



BENCH BRIEFS

SERVICE INFORMATION FROM HEWLETT-PACKARD

REFERENCE FILE COPY

January-February 1986

~~PLEASE DO NOT REMOVE~~
MIL-STD-45662 Calibrations - 25 pt

Fred C. Harper,
HP Product Support Division

Does your facility require instrument calibrations that conform to MIL-STD-45662, with all of the recordkeeping that 45662 requires? If so, Hewlett Packard Customer Service Centers in the U.S. can now help you out.

All of HP's U.S. Customer Service Centers can now perform calibrations in **FULL compliance** with MIL-STD-45662. This is full compliance, not just "intent and purpose." When appropriate, we are prepared to be audited for assurance of that compliance.

Full compliance with 45662 includes the following items:

- Formal calibration procedures with recording of test results before and after any necessary adjustments.
- Records of calibration dates and names of responsible individuals.
- Records of accuracy of test standard's accuracy and controlled environmental conditions.
- System of notification and recalibration when test standards are found to be out-of-tolerance.

Hewlett Packard has invested substantial amounts of money and effort into creating and supporting the data management system for 45662 compliance. This system permits HP to track calibrations performed on customer's and HP's own equipment. Thus, if any of HP's equipment is later found to have been out-of-tolerance, HP will notify you and perform any necessary re-calibration for free.

In summary, HP is confident of its ability to meet your MIL-STD-45662 audit requirements.

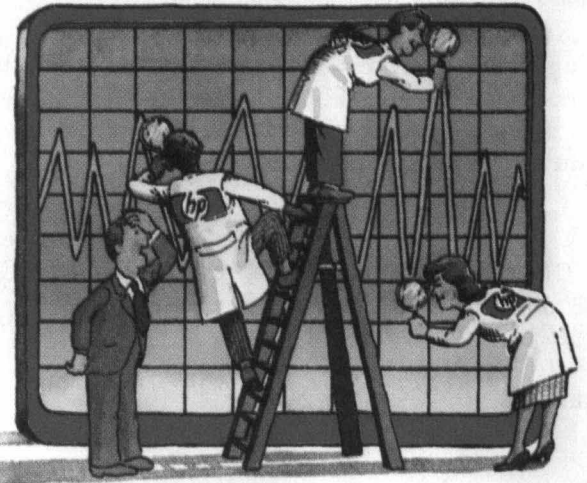
For more information, contact your local HP representative and ask for the *Military Standard Calibration Service* flyer, HP P/N 5954-2804. Or, contact your nearest HP Customer Service Center. The Service Centers can also provide you with price lists of Military Standard services.

The U.S. Customer Service Centers are located in:

- | | |
|------------------------------------|-------------------------------|
| Mountain View, CA (415) 960-5251 | Paramus, NJ (201) 265-5000 |
| Fullerton, CA (714) 758-5490 | Atlanta, GA (404) 955-1500 |
| Englewood, CO (303) 649-5524 | Richardson, TX (214) 231-6101 |
| Rolling Meadows, IL (312) 255-9800 | |



HP MILITARY STANDARD CALIBRATION SERVICE



Your **Spec**ific Solution for
MIL-STD 45662

A Short Troubleshooting Quiz

18 pt.

A qualified radio technician must have a deep reservoir of knowledge to be able to troubleshoot the varied transceiver equipment in use today. How deep is your reservoir? Here is a selection of questions that will test a radio technician's mettle.

1. VHF transceivers are range limited to essentially line-of-sight.

True—False

2. Although crystals can be obtained to operate at frequencies up to 30 MHz, a dual conversion mixing scheme is generally used in VHF transceivers for better frequency stability as well as better selectivity.

True—False

3. In frequency modulation transceivers, the ratio between frequency deviation, in Hertz, and the modulating frequency, also in Hertz, is called the MODULATION INDEX and is analogous to percentage of modulation in amplitude modulation.

True—False

4. One major advantage in FM over AM modulation is that interference resulting from rectification of the transmitted signal is virtually eliminated.

True—False

5. In impedance matching an antenna to a transmission line, one method of matching makes use of the quarter wave transformer of "Q" section, which is actually a one

quarter wave section of transmission line. The formula for determining the required characteristic impedance is $Z = \sqrt{Z_1 Z_0}$ where Z_1 is the antenna impedance and Z_0 is the characteristic impedance of the line to which it is to be matched.

True—False

6. When planning an SSB installation with a remote antenna coupler, which of the following statements is of the most importance?

- A short, low-impedance ground should be connected to the radio chassis.
- A short, low-impedance ground should be connected to the coupler.
- The coaxial cable connecting the radio to the coupler must be grounded at regular intervals.
- The DC power cable to the coupler must be run parallel to the RF coaxial cable.

7. Which of the following statements is true?

- The lead-in wire from a short whip antenna can be of any length if it is properly insulated.
- Performance will not be degraded when the lead-in wire is bundled with other cables provided a good grade of GTO wire is used.
- Coaxial cable can be used as lead-in wire for short whip antennas if the braid is grounded at both ends.
- For best results, the short whip antenna lead-in wire should be separated from all surrounding objects by at least three inches.

8. Which of the following statements is not true?

- Trap antennas are meant to work only in a narrow band of frequencies.

- Trap antennas eliminate the need for a ground system.

- Trap antennas do not usually require a coupler for efficient operation.

- Trap antennas are subject to detuning by nearby metal objects.

