HEWLETT PACKARD

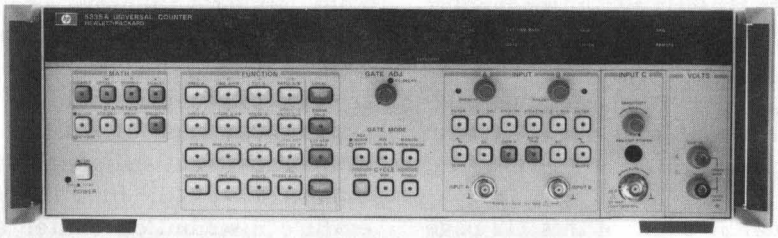
BENCH BRIEFS

SERVICE INFORMATION FROM HEWLETT-PACKARD

January–March 1987

HP 5335A Universal Frequency Counter Anomalies and Workarounds

Mara DuMond
HP Santa Clara Division



Service Note 5335A-21 documents the HP 5335A firmware Revision 1.1 programming anomalies and workarounds. You may find this information useful if you are experiencing programming difficulties with the 5335A. The following is a summary of the service note. If you would like a copy of this service note, please write to the address on the last page of *Bench Briefs*.

Introduction

The purpose of this service note is to facilitate successful programming of the 5335A by informing the user of the programming anomalies and their workarounds for the 5335A firmware Revision 1.1. The anomalies and their workarounds, which were verified for the HP 9000 Series 200 controllers, are presented in the following categories:

- 5335A Data Output Format
- Totalize A Function
- Pulse B Function
- Gate Modes
- Single Cycle Mode
- SRQ -Service Request
- Status Byte/Serial Polling

All anomalies and/or workarounds do not affect the credibility of any measurements made by the 5335A.

Major Subjects

References: Which documents it supports.
Firmware Revision Identification: Is your counter the one?
Anomalies and Workarounds: In each case listed above, there is an explanation of the anomaly and the suggested workaround. In many cases there is an example program listing in BASIC for the HP 9000 Series 200 controller. □

Change is Contemplated in U.S. Unit of Voltage

Bill Bruce
HP Loveland Division

In an effort to more closely align the U.S. legal unit of voltage with the SI (international system of units), NBS is contemplating an approximately 9 ppm change in our unit of voltage. The ohm will also be adjusted about 1.5 ppm. Some experiments are presently underway and a decision on what the actual changes will be is due late in 1988. The changes would then become effective January 1, 1990.

While this change will be insignificant to the majority of users of HP instruments, it will affect the calibration of some HP products, which can be dealt with. Some of our customers in non-electrical disciplines, however, may not be aware of the impact it will have on their operations.

If you know of or learn of an impact on a non-electrical field, please communicate it to Bill Bruce at the Loveland Instrument Division Standards Lab. Bill is on an NBS sponsored government-industry committee that will formulate recommendations for dealing with the changes.

Send inputs to:

Bill Bruce
LID Standards Lab
Hewlett-Packard Company
P.O. Box 301
Loveland, CO 80539 □

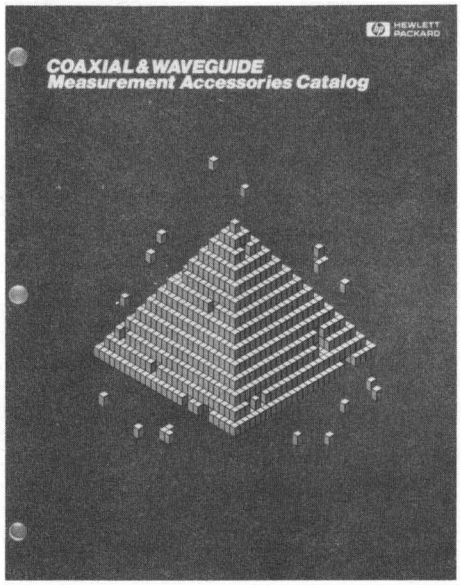
Pub. No. 5952-0127

Coaxial/Waveguide Measurement Accessories Catalog Now Available

The latest edition of HP's Coaxial and Waveguide Measurement Accessories Catalog is now available with product and applications information on more than 400 products operating from dc to 110 GHz. Seventeen product sections include attenuators, detectors, couplers, filters, power sensors, scalar analyzer accessories, noise figure equipment and even 75 ohm accessories.

More than 27 pages of this 112 page catalog are devoted to microwave measurement techniques and reference information, summarizing common scalar techniques of attenuation and SWR, as well as other measurements in component and system test such as power, frequency, noise figure, spectrum, waveform, carrier noise and modulation analysis. Waveguide and Coax band designations and flange data are included in the reference section, along with 9 pages of associated equipment descriptions.

