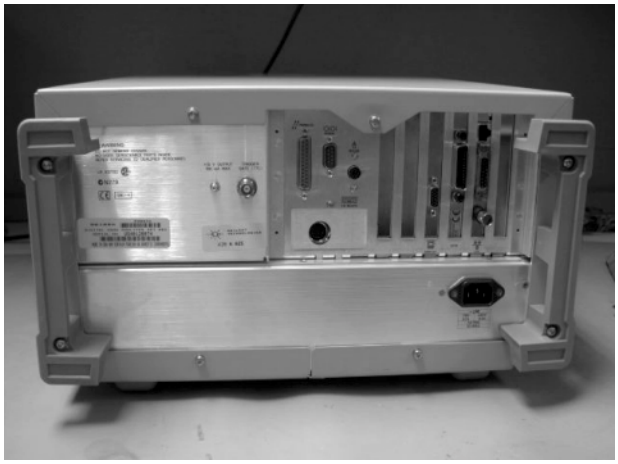


Figure 4-1. Accessing the Back of the Mainframe

3 Use a T-15 TORX driver to remove the four screws that attach the rubber feet to the back of the instrument, as shown in Figure 4-2.

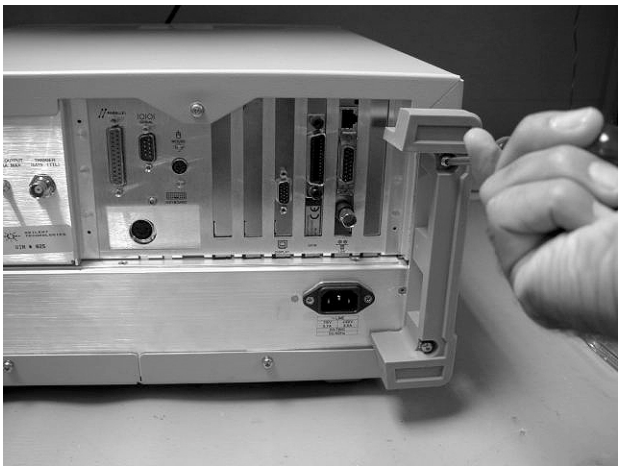


Figure 4-2. Removing the Rubber Feet

4 Remove the remaining four screws that fasten the cover to the instrument's rear panel, as shown in Figure 4-3.

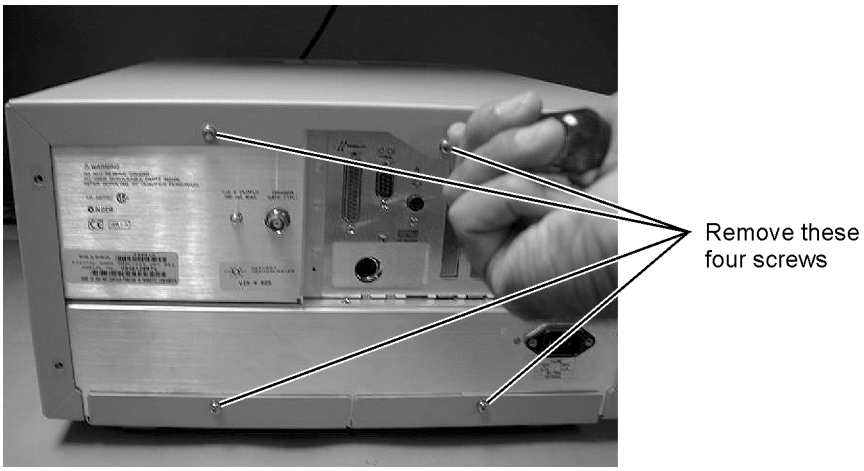


Figure 4-3. Removing Screws from Back of Mainframe

5 Remove the two screws that secure each handle to the side of the mainframe, as shown in Figure 4-4.

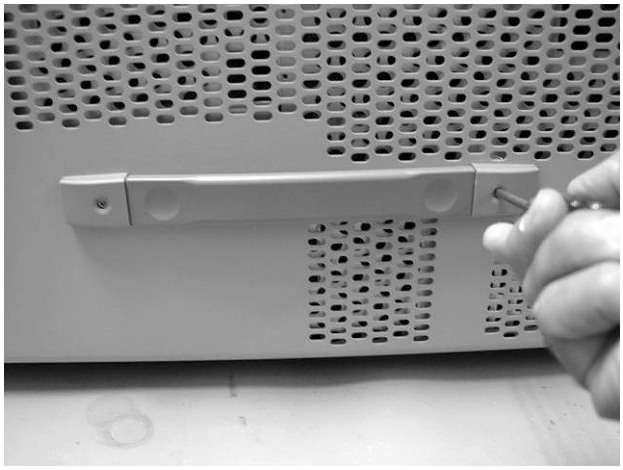


Figure 4-4. Removing the Side Handles

6 To slide the cover off the mainframe, first turn the mainframe upside down on the bench. Place your hands on each side of the cover, and using your thumbs, push the instrument out the front of the cover.

7 Once the mainframe has begun to slide forward, you can then set the instrument on its side (see Figure 4-5) and slide the cover off completely.

Figure 4-5. Sliding Cover off Mainframe

To Remove the Mainframe Front Panel

CAUTION Electrostatic discharge (ESD) can damage or destroy electrostatic components. All work on electronic assemblies should be performed at a static-safe work station. See ”Electrostatic Discharge Information” on page 1-9 for more information on preventing ESD.

1 Disconnect the power cord from the instrument.

WARNING **Opening covers or removing parts is likely to expose dangerous voltages. Disconnect the instrument from all voltages before it is opened.**

2 Remove the trim strips from both sides of the front panel, as shown in Figure 4-6.

Figure 4-6. Removing the Trim Strips

3 Use the T-15 TORX driver to remove the four screws (two on each side) that secure the front panel to the mainframe, as shown in Figure 4-7.

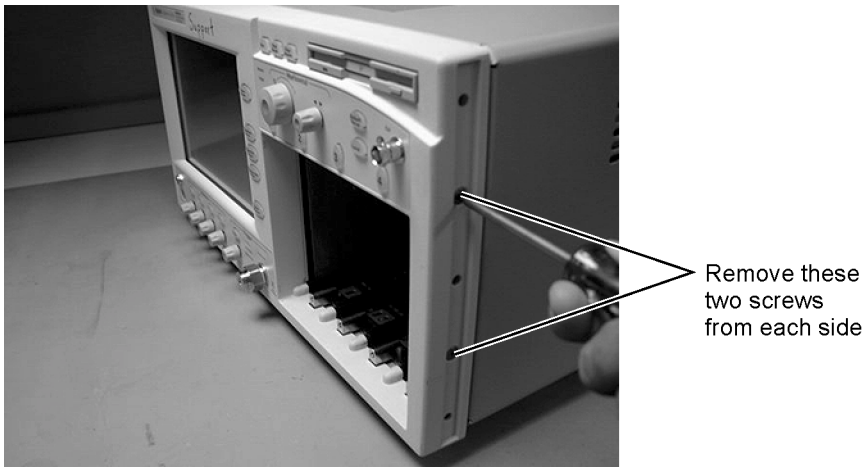


Figure 4-7. Removing the Front Panel Screws

4 Slide the front panel a few inches away from the mainframe, as shown in Figure 4-8.

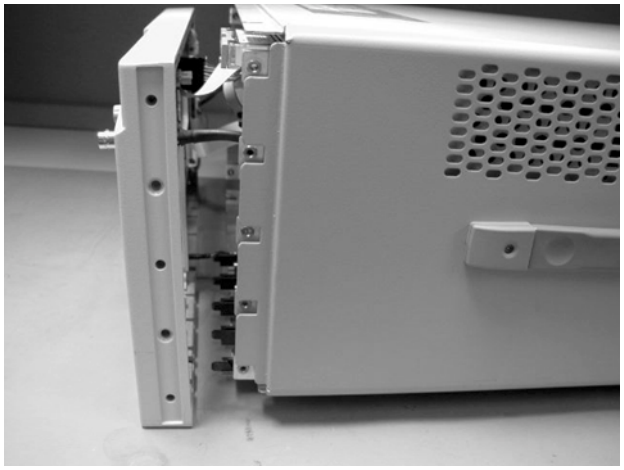


Figure 4-8. Sliding Front Panel Away From Mainframe

5 Use a T-10 TORX driver to remove the two screws that secure the Cal connector to the front panel, as shown in Figure 4-9.

Figure 4-9. Removing Screws that Secure the Cal Connector

6 Disconnect the W5 and W6 ribbon cables, shown in Figure 4-10.

Figure 4-10. Removing the W5 and W6 Ribbon Cables

7 Disconnect the W3 mylar flex cable, shown in Figure 4-11. Pry up the retainer slightly at either end of the connector, using a small flat-blade screwdriver. Do not force the retainer; it should remain attached to the body of the socket.

CAUTION Take great care when you disconnect and reconnect the mylar flex cable from the touch screen to the display board, as the cable is fragile and is only good for a few insertions.

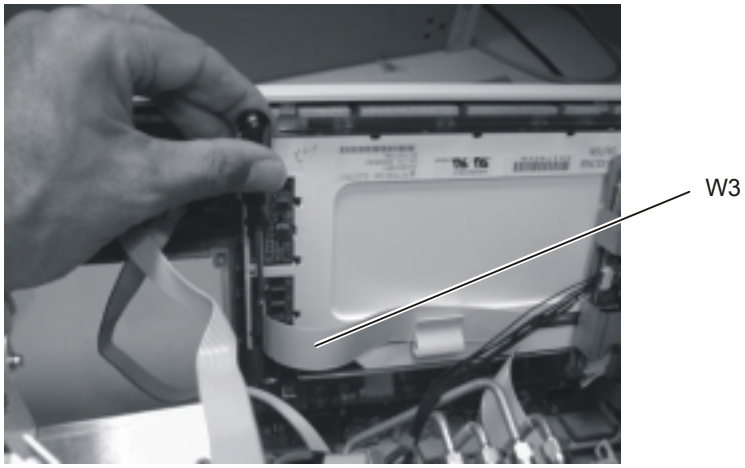


Figure 4-11. Disconnecting the W3 Mylar Flex Cable

8 Disconnect the W4 cable from the A3 Backlight Inverter board, as shown in Figure 4-12.

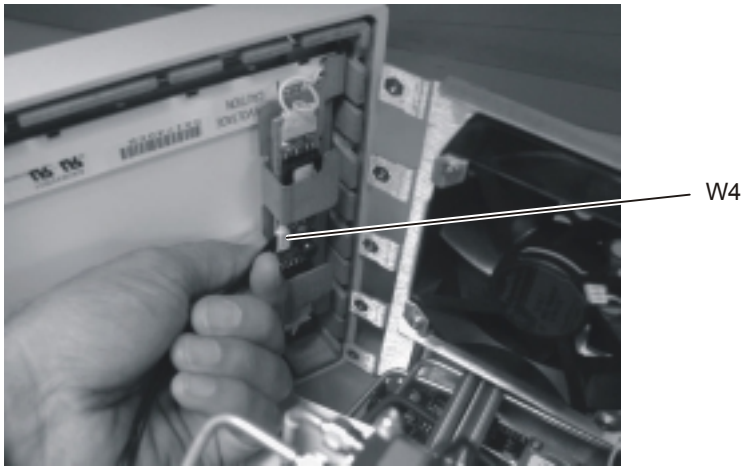


Figure 4-12. Disconnecting the W4 Cable from the A3 Backlight Inverter Board

9 Use a 5/16 inch wrench to remove the W22 cable from the front panel trigger input, as shown in Figure 4-13.

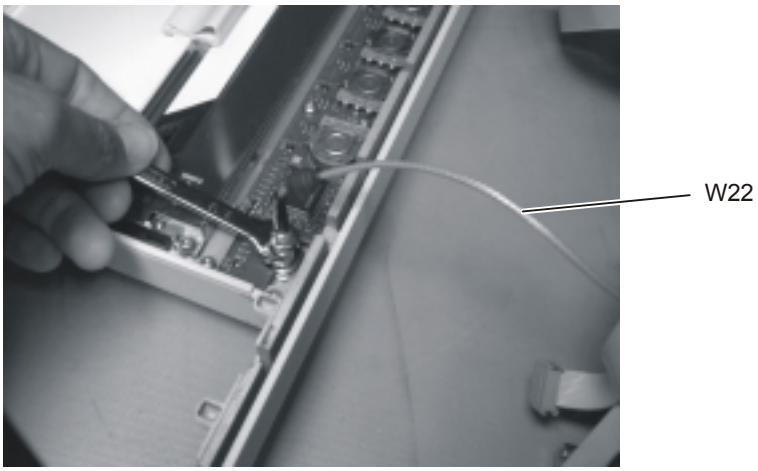


Figure 4-13. Removing the Front Panel Trigger Cable

CAUTION When replacing the front panel, be careful that the two ribbon cables, the front panel trigger cable, and the Cal cable do not become pinched.

LS-120 Disc Drive Modification (86100A Only)

1 Follow the instructions for removing the mainframe cover, on page 4-4.

2 Place the instrument so the top is facing up.

3 Using a T-10 TORX driver, remove the two screws that secure the A16 LS-120 board to the rear of the A10 floppy drive. Refer to Figure 4-14.

4 Remove the ribbon cable, W9. Refer to Figure 4-14.

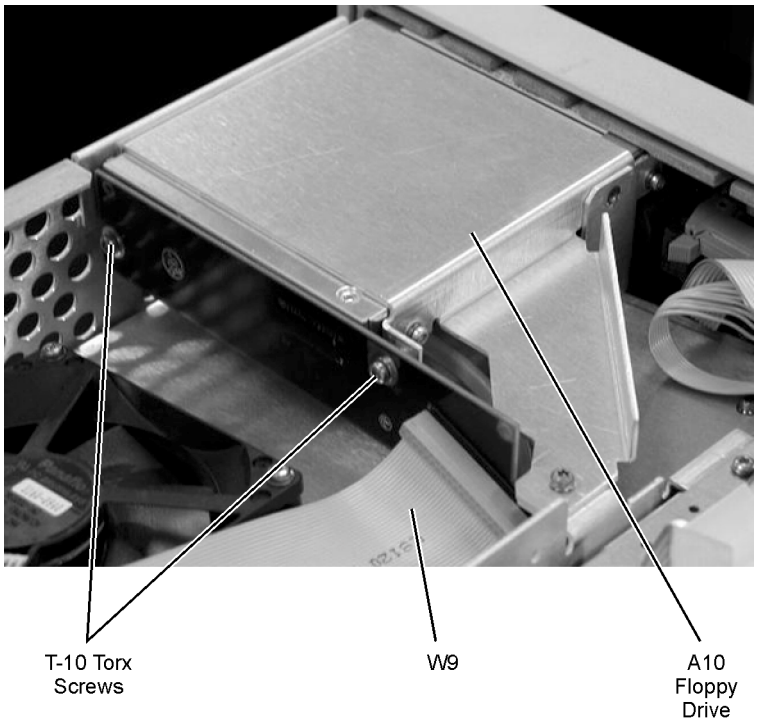


Figure 4-14. LS-120 and A-10 Floppy Drive

5 Put the new A16 LS-120 board (86100-66505) on the back of the A10 Floppy Drive. Refer to Figure 4-15.

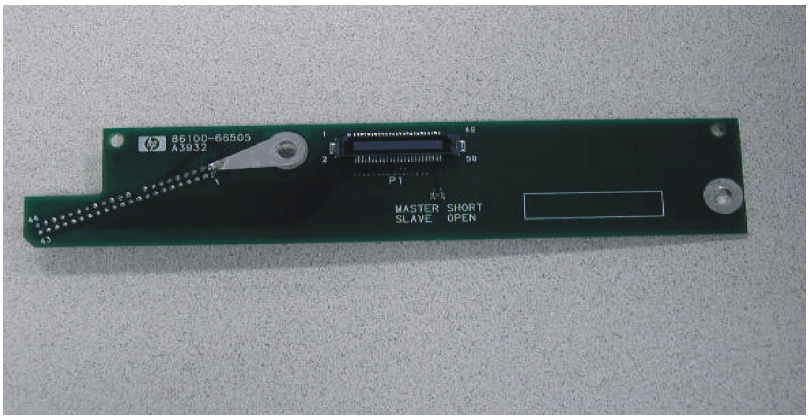


Figure 4-15. A16 LS-120 Board shown with Added Ground Strap

6 Secure the A16 LS-120 Board to the A10 Floppy Drive with two, T-10 Torx Screws. Refer to Figure 4-14.

7 Secure the ribbon cable W9 to the A16 LS-120 Board. Refer to Figure 4-14.

NOTE Ensure that the red stripe on the ribbon cable, W9 is towards the fan assembly when connection the cable to LS-120.

8 Reassemble the Mainframe Cover.

9 Perform a Read/Write test of the Floppy Drive.

- Power on the instrument, and insert any 3.5 floppy disk into the floppy drive.
- At the touchscreen select the File pull-down menu, and select “Save, Instrument Setup.”
- Select “Look In” 3.5 Floppy (A:), touch/click Save.
- Select “Open Instrument Setup” and recall the file that was just saved.
- The saved setup should be recovered properly.

To Remove the A2 Flat Panel Display

1 Follow the instructions for removing the front panel on page 4-7.

2 Use a T-10 TORX driver to remove the four screws that secure the display to the front panel, as shown in Figure 4-16.

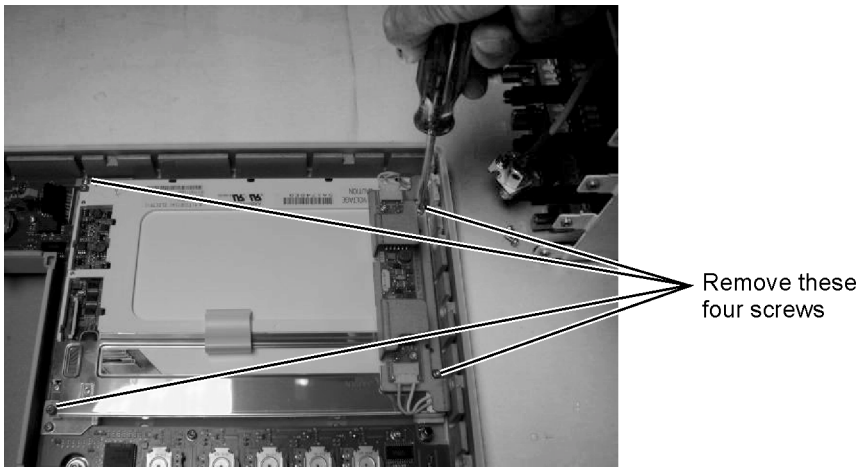


Figure 4-16. Removing the Display Screws

3 Carefully lift the display out of the front panel.

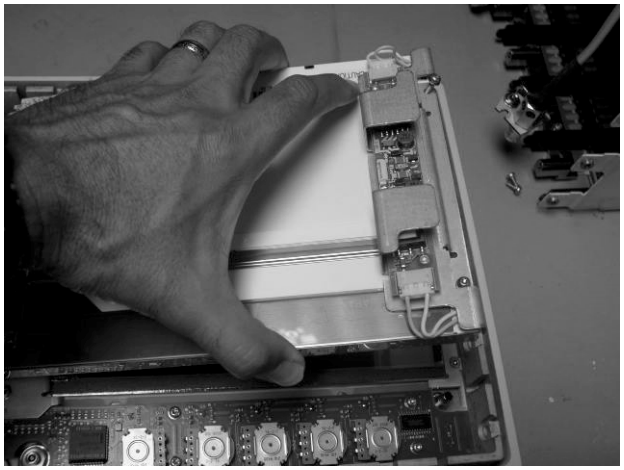


Figure 4-17. Removing the Display

To Remove the Display Backlights

1 Follow the instructions for removing the front panel on page 4-7, and the display on page 4-14.

2 Disconnect the cables from the A3 Backlight Inverter shown in Figure 4-18.

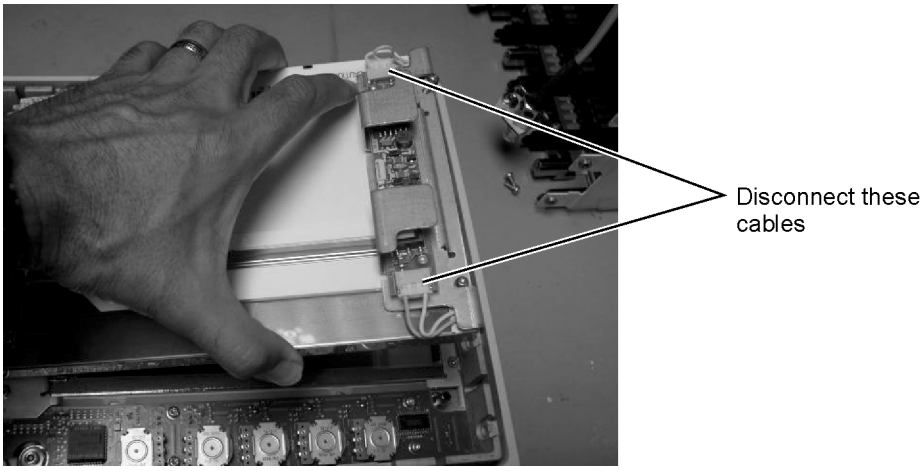


Figure 4-18. Disconnecting the Cables from the A3 Backlight Inverter

3 At the top of the display, push the locking tab to release the top backlight, as shown in Figure 4-19.

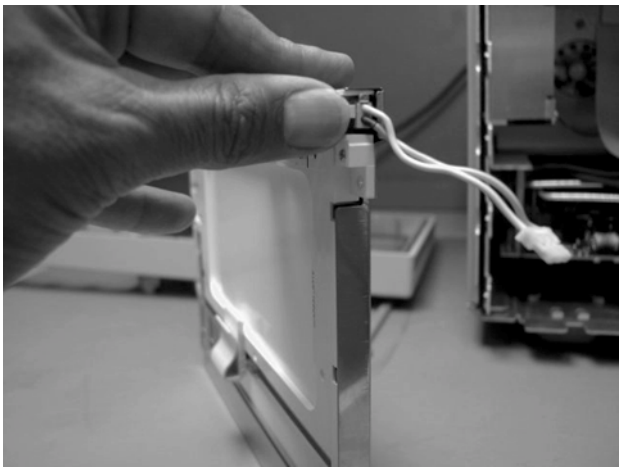


Figure 4-19. Release the Backlight Tab

4 Remove the top backlight, as shown in Figure 4-20.

Figure 4-20. Removing the Backlight

NOTE Pay attention to the orientation of the backlight as you remove it, to ensure correct replacement.

