

# 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

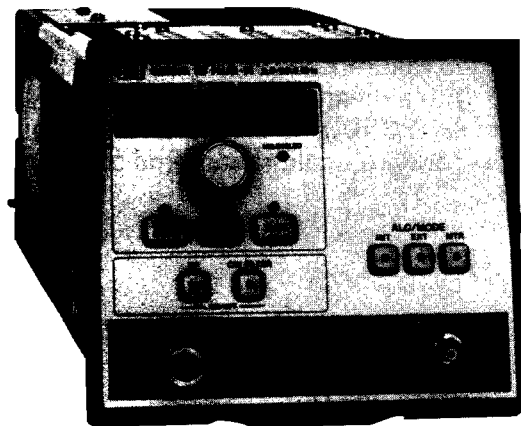
Subject: MODEL 83590A 2.0 to 20.0 GHz RF PLUG-IN

## DESCRIPTION

The 83590A is a broad band RF Plug-in compatible with the 8350A Sweep Oscillator, covering frequencies from 2.0 GHz to 20.0 GHz in a continuous sweep. There are three 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), or all three bands can be swept sequentially for 2.0 GHz to 20.0 GHz frequency coverages. The specified maximum leveled output power is +10 dBm with <20 kHz peak residual FM. The 83590A 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, or third harmonic of the fundamental. The 83590A has internal leveling standard. The available options are:

- Option 002 — Internal 70 dB Step Attenuator
- Option 004 — Rear Panel RF Output
- Option 005 — APC-7 RF Output Connector

The 83590A U.S.A. list price is \$19,250. 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 March, 1982.

## SERVICE SPECIFICATIONS

The expected failure rate for the 83590A 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 83590A 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 83590A is provided in Attachment III. The Weinschel power splitter and attenuators are necessary to ensure accurate power related measurements from 18 to 20.0 GHz.

## PARTS STOCKING RECOMMENDATIONS

A parts stocking recommendation will be sent to CPC and PCE for those parts that are unique to the 83590A. 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. 83590A Projected Repairs by Region*

	NEELY	EAST	MIDWEST	SOUTH	EUROPE	JAPAN	ICON	Total
Q1	0	0	0	0	0	0	0	0
Q2	1	1	0	0	1	0	0	3
Q3	2	1	1	1	2	1	0	8
Q4	2	2	0	1	2	1	1	9
<b>Total</b>	5	4	1	2	5	2	1	20

*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 – 20.0 GHz	5086-7341	5086-6341	3000.00	1500.00
Power Amp 2.0 – 7.0 GHz	5086-7342	5086-6342	3000.00	1500.00

*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 3455A	A,T
Oscilloscope	Dual Channel Bandwidth: dc to 100 MHz Vertical Sensitivity: $\leq 5$ 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 20.0 GHz Input Impedance: 50 Ohms Resolution: $\leq 1$ MHz	HP 5343A	P,A
Spectrum Analyzer	Frequency Range: 0.01 to 20.0 GHz Residual FM: $< 100$ Hz	HP 8565A or HP 8566A	P,T
Swept Amplitude Analyzer	Capable of Transmission Measurements. Power Resolution: $\leq 0.25$ dB	1HP 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 20.0 GHz Power Range -20 to +10 dBm	HP 11664B	A
Frequency Meter	Frequency Accuracy: $\leq 0.17\%$ Calibration Increments: $\leq 2$ MHz Frequency Range: 0.96 to 4.0 GHz 4.0 to 12.4 GHz 12.4 to 18 GHz	HP 536A HP 537A HP P532A	A A 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: $\leq +3\%$ from 10 Hz to 100 kHz $\leq +10\%$ from 100 kHz to 10 MHz	HP 3312A	P,A,T
Power Meter	Power Range: -20 to +10 dBm (No substitute when used for external power meter leveling).	HP 432A	P,A
Thermistor Sensor	Frequency Range: 0.01 to 18 GHz Maximum SWR: $\leq 1.75$	HP 8478B	P,A

*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: 18 to 20.0 GHz Maximum SNR: $\leq 2.0$	HP K486	P, A
Adaptor	Waveguide to APC 3.5 (f) (for use with HP K486)	HP K281C	A
Power Meter	Power Range: 1 $\mu$ W to 100 mW	HP 436A	P, A
Power Sensor	Frequency Range: 0.01 to 20.0 GHz	HP 8485A	P, A
Crystal Detector**	Frequency Response: 0.01 to 20.0 GHz Maximum Input Power: 100 mW	HP 8473C	P, A
Attenuator**	Frequency Range: 0.01 to 20 GHz Maximum Input Power: +28 dBm Attenuation: 20 dB $\pm 1.0$ dB 10 dB $\pm 0.8$ dB 6 dB $\pm 0.6$ dB 3 dB $\pm 0.5$ 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 20.0 GHz Maximum Input Power: $\leq +20$ dBm	Weinschel Model 1579A	P, A
Directional Coupler	Frequency Range: 0.1 to 2.0 GHz Nominal Coupling: $\geq 20$ dB Maximum Coupling Variation: $\leq +1$ dB Minimum Directivity: $\geq 32$ dB	HP 778D	P
Directional Coupler	Frequency Range: 2.0 to 18 GHz Nominal Coupling: $\geq 22$ dB Maximum Coupling Variation: $\pm 1$ dB Minimum Directivity: 26 dB	HP 11691D	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
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 18 GHz Incremental Attenuation 0 to 70 dB in 10 dB steps Calibration Accuracy: $\leq +0.1$ dB at all steps	HP 8495B Option 890	P

*Attachment III. Recommended Test Equipment (3 of 3)*

<u>Instrument</u>	<u>Critical Specifications</u>	<u>Recommended Model</u>	<u>Use*</u>
Adjustable Short	Frequency Range: 1.1 to 18 GHz Impedance: 50 $\pm$ 1.5 ohms	Maury Microwave 1959-2	P
DC Power Supply	DC Output: 0 to 6.5Vdc $\pm$ 0.05Vdc	HP 6213A	A
50 Ohm Termination	Type N, 50 $\pm$ 0.5 Ohms	HP 909A	P
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  $\leq$ 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 8470B

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