This catalog will prove useful for design engineers, production test personnel, quality assurance and metrology engineers, field-test and system-maintenance engineers. It is available without charge (publication number 5954-6401) from the HP literature distribution center at the address on the rear page of this issue of *Bench Briefs*. □



Life Support for Your Home Computer

Mainframe computers are swaddled in specialized computer rooms where heat, humidity, smoke, dust, and static electricity are eliminated or controlled. Excess heat can lead to microprocessor burnout, smoke and dust to garbled data, and low humidity and static electricity to loss of memory. Personal computers are prey to the same ills, but few people would buy $3,000 machines if they had to hermetically seal the family garage as a computer sanctum. Fortunately, PCs don't have to be treated that tenderly. Still, elementary caution is due.

Put the computer system away from open windows, heat vents, radiators, and air conditioners. This helps reduce dust, smoke, and other airborne particles as well as control variations in temperature and humidity. A good rule of thumb: if the room is uncomfortable for humans, it will probably also discomfort computers.

Leave the computer on for the entire day, even if it will be used only briefly a few times. There are two reasons for this; the first is the disc drive. Each time you power the unit on and off, the heads go through their homing or position-seeking routines, resulting in a certain amount of mechanical wear. The fewer times you cycle the power, the less wear. The second reason is that continually heating up and cooling down circuits can widen undetected hairline fractures in chips, leading to the kinds of glitches that disappear at the repair shop but reappear when you're in the middle of creating text or program code. Computers are designed to use little electricity, so power bills from all-day operation aren't high. A good reason for keeping a brand-new computer on: most electronic parts, if they are going to fail, will do so within the first ten hours of operation, well within the typical 90 days covered by the warranty. When you leave your computer on, lower the intensity of the monitor so as not to burn an image onto the screen.

Don't smoke, eat, or drink around the computer system. Smoke is especially insidious because tobacco tar can jam between the disc and disc head, which reads and stores data, thus leading to misreads. Dust has the same vandalistic propensities, so use a dust cover when the equipment isn't on.

Power surges, static electricity and brownouts are also gremlins that can disrupt your equipment. We recommend that you contact local user groups to learn of particular area idiosyncrasies, such as extremely low humidity resulting in high static electricity. Place an antistatic mat on the floor to eliminate static electricity, which can cause gaps in your data.

What if you live in an area where power surges are common? To guard against too much electricity, which can burn the system's insides, buy a surge suppressor, which can cost $50 to $100. These devices absorb most power surges that come from utilities or electrical storms. During severe lightning storms, however, surges are so powerful they can burst through telephone lines and electrical cords even when a computer system is turned off.

You may live in an area where power drops, or brownouts are common. Or your house may be wired such that another appliance, such as a food processor, when turned on, causes a mini-brownout. Of course these brownouts, however caused, will wipe out data stored in memory. There are two ways to guard against data loss from brownouts. The first is to buy a constant power generator, which lifts the power flow to an acceptable level for 15 minutes. Since these devices cost several hundred dollars, you might consider making copies of all your valuable data; always a good habit for any unforeseen event.

Since magnetism can distort or erase data, don't put telephones, stereo speakers, tape recorders, or other devices with motors or magnets next to the computer.

If all fails, and the computer system does break down, document precisely what happened. It will help the repairman figure out what went wrong and may reduce the likelihood that the gremlin will return. □

Hardware Service Training, Investing in Self-Support

Wei Huang
HP Customer Training

Businesses across the country are currently reassessing their financial and production strategies in view of the impending tax revision, which will curtail the long cherished investment tax credit. And one of their primary concerns is how to extend the useful life of existing equipment with moderate resources.

To keep a computer or instrument running efficiently in or beyond its expected life-cycle, there is no better way than an active preventive maintenance program. The ability to detect minor flaws before they result in a major breakdown, as well as the speed in which the equipment is repaired, are crucial to any business and production-intensive environment. Time is money.

Hewlett-Packard Customer Service Training has the right program to assist HP hardware owners who desire self-support and preventive maintenance. Currently, there are 21 computer hardware classes, 57 self-paced computer learning packages, 22 self-paced mentored courses, and 20 instrument service classes available to self-support customers. Classroom computer service instruction is provided at Mtn. View, CA; Dallas, TX; Rockville, MD; and all instrument classes are delivered at the respective product division.

