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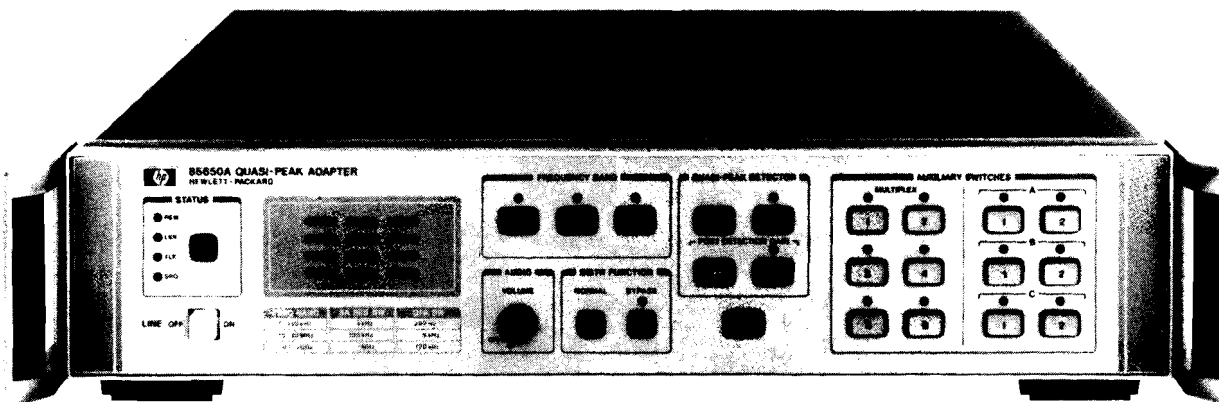
I N T E R - O F F I C E S E R V I C E M E M O

August 1, 1981

TO: ALL IPG SALES AND SERVICE OFFICES

FROM: Signal Analysis Division Product Support

SUBJECT: 85650A Product Support Plan

**85650A BASIC DESCRIPTION**

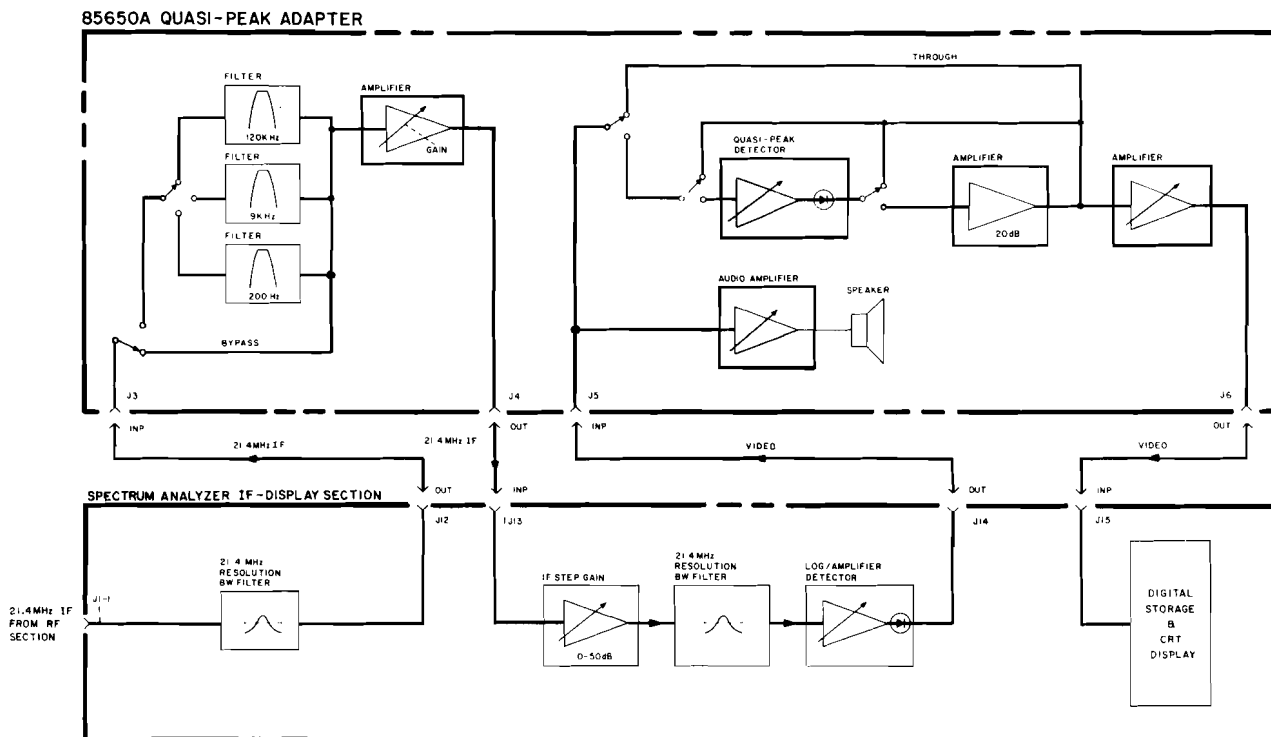
The HP 85650A Quasi-Peak Adapter is an HP-IB programmable accessory to the HP 8566A and HP 8568A Spectrum Analyzers. When properly interconnected, the spectrum analyzer and quasi-peak adapter provide the capability for measurement of electromagnetic interference (EMI) according to Publication 16 of Comite International Special des Perturbations Radioelectriques (CISPR).