5 Repeat steps 3 and 4 to remove the bottom backlight.

To Remove the A8 Touch Screen

1 Follow the instructions for removing the front panel on page 4-7, and the display on page 4-14.

2 Using a T-10 TORX driver, remove two screws that secure the touch screen board bracket, as shown in Figure 4-21.

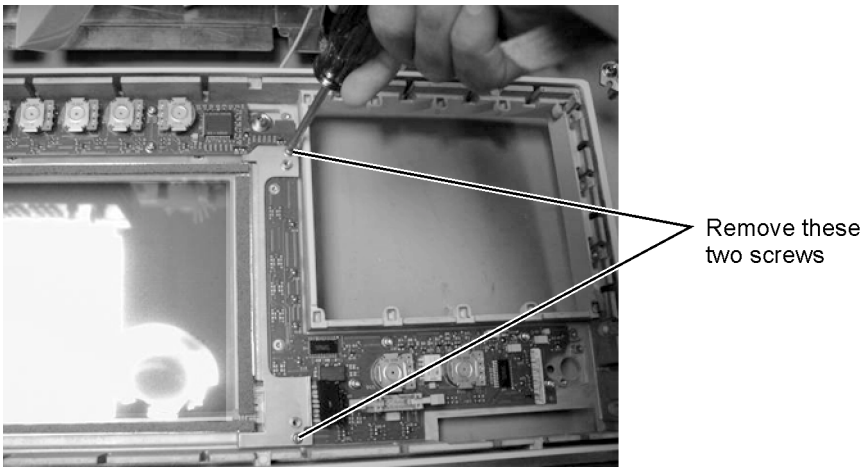


Figure 4-21. Removing the Touch Screen Screws

3 Lift the touch screen out of the display assembly, as shown in Figure 4-22.

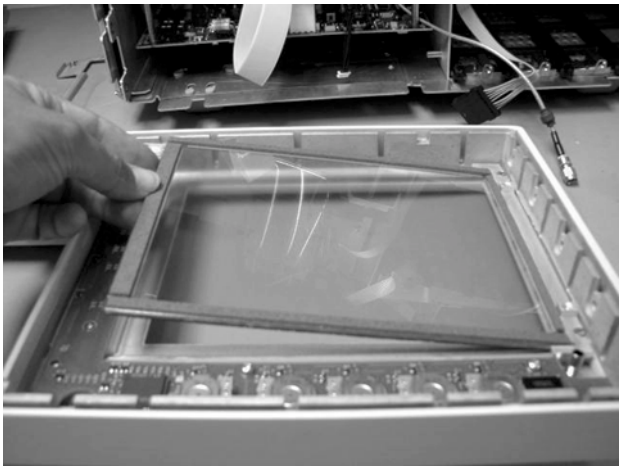


Figure 4-22. Lifting out the Touch Screen

To Remove the A7 Front Panel Keyboard

1 Follow the instructions for removing the front panel on page 4-7, and the display on page 4-14.

2 Turn the front panel face up.

3 Pull off all knobs, as shown in Figure 4-23.

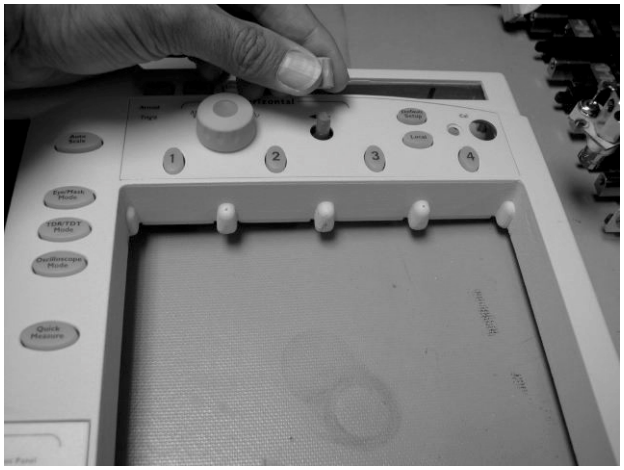


Figure 4-23. Removing the Knobs

4 Turn the panel face down.

5 Use a T-10 TORX driver to remove the two screws from the touch screen board, as shown in Figure 4-24, then lift bracket out of front panel.

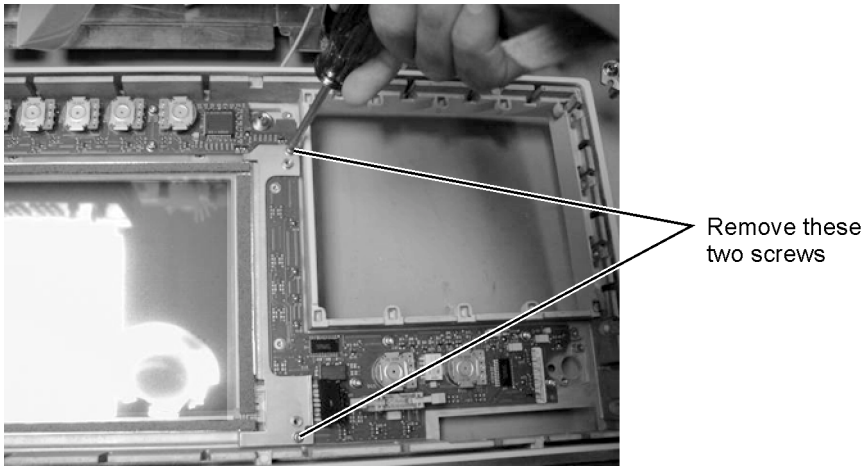


Figure 4-24. Removing the Touch Screen Screws

6 Remove the eight screws that secure the keyboard to the front panel, as shown in Figure 4-25.

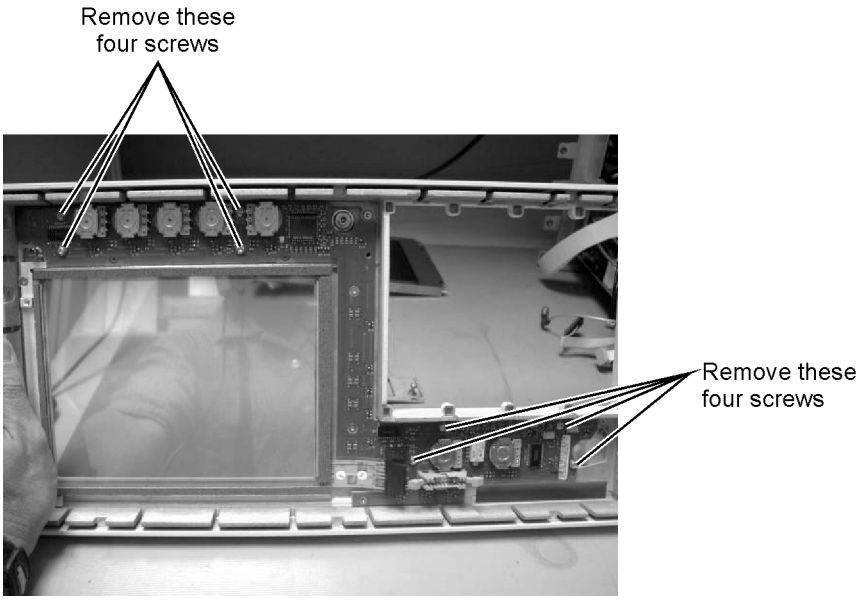


Figure 4-25. Removing the Keyboard Panel Screws

7 Lift the board out of the front panel.

NOTE During reassembly, when replacing the keyboard be sure that all of the buttons come through the front panel properly. If they are not aligned properly, the buttons may remain stuck behind the panel.

CAUTION When replacing the front panel, be careful that the two ribbon cables, the front panel trigger cable, and the Cal cable do not become pinched.

To Remove the A3 Backlight Inverter

CAUTION Electrostatic discharge (ESD) can damage or destroy electrostatic components. All work on electronic assemblies should be performed at a static-safe work station. See ”Electrostatic Discharge Information” on page 1-9 for more information on preventing ESD.

1 Disconnect the power cord from the instrument.

WARNING **Opening covers or removing parts is likely to expose dangerous voltages. Disconnect the instrument from all voltages before it is opened.**

2 Remove the trim strips from both sides of the front panel, as shown in Figure 4-26.

Figure 4-26. Removing the Trim Strips

3 Use the T-15 TORX driver to remove the four screws (two on each side) that secure the front panel to the mainframe, as shown in Figure 4-27.

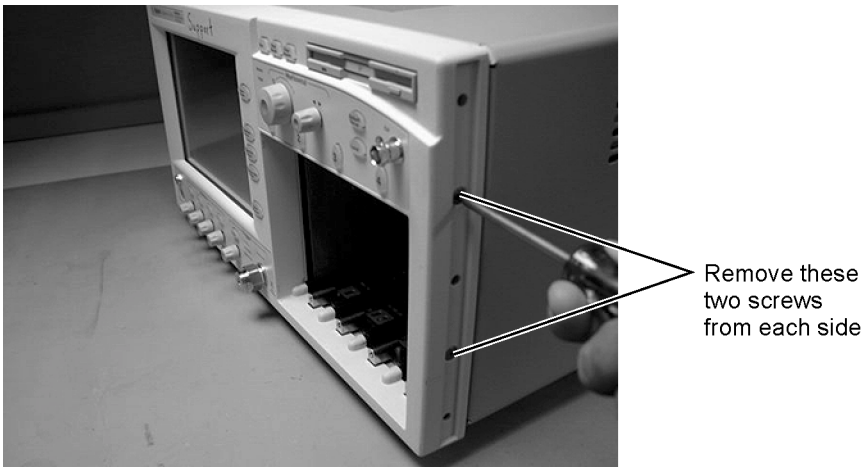


Figure 4-27. Removing the Front Panel Screws

4 Slide the front panel a few inches away from the mainframe as show in Figure 4-28.

Figure 4-28. Accessing the Inverter Board

5 Disconnect the three cables, as shown in Figure 4-29

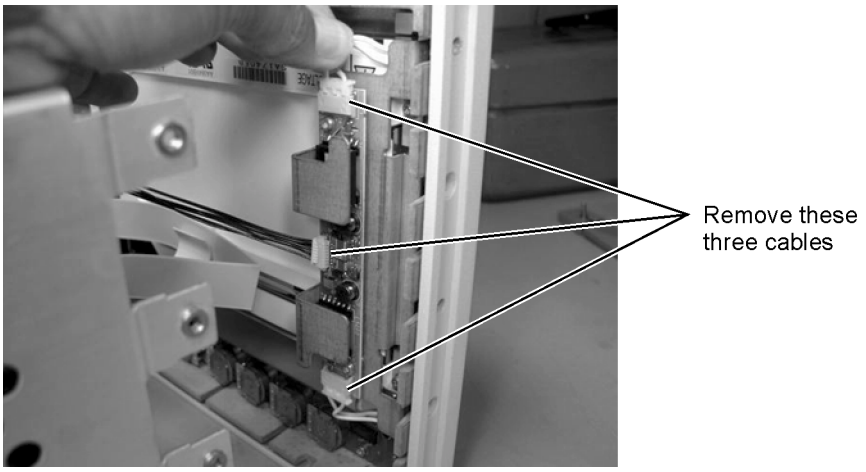


Figure 4-29. Removing the Cables from the Inverter Board

6 Use a T-10 TORX driver to remove the two screws that secure the board to the display.

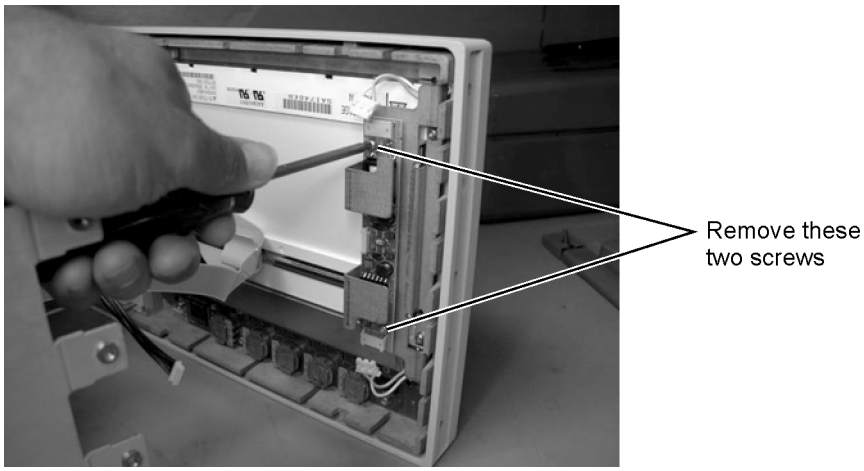


Figure 4-30. Removing the Keyboard Panel Screws

CAUTION When replacing the front panel be careful that the two ribbon cables, the front panel trigger cable, and the Cal cable do not become pinched.

To Remove the Front Panel Trigger Input

CAUTION Electrostatic discharge (ESD) can damage or destroy electrostatic components. All work on electronic assemblies should be performed at a static-safe work station. See "Electrostatic Discharge Information" on page 1-9 for more information on preventing ESD.

1 Disconnect the power cord from the instrument.

WARNING **Opening covers or removing parts is likely to expose dangerous voltages. Disconnect the instrument from all voltages before it is opened.**

2 Remove the trim strips from both sides of the front panel, as shown in Figure 4-31.

Figure 4-31. Remove the Trim Strips

3 Use the T-15 TORX driver to remove the four screws (two on each side) that secure the front panel to the mainframe, as shown in Figure 4-32.

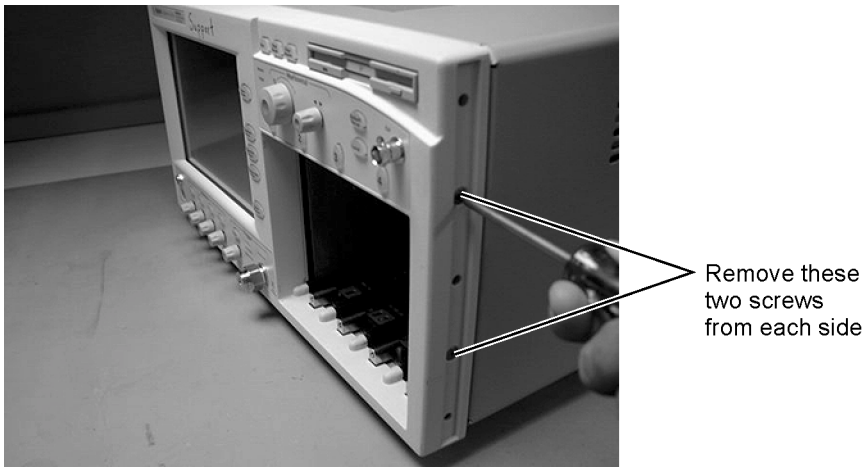


Figure 4-32. Remove the Front Panel Screws

4 Slide the front panel a few inches away from the mainframe, as shown in Figure 4-33.

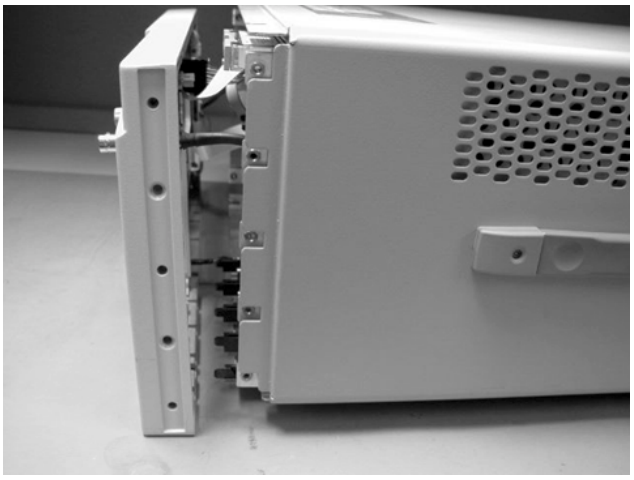


Figure 4-33. Slide Front Panel Away From Mainframe

5 Use a 5/16 inch wrench to remove the W22 cable from the front panel trigger input.

6 Use a 9/16 inch wrench to remove the front panel trigger input connector.

To Remove the A4 PC Motherboard

NOTE The 86100A is used in the following steps. Although some of the components are different in the 86100B, the removal procedure is virtually identical.

1 Follow the instructions on page 4-4 for removing the mainframe cover.

2 Use a T-10 TORX driver to remove the four screws that secure the fan, as shown in Figure 4-34, then lift the fan out of the mainframe.

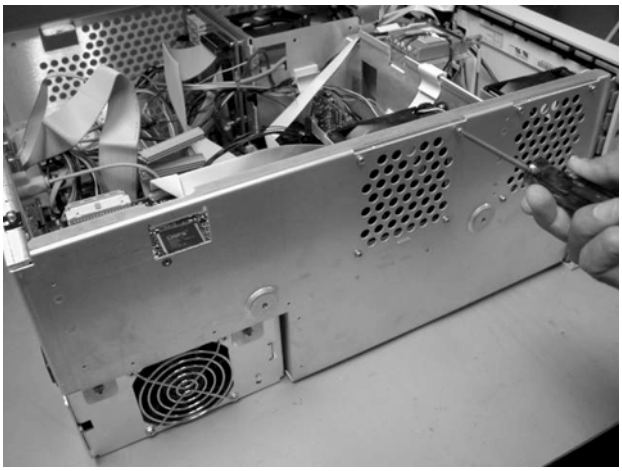


Figure 4-34. Removing the Fan

3 Use a T-10 TORX driver to remove the two screws that secure the bar to the mainframe, as shown in Figure 4-35.

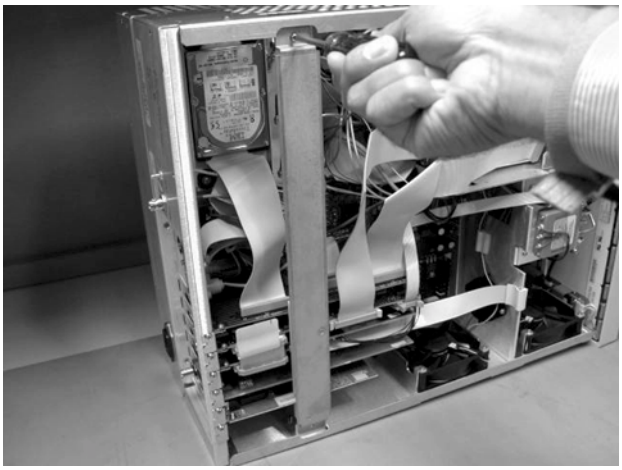


Figure 4-35. Removing the Bar (86100A only)

4 Use a T-15 TORX driver to remove all of the circuit boards from the PC slots, as shown in Figure 4-36.

NOTE The W10 ribbon cable connecting the A5 SVGA Adapter and the A6 Interface can be left connected, and the boards pulled out together, as shown in Figure 4-37.

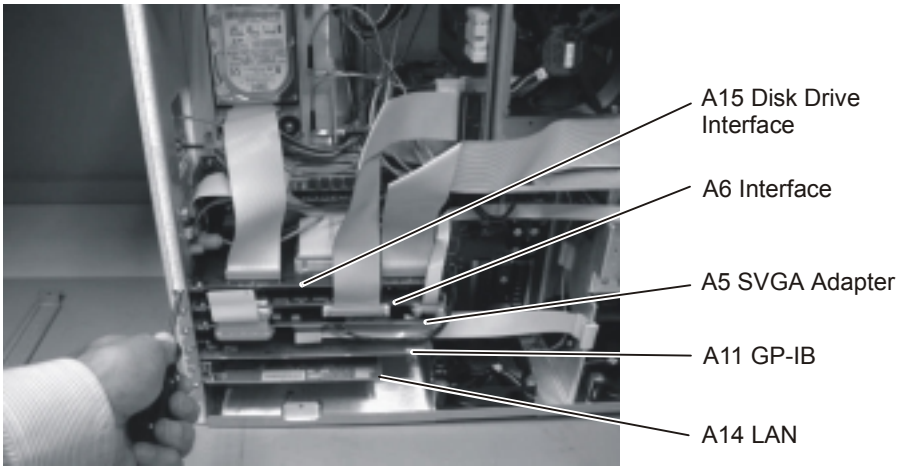


Figure 4-36. Removing the Circuit Boards from the Motherboard

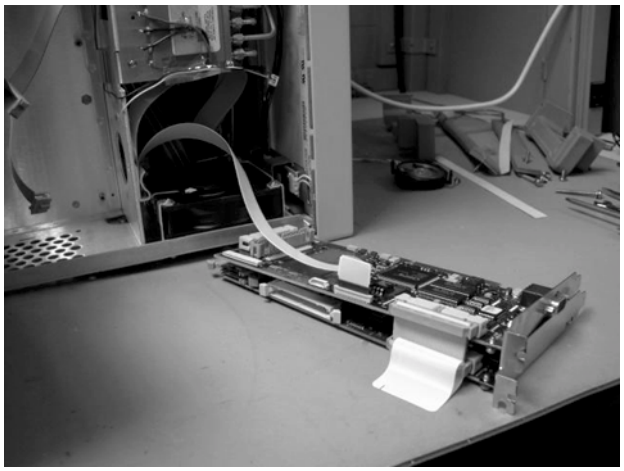


Figure 4-37. Removing the A5 and A6 Boards

5 Use a T-10 TORX driver remove one screw that secures the speaker, as shown in Figure 4-38. Then disconnect the speaker cable, as shown in Figure 4-39, and remove the speaker.

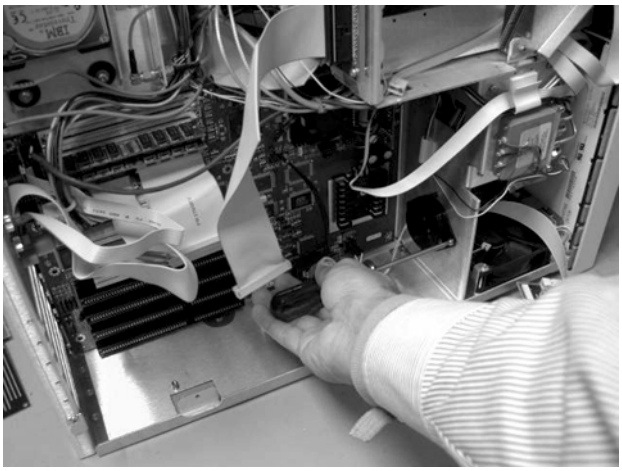


Figure 4-38. Removing the Speaker Screw

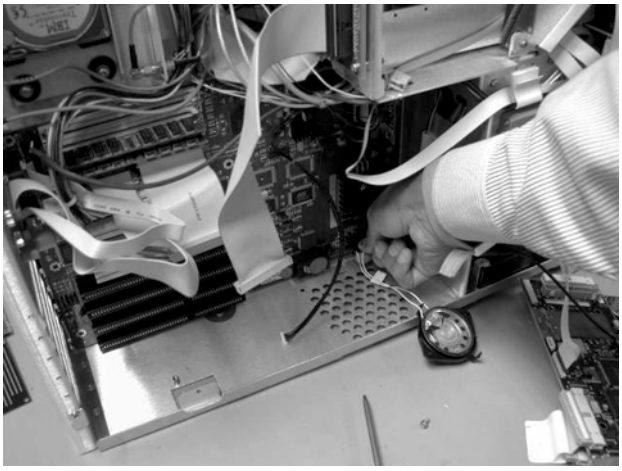


Figure 4-39. Disconnecting the Speaker Cable

6 Use a T-10 TORX driver to remove nine screws that secure the motherboard, as shown in Figure 4-40.

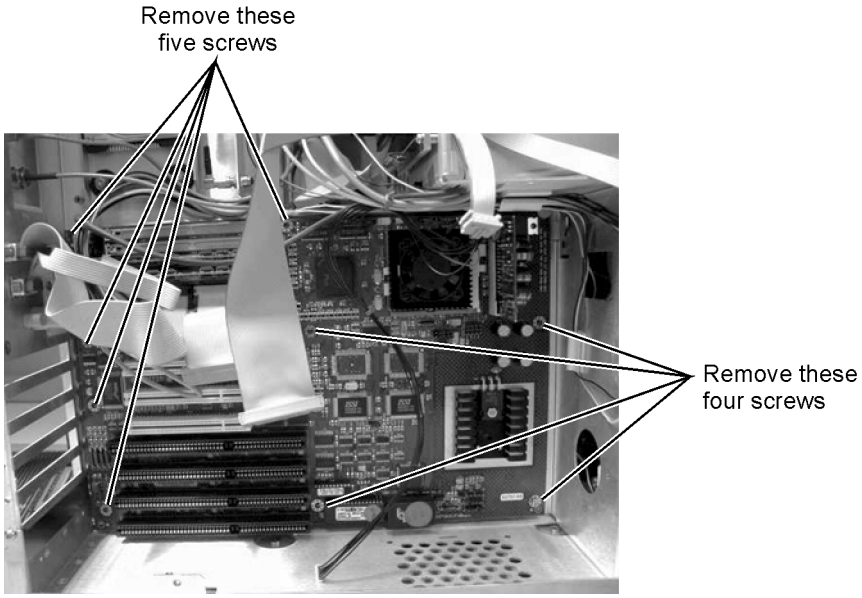


Figure 4-40. Removing the Screws from the Motherboard

7 Slide the bottom of the motherboard out to clear the white tab, as shown in Figure 4-41, then pull the motherboard out the right side, as shown in Figure 4-42.