For detailed information on classes that provide good, solid service information and techniques on CPUs, discs, printers, PCs, and instruments, please contact Customer Service Training at (415) 691-5300/5295, or (800) 523-0696 (in the Continental U.S.), or (800) 882-9595 (within California). □

1987 CUSTOMER SERVICE TRAINING CALENDAR

Learn Service Skills Through In-Depth Technical Instruction

Hewlett-Packard service training courses are designed to provide in-depth technical instruction for maintenance personnel seeking the skills needed to troubleshoot, repair, and maintain HP instruments and instrument systems. Course concepts are taught through a balance of theory and practical, hands-on exercises.

Ordering Instrument Service Training is easy. Simply contact your local HP Sales Representative and tell him or her which courses you wish to attend. If you require a course on an instrument or instrument system not listed on the calendar below, ask your Sales Representative if a special arrangement can be made. For a copy of the 1987 calendar, ask for publication number 5953-9606. For more information, call (415) 691-5300/5295. □

Content	Dates	Location	Tuition per Student
Data Acquisition			
HP 2250 Maintenance #25599A	Apr 20-24 Sep 21-24	Loveland Instrument Division Loveland, Colorado	$1400
Automatic Test			
HP 3061A/62A Board Test Systems	Oct 20-28	Manufacturing Test Division Loveland, Colorado	$2500
HP 3065H Board Test Systems	Apr 27-May 6	Manufacturing Test Division Loveland, Colorado	$3600
HP DTS-70 Board Test Systems #IV-F	Jul 27-31 Nov 16-20	Lexico Enterprise 10517 NE, 38th Place Kirkland, WA 98033 (206) 828-0555	$1495
Advanced DTS-70 Board Test Systems	May 18-22 Sep 28-Oct 2	Lexico Enterprise 10517 NE, 38th Place Kirkland, WA 98033 (206) 828-0555	$1495
HP ATS/1000 System	Oct 5-9	Advanced Manufacturing Systems Organization Cupertino, CA	$3100
Signal Generation			
HP 8642A #B400	Oct 13-15	Spokane Division Spokane, WA	$ 675
HP 8640A/B #B438	Sep 24-25	Spokane Division Spokane, WA	$ 450
HP 8656A/B #B477	Sep 21-23	Spokane Division Spokane, WA	$ 675
HP 8901A/02A/03A/B/E #B475/440	Oct 5-9	Spokane Division Spokane, WA	$1125
HP 8901A/B8902A #B475	Sep 14-17	Spokane Division Spokane, WA	$ 900
HP 8903A/B/E #B440	Sep 10-11	Spokane Division Spokane, WA	$ 450
HP 8662A/8663A #B501	Sep 29-Oct 1	Spokane Division Spokane, WA	$ 675

Safety-Related Service Notes

Service notes from HP relating to personal safety and possible equipment damage are of vital importance to our customers. To make you more aware of these important notes, they are printed on paper with a red border, and the service note number has a "-S" suffix. In order to make you immediately aware of any potential safety problems, we are highlighting safety-related service notes here with a brief description of each problem. Also, in order to draw your attention to safety-related service notes on the service note order form at the back of *Bench Briefs,* each appropriate number is highlighted by being printed in color.

HP 3065HX and HL Board Test Systems

A safety problem exists in HP 3065HL systems with serials below 2541A00145. The problem involves the two service outlets labeled "For Field Service Only" (J211 and J212). These outlets have 120V between neutral and ground, and if an instrument designed with neutral and ground shorted together is plugged into one of these outlets, the instrument could draw 40 amps before the PDU circuit breaker opens. This problem still exists even if the 2A fuse in the PDU is removed.

Hewlett-Packard has developed a solution for this problem. Please contact your nearest HP office and order Product Safety Service Note 3065-44-S for more information.

HP 3497A Data Acquisition and Control Unit

Product Safety Service Note 3497A-23B-S is a replacement service note for 3497A-23A-S, described in the January-February 1986 issue of *Bench Briefs*.

HP 3498A Extender

Product Safety Service Note 3498A-3B-S is a replacement service note for 3498A-3A-S, described in the January-February 1986 issue of *Bench Briefs*.

HP 3852A Data Acquisition and Control Unit

Product Safety Service Note 3852A-1A-S clarifies a user manual statement of maximum input voltage. The manual reads, "To extend relay life or apply voltage greater than 170V peak, a voltage divider can be installed in the space provided for the filter." **Under no circumstances should more than 170V peak be input between any two terminals of the HP 44705A.**

If more than 170V peak is input to the HP 44705A, damage to the module or injury to the user is possible.

Please order this service note for more information.