9. After installing an SSB transmitter, you notice that the transmitter output is less than normal on voice peaks. Back at the shop, transmitter output is normal. The most likely cause of this problem is:

- Faulty bird wattmeter
- High input voltage
- Excessive lead length supplying input power
- Over-modulation

10. Which of the following statements is false regarding SSB installation?

- IR drop is of no particular importance.
- Wire size is an important factor for input power.
- Antenna feed line should be short and direct.
- Antenna feed line (GTO type) should be well insulated from metal objects.

How well do you think you did? The answers are located on the back page. And while on the subject did you know that Hewlett-Packard manufactures a product line of transceiver test equipment that performs many automated tests for the technician? Call your local HP office and ask for more information on the HP 8955A RF Test System.

Using Fiber Optics to Transmit a Frequency Standard—More Information

18 pt

Brett Frymire,
HP Opto-Communications Div.

The article I wrote for the June/August 1985 issue of Bench Briefs has been updated with some new and corrected information, including prices for the parts list.

I would like to recommend that when constructing the circuits for the transmitter and receiver, you use a ground-plane type of circuit board due to the high frequencies involved. I would also recommend that, in a high noise environment, you place the receiver in a shielded metal box.

In the receiver schematic shown in Figure 5 on page 7 of the June/August 1985 issue of Bench Briefs, pins 4 and 10 on U1 (LM733) were switched. Pin 10 should have been connected to +5V and pin 4 should have been connected to the source of the FET. The revised drawing is shown in Figure 1.

The new parts list with the approximate parts cost is shown in Table 1. Please note that the prices are for minimum quantities and are taken from a local distributor. Prices may fluctuate between distributors.

We have produced another Tech Brief (No. 104) titled Baseband Video Transmission with Low Cost Fiber

Optic Components. This publication is available from Hewlett-Packard as HP publication 5954-1025. □

Table 1. Transmitter/Receiver Parts List

Transmitter Parts				Receiver Parts			
Ref. Desig.	JDEC #	HP #	Approx. Price	Ref. Desig.	JDEC #	HP #	Approx. Price
Active parts				Active parts			
U1	LH0002	1820-0224	\$10.00	U1	LM733	1826-0064	\$ 1.15
U2	LM741	1826-0271	.35	U2	LF351	1826-0667	.75
Q1	2N2905	1853-0314	.75	Q1	2N4416	1855-0276	1.76
CR1-3	FD777	1901-0179	.35	Q2	2N5179	1854-0345	.47
CR4	HFBR-1402	HFBR-1402	29.00	CR1	1N4150	1901-1098	.10
Passive parts				Passive parts			
C1-3	.1ufd	0160-0576	.20	C1,3-10	.1ufd	0160-0576	.20
C4	4.7ufd	0180-2683	2.00	C2	1ufd	0160-0127	1.00
R1	51 ohms	0683-5105	.05	R1	100 ohms	0683-1015	.05
R2,3	1 Kohm	0683-1025	.05	R2,3	2.2 Kohms	0683-2225	.05
R4	3.9 Kohms	0683-3925	.05	R4	22 Kohms	0683-2235	.05
Rm, Rq	Select components			R5,6	1 Mohms	0683-1055	.05
				R7	18 Kohms	0683-1835	.05
				R8	3.3 Kohms	0683-3325	.05
				R9	1 Kohms	0683-1025	.05
				R10	10 Kohms	0683-1035	.05
				Fiber Optic Cable (with connectors) HFBR-3000 (This has connecting costs as well as cost of fiber cable.)			
						HFBR-3200	~1.75/metre
				(without connectors)			
						SMA	3.00-33.00
				Connectors for fiber optic cable			

