S E R V I C E   N O T E

SUPERSEDES: None

HP 37717A PDH/SDH/Jitter Test Set

Serial Numbers: 3345U00000/3345U99999

Swapping Modules Between Instruments

To be Performed by: Qualified Service Personnel

Situation

Use the following information if you need to swap one or more modules from an HP 37714A, HP 37717A, HP 37717B or HP 37717C into an HP 37717A instrument.

Action

Confirm the module(s) you want to swap and check for any problems and all other relevant information from the list below.

NOTE

Modules must be fitted in the positions shown in Table 1 and Figure 1.

Continued

DATE: October 1996

ADMINISTRATIVE INFORMATION

SERVICE NOTE CLASSIFICATION:

INFORMATION ONLY

AUTHOR:	ENTITY:	ADDITIONAL INFORMATION:
DBG	E610	

HEWLETT® **PACKARD**

CAUTION

> To prevent removal or damage of the metal RFI strips fitted on the
> side of each module you must remove all the modules in front of
> the one to be swapped, then replace the modules working from the
> back of the instrument to the front.

Severe damage can result if an RFI Strip is dislodged and falls inside the instrument. Always ensure that RFI strips are securely in position and unbroken.

Optical Modules (# UH1, UH2, URU, UKT, USN, A3T, A3U)

UKT, USN. A3T and A3U can not be fitted into the HP 37717A

Remember, when testing #URU and also the 1550nm transmit port from #USN or A3T, you will need to attenuate the output signal with an optical attenuator when running the back-to-back tests. You don't need the attenuator with UH1 or UH2. Information on this is in the Service Manual and Calibration Manual.

SDH Modules (#US1, US9, A1T, A1U, A3R)

A3R can not be fitted into the HP 37717A.

If the later Jitter Transmit module (#A3K) is fitted, unmodified US1 or A1T Modules will limit SDH Jitter transmit frequency to 4MHz (5HMHz is required for G825 testing).

If the earlier Jitter Transmit module (#UHK) is fitted, modified US1 or A1T Modules may not operate correctly. These modifications were introduced at Build Status 2.18.

Also note that a special RS449 looping link is required when running the INDIVIDUAL A1T selftest but NOT the ALL TESTS.

Unstructured PDH Modules (#UKK, USB)

No problems in swapping any of these modules between instruments but you should check the RECOVERED CLOCK CALIBRATION is OK - see Service Manual.

Structured PDH Modules (#UKJ, USA)

No problems in swapping any of these modules between instruments but you should check the RECOVERED CLOCK CALIBRATION is OK - see Service Manual.

ATM Modules (#UKN, USE)

ATM HAS THE SAME HARDWARE AS Structured PDH, so check on the options page that UKN is fitted. If not, you will need to contact the factory for the special Retrofit Kit to enable ATM firmware features. - there is a charge for this kit.

Services Module (#USK)

This can not be fitted to the HP 37717A

Binary Interface Module (#UH3)

You should check the binary levels and mark to space ratios are within specification - there is a procedure in the latest calibration manual. A modification was introduced to the PDH Module from Build Status 1.21 to ensure all Binary Interfaces met specification.

ETSI/ANSI Module (#UKZ)

This can not be fitted to the HP 37717A.

Jitter Modules (#UHK, UHN, A1M, A1N, A1P, A1Q, A1R, A1S)

CAUTION

Swapping Jitter Transmit and Receive modules is not
recommended.

SDH Jitter Measurement (#A1M, A1Q) is only allowed in the HP 37717A if no Optics fitted.

Optical Jitter Measurement (#A1N, A1P, A1R, A1S) is NOT allowed in the HP37717A.

Jitter Tx and Rx calibration data is unique and is held in the Processor Module (CPU Module).

If you swap ONLY the jitter Transmitter module to another unit, the Transmit calibration data

will be wrong so you will need to perform Jitter Transmitter Calibration -takes between 30 minutes and 1 hour and needs a Spectrum Analyser.

If you swap ONLY the jitter Receiver module to another unit, the Receive calibration data will be wrong so you will need to perform Jitter Receiver Calibration - this will take between 30 minutes and 1.5 hours (depending on jitter options fitted) but needs no external equipment - it's fully automatic. If STM -1/4 optical Jitter is fitted (#A1N, A1P,A1R,A1S), you must also check/set the STM-1 and STM-4 Optical Recovered Clock free-run frequencies.

If you swap BOTH the jitter Tx and Rx Modules , all jitter calibration data will be wrong so you will need to perform both Tx and Rx cal - always perform the Jitter Transmitter Calibration first.