HP 4951C Protocol Analyzer

Product Safety Service 4951C-2-S describes a possible shock hazard that may exist on instruments with serial numbers 2631A00101 thru 2631A00243. Improper dressing of primary ac wires inside the unit may cause ac voltages to be applied to the printed circuit board assemblies. In addition, if this problem is not resolved, circuit and equipment damage may occur.

For a complete description of the problem and instructions on how to fix it, please order the service note with the order form on the last page of this issue of *Bench Briefs*.

HP 8770A Arbitrary Waveform Synthesizer

A potential short circuit in the line module can occur in HP 8770As with serial numbers 2626A00254 and below. If this short circuit occurs, damage to the instrument can result. For more information please order Product Safety Service Note 8770A-9-S with the order form on the last page of this issue of *Bench Briefs*. □

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supplement to

BENCH BRIEFS SERVICE NOTE INDEX

Need Any Service Notes?

They're free!

Here's the latest listing of service notes. They recommend modifications to Hewlett-Packard instruments to increase reliability, improve performance, or extend their usefulness.

Use the form at the rear of *Bench Briefs* to order, free of charge, service notes for several instruments.

If you would like to purchase large quantities of service notes covering a wide range of instruments, or if you desire a complete history of all service notes documenting all changes to your instruments, Hewlett-Packard offers a microfiche library for a one time charge. There is also a microfiche subscription service available that automatically updates the library on a quarterly schedule.

The part numbers for the service note microfiche library and subscription service are:

Library—	5951-6511
Subscription service—	5951-6517

Contact your local HP Sales Office for ordering information. □

HP 436A POWER METER

436A-5A. All serials. Option 022 Retrofit instructions.

HP 816A COAXIAL SLOTTED LINE

816A-1. All serials. Recommended new RF connector contact to improve return loss.

HP 2250 DATA ACQUISITION AND CONTROL UNIT

2250-29. ERC: 2520 and below. Modification to improve HP 25501 autoranging applications.

HP 3056DL DATA LOGGER SYSTEM

3056DL-1. Revision A System Software vs. Revision B System Software.

3056DL-2. All serials. Instructions on using revision B software on an HP-85A, and a description of the HP-85 I/O ROM error.

HP 3061/62 BOARD TEST SYSTEM

HP 3061A/3062A-17. Replacement procedure for the cam bar and handle of the scanner receiver mechanism in HP 3061/62 Board Test systems.

HP 3065 BOARD TEST SYSTEM

HP 3065-8A. Preventive maintenance for fixture receiver mechanisms.

3065-44-S. Serials (HP 3065HL) 2541A002145 and below. Notification of potential safety hazard.

HP 3235A/E SWITCH/TEST UNIT

3235A/E-1. Serials 2628A00214 and below. Replacement ROM improves FTEST function.

HP 3335A SYNTHESIZER/LEVEL GENERATOR

HP 3335A-12. Serials 2516A03880 and below. Possible missing insulators on pass transistor assembly.

HP 3421A DATA ACQUISITION AND CONTROL UNIT

3421A-0. HP 3421A service note index.

3421A-7. Serials 2338A03052 and below. Motherboard ROM update.

3421A-12. Serials 2338A02074 and below. HP-IB microprocessor on-board ROM update to improve performance.

3421A-15. Warranty date codes 09-2623 to 09-2644. Notification of possible defective terminal blocks on the HP 44462A eight channel multiplexer/two channel actuator assembly.

HP 3455A DIGITAL VOLTMETER.

3455A-20E. All serials. HP P/N 03455-69801 on-site service kit.

HP 3457A MULTIMETER

3457A-5. Warranty date codes 09-2623 through 09-2644. Notification of possible defective terminal connectors.

3457A-6. New reed relays in the 44492A Reed Relay Multiplexer to improve performance.

HP 3465A MULTIMETER

3465A-8. Serials 1606A00900 and below. Recommended replacement for A1CR7 rectifier.

HP 3488A SWITCH/CONTROL UNIT

3488A-9. All serials. Correction of CHAN CLOSED line test on the 44474A digital I/O module. Supersedes 3488A-8 dated 8/86.

3488A-10. Warranty date codes 09-2623 through 09-2644. Notification of possible defective terminal connectors.

HP 3497A DATA ACQUISITION AND CONTROL UNIT

3497A-23B-S. Serials 2448A15955 and below. Possible shock hazard near the inguard control section.

3497A-25. Serials 2605A19100 and below. Obsolescence of front panel printed circuit board.

3497A-26. Serials 2629A19541 and below. New power supply deck.