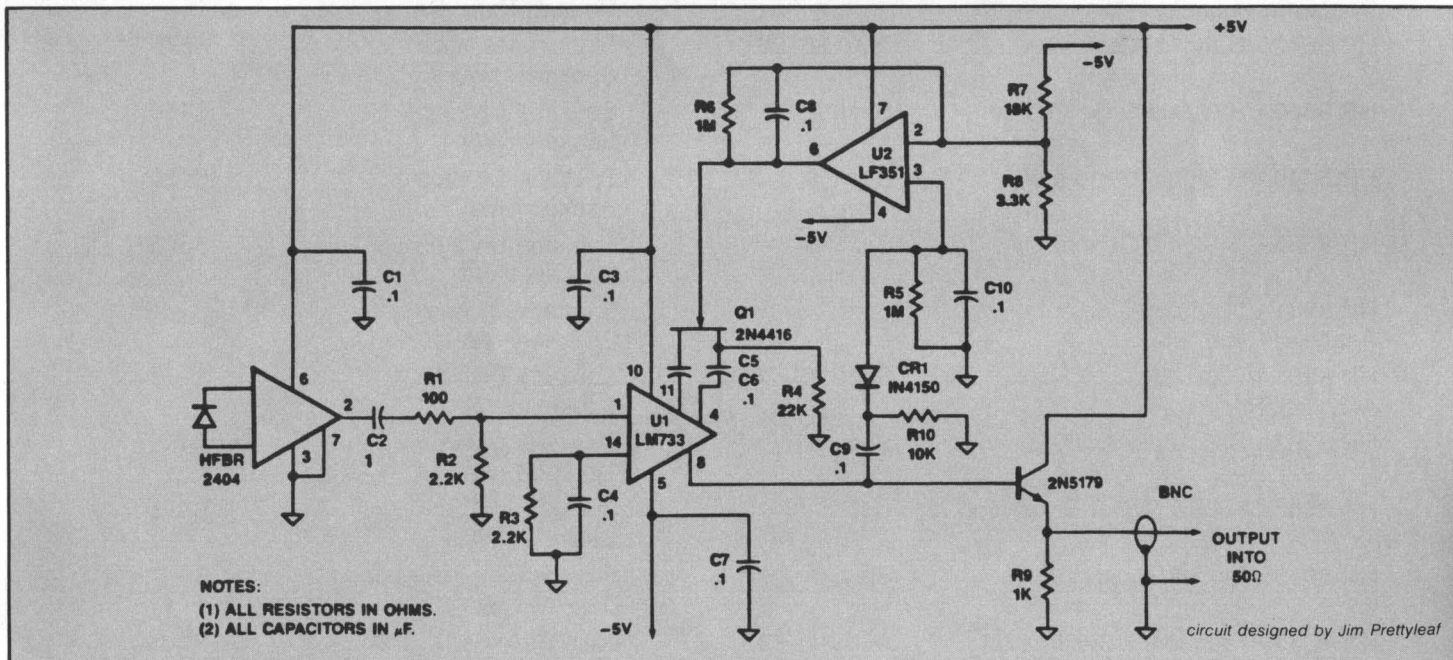


Figure 1. Fiber optic receiver.

1986 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 1986 calendar, ask for publication number 5953-9606. For more information, call (415) 960-5295. □

Content	Dates	Location	Tuition per Student
Logic Analyzers & Development Systems			
HP 64000 Logic Development System	July 14-18	Logic Systems Division Colorado Springs, CO	\$1,000
Data Acquisition			
HP 2250 Measurement & Control System	May 5-9 Sept. 29-Oct. 3	Loveland Instrument Division Loveland, CO	\$1,400
Automatic Test			
HP 3061A/62A Circuit Test System	April 14-25 June 2-13 Sept. 22-Oct. 3	Manufacturing Test Division Loveland, CO	\$2,500
HP 3065H Board Test System	Feb. 24-March 7 May 12-23 July 7-18 Sept. 8-19	Manufacturing Test Division Loveland, CO	\$3,600
HP DTS-70 Board Test System	April 28-May 2 Aug. 18-22 Sept. 29-Oct. 3	This course is taught by Lexico Enterprises Inc. located in Kirkland, WA	
RF & Microwave			
HP8566A/B, 8567A, 8568A/B Spectrum Analyzers	July 28-Aug. 8	Signal Analysis Division Rohnert Park, CA	\$1,800
HP 8642A/B Signal Generator	Aug. 26-28	Spokane Division Spokane, WA	\$675
HP 8660A/B/C Signal Generator	Sept. 2-3	Spokane Division Spokane, WA	\$450
HP 8640A/B Signal Generator	Sept. 4-5	Spokane Division Spokane, WA	\$450
HP 8656A/B Signal Generator	Sept. 9-11	Spokane Division Spokane, WA	\$675
HP 8901A/02A/03A/B/E Analyzer/Receiver	Sept. 15-19	Spokane Division Spokane, WA	\$1,125
HP 8901A/B/8902A Analyzer/Receiver	Sept. 23-26	Spokane Division Spokane, WA	\$900
HP 8903A/B/E Audio Analyzer	Sept. 30-Oct. 1	Spokane Division Spokane, WA	\$450
HP 8662A/8663A Signal Generator	Oct. 7-9	Spokane Division Spokane, WA	\$675
HP 8673B Signal Generator	Sept. 8-12	Stanford Park Division Palo Alto, CA	\$1,125
HP 3335A Frequency Synthesizer	Aug. 19-22	Lake Stevens Division Lake Stevens, WA	\$1,390

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 182 and 1200 Series Oscilloscopes

Correction!! The previous issue of *Bench Briefs* listed a service kit for repairing the oscilloscope strap handles. The HP P/N for this kit was incorrectly listed. The correct part number is 00182-69505 and can be ordered from:

HEWLETT-PACKARD Co.
P.O. Box 2197
Colorado Springs, CO 80901
Attn. Product Assurance Mgr.

3060A Board Test System, 3061A/3062A Board Test Systems, 3065A Board Test System

These four HP Board Test Systems may have a potential safety hazard in which more than 42 volts could be supplied to the printed circuit board under test.

18pt

If >42 volts is supplied to the pc board under test, safe operation requires that a fixture cover with a safety interlock be installed (refer to Test Fixture Assembly and Service Manual, HP P/N 44538-90003).

Safety Service Note 3061A/62A-14-S and 3065-38-S provides more information on the recommended safety shroud described in Appendix B of the fixture assembly manual. Improper construction may cause the safety shroud to implode, possibly causing injury to people nearby. This can happen when the shroud forms a sufficiently tight seal against the test fixture.

3065-31-S Safety Service Note describes a procedure for insulating the 220 Vac power lines to the cooling fans on the back of the HP 3065C. This insulation is required to isolate the 220 Vac lines from the 12 Vdc air flow sensing lines.

HP 3325A Synthesizer/Function Generator

On generators with serial numbers below 2512A19654, the use of an improper slow-blow fuse may cause permanent damage to the power supply assembly and transformer T1 (HP P/N 9100-4099). Product Safety Service Note 3325A-19-S describes the problem in more detail.

HP 3336A/B/C Level Generator

On HP 3336A generators with serials 2513A01253 and below, 3336B generators with serials 2514A02483 and below, and 3336C generators with serials 2515A01057 and below, the use of an improper slow-blow fuse may cause permanent damage to the

power supply assembly and transformer T1 (HP P/N 9100-0480). Product Safety Service Note 3336A/B/C-16-S describes the problem in more detail.