NOTE

If you do not want to do the calibrations, you can swap the CPU
Module and the Jitter Tx/Rx Modules AS A MATCHED SET. but
you will now need to recalibrate the 10MHz Reference, and the
PDH VCXO,s/ Recovered Clocks (if PDH/ATM fitted). You will
also need to check the option structure is the same and enable
disable any missing options. To do this, you will need to contact
the factory for the special codeword(s).

Jitter Modules (#A3K, A3L, A3M, A3N, A3P, A3Q, A3V, A3W)

None of the above jitter options is allowed in the HP 37717A.

Processor (CPU) Module

CAUTION

Swapping the Processor module is not recommended.

As explained above, all unique calibration data is held in the Processor Module (CPU Module) for Jitter Tx/Rx, Recovered Clocks, VCX0's and all firmware options fitted.

If you swap ONLY the CPU to another unit, all the above cal data will be wrong so you will need to perform a FULL INSTRUMENT CALIBRATION.

The disc drive CPU fitted in later versions of the HP 37717B and all HP 37717C will not operate in the HP 37717A.

Rules for Fitting modules

- Left-justify all modules when fitting - i.e if one or more shown above is not fitted, move others as far left as possible to fill any gaps (EXCEPT for Slot 1 which must only have OPTICS module).

- Modules are 1-slot or 2-slots wide (see Table 2)

- Total module width must not exceed 8 slots.

- If total module width is less than 8 slots, fill gap at right side with Blanking Plates.

Anti-Static Precautions. Watch out for Static Zap !!!

The smallest static voltage which most people can feel is around 3500 volts. It takes less than one tenth of this (about 300 volts) to destroy or severely damage static-sensitive circuits such as those found in the HP 37717. Often, static damage is not sufficient to cause an immediate malfunction. Instead, it can seriously damage a component, resulting in premature failure often at a critical moment when the instrument is most in demand.

The modules fitted to the HP 37717A contain assemblies and components which are sensitive to electrostatic discharge and are not fully screened against this when removed from the instrument. For this reason, you must always follow recommended static-handling procedures when upgrading your HP 37717A with parts from this kit.

By taking the simple precautions below, you can significantly reduce the risk of instrument failure or malfunction caused by static damage.

- Before installing the parts from this retrofit kit, set up a suitable working area where potential static sources are minimised. Avoid working in low-humidity and carpeted areas. Avoid wearing nylon or static-inducing clothing and keep body movement to a minimum.

- Treat all assemblies, components and interface connections as static-sensitive.

- When you unpack this retrofit kit, keep all boards and accessories in their conductive anti-static bags until you are ready to install them.

- Always use the two knobs on the module front panel when removing and installing modules in the instrument. After removal, immediately place the module into a conductive anti-static bag.

- Never touch the module edge connector or any exposed circuitry on the module.

- If possible, wear anti-static clothing and use a controlled-static work station which includes instrument and personnel grounding provisions (HP 9300-0933 or equivalent).

A typical Workstation will consist of a Table Mat and Floor Mat grounded to a suitable earth in the building, a Wrist Strap attached to the operator's wrist and connected by a flexible cable to the Table Mat and a Heel Strap which should be attached to the operator's foot. A supply of various sized anti-static bags should be on hand and any unprotected assembly should be placed in one of these immediately upon removal.

If a static-controlled workstation is unavailable, minimum protection will be obtained by using the special anti-static wrist strap provided in this upgrade kit. Instructions for using this strap are provided with it.

Table 1   Configurations for the HP 37717A Modules

Module Description	Available Options	Module Width	Fitting Instructions
Optics	UH1,UH2, URU, USN,UKT	2-slot 2-slot 2-slot	**Always Slot 1 -this is a dedicated Optics slot, so cannot be occupied by any other type of module.**
SDH Binary In/face	0YH	1-slot	Attached to #UKT or USN in slot 2
SDH	US1,US5 A1T,A1U	2-slot 2-slot	Immediately to the right ofOptics Module
PDH Multiple Outputs	UHC,US6	1-slot	To right of SDH Module (or Optics if no SDH fitted)
Jitter Transmitter	UHK	1-slot 1-slot	To right of PDH Multiple Outputs To right of SDH (if no PDH Multiple Outputs) To right of Optics (if no SDH or PDH Multiple Out)
Unstructured PDH. (single Tx/Rx module) Structured PDH or ATM. (one Tx& one Rx Module)	UKK,USB UKJ, USA	2-slot 1-slot each	To right of Jitter Transmitter, PDH Multiple Outputs, SDH or Optics (see above). As Unstructured PDH - Tx Module is always on left
PDH Binary In/face	UH3	1-slot	Immediately to the right of PDH Rx Module
Jitter Receiver	UHN,US9, A1M, A1Q,	1-slot 2-slot 2-slot 2-slot 2-slot 2-slot 2-slot	If #UH3 fitted, to right of it. If #UH3 not fitted, to right of PDH Rx Module If PDH not fitted, to right of SDH Module. **NOTE : SDH Jitter is only allowed in the 37717A if NO Optical Module fitted.** **Optical Jitter is NOT allowed in the 37717A under any circumstances.**
Blanking Plates -part no. 37714-00013 (single) 37714-00014 (double)	N/A	1 or 2-slot	Fit Blanking Plates at rear (CPU end) to fill any gaps left after fitting all required modules - **there must be no gaps between modules or at instrument front.**