3497A-27. Serial numbers: 03497 66521 board rev. B and below. Recommended replacement counter ROMs (HP P/N 1818-1615).

3497A-28. Serials 2629A19541 to 2629A19867. Modification to correct inoperative or intermittent RS-232 transmissions.

HP 3498A EXTENDER

3498A-3B-S. Serials 2223A04650 and below. Possible shock hazard near the inguard control section.

3498A-4A. Serials 2026A00415 and below. Old transformer no longer available; replace with HP kit P/N 03497-67916.

HP 3552A TRANSMISSION TEST SET

3552A-10. All serials. Preferred replacement for transistors A1Q706-710. Use new HP P/N 1853-0281.

HP 3562A DYNAMIC SIGNAL ANALYZER

HP 3562A-3. Serials 2502A01478, 2502A01474, 2502A01467 and below. New replacement capacitor for ADC.

HP 3577A NETWORK ANALYZER

3577A-9. Serials 2333A11610 and below. Adding washer solves intermittent receiver board problems.

HP 3702B IF/BB RECEIVER

3702B-53. All serials. Mechanical parts identification.

HP 3708A NOISE AND INTERFERENCE TEST SET

3708A-12. Serials 2414U00250 and below. Modification to prevent front panel display lock-up.

HP 3709A CONSTELLATION DISPLAY

3709A-3. All serial numbers. Performance and operation verification test 4-16 program error.

HP 3710A/11A/12A IF/BB TRANSMITTER

3710A-24. All serials. Mechanical parts identification.

3711A-7. All serials. Mechanical parts identification.

3711A-8. All serials. Preferred replacement for A1CR1, A9CR1 and A9CR2.

3711A-9. Serials 2620U00885 and below. Directions for setting up the A9 580 MHz oscillator symmetry adjustment.

3712A-15. All serials. Mechanical parts identification.

HP 3746A SELECTIVE LEVEL MEASURING SET

3746A-22. Serials 2508U00882 and below. Modification to prevent possible serial poll hang-ups.

HP 3754A/3756A/3757A ACCESS SWITCH

3754A-1. Serials 2512U01510 and below. Modification to prevent incorrect switch selection after power up.

3756A-1. Serials 2511U00666 and below. Modification to prevent incorrect switch selection after power up.

3757A-2. Serials 2127U00906 and below. Modification to prevent incorrect switch selection after power up.

HP 3764A DIGITAL TRANSMISSION ANALYZER

3764A-19. Serials between 2615U01162 and 2712U01637. Retrofit kit to upgrade the auxiliary analog input.

HP 3776A/B PCM TERMINAL TEST SET

3776A-29. All serials Opt. 001 units. Preferred replacement of analog MUX U64 on A5 assembly with new part 1826-1617.

3776A-30. All serials. Preferred replacement of bit slice processor U306, U406, U506 and U606 on assembly 03776-60001 with new part 1820-4699.

3776B-22B. Serials 2437U00742 and below. Modification to improve measurement accuracies in Timeslot 24.

3776B-30A. Serials 2437U00642 and below. Firmware update to correct echo return loss measurement.

3776B-32. Serials 2637U01202 to 2616U01152. Preferred replacement of PROM (HP P/N 03776-80111).

3776B-33. Serials 2616U01152 and below. Preferred replacement of PROM (HP P/N 03776-80103).

3776B-34. All serials Opt. 001 units. Preferred replacement of analog MUX U64 on A5 assembly with new part 1826-1617.

3776B-35. All serials. Preferred replacement of bit slice processor U306, U406, U506 & U606 on assembly 03776-60101 with new part 1820-4699.

HP 3779A/B/C/D PRIMARY MULTIPLEX ANALYZER

3779A-13B. All serials. Preferred replacement for relays A1K1-K6; A8K1; A9K1-K5, K7, K9, K10; A31K1; A37K1-K4.

3779A-32B. All serials. List of HP 3779C/D assemblies that are direct replacements in HP 3779A models.

3779A-57. All serials. Conversion of standard 3779A to 3779A opt. 001, opt. 002 or opt. 003.

3779A-58. All serials. Conversion of 3779A (all models) to 3779B opt. 001 or opt. 003.

3779A-59. All serials. Conversion of 3779A (all models) to 3779B opt. 002.

3779B-13B. All serials. Preferred replacement for relays A1K1-K6; A8K1; A9K1-K5, K7, K9, K10; A31K1; A37K1-K4.

3779B-18A. All serials. Conversion of standard 3779B, opt. 001 or opt. 003 to 3779B opt. 002.