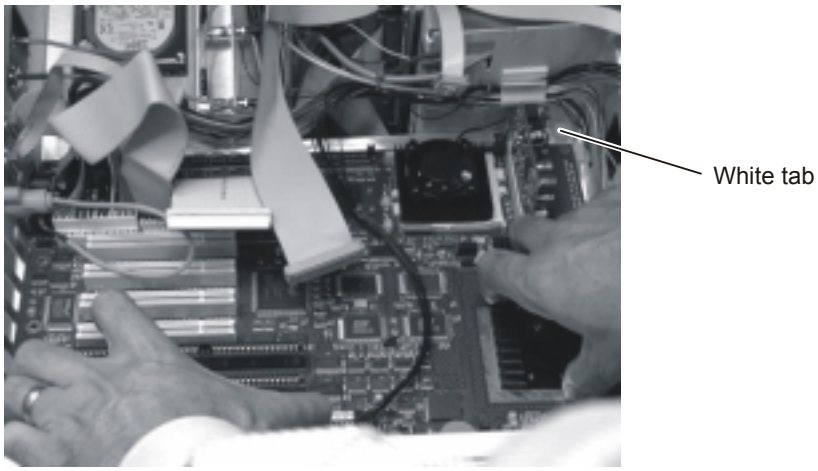


Figure 4-41. Slide the Motherboard Down to Clear the White Tab

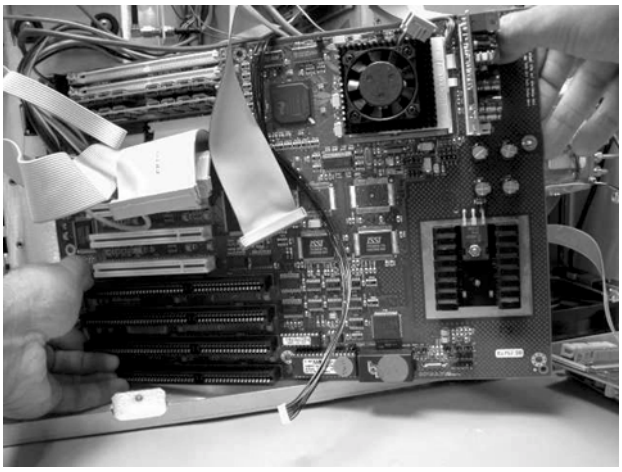


Figure 4-42. Pull the Motherboard out the Right Side

CAUTION Ensure that the cables that are routed on the upper right corner can clear the board so that you are not pulling on the cables as you remove the board.

8 Label any cables that are still connected to the motherboard, then disconnect them.

9 Remove the RAM from the motherboard, as shown Figure 4-43.

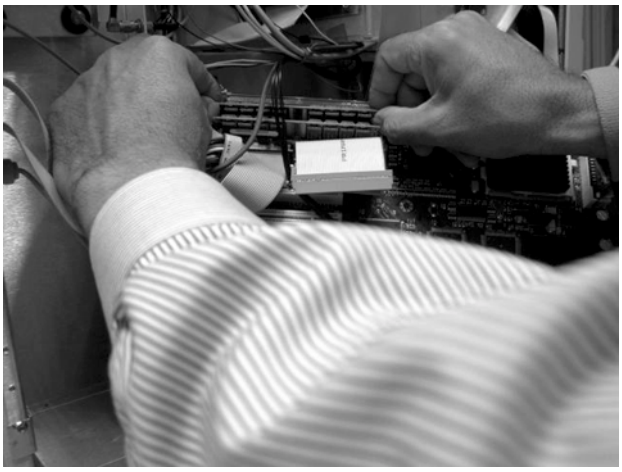


Figure 4-43. Removing the RAM

10 Remove any ribbon cables attached to the motherboard.

11 Refer to Figure 4-44 through Figure 4-47 for cable connections.

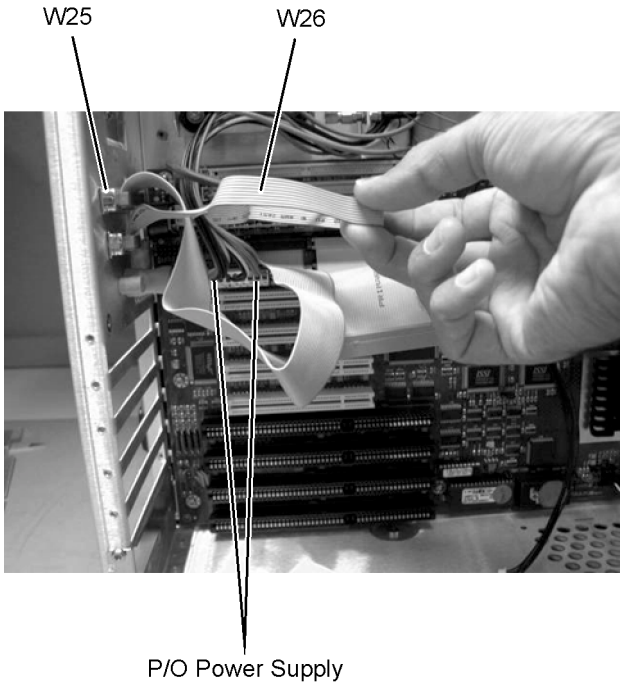


Figure 4-44. W25, W26, and Power Supply Cables

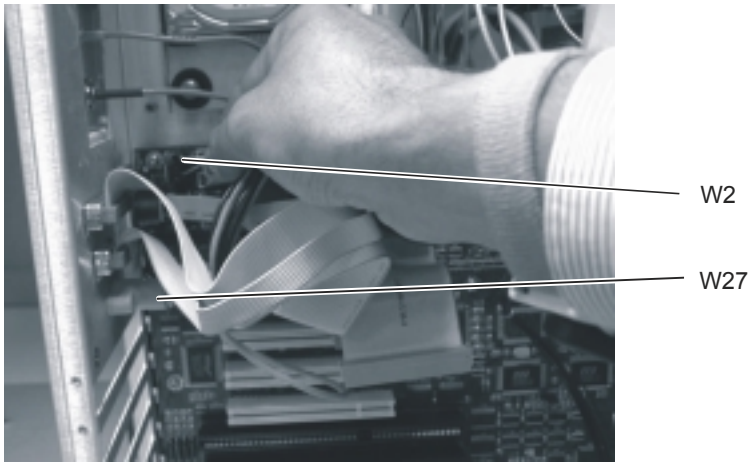


Figure 4-45. W2 and W27 Cables

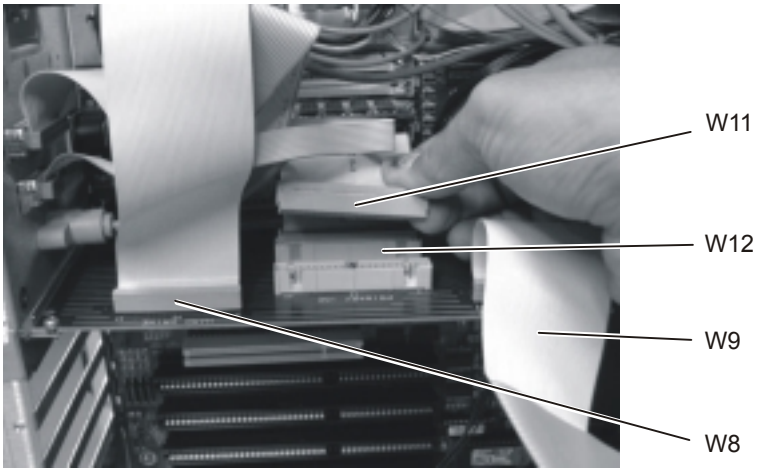


Figure 4-46. W8, W9, W11, and W12 Cables

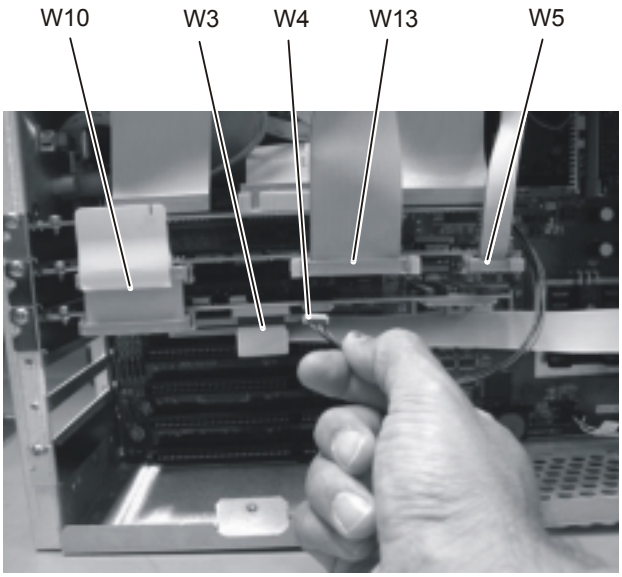


Figure 4-47. W3, W4, W5, W10, and W13 Cables

To Remove the A13 Acquisition (Option 001)

1 Follow the instructions for removing the mainframe cover, on page 4-4.

2 Use a 5/16 inch wrench to remove the three cables labeled: W30, W31, and W32, shown in Figure 4-48.

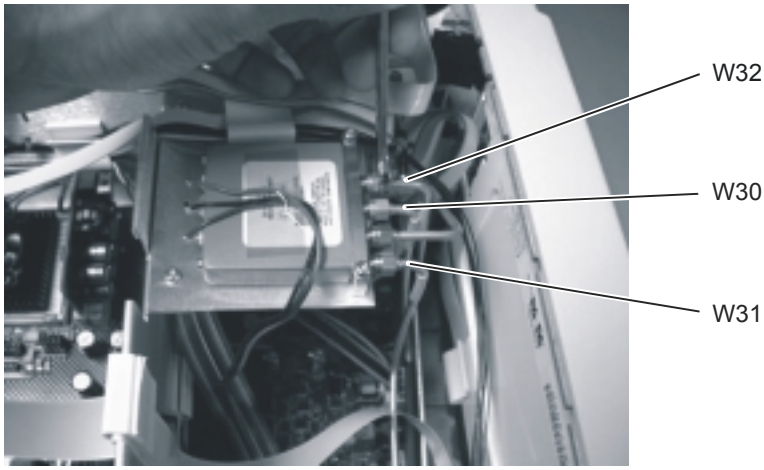


Figure 4-48. Removing the Cables from the Coaxial Switch

3 Turn the instrument on its side so that you can access the screws that secure the A13 Acquisition board, then remove the two screws, as shown in Figure 4-49.

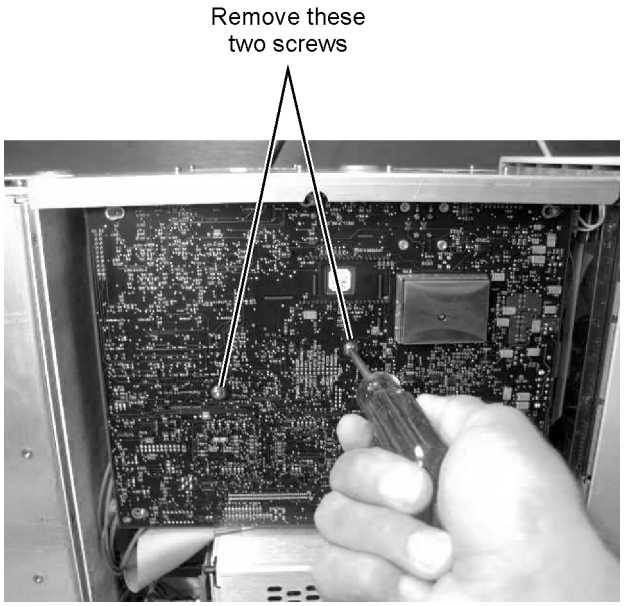


Figure 4-49. Removing the A13 Acquisition Board Screws

4 Slide the board to the right to free it from the locking posts.

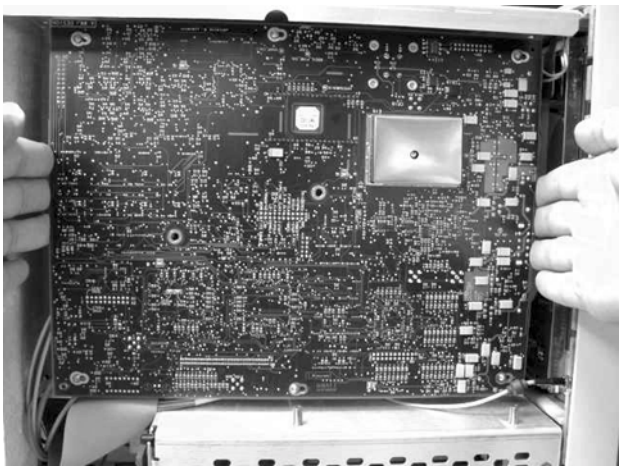


Figure 4-50. Sliding the Board to the Right

5 Pull the board out a few inches, then disconnect the W24 ribbon cable and the cable from the SW2 Transfer Switch, as shown in Figure 4-51 and Figure 4-52.

Figure 4-51. Removing the W24 Ribbon Cable from P24 SRC_SEL

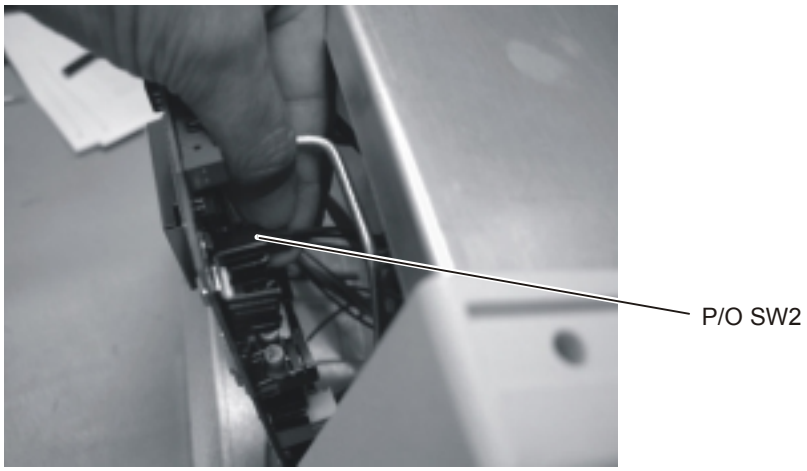


Figure 4-52. Removing the SW2 Cable from P19 Connector

6 Remove the board, as shown in Figure 4-53.

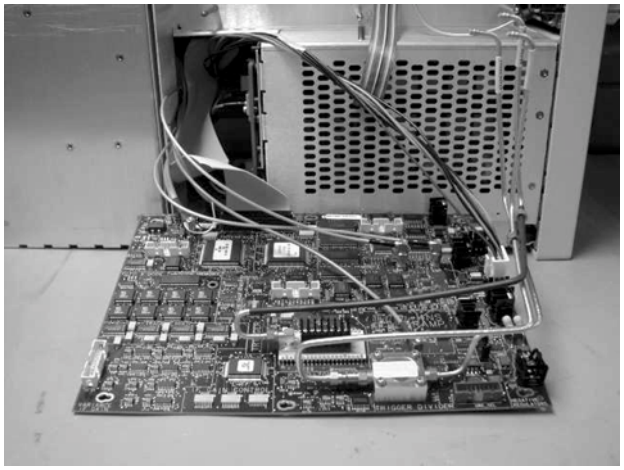


Figure 4-53. Removing the A13 Acquisition Board

7 Disconnect all of the remaining cables.

8 Refer to Figure 4-54 and Figure 4-55 for cable connections.

NOTE The left and right strobe cables are interchangeable.

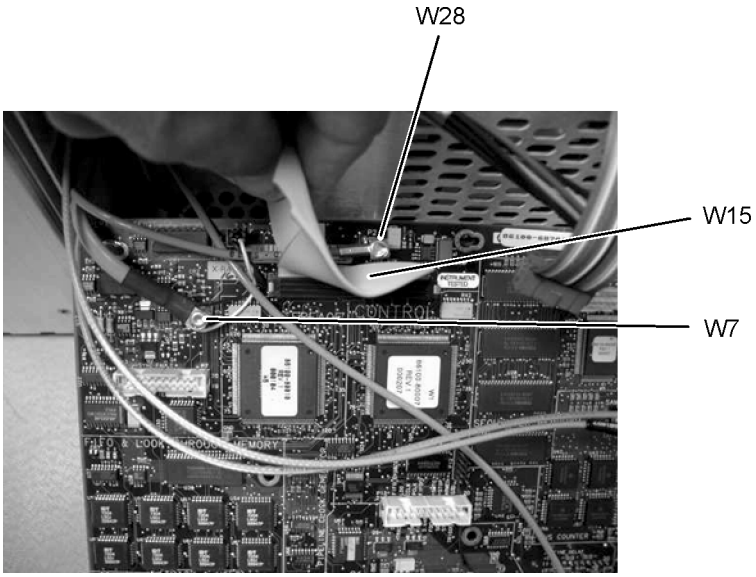


Figure 4-54. W28, W7, and W15 Cables from the A13 Acquisition Board

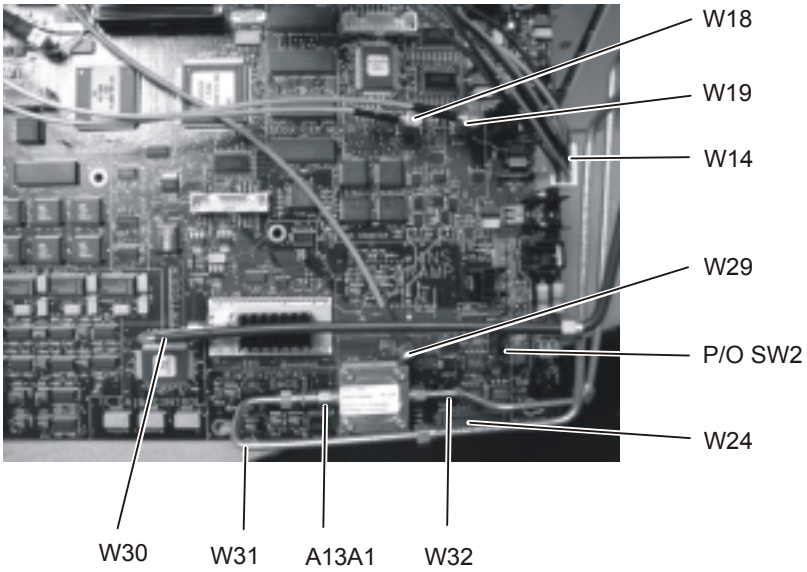


Figure 4-55. Cables from the A13 Acquisition Board (option 001)

A13 Acquisition Board PLD Header Modification (86100A Only)

Refer to ”Preventative Maintenance” on page 1-17 in “General Information” for serial prefix information.

1 Follow the instructions for removing the mainframe cover, on page 4-4.

2 Follow the instructions for removing the A13 Acquisition Board, on page 4-32.

3 Place the jumper, shown in Figure 4-56, on P12 so that the resistors are connected to pins 1, 4, and 5, shown in Figure 4-57. The jumper key should face towards the front panel.

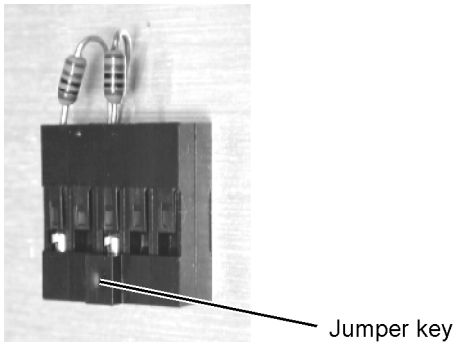


Figure 4-56. Jumper, E2660-01201

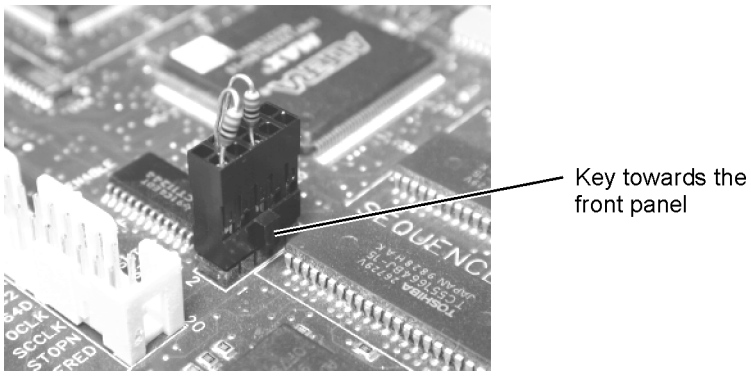


Figure 4-57. Placement of the Jumper on P12

4 Reassemble the A13 Acquisition Board in reverse order of removal.

5 Reassemble the Mainframe Cover in reverse order of removal.

To Remove the A1 Power Supply

1 Follow the instructions for removing the mainframe cover, on page 4-4.

2 Use a T-15 TORX driver to remove the two screws that secure the mainframe to the top of the A1 Power Supply, as shown in Figure 4-58.

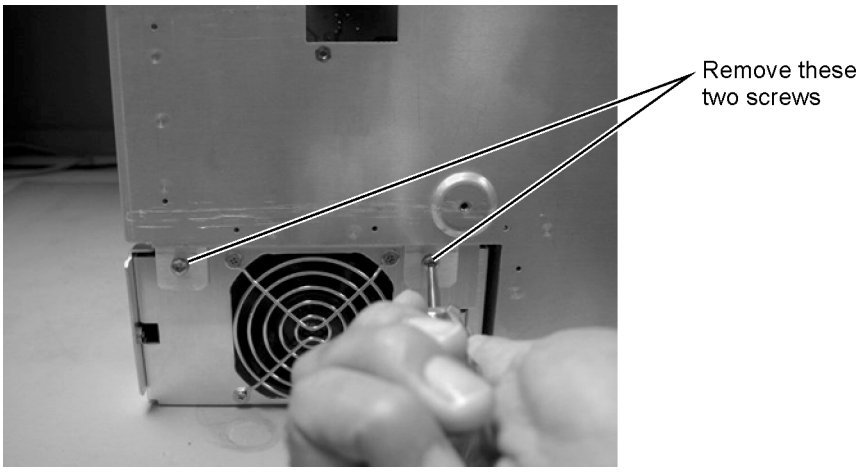


Figure 4-58. Removing the Screws Securing the Power Supply

3 Remove the two screws located on either side of the hard drive, as shown in Figure 4-59.

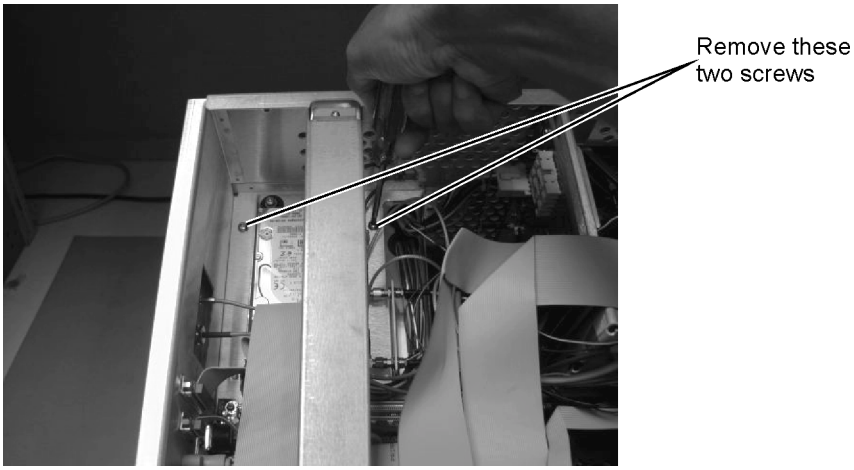


Figure 4-59. Removing the Screws on Top of the Hard Drive

4 Disconnect all cables from the power supply.

NOTE You may need to remove the cable from the A9P2 Hard Drive connector on the A15 Disk Drive Interface to access cables on the A4 PC Motherboard.