HP 3497A Data Acquisition and Control Unit

On units with serial numbers 2448A15955 and below, the inguard control section and its associated sheet metal, along with the connector housing to the analog extender cable are at the same potential as the guard input terminal. This potential can be as high as 170 volts above chassis ground. It is possible to contact this hazardous potential with the safety cover in place because the ventilation slot on top of the panel does not adequately restrict finger access.

A modification kit (HP P/N 03497-67915) is available free-of-charge from Hewlett-Packard to replace the old rear cover on the HP 3497A. Product Safety Service Note 3497A-23A-S contains complete instructions.

HP 3498A Extender

The HP 3498A Extender with serial numbers 2223A04650 and below has the same problem as the HP 3497A described above. In addition, when connecting multiple analog extender cables to the rear panel of the 3498, there is not sufficient clearance for the rear safety cover to be installed properly.

A modification kit (HP P/N 03498-67915) is available free-of-charge from Hewlett-Packard to replace the old rear cover on the HP 3498A. Product Safety Service Note 3498A-3A-S contains complete instructions. □

OK

supplement to

BENCH BRIEFS SERVICE NOTE INDEX

GENERAL

5083-15. Serials 2101A and below. New model kit (5061-2972) to install CRTs with improved face plate grounding.

HP 141T DISPLAY

5083-15. Serials 2101A and below. New model kit (5061-2972) to install CRTs with improved face plate grounding.

HP 346A/B/C NOISE SOURCE

346A-1. All serials. Recommended current regulator board replacement for HP 346A and HP 346B.

346B-5. All serials. Recommended attenuator replacement for HP 346B and 346C.

HP 1220A/1221A/1222A OSCILLOSCOPES

1220A-27. All serials. Modification to prevent potential handle breakage.

1222A-7. All serials. Modification to prevent potential handle breakage.

HP 1630G LOGIC ANALYZER

1630G-5A. Serials 2415A00280 and below and serials 2415A00286, 2415A00287, 2415A00289. Recommended 1630G PROM replacement to correct firmware.

HP 1631A/D LOGIC ANALYZER

1631A/D-2. 1631A serials 2525A and below; 1631D serials 2518A and below. Recommended PROM replacement to correct firmware.

HP 3054A AUTOMATIC DATA ACQUISITION/CONTROL SYSTEM

3054A-2. All serials. Modifications to allow verification of the FET multiplexer assembly.

HP 3060A/61A/62A AND 3065 BOARD TEST SYSTEMS

3060A-64. All serials. Field modifications to change the power option on the HP 34196C power module.

3061/2A-0. Service note index.

3061A/3062A-13. All serials. Field modifications to change the power option on the HP 34196C power module.

3061A/62A-14-S. All serials. Notification of potential safety hazard.

3065-0. Service note index.

3065-27. All serials. HP model 44633H service kit.

3065-31-S. Serials 2308A00372 and below. Notification of potential safety hazard.

3065-32. Serials 2316A00509 and below. Wiring corrections for HP 11253B with power options 220 or 240.

3065-38-S. All serials. Notification of potential safety hazard.

HP 3325A SYNTHESIZER/FUNCTION GENERATOR

3325A-18. Serials 1748A13350 and below. Microprocessor bias voltage selection related to intermittent resets.

3325A-19-S. Serials 2512A19654 and below. Burned power supplies linked to primary fuse.

HP 3326A TWO-CHANNEL SYNTHESIZER

3326A-2. Serials 2437A00450 and below. Defective line voltage selector.

3326A-3. Serials 2437A00460 and below. Metal tab on HP3326A rear panel shorts capacitor.

HP 3336A/B/C LEVEL GENERATOR

3336A/B/C-16-S. 3336A serials 2513A01253 and below; 3336B serials 2514A02483 and below; 3336C serials 2515A01057 and below. Burned power supplies linked to primary fuse.

HP 3421A DATA ACQUISITION/CONTROL UNIT

3421A-2B. All serials. HP 44462A multiplexer/actuator jumper configuration.

HP 3456A DIGITAL VOLTMETER

3456A-1D. All serials. Customer service kit (03456-69801) for board level repair.

3456A-6A. All serials. Line frequency options on the A30 inguard logic PC board.

3456A-16A. Serials 2201A and below. A3 PC board assembly compatibility.

HP 3497A DATA ACQUISITION/CONTROL UNIT

3497A-15A. Recommended input relay replacements for voltmeter option.

3497A-21. Serials 2514 and above; serials 2448 and below. System II cabinets inch/metric conversion.

3497A-23A-S. Serials 2448A15955 and below. Possible shock hazard.

HP 3498A EXTENDER

3498A-3A-S. Serials 2223A04650 and below. Possible shock hazard.

HP 3561A DYNAMIC SIGNAL ANALYZER

3561A-8. Serials 2338A01928 and below. New power switch withstands greater surge current.

HP 3577A NETWORK ANALYZER

3577A-4. Serials 2333A10908 and below. Masked ROMS replace EPROMS.

3577A-5. Serials 2333A11392 and below. New 5 volt connector.

3577A-6. Serials 2333A10250 to 233A10600. Modification to eliminate HP-IB lockup problem.

3577A-7. Serials 2333A10150 and below. Modification to prevent 10 MHz VCO unlock problem.

HP 3582A SPECTRUM ANALYZER

3582A-13. All serials with prefix 1809A and 2508A06494 to 2508A06610. Wiring of triac A19Q1 to A19 power supply motherboard may be reversed.