3779B-33B. All serials. List of HP 3779C/D assemblies that are direct replacements in HP 3779A/B models.

3779B-62. All serials. Conversion of standard 3779B to 3779B opt. 001 or opt. 003.

3779B-63. All serials. Conversion of standard 3779B, opt. 001 or opt. 003 to 3779A opt. 001, opt. 002 or opt. 003.

3779C-31. All serials. Conversion of standard 3779C to 3779C opt. 001, opt. 002 or opt. 003.

3779C-32. All serials. Conversion of all models 3779C to 3779D opt. 001 or opt. 003.

3779C-33. All serials. Conversion of 3779C (all models) to 3779D opt. 002.

3779D-36. All serials. Conversion of standard 3779D to 3779D opt. 001 or opt. 003.

3779D-37. All serials. Conversion of standard 3779D, opt. 001 and opt. 003 to 3779C opt. 001, opt. 002 or opt. 003.

3779D-38. All serials. Conversion of standard 3779D, opt. 001, or 003 to 3779D opt. 002.

HP 3780A PATTERN GENERATOR/ERROR DETECTOR

3780A-31A. Serials 2224U02486 to 2224U03100 and 2449U03101 to 2449U03165. Recommended IC replacement to improve performance of A37 systematic error detector and A38 error counter/control logic board.

HP 3781B PATTERN GENERATOR

3781B-10. All serials. B8ZS retrofit kit instructions.

HP 3782B ERROR DETECTOR

3782B-11. All serials. B8ZS retrofit kit instructions.

HP 3793B DIFFERENTIAL PHASE DETECTOR

3793B-8. All serials. Preferred repalcement A2 or A3 assemblies in conjunction with the 8.2 MHz high tone.

HP 3852A DATA ACQUISITION AND CONTROL UNIT

3852A-0A. Service note index of the HP 3852A and associated modules.

3852A-1A-S. Clarification of maximum input voltage.

3852A-2. Service manual April 1986 printing and earlier. Error in front panel keyboard diagnostic test program.

3852X-1. Serials 2534A00349 and below having firmware revision 1.0. Modification to prevent lock-up or missing a reading when taking multiple readings per trigger with HP 44701A.

3852X-2. Serials 2434A00349 and below having firmware revision 1.0. The correct way to redimension variables.

3852X-3. Serials 2551A00455 and below having firmware 1.1 and below. Proper way to prevent erroneous reference temperature when scanning multiple TC multiplexers.

3852X-4. Serials 2602A00xxx and below having firmware rev. 1.2 and below. Front panel display must be on when using ALRM, ON ALRM commands to generate interrupts.

3852X-5. Serials 2602A02091 and below. Errors resolved and enhancements made in firmware revision 2.2.

HP 4935A TRANSMISSION IMPAIRMENT MEASURING SET

4935A-12B. Serials 2413A thru 2436A. Modification to prevent fuse blowing.

HP 4936A TRANSMISSION IMPAIRMENT MEASURING SET

4936A-5A. Serials 2326U01636 and below. Recommended replacement for rubber foot.

4936A-6. All serials. Preferred replacement fuses on battery charger assembly.

HP 4947A TRANSMISSION IMPAIRMENT MEASURING SET

4947A-1. Serials 2636U00196 and below. Preferred replacement of PROM assembly HP P/N 03773-80015.

4947A-2. Serials 2627U00142 and below. Additional supply pin for A-D converter U65 (A7 board).

4947A-3. Serials 2627U00142 and below. Firmware modification to rectify erroneous printout when performing EDD measurements (slow sweep).

4947A-4. All serials. Preferred replacement of analog MUX U64 on A5 assembly with new part 1826-1617.

HP 4951C PROTOCOL ANALYZER

4951C-2-S. Serials 2631A00101 thru 2631A00243. Possible shock hazard may exist on the PC board assemblies. Supersedes 4951C-1.

HP 4953A PROTOCOL ANALYZER

4953A-9. Serials 2522A00751 to 2605A01501 (instruments with locking handles). New improved locking handle assembly is now available.

4953A-10. Serials 2605A01360 to 2605A01489 (shipped between June 1 and Aug. 1, 1986). Modification to improve the HP 4953A in Bit/Character oriented protocol.

HP 5061A/B CESIUM BEAM FREQUENCY STANDARD

5061A-19. All serials. 5061A oscillator tuning shaft replacement kit installation instructions.

5061A-20. Serials 2112 and higher. Modifications to fix large frequency offsets in long time constant mode.

5061B-1. Serials 2636 and below. Modifications to fix large frequency offsets in long time constant mode.