5 Rout the cables out of the instrument when you are removing the A2 Power Supply.

6 Refer to Figure 4-60 through Figure 4-62 for cable connections.

Figure 4-60. A12P2 Connection

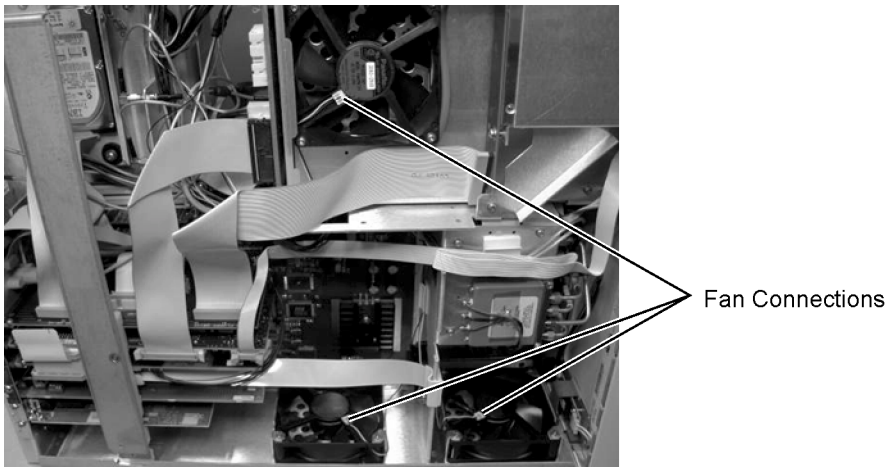


Figure 4-61. Fan Connections

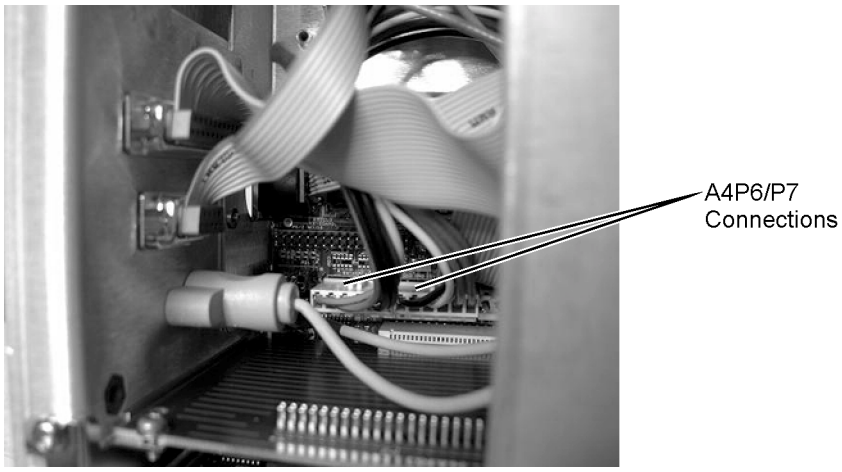


Figure 4-62. A4P6/P7 Connections

To Remove the A6 Distribution Assembly

1 Follow the instructions on page 4-4 for removing the mainframe cover.

2 Use a T-10 TORX driver to remove the two screws that secure the assembly, as shown in Figure 4-63.

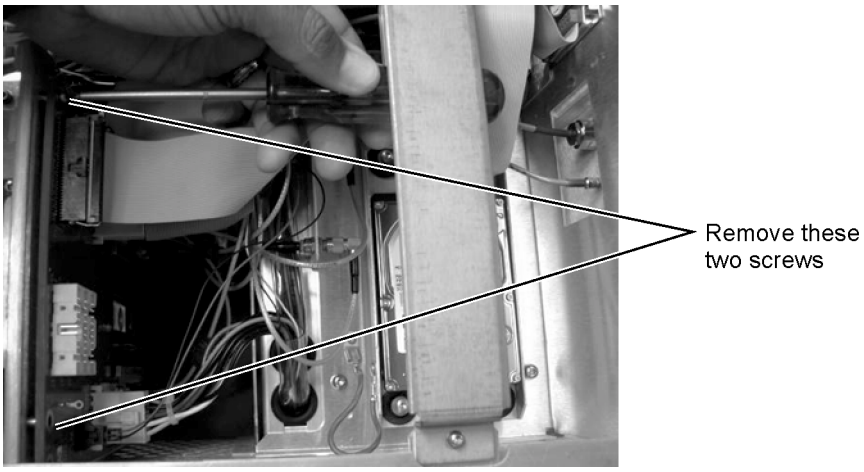


Figure 4-63. Disconnecting Screws from A6 Board

3 Remove the cables that you can access from this side of the instrument.

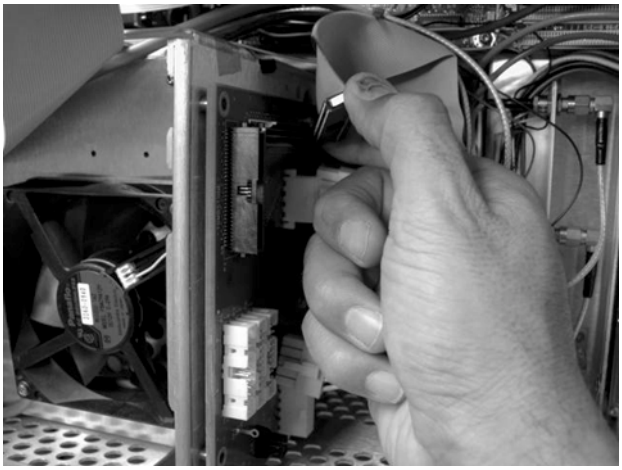


Figure 4-64. Disconnecting the Cables

4 Use a T-10 TORX driver to remove four screws from the connectors in the module drawer as shown in Figure 4-65.

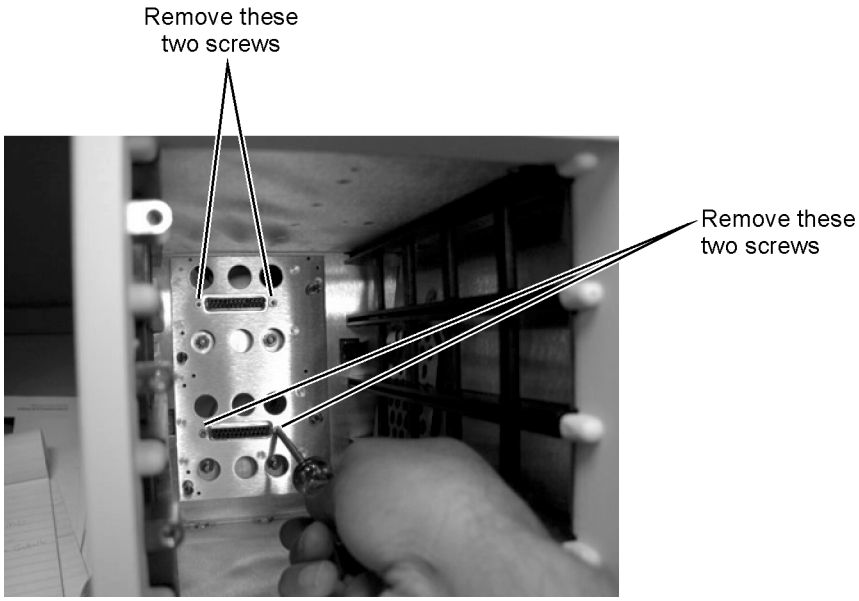


Figure 4-65. Removing Screws from Connectors in Module Drawer

5 Pull the A6 Distribution assembly away from the mainframe, as shown in Figure 4-66.

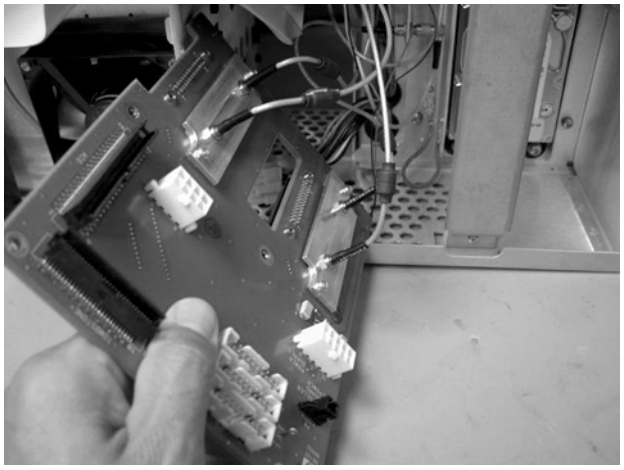


Figure 4-66. Pulling Out the A6 Distribution Assembly Board

6 Access the side of the instrument, and pull the board out far enough so that you can access the brackets that secure the cables.

7 Remove the two screws that secure each bracket, as shown in Figure 4-67.

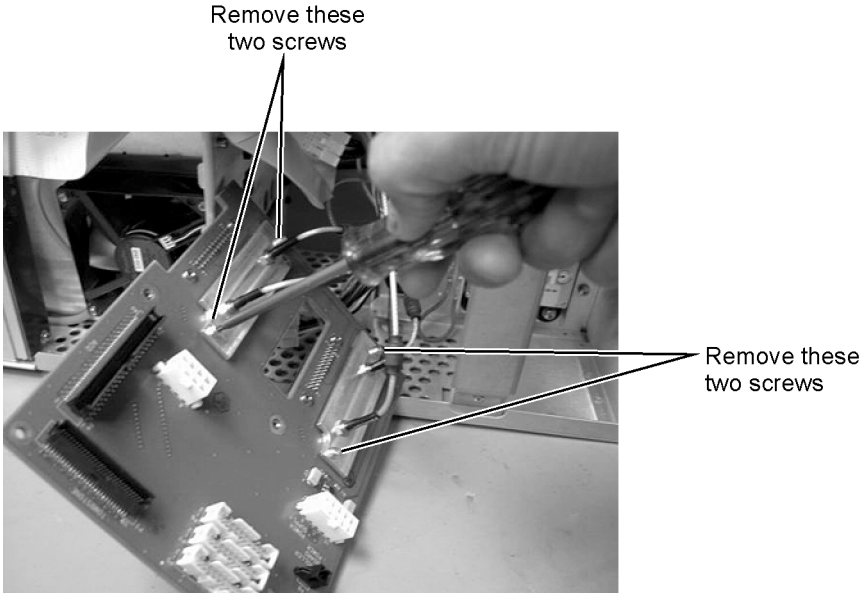


Figure 4-67. Removing the Screws from the A6 Bracket

To Remove the A6 Distribution Assembly

5

Replaceable Parts—86100A

Replaceable Parts—86100A

In this section, you'll find tables that identify each mechanical and electrical assembly in the Agilent 86100A mainframe. An Agilent part number is provided for each available part.

Part Ordering Information

Only major assemblies can be replaced. To order an assembly, quote the Agilent part number, and indicate the quantity required.

Assemblies can be ordered from the nearest Agilent office. Customers within the USA can also use either the direct mail-order system or the direct phone-order system described below. The direct phone-order system has a toll-free phone number available.

Direct Mail-Order System

Within the USA, Agilent can supply parts through a direct mail-order system. Advantages of using the system are as follows:

- Direct ordering and shipment from Agilent
- No maximum or minimum on any mail order. (There is a minimum order amount for parts ordered through a local Agilent office when the orders require billing and invoicing.)
- Prepaid transportation. (There is a small handling charge for each order.)
- No invoices

To provide these advantages, a check or money order must accompany each order. Mail-order forms and specific ordering information are available through your local Agilent office.

Direct Phone-Order System

The toll-free phone number, (800) 227-8164, is available Monday through Friday, 6 am to 5 pm (Pacific time). Regular orders have a 4-day delivery time.

Major Assembly and Cable Identification

Table 5-1. Major Assembly and Cable Identification

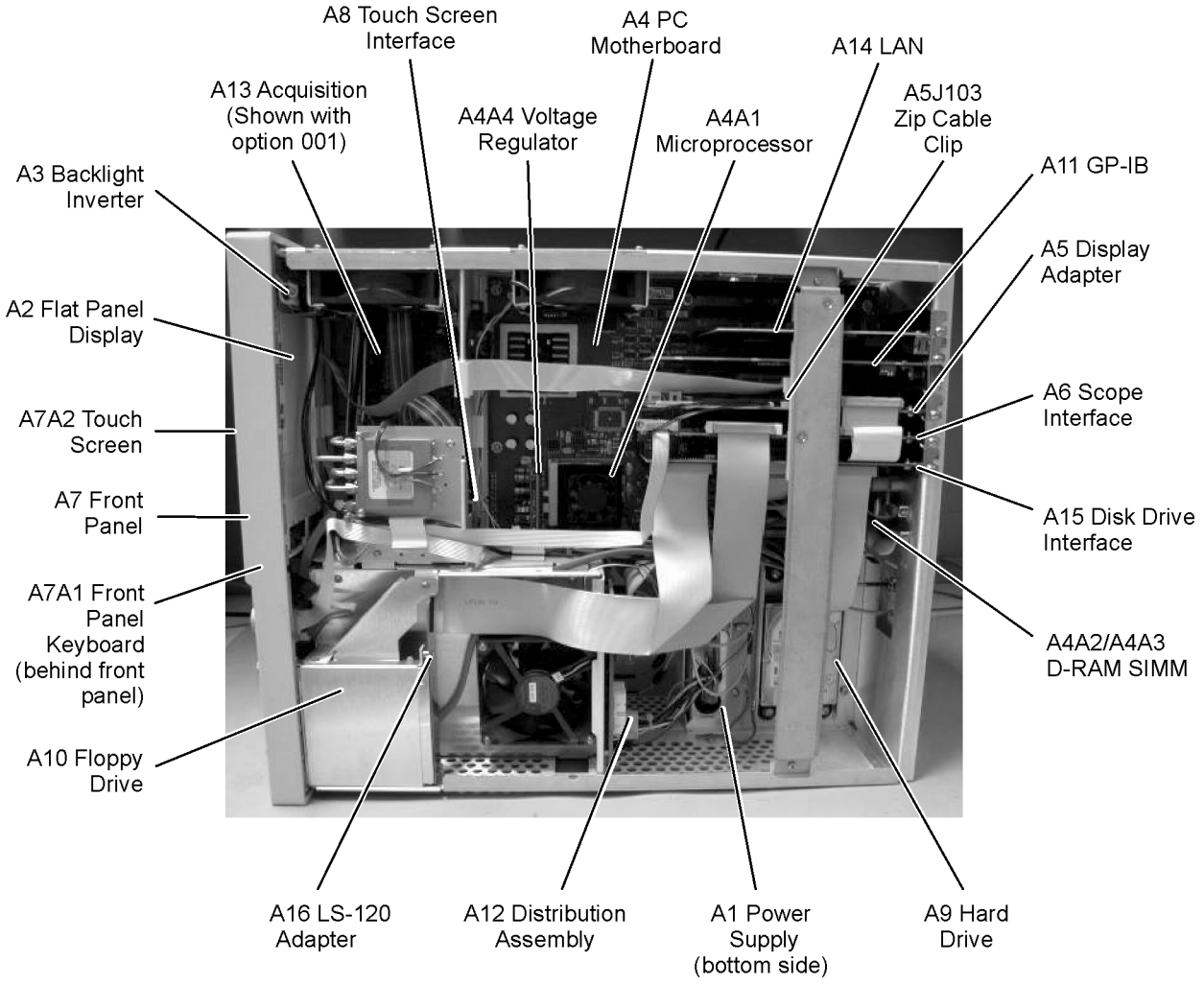
Ref Des	Description	Agilent Part Number
A1	Power Supply	0950-3499
A2	Flat Panel Display	2090-0396
A2DS1, DS2	Backlight Bulb	2090-0365
A3	Backlight Inverter	0950-3235
A4	PC Motherboard	E2660-68701
A4A1	Microprocessor	1821-4976
A4A2	D-RAM SIMM	1818-7682
A4A3	D-RAM SIMM	1818-7682
A4A4	Voltage Regulator Module	0950-3399
A5	Display Adapter (El Mirage)	54810-66525
A5J103	Zip Cable Clip (part of J103 and W3)	1253-5093
A6	Scope Interface (Tombstone)	54810-66529
A7	Front Panel Assembly	86100-60001
A7	Front Panel Assembly Rebuilt	86100-69001
A7A1	Front Panel Keyboard (Z Board)	86100-66504
A7A2	Touch Screen	1000-1013
A8	Touch Screen Interface	0960-1046
A9	Hard Drive	86100-10015
A10	LS-120 Floppy Drive	0950-3931
A11	GP-IB	E2072-66502
A12	Distribution Assembly	86100-66518
A13	Acquisition (Standard)	E2660-60702
A13	Acquisition Rebuilt (Standard)	E2660-69702
A13	Acquisition (Option 001)	E2660-68709
A13	Acquisition Rebuilt (Option 001)	E2660-69709
A13A1	6dB Attenuation (Option 001)	0955-0243
A14	LAN	0960-1232
A15	Disk Drive Interface	86100-66506

Table 5-1. Major Assembly and Cable Identification

Ref Des	Description	Agilent Part Number
A16	LS-120 Adapter	86100-66515
W1	Touch Screen Cable (from A8H1 to A12P8)	86100-60010
W2	Touch Screen Cable (from A8H2 to A4SER1)	86100-60009
W3	LCD Signal Cable (from A5J103 to A2)	86100-60017
W4	LCD Power Cable (from A5J1 to A3	86100-60020
W5	Tombstone Cable (from A6J3 to A7A1P1)	86100-60008
W6	Cable (from A8H5 to A7A2)	86100-60021
W7	Cable (from A13P5/P1 to CAL connector)	86100-60002
W8	IDE Cable (from A15P2 to A9 Hard Drive)	86100-60027
W9	Cable (from A15P1 to A10 Floppy Drive)	86100-60023
W10	Cable (from A5J118 to A6J1) (Tombstone to Mirage)	54801-61624
W11	Cable, IDE (from A15 Primary IDE to A4P5)	86100-60025
W12	Cable (from A15 Secondary IDE to A4P9)	86100-60026
W13	Tombstone Cable (from A6J2 to A12P3)	86100-60007
W14	Cable (from A12P1 to A13P11)	86100-60003
W15	Cable (from A12P4 to A13P4)	86100-60004
W16	Cable (from RF bulkhead to A13 Strobe left)	86100-20020
W17	Cable (from RF bulkhead to A13 Strobe right)	86100-20020
W18	Cable (from RF bulkhead to lower A12 mod strobe)	86100-20007
W19	Cable (from RF bulkhead to lower A12 mod strobe)	86100-20007
W20	Cable (from SW1 port 2 to upper A12)	86100-20029
W21	Cable (from SW1 port 3 to upper A12)	86100-20029
W22	Cable (from SW1 port 5 to front panel trigger)	86100-20008
W23	Cable (from SW1 center to A13 TRG IN) (Standard)	86100-20009
W23	Cable (from SW1 center to SW2) (Option 001)	86100-20021
W24	Cable (from SW1 to A13P24 SRC SEL)	86100-60011
W25, W26	Cable kit (from A4 parallel and serial to rear panel–both cables)	54810-66524
W27	Cable (from A4 mouse to rear panel)	86100-60019
W28	Cable (from A13P2 to rear panel +15V output)	8120-5038
W29	Cable (from A13P21 to rear panel trigger gate)	86100-20013

Table 5-1. Major Assembly and Cable Identification

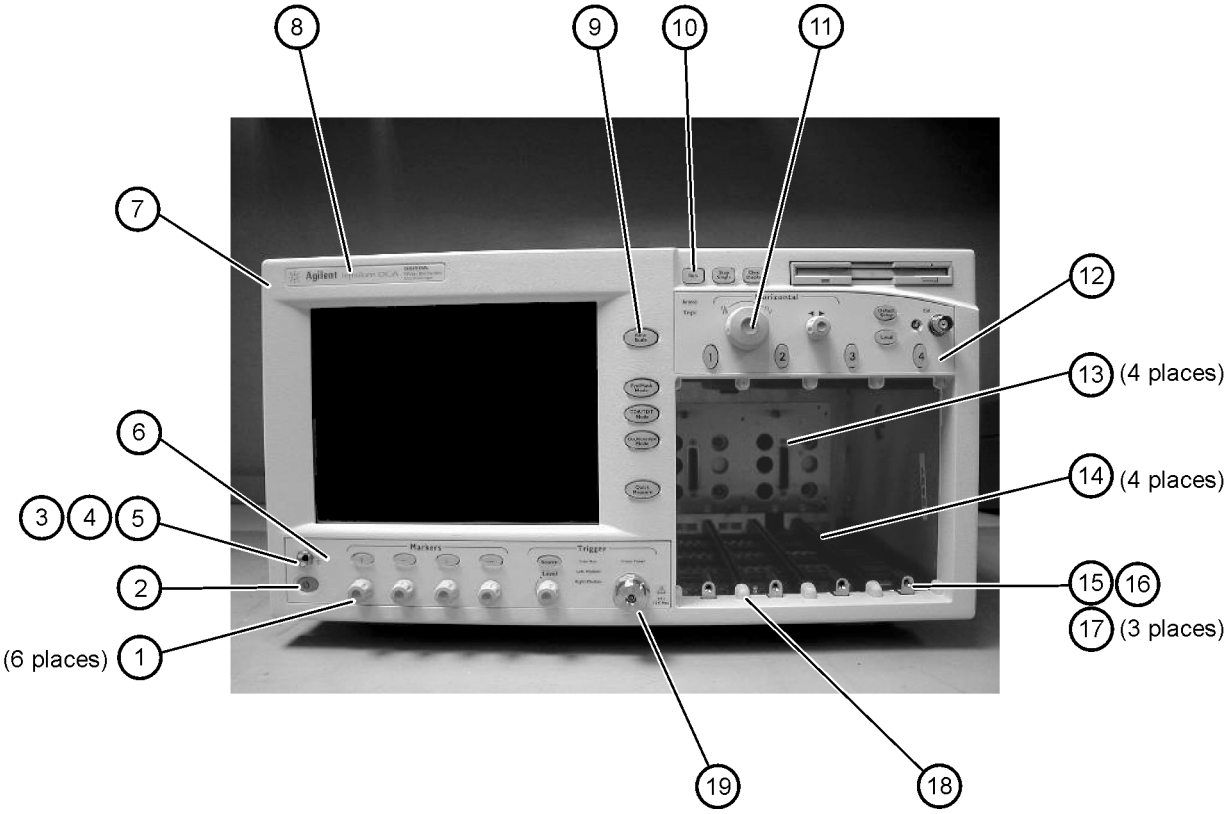
Ref Des	Description	Agilent Part Number
W30	Cable (from SW2 to A13 TRG IN) (Option 001)	86100-20012
W31	Cable (from SW2 to A14) (Option 001)	86100-20010
W32	Cable (from SW2 to A13U102) (Option 001)	86100-20011



Front View Identification

Table 5-2. Front View Identification

Item	Description	Quantity	Agilent Part Number
1	Knob, 12 mm	6	86100-47402
2	Lower cursor keypad	1	86100-40002
3	Ground lug	1	54542-26101
4	Washer	1	2190-0027
5	Nut	1	2950-0072
6	Lower front panel	1	86100-60015
7	Front frame	1	86100-20002
8	Nameplate	1	86100-80011
9	Middle cursor keypad	1	86100-40003
10	Upper cursor keypad	1	86001-40001
11	Knob, 24 mm	1	86100-47401
12	Upper front panel	1	86100-60014
13	Screw	4	0515-2035
14	Module rail	2	54710-43101
15	Copper spring	1	86100-20028
16	Module anchor	1	86100-20004
17	Screw	3	0515-0430
18	Filler Panel	2	86101-60005
19	SM 3.5 mm connector	1	5062-1247


8
9
10
11
7
12
13 (4 places)
6
14 (4 places)
3
4
5
2
15
16
17 (3 places)
(6 places)
1
19
18

