

PRODUCT SUPPORT PLAN

February 25, 1982
Supersedes: none

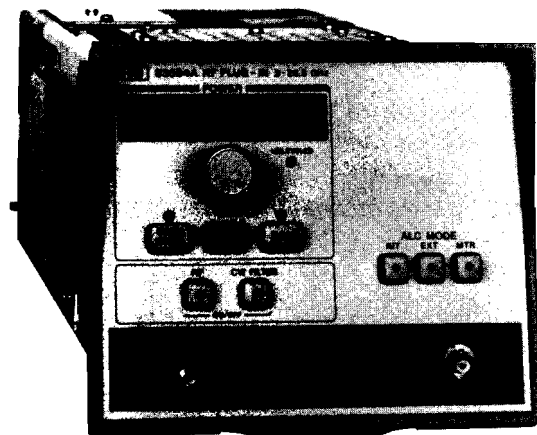
To: PT-01, PT-11 INSTRUMENT SALES AND SERVICE OFFICES
From: NETWORK MEASUREMENTS DIVISION (4500),
SANTA ROSA, CALIFORNIA
Subject: MODEL 83594A 2.0 to 26.5 GHz RF PLUG-IN

DESCRIPTION

The 83594A is a broad band RF Plug-in compatible with the 8350A Sweep Oscillator, covering frequencies from 2.0 MHz to 26.5 GHz in a continuous sweep. There are four separate frequency bands available. Band 1 (2.0 to 7.0 GHz) Band 2 (7.0 to 13.5 GHz), Band 3 (13.5 to 20.0 GHz) and Band 4 (20.0 to 26.5 GHz), or all four bands can be swept sequentially for 2.0 GHz to 26.5 GHz frequency coverages. The specified maximum leveled output power is +10 dBm with <20 kHz peak residual FM. The 83594A uses a Switched YIG Tuned Multiplier (SYTM), which allows the selection of the fundamental 2.0 to 7.0 GHz (Band 1) or the second, third, or fourth harmonic of the fundamental. The 83594A has internal leveling standard. The available options are:

- Option 002 – Internal 55 dB Step Attenuator
- Option 004 – Rear Panel RF Output

The 83594A U.S.A. list price is \$22,750. The first customer shipment is December 1, 1981.



SUPPORT STRATEGY

The repair strategy is bench repair to the component level. There are three microcircuits, all of which are on the Rebuilt Exchange program (Blue Stripe). See Attachment II for a list of HP part numbers and prices.

Jim Stead

 **HEWLETT
PACKARD**

SERVICE TRAINING

United States Product Service Training for the 8350A Sweep Oscillator and the family of six RF Plug-ins was completed in November (83525A, 83540A, 83522A, 83545A, 83570A, and 83592A). HPSA Product Service Training is scheduled for November 30 through December 11, 1981 and ICON Product Service Training is scheduled for March 8 - 12, 1982 in Santa Rosa.

DOCUMENTATION PLAN

The first customer shipments are being made with preliminary manuals. The first edition manual is planned to be ready for customer shipment starting the first of February. The final manual will be distributed in June, 1982.

SERVICE SPECIFICATIONS

The expected failure rate for the 83594A is less than 15% with a mean time to repair of less than 4.5 hours, ARC \$500. The calibration cycle will be twice a year with a calibration time of less than two hours.

WARRANTY

The 83594A carries the standard instrument product warranty, one year return to Hewlett-Packard.

TEST EQUIPMENT REQUIRED

A list of service accessories and recommended test equipment to support the 83594A is provided in Attachment III. The Weinschel power splitter and attenuators are necessary to ensure accurate power related measurements from 18 to 26.5 GHz.

PARTS STOCKING RECOMMENDATIONS

A parts stocking recommendation will be sent to CPC and PCE for those parts that are unique to the 83594A. This will include both purchased and fabricated parts. The expected number of repairs per region per quarter are shown in Attachment I.