HP 3702B IF/BB RECEIVER

3702B-50. All serials. Preferred replacement for A25Q2.

3702B-51. All serials. Preferred replacement for A1CR1.

HP 3708A NOISE AND INTERFERENCE TEST SET

3708A-2. Serials 2414U00150 and below. Preferred replacement for RFI strip on assembly A403.

3708A-3. Serials 2414U00179 and below. Recommended component changes to enhance the stability and adjustment of the 140 MHz oscillator.

3708A-4. All serials. HP 3708A noise bandwidth calibration tape.

HP 3739A OSCILLATOR

3739A-4. Serials 1849U00206 and below. Preferred replacement for the YIG oscillator.

HP 3746A SLMS

3746A-2B. All serials. 10 MHz precision frequency reference assembly (option 014) retrofit kit.

3746A-5A. All serials. Retrofit procedure for OPT 011 group filter.

3746A-16. Serials 2410U00692 and below. Modification to input transistor (A2Q1) to prevent failures.

HP 3747A/B SLMS

3747A/B-25B. Serials 2143U00136 and below. Thermopile protection retrofit kit for the A315 broadband power detector.

HP 3762A DATA GENERATOR

3762A-8. Serials 2142U00661 to 2513U01166 inclusive. Modification to eliminate high incidence of fuse failure on PSU capacitor board.

HP 3763A ERROR DETECTOR

3763A-7B. Serials 2150U00800 and below. Preferred replacement for A14IC27 (1820-1755), A14IC26 (1820-2040) and 03763-60114 (timer assembly).

3763A-12. Serials 2150U00641 to 2508U01114 inclusive. Modification to eliminate high incidence of fuse failure on line input assembly.

HP 3764A DIGITAL TRANSMISSION ANALYZER

3764A-11B. All serials. Tape cassette retrofit kit.

3764A-12. Serials 2419U00580 and below. Option 010 tape cassette firmware revision.

3764A-13. Serials 2519U00827 and below. Modification to prevent possible interface problems between HP 3764A and HP 37204A HP-IB extender.

HP 3770B TELEPHONE LINE ANALYZER

3770B-31. All serials. Preferred replacement for check & marker pushbutton switches.

HP 3776A/B PCM TERMINAL TEST SET

3776A-23. All serials. 3776 test programs data cartridge (HP P/N 03776-10001) modifications—update to REV D.

3776A-24. All serials. Inappropriate selection of "through PCM" causes errors 31/32 to be displayed while running a measurement.

3776B-18B. Serial numbers below 2437U00642. Frequency update instructions for data measurement option 001.

3776B-24. All serials. 3776 test programs data cartridge (HP P/N 03776-10001) modifications—update to REV D.

3776B-25. All serials. Inappropriate selection of "through PCM" causes errors 31/32 to be displayed while running a measurement.

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

3779A-42. All serials. Instructions for retrofitting the HP 3779C/D A17 assembly to the HP 3779A.

3779A-43. All serials. Instructions for retrofitting the HP 3779C/D A18 assembly to the HP 3779A.

3779A-45. All serials. Instructions for retrofitting the HP 3779C/D A22 assembly to the HP 3779A.

3779A-47. All serials. Recommendation that neither HP 82905A/B or 82906A/B printers be used along with any model of the 3779.

3779A-54. Serials 00215 and below. Recommended modification to improve power supply reliability.

3779B-45. All serials. Instructions for retrofitting the HP 3779C/D A17 assembly to the HP 3779B.

3779B-46. All serials. Instructions for retrofitting the HP 3779C/D A18 assembly to the HP 3779B.

3779B-48. All serials. Instructions for retrofitting the HP 3779C/D A22 assembly to the HP 3779B.

3779B-49. All serials. Instructions for retrofitting the HP 3779C/D A35 assembly to the HP 3779B.

3779B-50. All serials. Recommendation that neither HP 82905A/B or 82906A/B printers be used along with any model of the HP 3779.

3779C-24. Serials between 2447U00459 and 2447U00508. Modification to prevent display inaccuracy during A-A outband spurious measurement.

3779C-25. All serials. Interface problems with EPSON printers and the PMA.

3779D-27. Serials 00439 to 00514. Modification to the A26 assembly to prevent possible corruption of NVM data.

3779D-28. Serials 2446U00439 and 2447U00514. Modification to prevent display inaccuracy during A-A outband spurious measurement.

3779D-29. All serials. Interface problems with EPSON printers and the PMA.

3779D-31. Serials 00243 and below. Modification to eliminate failure code S-223 on digital self-test 4.

HP 3780A PATTERN GENERATOR/ERROR DETECTOR

3780A-18B. Serials 1804U00523 and below. Retrofit kit to incorporate equaliser and attenuator in existing option 100.
3780A-31. Serials 2224U02486 to 2224U03100 and 2449U03101 to 2449U03165. Preferred IC replacement to prevent failures of A37 systematic error detector and A38 error counter/control logic board.

HP 3781A/B PATTERN GENERATOR

3781A-4. All serials. Preferred replacement for A39 assembly.
3781B-8. All serials. Preferred replacement for A39 assembly.
3781B-9. Serials 2512U and below. Preferred replacement of cooling fan.

HP 3782A/B ERROR DETECTOR

3782A-6. All serials. Preferred replacement for A39 assembly.
3782B-9. All serials. Preferred replacement for A39 assembly.
3782B-10. Serials 2512U and below. Preferred replacement of cooling fan.