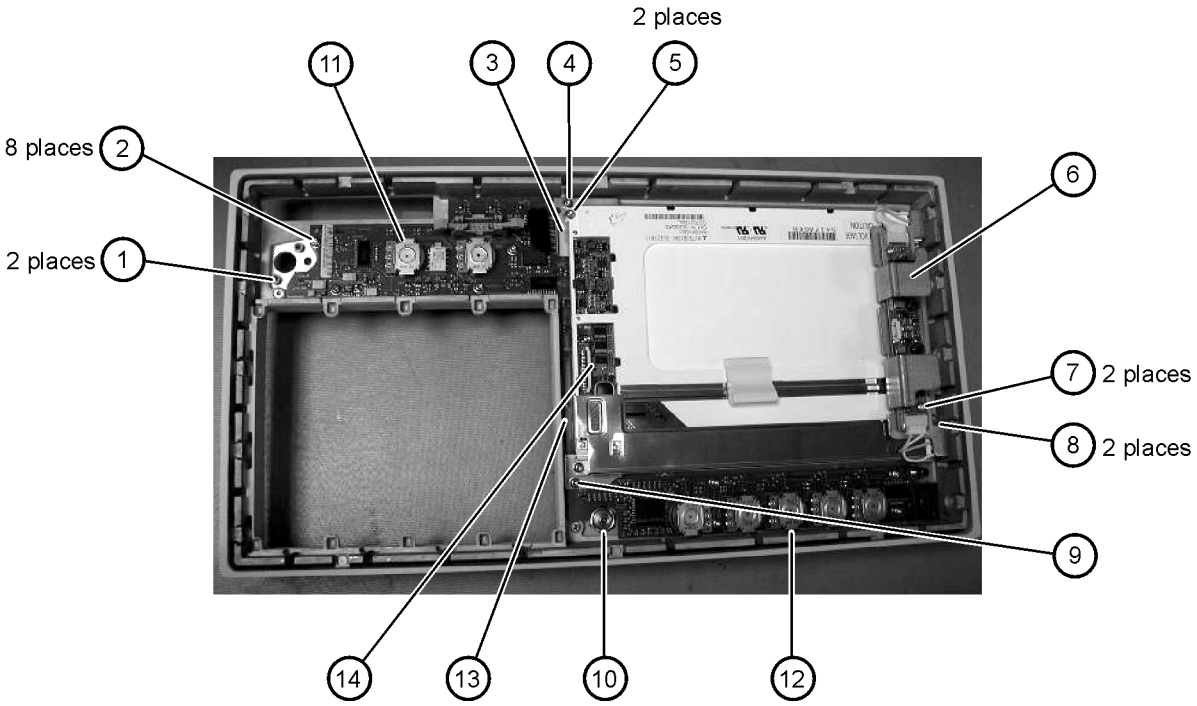

Filler
Panel

Front Inside Panel Identification

Table 5-3. Front Inside Panel Identification

Item	Description	Quantity	Agilent Part Number
1	Screw	2	0515-0372
2	Screw	8	0515-0372
3	Bracket, Touch Screen	1	86100-00007
4	Screw	1	0515-0372
5	Screw	2	0515-0430
6	Bracket, Inverter	1	86100-00016
7	Screw	2	0515-1246
8	Screw	2	0515-0664
9	Screw	1	0515-0664
10	RF Connector	1	5062-1247
11	Keypad Upper	1	86100-40001
12	Keypad Lower	1	86100-40002
13	Keypad Middle	1	86100-40003
14	Zip Cable Clip	1	1253-5093

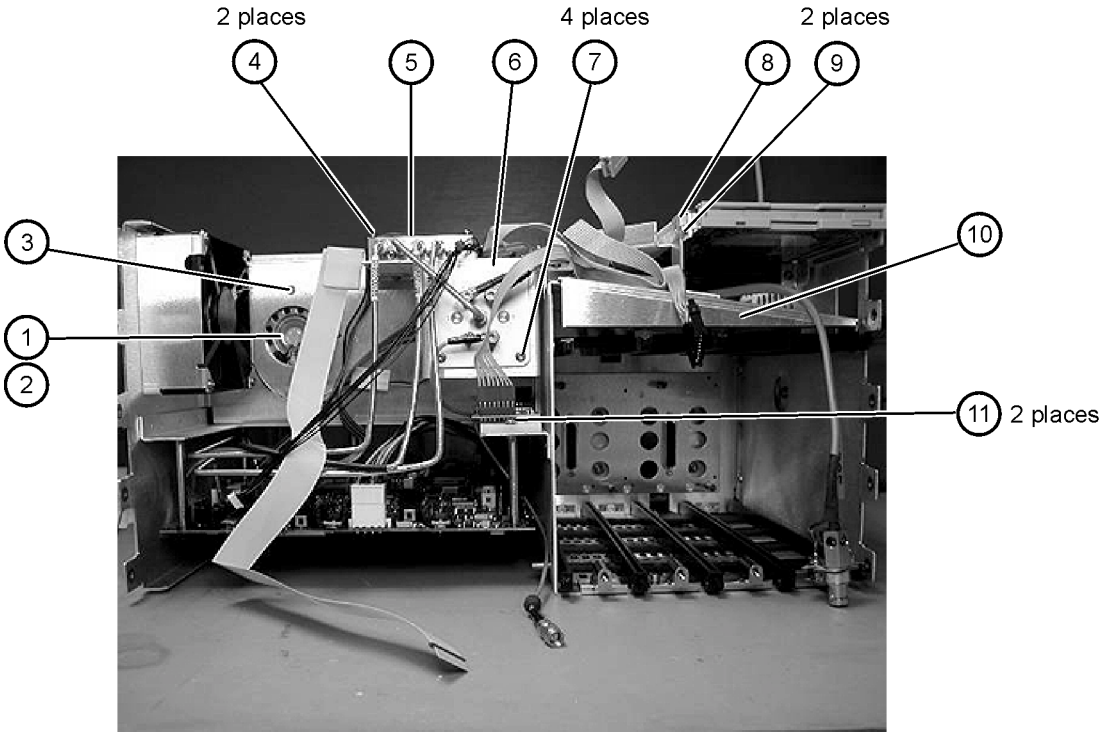
NOTE The keypads are underneath the A7A1 keyboard.


2 places
11
3
4
5
8 places
2
6
2 places
1
7
2 places
8
2 places
9
14
13
10
12

Front View, Front Panel Removed, Identification

Table 5-4. Front View, Front Panel Removed, Identification

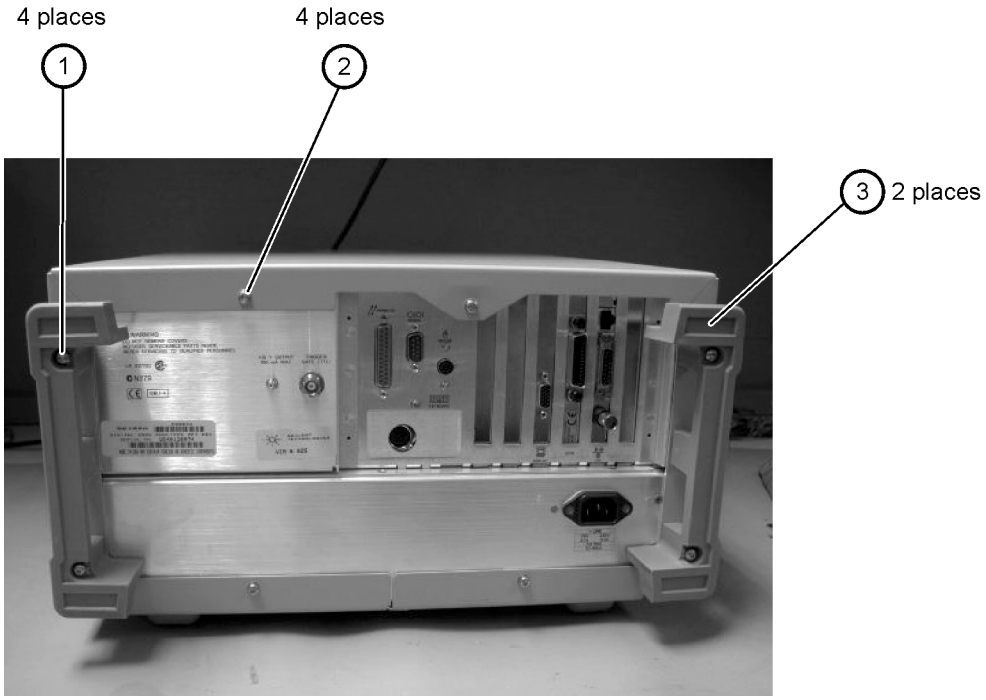
Item	Description	Quantity	Agilent Part Number
1	Speaker	1	86100-60022
2	Cover, Speaker	1	A2095-00009
3	Screw	1	0515-0372
4	Screw	2	0515-1410
5	Switch, 4PT, 3.5 mm 15V (Option 001 only)	1	E2660-68707
6	Switch, Trigger Select	1	87104-60001
7	Screw (Option 001 only)	4	0515-0372
8	Screw	1	0515-0663
9	Screw	2	0515-2691
10	Bracket, Fan	1	86100-00005
11	Screw	2	0515-0372


2 places
4 places
2 places
4
5
6
7
8
9
3
10
1
2
11
2 places

Rear View Identification

Table 5-5. Rear View Identification

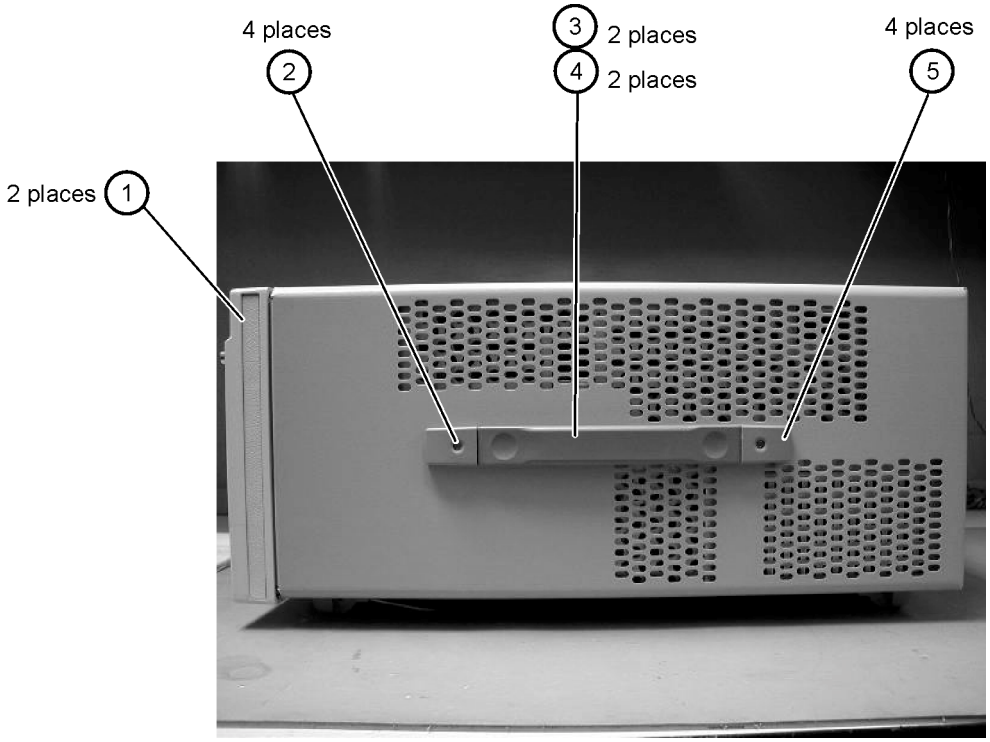
Item	Description	Quantity	Agilent Part Number
1	Screw	4	0515-2195
2	Screw	4	0515-0433
3	Foot	2	5042-1753


4 places
4 places
1
2
3
2 places

Left and Right Side Identification

Table 5-6. Left and Right Side Identification

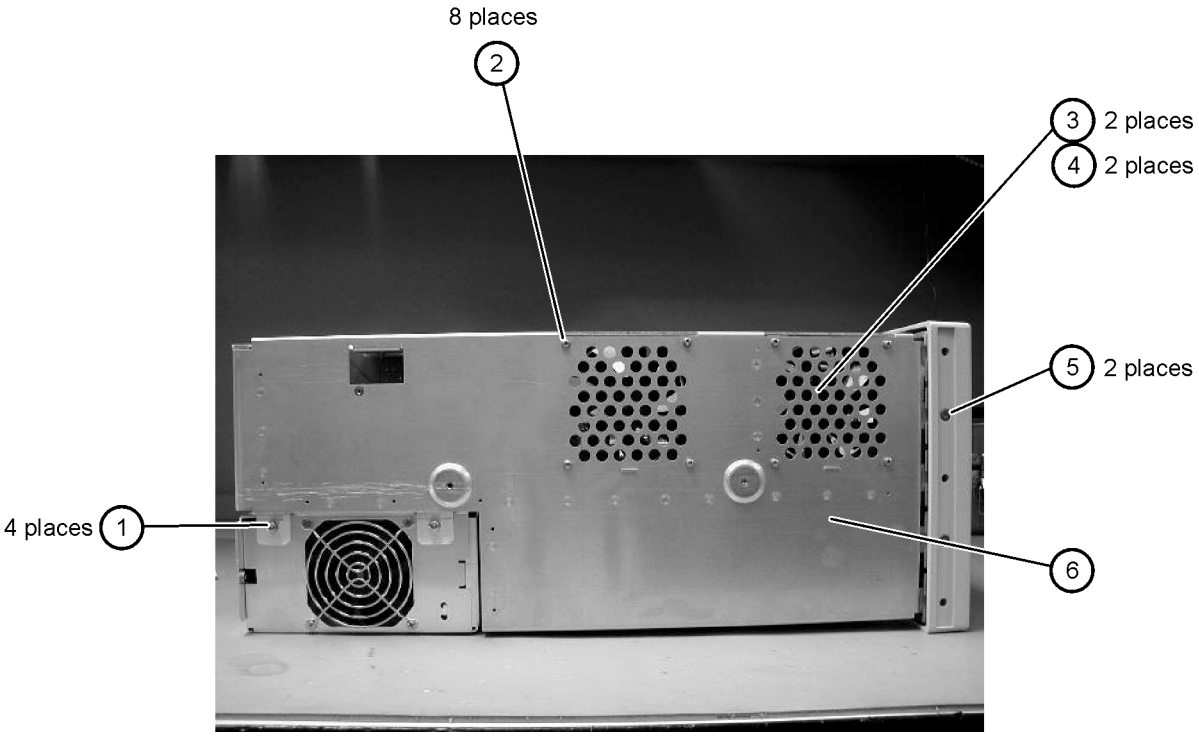
Item	Description	Quantity	Agilent Part Number
1	Trim Strip	2	5041-9173
2	Screw	4	5021-4308
3	Molded Handle	2	54810-44901
4	Retainer Strip	2	54801-24702
5	Handle End Cap	4	54810-45001


4 places
2
3
2 places
4
2 places
4 places
5
2 places
1

Left Side, Cover Removed, Identification

Table 5-7. Left Side, Cover Removed, Identification

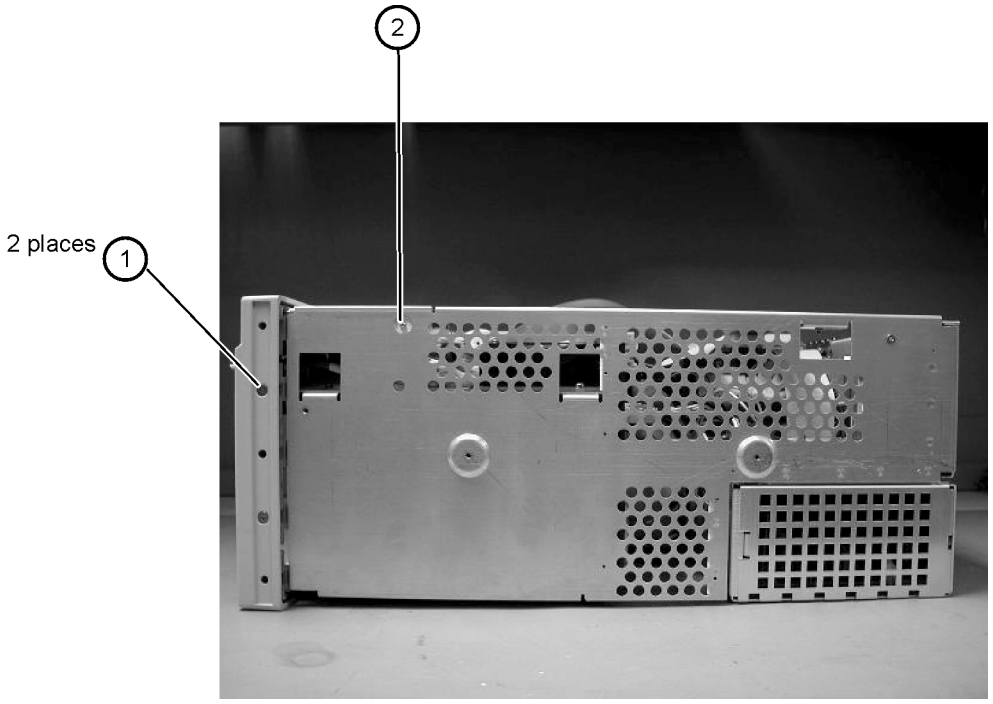
Item	Description	Quantity	Agilent Part Number
1	Screw	4	0515-0380
2	Screw	8	0515-1352
3	Fan Shroud	2	86100-00014
4	Fan, Low Speed	2	3160-0921
5	Screw	2	0515-2044
6	Chassis	1	86100-0001


8 places
2
3 2 places
4 2 places
5 2 places
4 places
1
6

Right Side, Cover Removed, Identification

Table 5-8. Right Side, Cover Removed, Identification

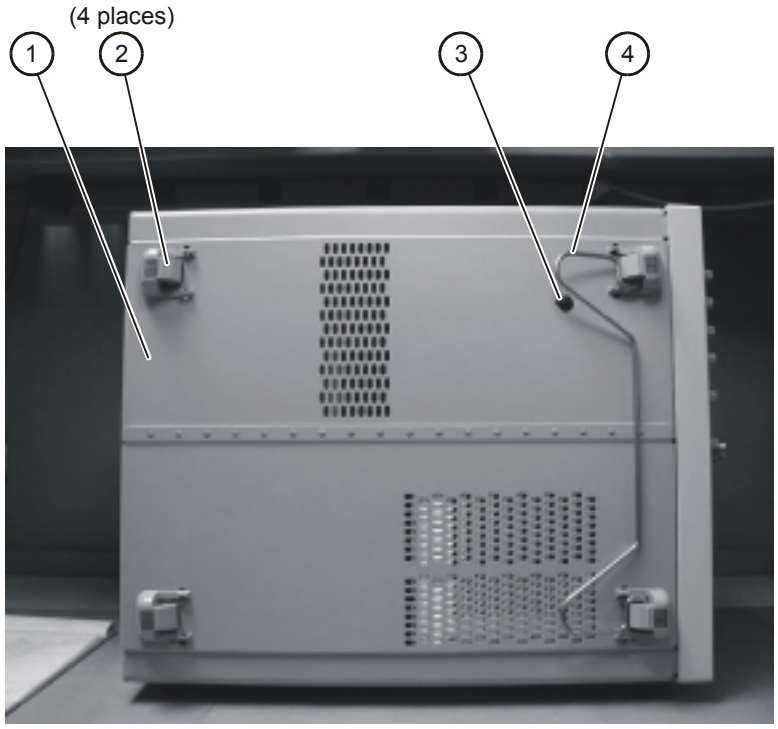
Item	Description	Quantity	Agilent Part Number
1	Screw	2	0515-2044
2	Screw	1	0515-2691


2
2 places
1

Bottom View Identification

Table 5-9. Bottom View Identification

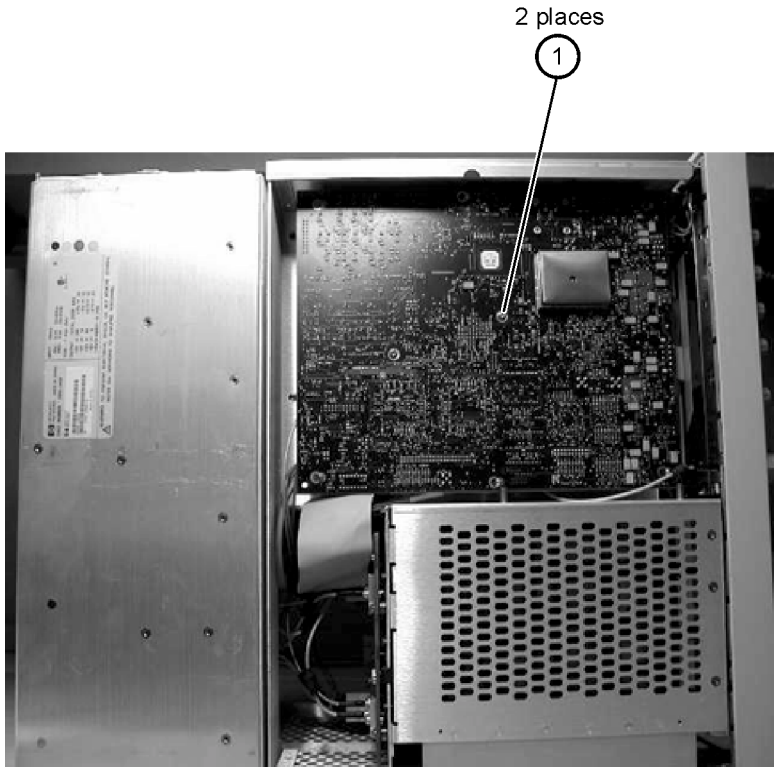
Item	Description	Quantity	Agilent Part Number
1	Cover	1	86100-00002
2	Foot	4	54810-61001
3	Hole Plug	1	86100-60024
4	Tilt Stand	1	86100-20030


(4 places)
1
2
3
4

Bottom View, Cover Removed, Identification

Table 5-10. Bottom View, Cover Removed, Identification

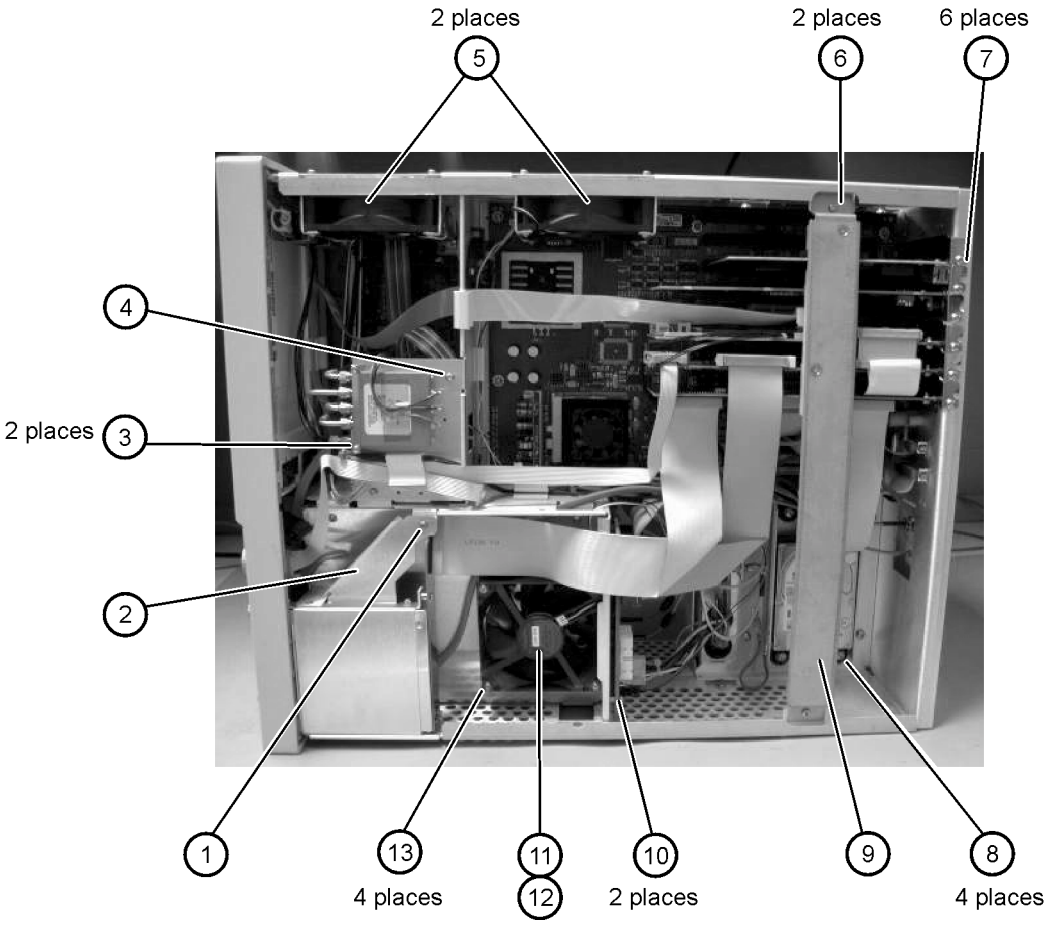
Item	Description	Quantity	Agilent Part Number
1	Screw	2	0515-0372