Steve Lund

8/81-53

85650A BLOCK DIAGRAM

The quasi-peak adapter (QPA) can be divided into four functional sections: bandwidth filter, peak detector, accessories control, and digital section. The following block diagram shows how the quasi-peak adapter and spectrum analyzer are interconnected.



Bandwidth Filters

The QPA provides the three bandwidth filters (200 Hz, 9 kHz, and 120 kHz) specified by CISPR. Unlike the bandwidth filters used in the spectrum analyzer, the QPA filters have a flat-top response. As the QPA bandwidth filters are in series with the spectrum analyzer filters, it is important to use a spectrum analyzer resolution bandwidth approximately 10 times larger than the QPA bandwidth. These filters can be used independently from the quasi-peak detection function.

Peak Detector

The QPA peak detector is inserted between the spectrum analyzer Video Processor and Digital Storage. It provides the charge, discharge, and meter movement time constants specified by CISPR. A 20-dB amplifier is provided for use with low level signals. An audio amplifier and speaker are included for convenience in identifying local, ambient signals.

Accessories Control

The QPA contains 9 relays that can be configured to switch customer supplied filters, preamplifiers, or attenuators in and out of the measurement system. These relays, as well as all other functions, can be selected from the front panel or remotely via HP-IB.

Digital Section

The QPA is a bus structured instrument. The microprocessor receives inputs from the front panel or via HP-IB and uses this information to control a number of latches. Except when a particular action is being performed, the microprocessor scans the keyboard. HP-IB control is provided by a commercially available chip set. A signature analysis test program, contained in the microprocessor EPROM, is provided to aid in troubleshooting the digital circuitry.

MODIFICATIONS

The 85650A requires that the HP 8566A or HP 8568A have Option 650. This option routes the IF and VIDEO signals from the spectrum analyzer through the QPA and back to the spectrum analyzer. A retrofit kit, HP Part Number 85650-60050, is available for field installation. It is priced at \$200.00 and takes approximately 2 hours to perform the modifications.

Several components need to be changed on the A4A1 Video Processor in 8568A's with IF-Display Section serial prefixes 1745A or earlier. This change prevents oscillations when long cables are used to interconnect the QPA to the 8568A. Service Note 8568A-40 provides information on the necessary changes.

REPAIR STRATEGY

The HP 85650A was designed for bench level repairs to the component level. There are no exchange assemblies.

REQUIRED TEST EQUIPMENT

Instrument	Critical Specifications	Recommended Model
Universal Counter	Frequency Resolution: 0.001 Hz for 1s gate time	HP 5315A
Pulse Generator	Pulse Amplitude: Maximum output >5V across 50Ω (variable) DC Offset: ±2.5V Pulse Width: 1 μs to 10 ms (variable)	HP 8013B
Pulse Modulator ¹	On/Off Ratio: 50 dB at 100 MHz	W-J S1*
Digital Multimeter	DC Voltmeter Accuracy: 0.1% of reading Ohmmeter Accuracy: 0.1% of reading	HP 3465A
Oscilloscope	Frequency: 100 MHz Sensitivity: 5.0 mV/div	HP 1740A
Spectrum Analyzer	Compatible with HP 85650A	HP 8568A Option 650
Signature Analyzer	Clock Rate: 10 MHz	HP 5004A
Logic Pulser	Output Pulse Voltage: High >2.0V at 650 mA Low <0.8V at 650 mA	HP 546A
Current Tracer	Sensitivity: 1 mA to 1 A	HP 547A

*Watkins-Johnson Co., 333 Hillview Ave., Palo Alto, CA 94304

¹The Watkins-Johnson Pulse Modulator has a long delivery time. As a convenience a PC board is available from the SAD Product Support Group for a pulse modulator that meets the critical specifications. Figure 4-7 of the Operation and Service Manual contains a schematic and parts list for this pulse modulator.