HP 3964A INSTRUMENTATION TAPE RECORDER

3964A-6A/8864A-6A/3968A-7A/8868A-7A. Serials 1702A and earlier. Improved power switch.

HP 3968A INSTRUMENTATION TAPE RECORDER

3964A-6A/8864A-6A/3968A-7A/8868A-7A. Serials 1702A and earlier. Improved power switch.

HP 4062B SEMICONDUCTOR PARAMETRIC TEST SYSTEM

4062A-6/4062B-1. 4062A all serials; 4062B serials 2519J00155 and below. Recommended replacement of VFP timer board.

HP 4935A TRANSMISSION IMPAIRMENT TEST SET

4935A-12A. Serials 2436A and below. Modification to prevent fuse blowing.
4935A-13. Improved carrying handle.

HP 4937A TRANSMISSION IMPAIRMENT TEST SET

4937A-2. Serials 2523A and below. Servicing the retrofitted instruments.
4937A-3. Improved carrying handle.
4937A-4. Serials 2545A and below. Announcement of revision 3.0 software.

HP 4951A PROTOCOL ANALYZER

4951A-1B. Serials 2426A and below. Installation of applications RAM.
4951A-3A. Serials 2426A01325 and below. Improved keyboard cable.
4951A-5A. Serials 2443A and below. Modification to correct tape board servo error.
4951A-6A. Serials 2426A and below (applicable only to Intercon, Europe, and Canadian units). Instructions on rewiring the power switch.
4951A-7A. Serials 2443A02576 and below. Instructions on installing the SCC retrofit kit.
4951A-8C. Serials 2443A2722 and below. Improved carrying handle.
4951A-10B. Serials 2443A and below. Summary of software revision 1.0 to 3.1.
4951A-11A. Serials 2508A to 2508A03900 and all HP 4951's that have been updated to Software Rev. 2.0. Announcement of Software Revision 3.1.
4951A-12A. Serials 2508A03891 and below. Modification to increase current drive for tape drive motor.
4951A-14A. Serials 2528A and below. Modification to prevent read amplifier errors.
4951A-15A. Tape drive assembly modification.
4951A-16. All HP 4951As shipped between 1 July 84 and 1 July 85. Recommend replacement ROMS.
4951A-17. Serials 2508 and below. Announcement of software update 3.1.

HP 4953A PROTOCOL ANALYZER

4953A-6B. Serials 2522A00626 and below. Preferred replacement EPROMS.
4953A-7. Serials 2528A and below. Announcement of revision 4.0 firmware update.
4953A-8. All serials. Recommended replacement cooling fan.

HP 4955 PROTOCOL ANALYZER

4955A-1B. Firmware upgrade to revision 1.2 operating system.

HP 5180A WAVEFORM RECORDER

5180A-16. Serials 2426A00941 and below. Modification to fix DMA problems with "auto stop" and chop mode data records.
5180A-20A. Serials 2448A01010 and below. Modification to improve histogram test results.

HP 5342A MICROWAVE FREQUENCY COUNTER

5342A-26A. All serials. Installation of amplitude measurement option 002 retrofit kit part number 05342-60200.
5342A-28A. All serials. Installation to Digital-to-Analog Conversion (DAC) option 004 retrofit kit part number 05342-60202.

HP 5345A ELECTRONIC COUNTER

5345A-37. Serials 2040A and below. Recommended replacement of A9U8, U10, U11, U13, U14, U15 on 05345-60009 gate control assembly.

HP 5384A/85A FREQUENCY COUNTER

5384A/85A-2. All serials. HP-IB verification program using the HP 85A controller.

HP 6002A POWER SUPPLY

6002A-3. Serials 2204A05926 to 2348A08275. Modification to improve reliability.
6002A-4. Serials 2520A09725 or below. Recommended power transistor and capacitor replacement.

HP 6030A/6031A/6032A/6033A/6034A/6038A/L POWER SUPPLIES

6030A-1. All serials. Modification to prevent self test error code 13 failure.
6031A-3. All serials. Modification to prevent self test error code 13 failure.
6032A-2. All serials. Modification to prevent self test error code 13 failure.
6033A-3. All serials. Modification to prevent self test error code 13 failure.
6034A-8. 6034A serials 2420A02404 to 2420A02984; 6034L serials 2423A00946 to 2423A01304. Front panel replacement parts.
6038A/L-1. All serials. Modification to prevent self test error code 13 failure.

HP 6942A MULTIPROGRAMMER

6942A-12/6943A-5. Serials 2513A05650 to 2513A05898. Explanation of power interrupt fault at supply voltage extremes.

HP 6943A MULTIPROGRAMMER EXTENDER

6942A-12/6943A-5. Serials 2516A00871 to 2516A00930. Explanation of power interrupt fault at supply voltage extremes.

HP 8170A LOGIC PATTERN GENERATOR

8170A-6. Serials 2521G01475 and below. RAM board 08170-66502 and 08170-66503 replacement.

HP 8447A/C/D/E/F RF AMPLIFIER

8447A-4. All serials. Prevention of amplifier damage due to electrostatic discharge.

HP 8483A POWER SENSOR

8483A-2. All serials. Calibration procedures with HP 435A/B, 436A and 438A power meters.

HP 8557A SPECTRUM ANALYZER

8557A-14. Serials 2229A02805 and below. Video filter potentiometer replacement.

HP 8559A SPECTRUM ANALYZER

8559A-28. Serials 2347A04500 and below. Video filter potentiometer replacement.