2 places
1

Top View, Cover Removed, Identification

Table 5-11. Top View, Cover Removed, Identification

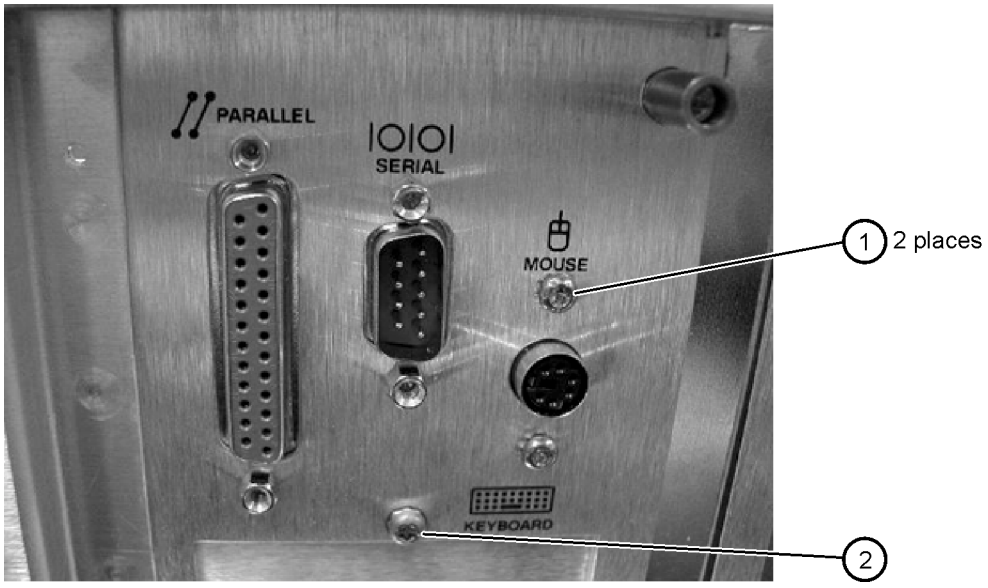
Item	Description	Quantity	Agilent Part Number
1	Screw	1	0515-0430
2	Floppy Disk Bracket	1	86100-00019
3	Screw	2	0515-1410
4	Screw	1	0515-0372
5	Fan, Low Speed	2	3160-0921
6	Screw	2	0515-0372
7	Screw	6	0624-0643
8	Screw	4	0515-0383
9	Card Strap	1	86100-00017
10	Screw	2	0515-0372
11	Fan, High Speed	1	3160-0940
12	Fan Shroud	1	86100-00014
13	Screw	4	0515-1349


2 places
5
2 places
6
6 places
7
4
2 places
3
2
1
13
4 places
11
12
10
2 places
9
8
4 places

Rear Panel Identification

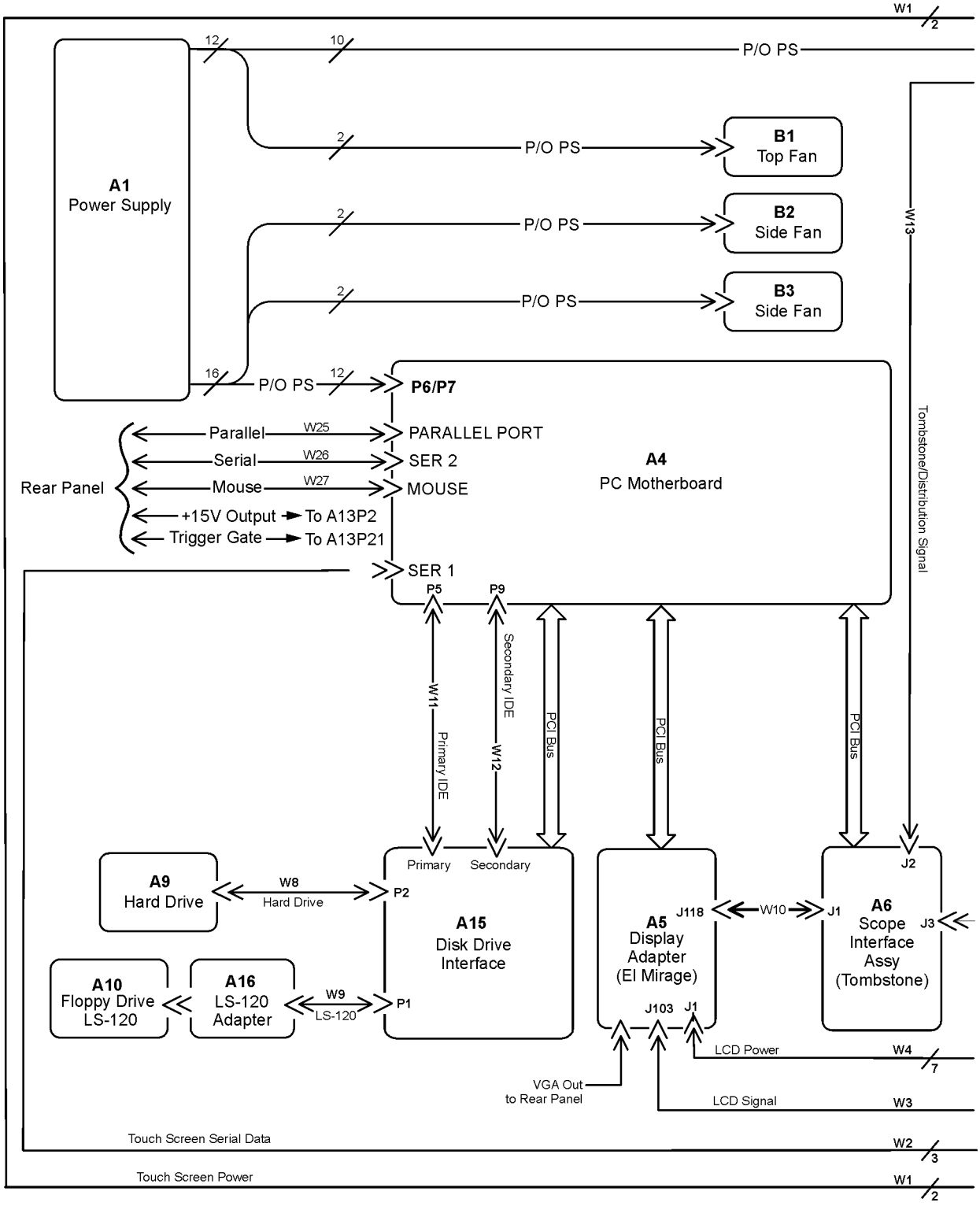
Table 5-12. Rear Panel Identification

Item	Description	Quantity	Agilent Part Number
1	Screw	2	2200-1271
2	Screw	1	0515-0430

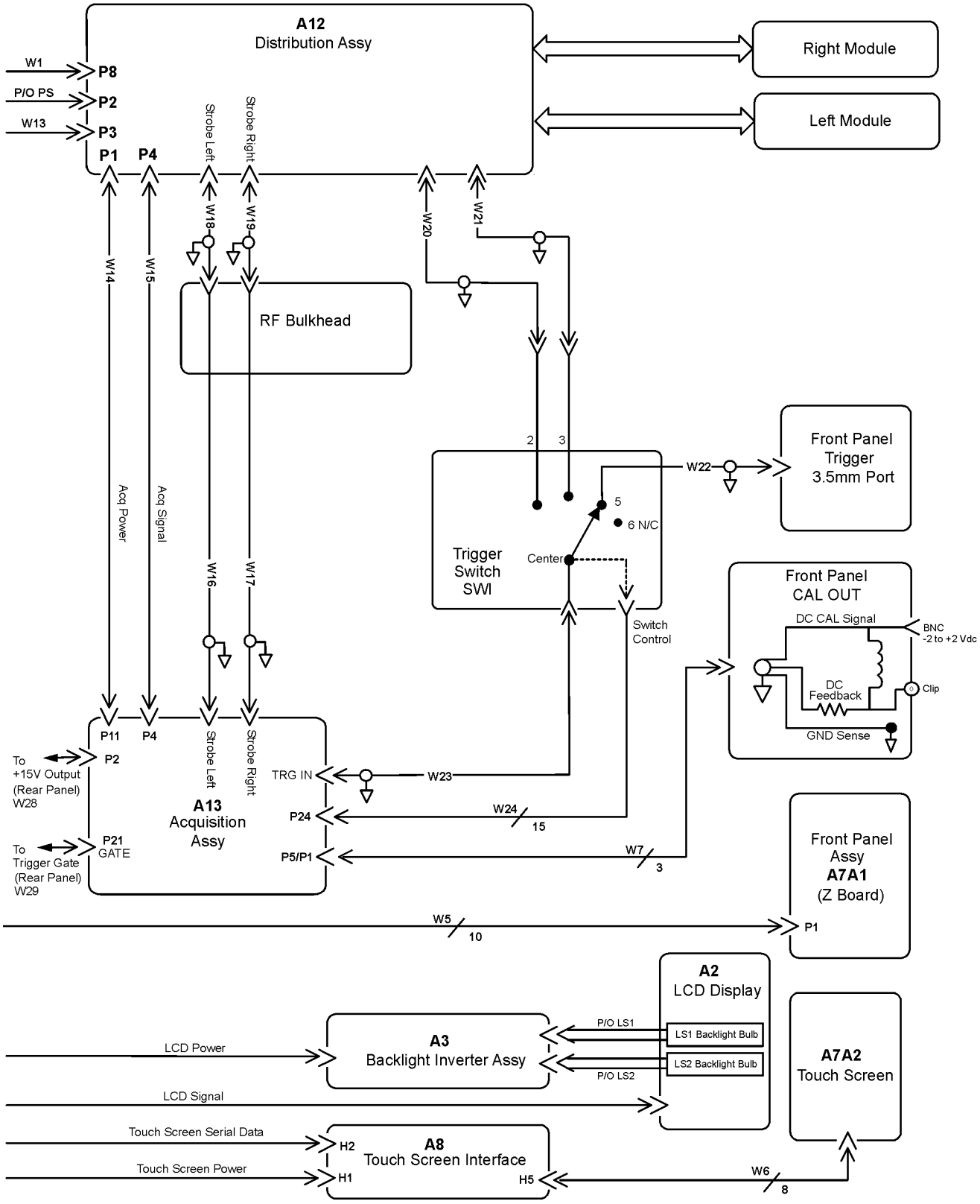


Block Diagrams

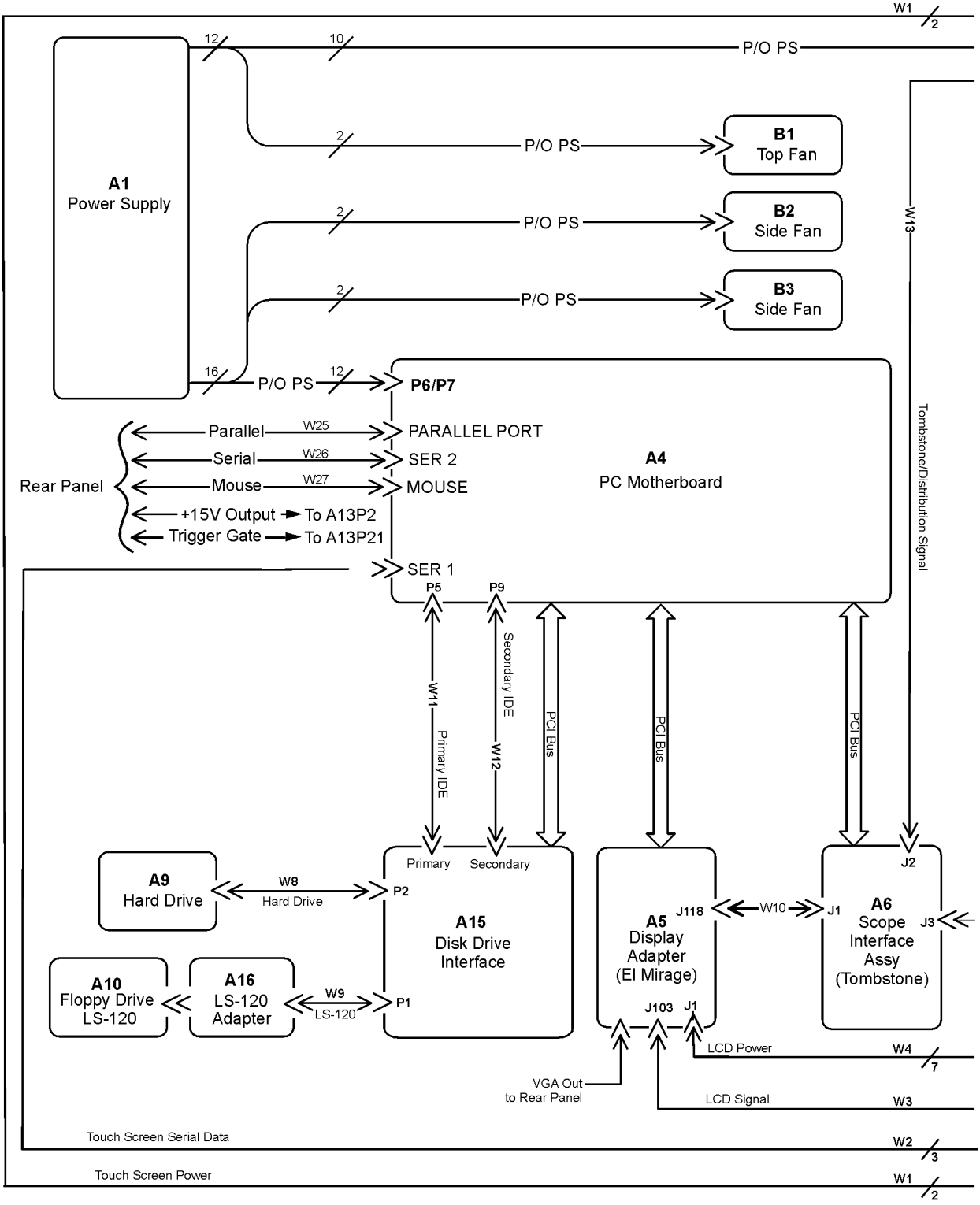
The following pages contain block diagrams of both the Standard and the Option 001 86100A Digital Communications Analyzer.



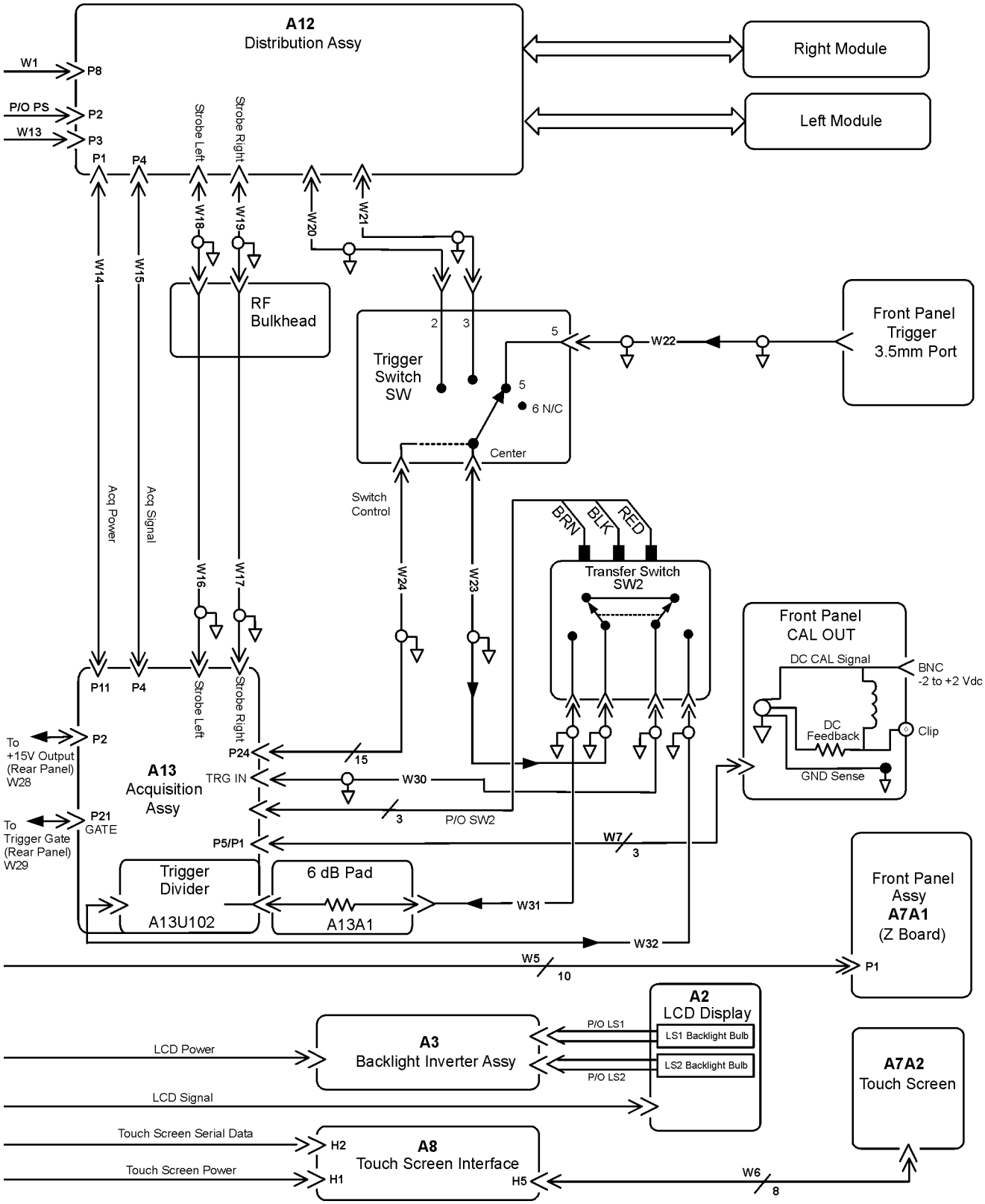
86100A Block Diagram (1 of 2)



86100A Block Diagram (2 of 2)



86100A Option 001 Block Diagram (1 of 2)



86100A Option 001 Block Diagram (2 of 2)

6

Replaceable Parts—86100B

Replaceable Parts—86100B

In this section, you'll find tables that identify each mechanical and electrical assembly in the Agilent 86100B mainframe. An Agilent part number is provided for each available part.

NOTE

The 86100A is shown in some of the following identification diagrams. Although some of the components are not the same as the 86100B, part and assembly locations are virtually identical.

Part Ordering Information

Only major assemblies can be replaced. To order an assembly, quote the Agilent part number, and indicate the quantity required.

Assemblies can be ordered from the nearest Agilent office. Customers within the USA can also use either the direct mail-order system or the direct phone-order system described below. The direct phone-order system has a toll-free phone number available.

Direct Mail-Order System

Within the USA, Agilent can supply parts through a direct mail-order system. Advantages of using the system are as follows:

- Direct ordering and shipment from Agilent
- No maximum or minimum on any mail order. (There is a minimum order amount for parts ordered through a local Agilent office when the orders require billing and invoicing.)
- Prepaid transportation. (There is a small handling charge for each order.)
- No invoices

To provide these advantages, a check or money order must accompany each order. Mail-order forms and specific ordering information are available through your local Agilent office.

Direct Phone-Order System

The toll-free phone number, (800) 227-8164, is available Monday through Friday, 6 am to 5 pm (Pacific time). Regular orders have a 4-day delivery time.

Major Assembly and Cable Identification

Table 6-1. Major Assembly and Cable Identification

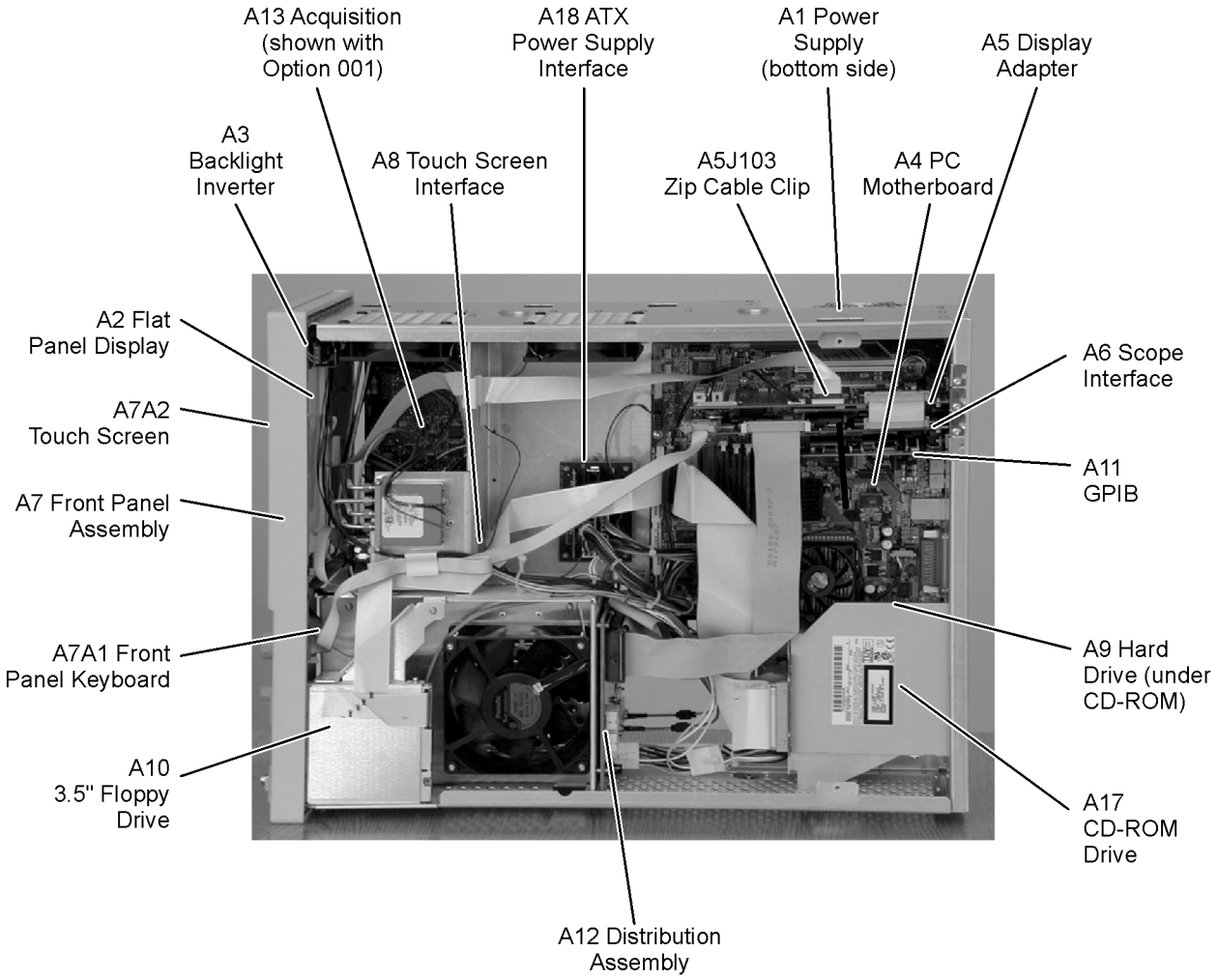
Ref Des	Description	Agilent Part Number
A1	Power Supply	0950-3499
A2	Flat Panel Display	2090-0396
A2DS1, DS2	Backlight Bulb	2090-0365
A3	Backlight Inverter	0950-3235
A4	PC Motherboard	E2660-66502
A4A1	Fan/Heat Sink	3160-4144
A5	Display Adapter (El Mirage)	54810-66525
A5J103	Zip Cable Clip (part of J103 and W3)	1253-5093
A6	Scope Interface (Tombstone)	54810-66529
A7	Front Panel Assembly	86100-60043
A7A1	Front Panel Keyboard (Z Board)	86100-66504
A7A2	Touch Screen	1000-1013
A8	Touch Screen Interface	E2660-66501
A9	Hard Drive	86100-10014
A10	3.5" Floppy Drive	0950-2782
A11	GP-IB	82350A option 002
A12	Distribution	86100-66518
A13	Acquisition (Standard)	E2660-60702
A13	Acquisition Rebuilt (Standard)	E2660-69702
A13	Acquisition (Option 001)	E2660-68709
A13	Acquisition Rebuilt (Option 001)	E2660-69709
A13A1	6dB Attenuation (Option 001)	0955-0243
A15	CD-ROM adapter	86100-66517
A17	CD-ROM drive	0950-4192
A18	ATX Power Supply Interface	86100-66516
W1	Cable (from A8H1 to A12P8) (Touch Screen Power)	part of W33