Attachments:

- I. Projected Repairs by Region
- II. Rebuilt Exchange Parts
- III. Recommended Test Equipment

Attachment I. 83594A Projected Repairs by Region

| | NEELY | EAST | MIDWEST | SOUTH | EUROPE | JAPAN | ICON | Total |
|-------|-------|------|---------|-------|--------|-------|------|-------|
| Q1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Q2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Q3 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 4 |
| Q4 | 1 | 1 | 0 | 1 | 1 | 1 | 0 | 5 |
| Total | 2 | 2 | 1 | 1 | 2 | 1 | 0 | 9 |

Attachment II. Rebuilt Exchange Parts

| Description | Part Numbers | | New Price | Exchange Price |
|------------------------------|--------------|-----------|-----------|----------------|
| | New | Restored | | |
| YIG Oscillator 2.0 - 7.0 GHz | 5086-7335 | 5086-6335 | \$2050.00 | \$1250.00 |
| YTM 2.0 - 26.5 GHz | 5086-7340 | 5086-6340 | 3400.00 | 1700.00 |
| Power Amp 2.0 - 7.0 GHz | 5086-7386 | 5086-6386 | 3200.00 | 1600.00 |

Attachment III. Recommended Test Equipment (1 of 3)

| <u>Instrument</u> | <u>Critical Specifications</u> | <u>Recommended Model</u> | <u>Use*</u> |
|--------------------------|--|--|--------------------|
| Sweep Oscillator | No substitute | HP 8350A | P,A,T |
| Digital Voltmeter (DVM) | Range: -50V to +50V Accuracy: $\pm 0.01\%$ Input Impedance: $\geq 10M$ Ohms | HP 3456A | A,T |
| Oscilloscope | Dual Channel Bandwidth: dc to 100 MHz Vertical Sensitivity: ≤ 5 mV/DIV Horizontal Sweep Rate: $\leq 0.1\mu S/DIV$ External Sweep Capability | HP 1740A | P,A,T |
| Oscilloscope Probe | 1:1 General Purpose Probe | HP 10008B | A |
| Frequency Counter | Frequency Range: 0.01 to 26.5 GHz Input Impedance: 50 Ohms Resolution: ≤ 1 MHz | HP 5343A | P,A |
| Spectrum Analyzer | Frequency Range: 0.01 to 22.0 GHz Residual FM: ≤ 100 Hz | HP 8565A or HP 8566A | P,T |
| Swept Amplitude Analyzer | Capable of Transmission Measurements. Power Resolution: ≤ 0.25 dB | HP 8755C | A |
| Display Mainframe | Compatible with 8755C Swept Amplitude Analyzer | HP 180T/TR, 182T/TR | A |
| Detector | Compatible with Swept Amplitude Analyzer Frequency Range: 0.01 to 26.5 GHz Power Range -20 to +10 dBm | HP 11664B | A |
| Frequency Meter | Frequency Accuracy: $\leq 0.17\%$ Calibration Increments: ≤ 2 MHz Frequency Range: 0.96 to 4.0 GHz 4.0 to 12.4 GHz 12.4 to 18 GHz 18 to 26.5 GHz | HP 536A HP 537A HP P532A HP K532A | A A A P,A |
| Function Generator | Frequency Range: 0.1 Hz to 10 MHz Sinewave and squarewave output Output Level: 10Vp-p into 50 Ohms Output Level Flatness: $\pm 3\%$ from 10 Hz to 100 kHz $\pm 10\%$ from 100 kHz to 10 MHz | HP 3312A | P,A,T |
| Power Meter | Power Range: -20 to +10 dBm | HP 432A | P,A |
| | (No substitute when used for external power meter leveling). | | |