Note 1 : All Options listed in each row of the table are **mutually exclusive** (i.e only one can be fitted in an instrument).

Note 2 : Optical options need SDH option to operate.

Note 3 : Jitter transmit/receive needs PDH or SDH option to operate.

Note 4 : Jitter transmit option is needed to calibrate Jitter Receiver.

Note 5 : Services Option needs **structured** PDH to operate.

Note 6 : PDH Binary Interface option needs PDH to operate.

Note 7 : SDH Binary Interface is attached to USN/UKT module and needs SDH to operate.

Note 8 : SDH Jitter Measurement is only allowed in the HP 37717A if no Optics Module is fitted.

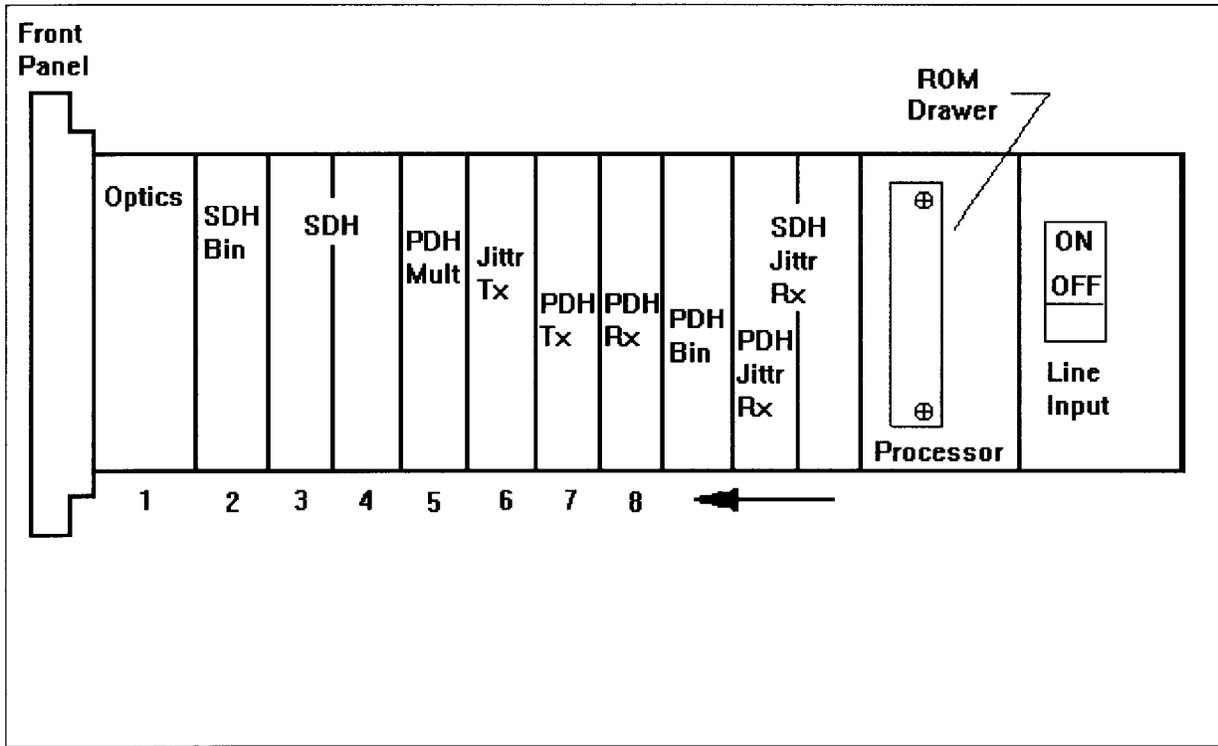**Note 9 :** Optical Jitter Measurement is NOT allowed in the HP37717A

Figure 1 Location of Modules in HP 37717A Mainframe