HP 8662A/8663A SYNTHESIZED SIGNAL GENERATORS

8662A-12A. Serials 2424A and below. Modification to improve low frequency loop performance and eliminate intermittent status errors 03/04.
8663A-6A. Serials 2419A and below. Modification to improve low frequency loop performance and eliminate intermittent status errors 03/04.

HP 8673C/D SYNTHESIZED SIGNAL GENERATOR

8673C-3. Serials 2512A and below. Recommended downconverter firmware update kit.
8673D-3. Serials 2512A and below. Recommended downconverter firmware update kit.

HP 8864A INSTRUMENTATION TAPE RECORDER

3964A-6A/8864A-6A/3968A-7A/8868A-7A. Serials 1702A and earlier. Improved power switch.

HP 8868A INSTRUMENTATION TAPE RECORDER

3964A-6A/8864A-6A/3968A-7A/8868A-7A. Serials 1702A and earlier. Improved power switch.

HP 10308B/C 6809/6809E INTERFACE MODULE

10308B/C-1. Interface board assemblies with HP P/N 64671-66501. Modification to correct invalid status and erratic J clocking.

HP 10312B/C 80286 INTERFACE MODULE

10312B/C-1. Serials 24XXA00XXX. Modification to prevent excessive noise on the user cable.

HP 35677A/B TEST SET

35677-2. 35677A serials 2331A00868 and below; 35677B serials 2332A00300 and below. Short screws on the directional bridges.

HP 37201A HP-IB EXTENDER WITH OPTION 050

37201A-6. Modification to U329 voltage supply to improve reliability.
37201A-7. All serials. Additional test steps for the HP-IB test program.

HP 37203A HP-IB EXTENDER

37203A-8. All serials. Repair of fiber optic cables.

HP 64100A DEVELOPMENT STATION

64100A-13A. All serials. Washing with harsh soaps or solvents will cause the water base paint to be removed.

HP 64110A DEVELOPMENT STATION

64110A-5A. All serials. Washing with harsh soaps or solvents will cause the water base paint to be removed.

HP 6422A 80186 EMULATOR POD

64224A-2. 80186 emulation pod repair number prefixes 2445A, 2448A, 2503A; serials 00331 through 00520 (inclusive). Modification to correct ALE circuit change.

HP 64501A PROM PROGRAMMER

64501A-3. Serials 2410A. Modification to the +5V REF circuit so it will not issue a programming pulse.

HP 69709A POWER SUPPLY CONTROL CARD

69709A-1. All serials. Controlling power supplies with a multiprogrammer power supply control card.

HP 85685A PRESELECTOR

85685A-1. All serials. Spectrum analyzer compatibility.

Service Note Order Form

If you want service notes, please check the appropriate boxes below and return this form separately to one of the following addresses.

For European customers (ONLY)

Hewlett-Packard
1820 Embarcadero Road
Palo Alto, California 94303

Hewlett-Packard
Nederland BV
Central Mailing Dept.
P.O.Box 529
1180 AM Amstelveen
The Netherlands