SERVICE ACCESSORIES

A Service Accessories package, HP Part Number 85650-60051, is available. The contents are listed in the following table.

Item	Qty	Description	HP Part Number
1	1	Extender Board: 24 contacts; 2 rows of 12	08559-60042
2	1	Test 1 Jumper	85650-60052
3	1	Test 2 Jumper	85650-60053

Extender board 5060-5915, used in the 8444A service accessories, can be substituted for the 08559-60042. The Test 1 and Test 2 Jumpers are necessary for performing signature analysis on the HP-IB circuitry.

REPAIR CENTERS

Only a limited number of repair centers are capable of servicing the 85650A. The cost of purchasing an 8568A Option 650 by an office cannot be justified because of the low expected failure rate of the 85650A.

Initially the only offices known to have the capability for repairing the 85650A are:

Midwest Repair Center, 5201 Tollview Rd., Rolling Meadows, IL, 60008. Attention: Nick Runk, Microwave Repair Group

Orsay, France. Attention: Roger Vidal.

Frankfurt, Germany. Attention: Klaus Raths, IPG Service.

Winnersh, United Kingdom. Attention: Peter Parker, IPG Service.

Hachioji-shi, Japan. Attention: Masaaki Shida.

Retrofit Kits, HP Part Number 85650-60050, will be supplied to these offices free of charge whenever the first sale is made in their regions.

If an 85650A is received by a repair center not listed above, it should be shipped to the nearest office capable of making the repair. Please contact the listed person to inquire about any special shipping instructions.

Any office not included above must contact Signal Analysis Division before writing a service agreement. It is important that the customer is aware that his 85650A must be sent to another office for bench repair.

OPERATION VERIFICATION

An Operation Verification tape is not planned. As the required test equipment is not HP-IB programmable, very little time can be saved by programming just the spectrum analyzer. Controller programs for drawing the test limits for the bandwidth filters will be available in a Service Note.

TRAINING

Don Bitters from the Rolling Meadows repair center has received training on repair of the 85650A. A one day seminar can be arranged on request. It will be taught the Friday before or Monday after a scheduled 8566A/8568A Service Seminar.

BASIC SERVICE INFORMATION

Failure Rate: 10%

Mean Time to Repair: 6 hours (includes calibration time)

Mean Time Between Failures: 20,000 hours

Average Repair Cost: \$375

Labor: \$330

Parts: \$45

Calibration Cycle: 6 months

Calibration Time: 2 hours

ADDITIONAL SERVICE INFORMATION

Sockets

Zero insertion force (ZIF) sockets are used for three ICs. Care must be taken when inserting ICs into their sockets. Improper insertion results in damage to the corner pins of the IC and socket. Read the notes for A2 Motherboard Troubleshooting in the manual. S.A.D. would like feedback on any reports of intermittent operation attributed to the ZIF sockets.

A2 Motherboard

Caution should be exercised when unsoldering components from the A2 Motherboard. Its thickness (.093 inches) requires more heat to remove parts and thus increases the chances of lifting pads. Although designed for easy removal, the Motherboard is expensive to replace.

Line Impedance Stabilization Networks (LISN)

A common measurement for the quasi-peak adapter/spectrum analyzer system is conducted interference on the AC mains. Switching between the line and neutral leads causes a large power surge that can burn out the attenuator in the spectrum analyzer. **When making such measurements a high pass filter and limiter must be used to protect the spectrum analyzer. Attenuators damaged when used with LISN's will not be replaced under warranty.**

DOCUMENTATION PLAN

A printed 85650A Operation and Service Manual (HP Part Number 85650-90001) became available for customer shipments in July 1981. Early shipments to IBM contained a xerox copy of the manual. A printed manual will be mailed to them.

Product Note 85650A-1 explains limitations of the quasi-peak adapter/spectrum analyzer system in making EMI measurements. It shows typical measurements and information on programming. Although the Product Note is being sent with each instrument shipped, it is strongly recommended that a potential customer read it before placing an order.