HP 5316A UNIVERSAL COUNTER

5316A-4. All serials. Modification to prevent HP-IB lock-up problem.

HP 5342A MICROWAVE FREQUENCY COUNTER

5342A-49. All serials. Modification to prevent HP-IB lock-up problem.

HP 5343A MICROWAVE FREQUENCY COUNTER

5343A-26. All serials. Modification to prevent HP-IB lock-up problem.

HP 5350B/5351B/5352B MICROWAVE FREQUENCY COUNTER

5350B-1. Serials 2627A00153 and below. Firmware change corrects display of zeros when signal is present.

5351B-1. Serials 2627A00119 and below. Firmware change corrects display of zeros when signal is present.

5352B-1. Serials 2627A00104 and below. Firmware change corrects display of zeros when signal is present.

HP 5355A AUTOMATIC FREQUENCY CONVERTER

5355A-3. Serials 2644A and above. Modification to prevent 5355A miscounts due to sidebands noise.

HP 5359A TIME SYNTHESIZER

5359A-6. All serials. Modification to prevent HP-IB lock-up problem.

HP 5370B UNIVERSAL TIME INTERVAL COUNTER

5370B-2. All serials. Modification to prevent HP-IB lock-up problem.

HP 5501A LASER HEAD

5501A-10A. All serials. Modification to improve the A5 lock reference board.

HP 5508A LASER MEASUREMENT DISPLAY

5508A-2. Serials 2628A and below. EPROM firmware revision.

HP 5517A/18A LASER HEADS

5517A/18A-1A. Serials 2532A and below. Repair of sampler assembly to improve performance.

HP 8447E, 8447F AMPLIFIER 0.1–1300 MHz

8447E/F-5. 8447E: Serials 2631A and above; 8447F: Serials 2634A and above. Preferred replacement power amplifier (HP Part Number 5086-7006).

HP 8477A CALIBRATOR

8477A-2. All serials. Preferred replacement for transistors A1Q11 and A1Q18.

HP 8481A POWER SENSOR

8481A-3A. All serials. Cartridge replacement instructions.

HP Q8486A POWER SENSOR

Q8486A-1. All serials. Procedure for torquing the waveguide flange screws.

HP 8557A/58B/59A SPECTRUM ANALYZER

8557A-15. Serials 2106A and below. Sweep trigger rotor replacement.

8558B-34. Serials 2145 and below. Correct replacement for the sweep trigger rotor.

8559A-30. Serials 2208A and below. Sweep trigger rotor replacement.

HP 8566A/B SPECTRUM ANALYZERS (85662A IF DISPLAY SECTION)

8566A-24. All serials. Bandwidth filter assembly A4A4/A4A8 replacement kit.

8566B-12. All serials. Installation procedure for rebuilt A15 controller assembly.

HP 8568A/B SPECTRUM ANALYZERS (85662A IF DISPLAY SECTION)

8568A-47. All serials. Bandwidth filter assembly A4A4/A4A8 replacement kit.

8568B-12. All serials. Installation procedure for rebuilt A15 controller assembly.

HP 8672A SYNTHESIZED SIGNAL GENERATOR

8672A-10B. Serials 2640A and below. Instructions for installing opt. 008 retrofit for greater power output.

8672A-14. All serials. Instructions for installing new opt. 008 amplifier retrofit.

8672A-17. Serials 2640A and below. Preferred power amplifier replacement.

HP 8683D SIGNAL GENERATOR

8683D-1. All serials. Output RF assembly kit installation.

HP 8684A/B SIGNAL GENERATOR

8684A-4. All serials. Power supply adjustment procedure.

8684B-4. All serials. Power supply adjustment procedure.

HP 8684D SIGNAL GENERATOR

8684D-1. All serials. Power supply adjustment procedure.

HP 8770A ARBITRARY WAVEFORM SYNTHESIZER

8770A-1A. Serials 2540A00101 to 2540A00114. Assembly A18 English to metric conversion.

8770A-2. Serials 2621A and below. Front panel assembly change.

8770A-4. Serials 2540A and below. Improved multiplexer assembly diagnostics.

8770A-5. Serials 2626A00233 and below. Improved line switch mounting.

8770A-8. Serials 2627A and below. Improved HP-IB data cable.

HP 8770A ARBITRARY WAVEFORM SYNTHESIZER

8770A-9-S. Serials 2627A00254 and below. Potential line module short.

8770A-10. Serials 2632A00290 and below. Improved front panel display.

8770A-11. Serials 2627A and below. Sequencer assembly part number change.