Name _____
Firm _____
Address _____
City _____
State _____ Zip _____

- | | | | | | |
|--|--|--|---|---|--|
| <input type="checkbox"/> 346A-1 | <input type="checkbox"/> 3497A-15A | <input type="checkbox"/> 3764A-13 | <input type="checkbox"/> 3781A-4 | <input type="checkbox"/> 4951A-16 | <input type="checkbox"/> 8557A-14 |
| <input type="checkbox"/> 346B-5 | <input type="checkbox"/> 3497A-21 | <input type="checkbox"/> 3770B-31 | <input type="checkbox"/> 3781B-8 | <input type="checkbox"/> 4951A-17 | <input type="checkbox"/> 8559A-28 |
| <input checked="" type="checkbox"/> 1220A-27 | <input type="checkbox"/> 3497A-23A-S | <input type="checkbox"/> 3776A-23 | <input type="checkbox"/> 3781B-9 | <input type="checkbox"/> 4953A-6B | <input type="checkbox"/> 8662A-12A |
| <input type="checkbox"/> 1222A-7 | <input type="checkbox"/> 3498A-3A-S | <input type="checkbox"/> 3776A-24 | <input type="checkbox"/> 3782A-6 | <input type="checkbox"/> 4953A-7 | <input type="checkbox"/> 8663A-6A |
| <input type="checkbox"/> 1630G-5A | <input type="checkbox"/> 3561A-8 | <input type="checkbox"/> 3776B-18B | <input type="checkbox"/> 3782B-9 | <input type="checkbox"/> 4953A-8 | <input type="checkbox"/> 8673C-3 |
| <input type="checkbox"/> 1631A/D-2 | <input type="checkbox"/> 3577A-4 | <input type="checkbox"/> 3776B-24 | <input type="checkbox"/> 3782B-10 | <input type="checkbox"/> 4955A-1B | <input type="checkbox"/> 8673D-3 |
| <input type="checkbox"/> 3054A-2 | <input type="checkbox"/> 3577A-5 | <input type="checkbox"/> 3776B-25 | <input type="checkbox"/> 3964A-6A/8864A-6A/ | <input type="checkbox"/> 5083-15 | <input checked="" type="checkbox"/> 10308B/C-1 |
| <input type="checkbox"/> 3060A-64 | <input type="checkbox"/> 3577A-6 | <input type="checkbox"/> 3779A-42 | <input type="checkbox"/> 3968A-7A/8868A-7A | <input type="checkbox"/> 5180A-16 | <input type="checkbox"/> 10312B/C-1 |
| <input type="checkbox"/> 3061/2A-0 | <input type="checkbox"/> 3577A-7 | <input type="checkbox"/> 3779A-43 | <input checked="" type="checkbox"/> 4062A-6/4062B-1 | <input type="checkbox"/> 5180A-20A | <input type="checkbox"/> 35677-2 |
| <input type="checkbox"/> 3061A/3062A-13 | <input type="checkbox"/> 3582A-13 | <input type="checkbox"/> 3779A-45 | <input type="checkbox"/> 4935A-12A | <input type="checkbox"/> 5342A-26A | <input type="checkbox"/> 37201A-6 |
| <input type="checkbox"/> 3061A/62A-14-S | <input type="checkbox"/> 3702B-50 | <input type="checkbox"/> 3779A-47 | <input type="checkbox"/> 4935A-13 | <input type="checkbox"/> 5342A-28A | <input type="checkbox"/> 37201A-7 |
| <input type="checkbox"/> 3065-0 | <input type="checkbox"/> 3702B-51 | <input type="checkbox"/> 3779A-54 | <input type="checkbox"/> 4937A-2 | <input type="checkbox"/> 5345A-37 | <input checked="" type="checkbox"/> 37203A-8 |
| <input type="checkbox"/> 3065A-27 | <input type="checkbox"/> 3708A-2 | <input type="checkbox"/> 3779B-45 | <input type="checkbox"/> 4937A-3 | <input type="checkbox"/> 5384A/85A-2 | <input type="checkbox"/> 64100A-13A |
| <input type="checkbox"/> 3065-31-S | <input type="checkbox"/> 3708A-3 | <input type="checkbox"/> 3779B-46 | <input type="checkbox"/> 4937A-4 | <input type="checkbox"/> 6002A-3 | <input type="checkbox"/> 64110A-5A |
| <input type="checkbox"/> 3065-32 | <input type="checkbox"/> 3708A-4 | <input type="checkbox"/> 3779B-48 | <input type="checkbox"/> 4951A-1B | <input type="checkbox"/> 6002A-4 | <input type="checkbox"/> 64224A-2 |
| <input type="checkbox"/> 3065-38-S | <input type="checkbox"/> 3739A-4 | <input type="checkbox"/> 3779B-49 | <input checked="" type="checkbox"/> 4951A-3A | <input type="checkbox"/> 6030A-1 | <input type="checkbox"/> 64501A-3 |
| <input type="checkbox"/> 3325A-18 | <input type="checkbox"/> 3746A-2B | <input type="checkbox"/> 3779B-50 | <input type="checkbox"/> 4951A-5A | <input type="checkbox"/> 6031A-3 | <input type="checkbox"/> 69709A-1 |
| <input type="checkbox"/> 3325A-19-S | <input type="checkbox"/> 3746A-5A | <input type="checkbox"/> 3779C-24 | <input type="checkbox"/> 4951A-6A | <input type="checkbox"/> 6032A-2 | <input type="checkbox"/> 85685A-1 |
| <input checked="" type="checkbox"/> 3326A-2 | <input type="checkbox"/> 3746A-16 | <input checked="" type="checkbox"/> 3779C-25 | <input type="checkbox"/> 4951A-7A | <input type="checkbox"/> 6033A-3 | |
| <input type="checkbox"/> 3326A-3 | <input type="checkbox"/> 3747A/B-25B | <input type="checkbox"/> 3779D-27 | <input type="checkbox"/> 4951A-8C | <input type="checkbox"/> 6034A-8 | |
| <input type="checkbox"/> 3336A/B/C-16-S | <input checked="" type="checkbox"/> 3762A-8 | <input type="checkbox"/> 3779D-28 | <input type="checkbox"/> 4951A-10B | <input type="checkbox"/> 6038A/L-1 | |
| <input type="checkbox"/> 3421A-2B | <input checked="" type="checkbox"/> 3763A-7B | <input type="checkbox"/> 3779D-29 | <input type="checkbox"/> 4951A-11A | <input type="checkbox"/> 6942A-12/6943A-5 | |
| <input type="checkbox"/> 3456A-1D | <input type="checkbox"/> 3763A-12 | <input type="checkbox"/> 3779D-31 | <input type="checkbox"/> 4951A-12A | <input type="checkbox"/> 8170A-6 | |
| <input type="checkbox"/> 3456A-6A | <input type="checkbox"/> 3764A-11B | <input type="checkbox"/> 3780A-18B | <input type="checkbox"/> 4951A-14A | <input type="checkbox"/> 8447A-4 | |
| <input type="checkbox"/> 3456A-16A | <input type="checkbox"/> 3764A-12 | <input type="checkbox"/> 3780A-31 | <input type="checkbox"/> 4951A-15A | <input type="checkbox"/> 8483A-2 | |

Please photocopy this order form if you do not want to cut off the page.

ANSWERS: 1-T; 2-T; 3-T; 4-T; 5-T; 6-B; 7-D; 8-B; 9-C; 10-A

Hewlett-Packard (Canada) Ltd.
6877 Goreway Drive
Mississauga, Ontario L4V 1M8

BENCH BRIEFS
JANUARY-FEBRUARY 1986

Volume 26 Number 1


Service information from
Hewlett-Packard Company

To obtain a qualification form for a free subscription, send your request to the above address.

Reader comments or technical article contributions are welcomed.

Please send them to the Bench Briefs Editor.

Editor: Jim Bechtold
Hewlett-Packard

	Canada Post Postage paid	Postes Canada Post Paye
Bulk third class		En nombre troisième classe
732 REXDALE		