Attachment III. Recommended Test Equipment (2 of 3)

| <u>Instrument</u> | <u>Critical Specifications</u> | <u>Recommended Model</u> | <u>Use*</u> |
|---------------------|---|--|--------------------|
| Thermistor Sensor | Frequency Range: 0.01 to 18 GHz Maximum SWR: ≤ 1.75 | HP 8478B | P,A |
| Thermistor Sensor | Frequency Range: 18 to 26.5 GHz Maximum SWR: ≤ 2.0 | HP K486 | P,A |
| Power Meter | Power Range: 1 μ W to 100 mW | HP 436A | P,A |
| Power Sensor | Frequency Range: 0.01 to 26.5 GHz | HP 8485A | P,A |
| Crystal Detector** | Frequency Response: 0.01 to 26.5 GHz Maximum Input Power: 100 mW | HP 8473C | P,A |
| Attenuator** | Frequency Range: 0.01 to 26.5 GHz Maximum Input Power: +20 dBm Attenuation: 20 dB ± 1.0 dB 10 dB ± 0.8 dB 6 dB ± 0.6 dB 3 dB ± 0.5 dB | Weinschel Model M9-20 Weinschel Model M9-10 Weinschel Model M9-6 Weinschel Model M9-3 | P P,A P P |
| Power Splitter** | Frequency Range: 0.01 to 26.5 GHz Maximum Input Power: $\geq +20$ dBm | Weinschel Model 1579A | P,A |
| Directional Coupler | Frequency Range: 0.1 to 2.0 GHz Nominal Coupling: ≥ 20 dB Maximum Coupling Variation: $\leq +1$ dB Minimum Directivity: ≥ 32 dB | HP 778D | P |
| Directional Coupler | Frequency Range: 2.0 to 18 GHz Nominal Coupling: ≥ 22 dB Maximum Coupling Variation: ± 1 dB Minimum Directivity: 26 dB | HP 11691D | P |
| Directional Coupler | Frequency Range 18 to 26.5 GHz Nominal Coupling: 10 dB Maximum Coupling Variation: $\pm .5$ dB Minimum Directivity: 40 dB | HP K752C | P |
| RMS Voltmeter | dB Range: -20 to -70 dBm (0 dBm = 1 mW into 600 ohms) Frequency Range: 10 Hz to 10 MHz Accuracy: $\pm 5\%$ of full scale | HP 3400A | P |

Attachment III. Recommended Test Equipment (3 of 3)

| <u>Instrument</u> | <u>Critical Specifications</u> | <u>Recommended Model</u> | <u>Use*</u> |
|------------------------------------|--|----------------------------|-------------|
| Air Line Extension (2 required) | Impedance: 50 Ohms Frequency Range: dc to 18 GHz Reflection Coefficient: 0.018 + 0.001 (times the frequency in GHz) | HP 11567A | P |
| Step Attenuator | Frequency Range: dc to 26.5 GHz Incremental Attenuation 0 to 70 dB in 10 dB steps Calibration Accuracy: ± 0.1 dB at all steps | HP 8495D Option 890 | P |
| Adjustable Short | Frequency Range: 1.1 to 18 GHz Impedance: 50 ± 1.5 ohms | Maurly Microwave 1959-2 | P |
| Waveguide short | Frequency Range: 18 to 26.5 GHz | HP K921B | |
| DC Power Supply | DC Output: 0 to 6.5Vdc ± 0.05 Vdc | HP 6213A | A |
| 50 Ohm Termination | Type N, 50 ± 0.5 Ohms | HP 909A | P |
| Adapter (2 required) | APC 3.5 to waveguide SWR ≤ 1.2 | HP K281C | PA |
| Delay Line Discriminator | Refer to Figure 1-3. | | P,A |
| PC Board Extender | 44-pin, extends printed circuit boards | HP Part No. 08350-60031 | A,T |

*P = Performance Test; A = Adjustments; T = Troubleshooting

**For testing at frequencies of ≤ 18 GHz, the following equipment may be substituted:

ATTENUATORS

20 dB HP 8491B Option 020
10 dB HP 8491B Option 010
6 dB HP 8491B Option 006
3 dB HP 8491B Option 003

POWER SPLITTER

HP 11667A

CRYSTAL DETECTOR

HP 8471B