HP 8956A SYSTEM INTERFACE

8956A-3. Serials 2525A and below. Procedure for replacing fuses AT2F1 and AT3F1.

8956A-4. Serials 2525A and below. Modification to improve LED life.

HP 8970A NOISE FIGURE METER

8970A-10. Serials 2633A and below. Improved measurement repeatability.

HP 11729B CARRIER NOISE TEST SET

11729B-4. All serials. Improved residual phase noise performance test.

HP 37203A/37204A HP-IB EXTENDER

37203A-11. All serials. Change to on-site repair policy.

37204A-1A. All serials. Installation of fiber optic interfaces.

HP 44701A INTEGRATING VOLTMETER FOR 3852A

44701A-1A. All units used with mainframe firmware revision 1.0. Modification to prevent lock-up or missing reading when taking multiple readings per trigger with HP 44701A.

44701A-2A. All serials. Procedure for eliminating intermittent error 27.

HP 44702A/B HIGH SPEED VOLTMETER FOR HP 3852A

44702A/B-1. Serials 2545A00199 and below (HP 44702A); 2546A00119 and below (HP 44702B). Modification to improve low resistance measurements.

44702A/B-2. Serials 2545A00193 (HP 44702A) and below; 2545A00116 (HP 44702B) and below. Modification to correct overload readings when autoranging.

44702A/B-3. Serials 2545A00193 (HP 44702A) and below; 2545A00115 (HP 44702B) and below. Modification to correct false detection of overloads.

44702A/B-4. Serials 2545A00193 (HP 44702A) and below; 2545A00115 (HP 44702B) and below. Modification to correct erroneous readings at elevated temperatures.

44702A/B-5. Serials 2612A00464 (HP 44702A) and below; 2612A00282 (HP 44702B) and below. Modification to correct erroneous readings at elevated temperatures.

HP 44708A RELAY MUX/TC FOR HP 3852A

44708A-1. Serials. All modules used in a mainframe having firmware 1.1 or below. Modification to prevent erroneous reference temperature when scanning multiple TC multiplexers.

HP 44710A FET MUX/TC FOR HP 3852A

44710A-1. Serials. All modules used in a mainframe having firmware 1.1 or below. Modification to prevent erroneous reference temperature when scanning multiple TC multiplexers.

HP 44715A COUNTER/TOTALIZER MODULE FOR THE HP 3852A

44715A-1. Serials 2551A00319 and below. Modification to improve performance when taking frequency measurements.

HP 51089A DISPLAY UNIT

51089A-1. Serials 2510A00180 and below. Modification to prevent ribbon cable from coming loose.

HP 54200A/D DIGITIZING OSCILLOSCOPES

54200A/D-6. 54200A serials 2601A00975 (appx) to 2617A01069; 54200D serials 2601A00619 (appx) to 2618A00637. Rubber bumpers which hold PC boards in the motherboard slots may be misplaced causing boards to come loose.

HP 64215A 6809 EMULATOR SUBSYSTEM

64215A-3. All repair numbers. Characteristics of the emulator's non-maskable interrupt signal.

HP 64216A 6809E EMULATOR POD

64216A-1. Emulation pod board serial prefix numbers 2332A and below. No HALT ACKNOWLEDGE from emulator while in background.

64216A-2. All repair numbers. Characteristics of the emulator's non-maskable interrupt signal.

HP 64228S 80286 EMULATOR POD

64228S-1. Pod repair number 2627A00150 and below. Modification to improve write cycle timing.

HP 64286A F9450 EMULATOR

64286A-1. Serials 2524A and below. Modification to correct data wait state tracking.

HP 69791A/69792A HIGH SPEED MEMORY CARDS

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HP 70001A MAINFRAME

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70001A-3. All serials. Preferred replacement of rear frame assembly.

HP 70310A PRECISION FREQUENCY REFERENCE

70310A-1. Serials 2622A00149 and below. Modification to ferrite bead A2L5 on the A2 power supply and processor board assembly (HP P/N 70310-60002).

HP 70900A LOCAL OSCILLATOR MODULE

70900A-4A. All serials. New repair strategy for the controller board.

HP 85650A QUASI-PEAK ADAPTER

85650A-3A. All serials. List of correct AC mains fuses.

85650A-6. All serials. 21.4 MHz crystal matching requirements.

HP 85685A RF PRESELECTOR

85685A-1A. All serials. Firmware revision for spectrum analyzer compatibility.

85685A-3. All serials. Instructions for a direct plotter dump with EMI receiver.

85685A-7. All serials. ROM replacement procedure.

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