Table 6-1. Major Assembly and Cable Identification

Ref Des	Description	Agilent Part Number
W2	Cable (from A8H2 to A4SER1) (Touch Screen Serial)	86100-60033
W3	Cable (from A5J103 to A2) (LCD Signal)	86100-60017
W4	Cable (from A5J1 to A3) (LCD Power)	86100-60020
W5	Cable (from A6J3 to A7A1P1) (Tombstone to Front Panel)	86100-60008
W6	Cable (from A8H5 to A7A2)	86100-60021
W7	Cable (from A13P5/P1 to front panel CAL connector)	86100-60002
W8	Cable, IDE (from A15P2 to A9 Hard Drive)	86100-60035
W9	Cable, Floppy (from A15P1 to A10 Floppy Drive)	86100-60034
W10	Cable (from A5J118 to A6J1) (Tombstone to Mirage)	54801-61624
W11	Cable, IDE (from A15 Primary IDE to A4P5)	86100-60037
W13	Cable, Tombstone (from A6J2 to A12P3)	86100-60032
W14	Cable (from A12P1 to A13P11)	86100-60003
W15	Cable (from A12P4 to A13P4)	86100-60004
W16	Cable (from RF bulkhead to A13 Strobe left)	86100-20029
W17	Cable (from RF bulkhead to A13 Strobe right)	86100-20029
W20	Cable (from SW1 port 2 to upper A12)	86100-20029
W21	Cable (from SW1 port 3 to upper A12)	86100-20029
W22	Cable (from SW1 port 5 to front panel trigger)	86100-20008
W23	Cable (from SW1 center to A13 TRG IN) (Standard)	86100-20009
W23	Cable (from SW1 center to SW2) (Option 001)	86100-20021
W24	Cable (from SW1 to A13P24 SRC SEL)	86100-60011
W28	Cable (from A13P2 to rear panel +15V output)	8120-5038
W29	Cable (from A13P21 to rear panel trigger gate)	86100-20013
W30	Cable (from SW2 to A13 TRG IN) (Option 001)	86100-20012
W31	Cable (from SW2 to A14) (Option 001)	86100-20010
W32	Cable (from SW2 to A13U102) (Option 001)	86100-20011

Table 6-1. Major Assembly and Cable Identification

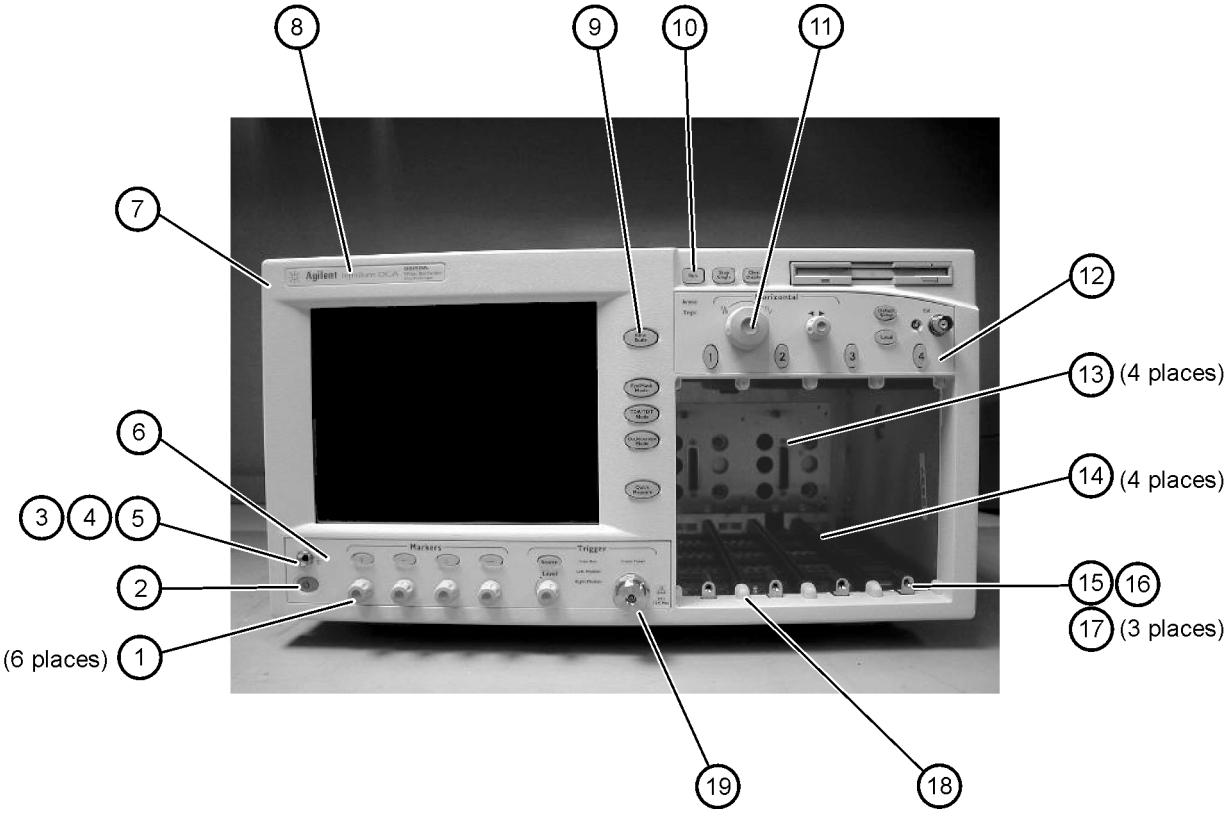
Ref Des	Description	Agilent Part Number
W33	ATX Power	86100-20036
W34	ATX Adapter	86100-60041
W35	Power Control	86100-60042
W36	5V Power	86100-20037



Front View Identification

Table 6-2. Front View Identification

Item	Description	Quantity	Agilent Part Number
1	Knob, 12 mm	6	86100-47402
2	Lower cursor keypad	1	86100-40002
3	Ground lug	1	54542-26101
4	Washer	1	2190-0027
5	Nut	1	2950-0072
6	Lower front panel	1	86100-60015
7	Front frame	1	86100-20002
8	Nameplate	1	86100-80017
9	Middle cursor keypad	1	86100-40003
10	Upper cursor keypad	1	86001-40001
11	Knob, 24 mm	1	86100-47401
12	Upper front panel	1	86100-60014
13	Screw	4	0515-2035
14	Module rail	2	54710-43101
15	Copper spring	1	86100-20028
16	Module anchor	1	86100-20004
17	Screw	3	0515-0430
18	Filler Panel	2	86101-60005
19	SM 3.5 mm connector	1	5062-1247


8
9
10
11
7
12
13 (4 places)
6
14 (4 places)
3
4
5
2
15
16
17 (3 places)
(6 places)
1
19
18

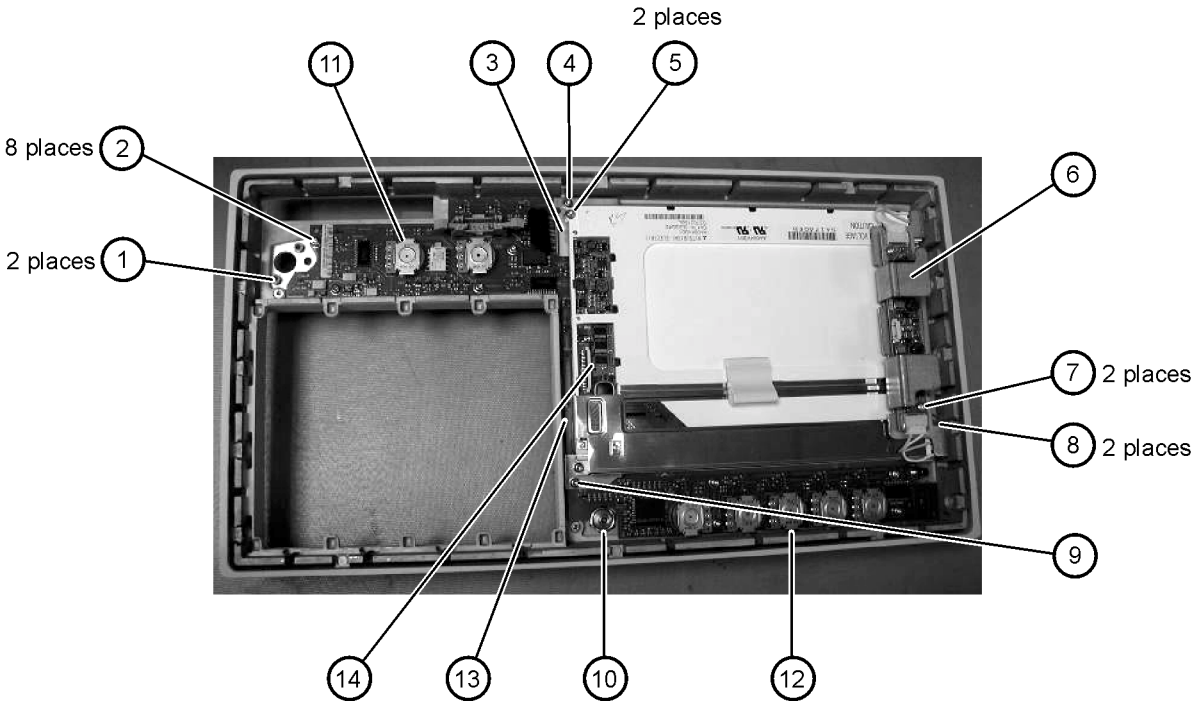

Filler
Panel

Front Inside Panel Identification

Table 6-3. Front Inside Panel Identification

Item	Description	Quantity	Agilent Part Number
1	Screw	2	0515-0372
2	Screw	8	0515-0372
3	Bracket, Touch Screen	1	86100-00007
4	Screw	1	0515-0372
5	Screw	2	0515-0430
6	Bracket, Inverter	1	86100-00016
7	Screw	2	0515-1246
8	Screw	2	0515-0664
9	Screw	1	0515-0664
10	RF Connector	1	5062-1247
11	Keypad Upper	1	86100-40001
12	Keypad Lower	1	86100-40002
13	Keypad Middle	1	86100-40003
14	Zip Cable Clip	1	1253-5093

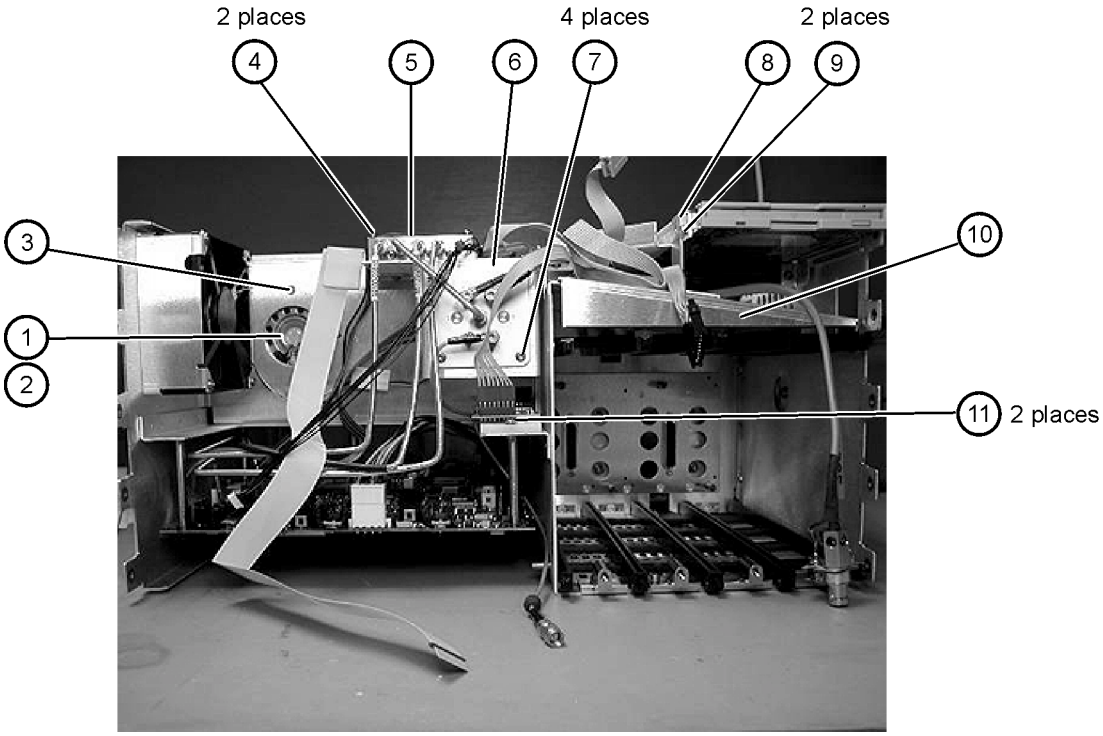
NOTE The keypads are underneath the A7A1 keyboard.


2 places
11
3
4
5
8 places
2
6
2 places
1
7
2 places
8
2 places
9
14
13
10
12

Front View, Front Panel Removed, Identification

Table 6-4. Front View, Front Panel Removed, Identification

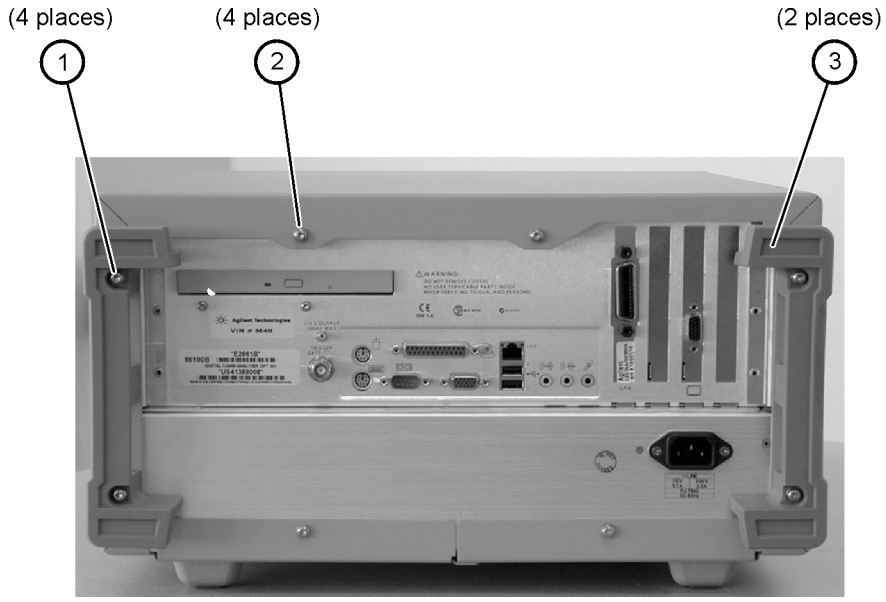
Item	Description	Quantity	Agilent Part Number
1	Speaker	1	86100-60022
2	Cover, Speaker	1	A2095-00009
3	Screw	1	0515-0372
4	Screw	2	0515-1410
5	Switch, 4PT, 3.5 mm 15V (Option 001 only)	1	E2660-68707
6	Switch, Trigger Select	1	87104-60001
7	Screw (Option 001 only)	4	0515-0372
8	Screw	1	0515-0663
9	Screw	2	0515-2691
10	Bracket, Fan	1	86100-00005
11	Screw	2	0515-0372


2 places
4 places
2 places
4
5
6
7
8
9
3
1
2
10
11
2 places

Rear View Identification

Table 6-5. Rear View Identification

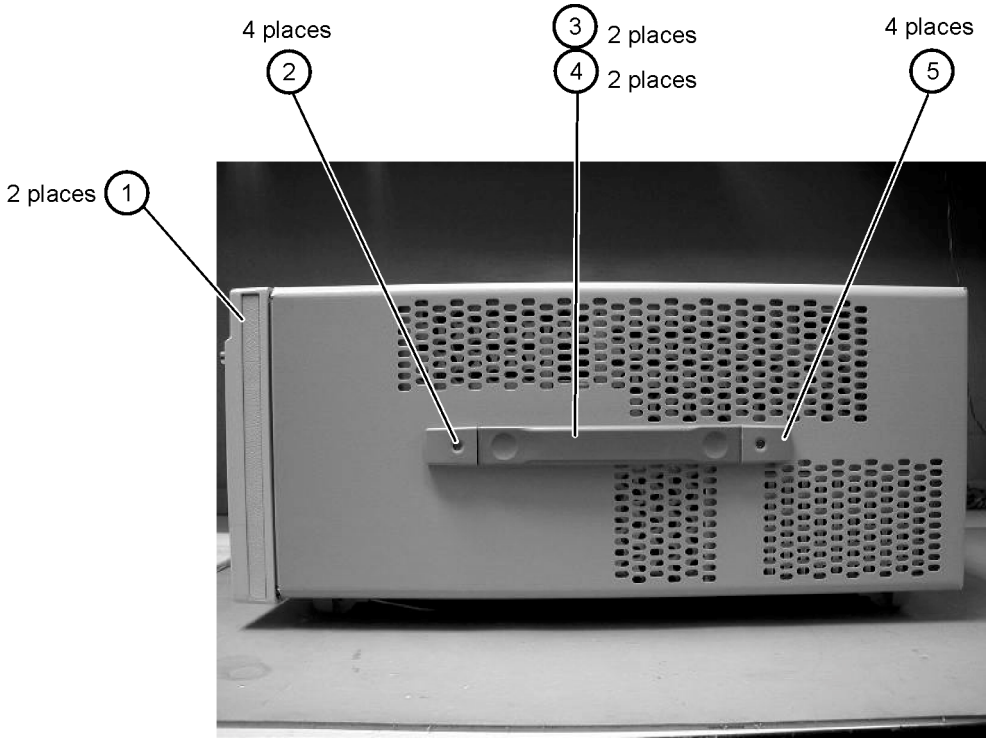
Item	Description	Quantity	Agilent Part Number
1	Screw	4	0515-2195
2	Screw	4	0515-0433
3	Foot	2	5042-1753


(4 places)
(4 places)
(2 places)
1
2
3

Left and Right Side Identification

Table 6-6. Left and Right Side Identification

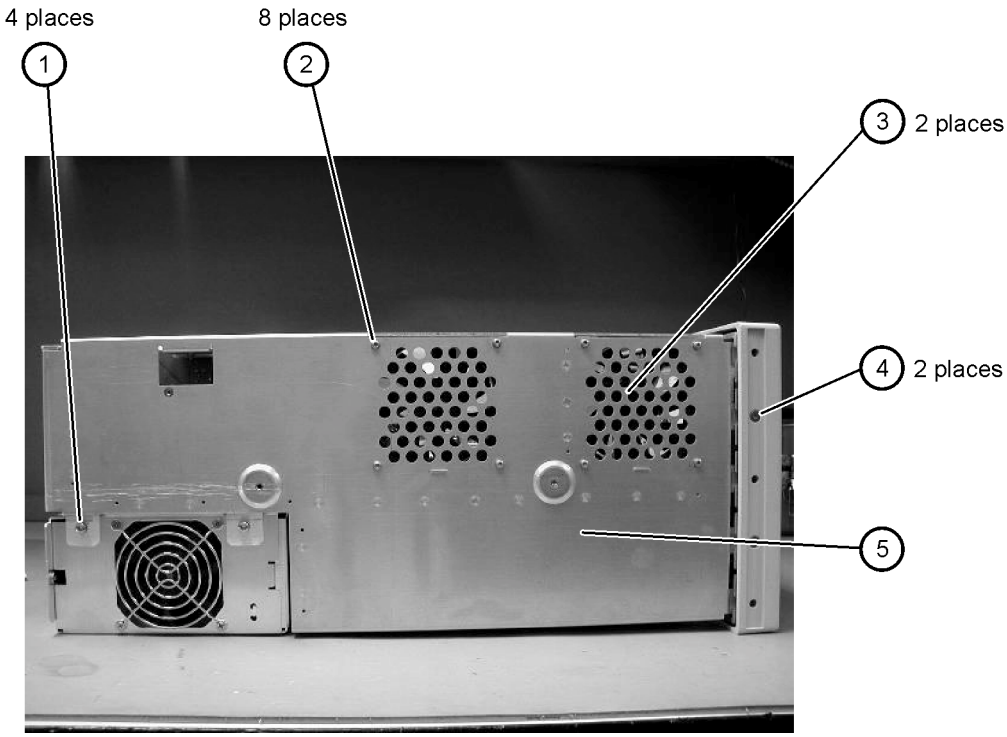
Item	Description	Quantity	Agilent Part Number
1	Trim Strip	2	5041-9173
2	Screw	4	5021-4308
3	Molded Handle	2	54810-44901
4	Retainer Strip	2	54801-24702
5	Handle End Cap	4	54810-45001


4 places
2
3
2 places
4
2 places
4 places
5
2 places
1

Left Side, Cover Removed, Identification

Table 6-7. Left Side, Cover Removed, Identification

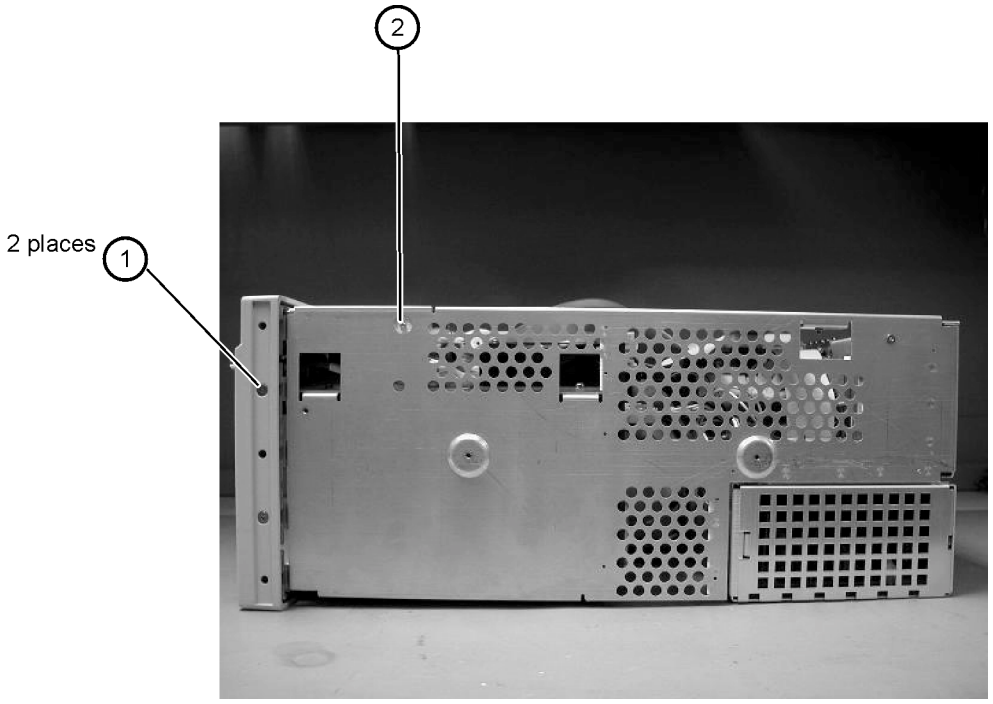
Item	Description	Quantity	Agilent Part Number
1	Screw	4	0515-0380
2	Screw	8	0515-1352
3	Fan, 90 mm	2	3160-4132
4	Screw	2	0515-2044
5	Chassis	1	86100-00031


4 places
8 places
1
2
3
2 places
4
2 places
5

Right Side, Cover Removed, Identification

Table 6-8. Right Side, Cover Removed, Identification

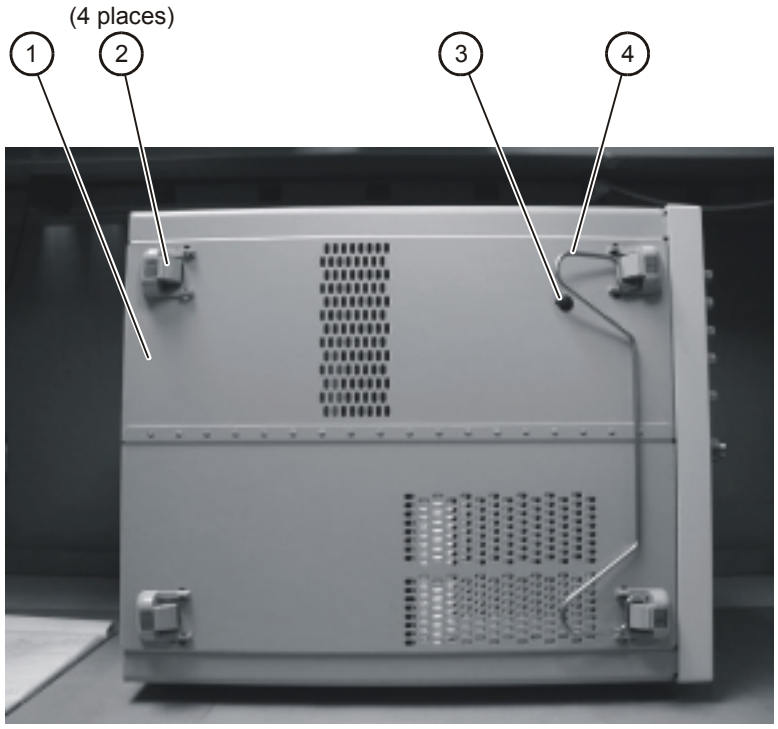
Item	Description	Quantity	Agilent Part Number
1	Screw	2	0515-2044
2	Screw	1	0515-2691


2
2 places
1

Bottom View Identification

Table 6-9. Bottom View Identification

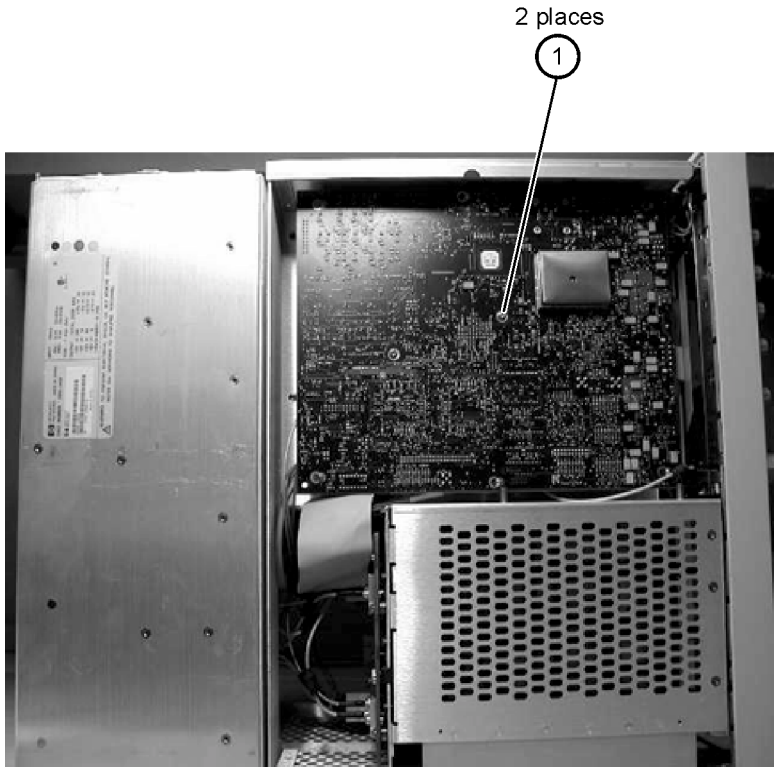
Item	Description	Quantity	Agilent Part Number
1	Cover	1	86100-00032
2	Foot	4	54810-61001
3	Hole Plug	1	86100-60024
4	Tilt Stand	1	86100-20030


(4 places)
1
2
3
4

Bottom View, Cover Removed, Identification

Table 6-10. Bottom View, Cover Removed, Identification

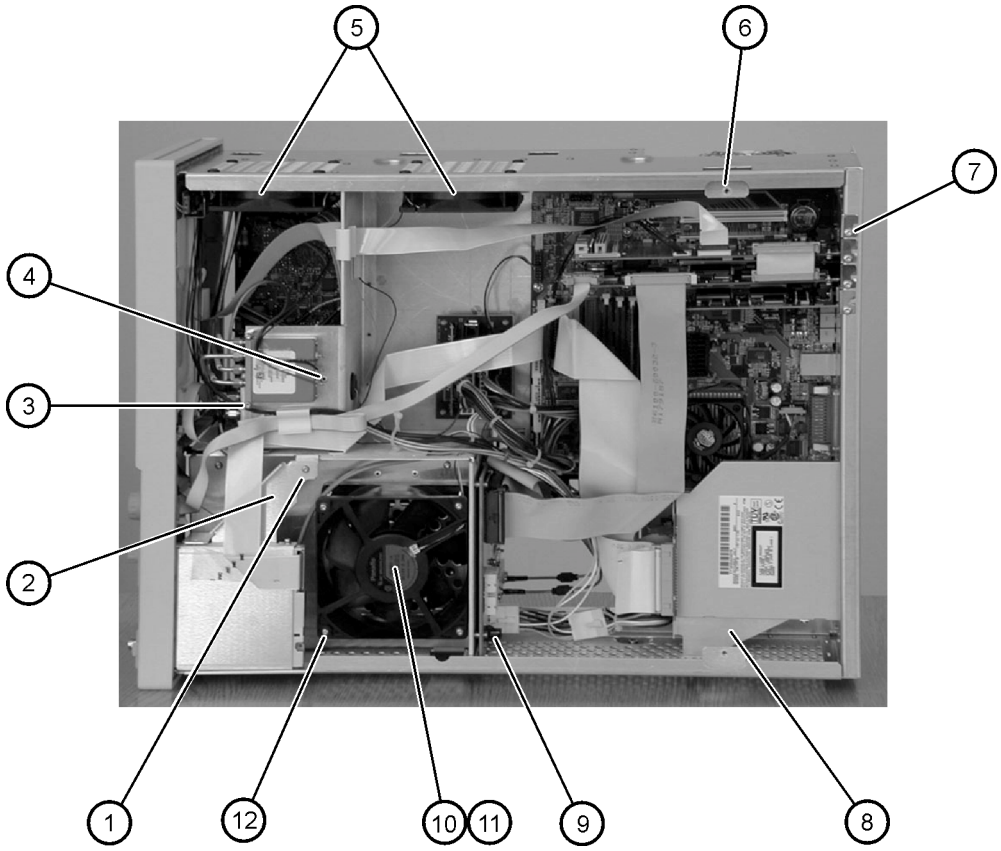
Item	Description	Quantity	Agilent Part Number
1	Screw	2	0515-0372


2 places
1

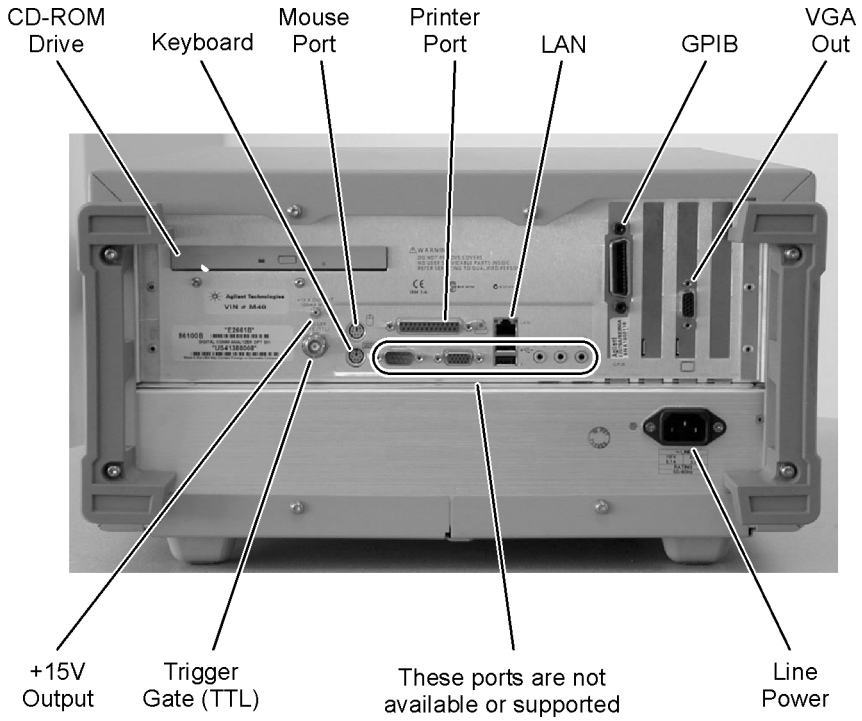
Top View, Cover Removed, Identification

Table 6-11. Top View, Cover Removed, Identification

Item	Description	Quantity	Agilent Part Number
1	Screw	1	0515-0430
2	Floppy Disk Bracket	1	86100-00028
3	Screw	2	0515-1410
4	Screw	1	0515-0372
5	Fan, 90 mm	2	3160-4132
6	Screw	2	0515-0372
7	Screw	4	0624-0643
8	CD-Rom Bracket	1	86100-00027
9	Screw	2	0515-0372
10	Fan, 120 mm	1	3160-0917
11	Fan Bracket	1	86100-00026
12	Screw	4	0515-1349

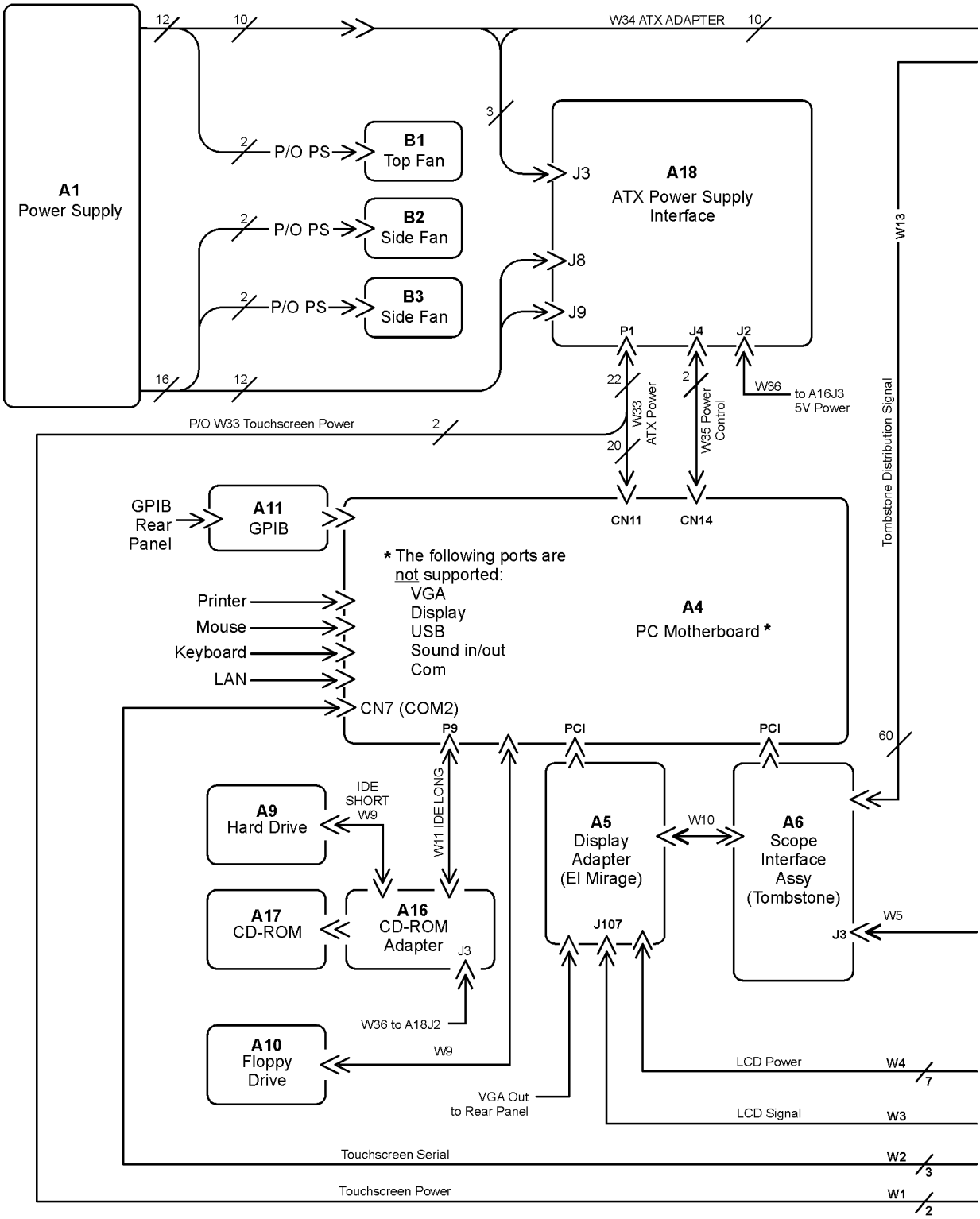

5
6
7
4
3
2
1
12
10
11
9
8

Rear Panel Identification

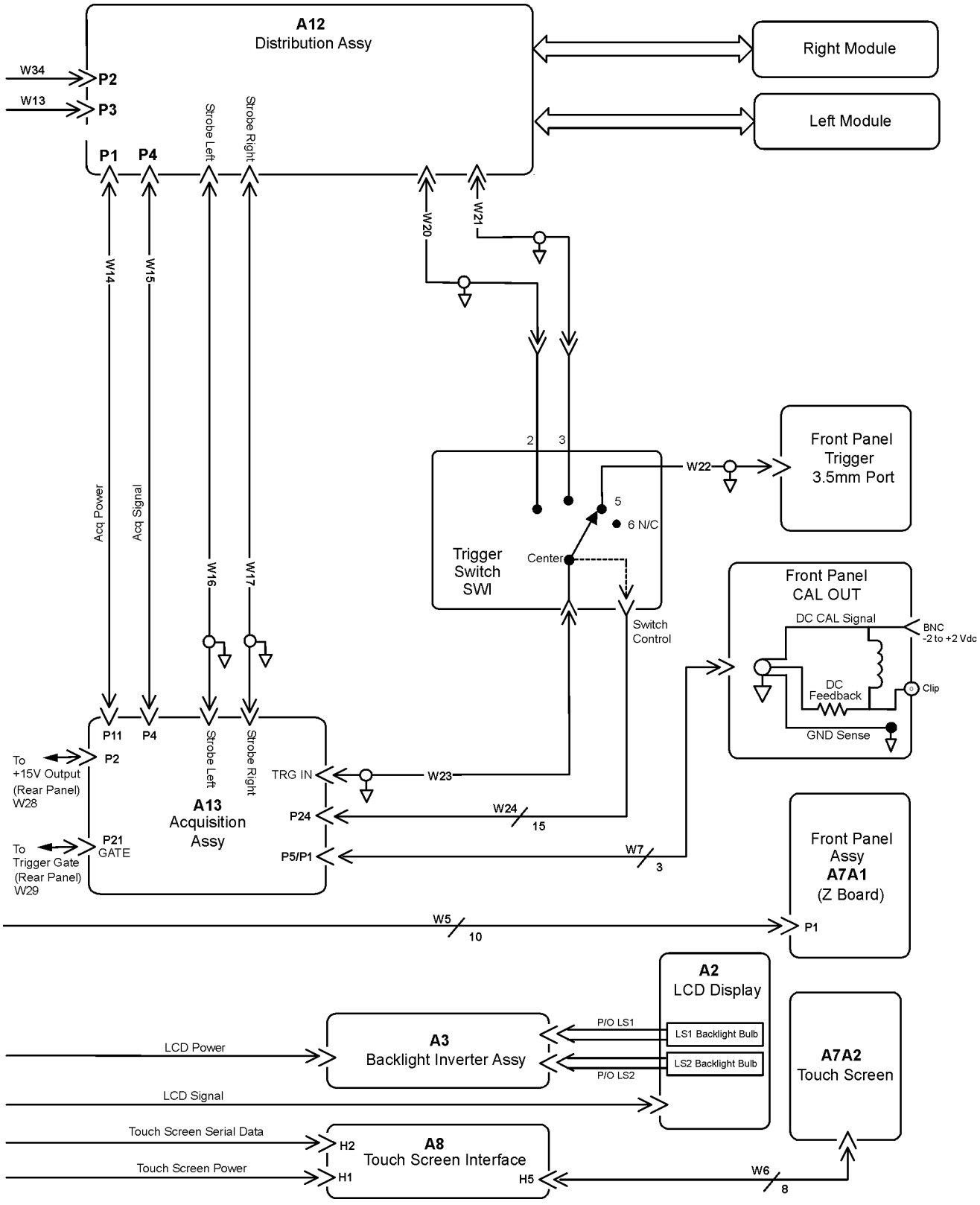


Block Diagrams

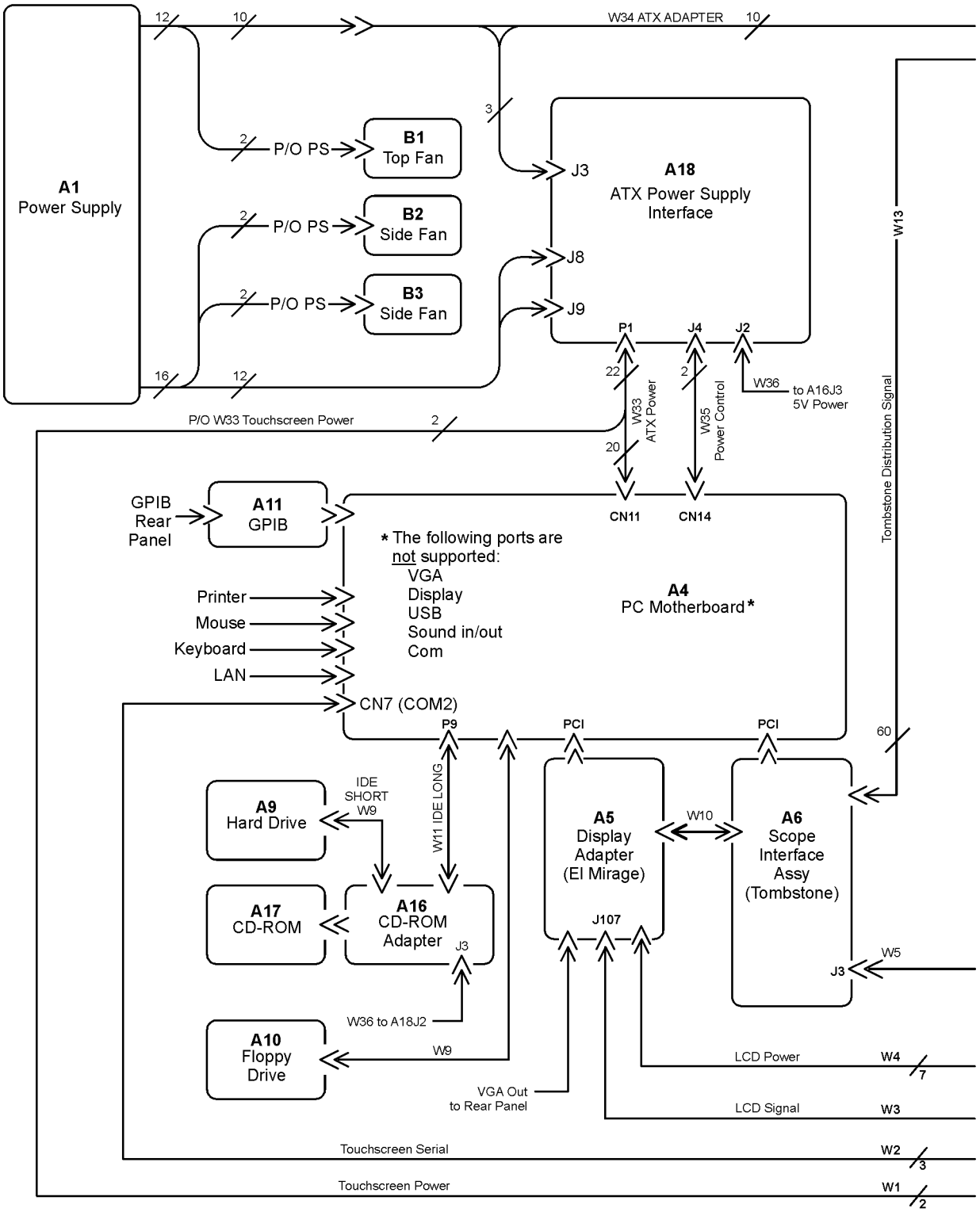
The following pages contain block diagrams of both the Standard and the Option 001 86100B Digital Communications Analyzer.



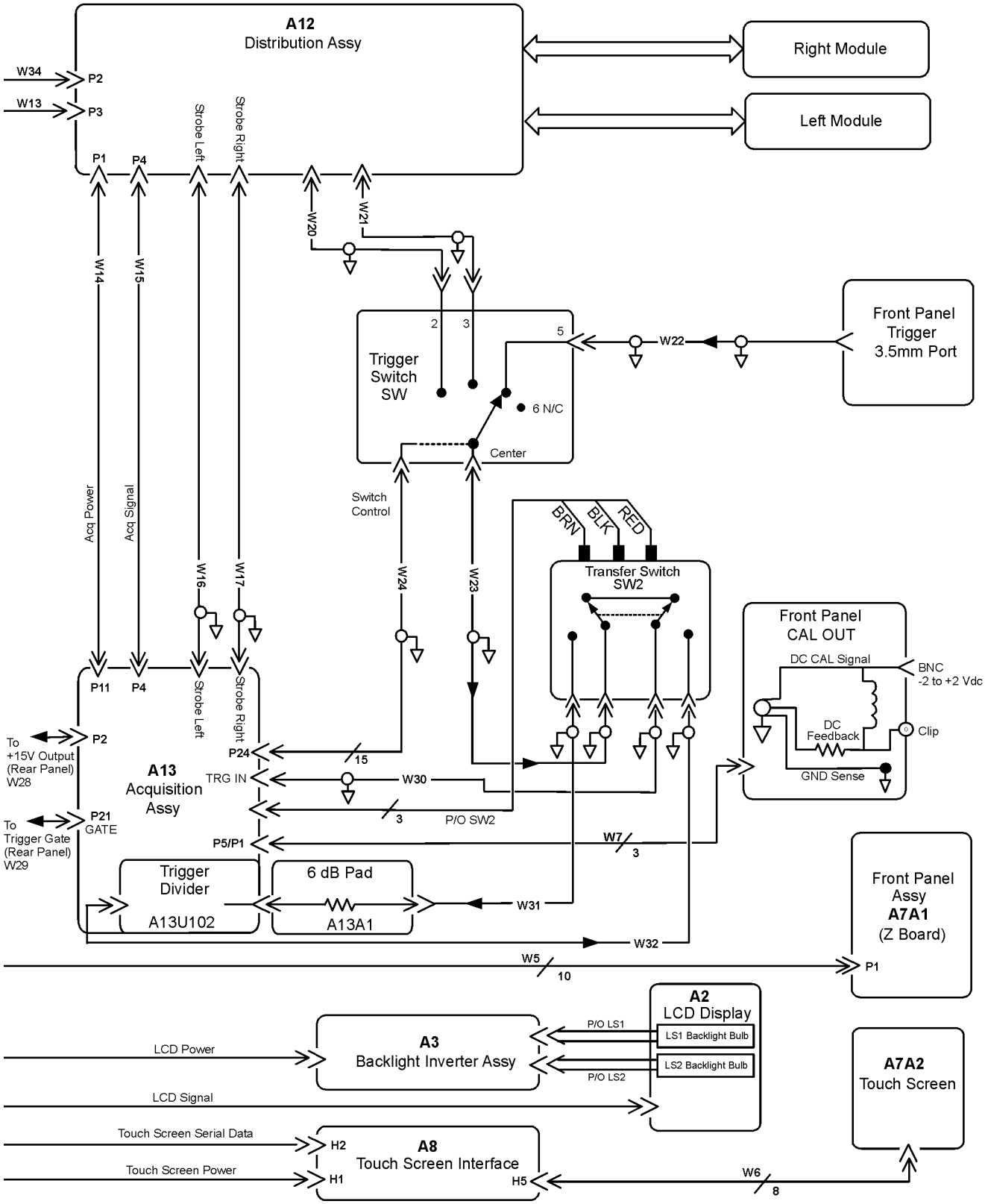
86100B Block Diagram (1 of 2)



86100B Block Diagram (2 of 2)



86100B Option 001 Block Diagram (1 of 2)



86100B Option 001 Block Diagram (2 of 2)

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