

# PRODUCT SUPPORT PLAN

December 3, 1982

Supersedes: none

To: ALL INSTRUMENT SALES AND SERVICE OFFICES (PT01)

From: NETWORK MEASUREMENTS DIVISION (45)  
SANTA ROSA, CALIFORNIA (PL14)

Subject: 83525B .01 to 8.4 GHz RF PLUG-IN

## DESCRIPTION

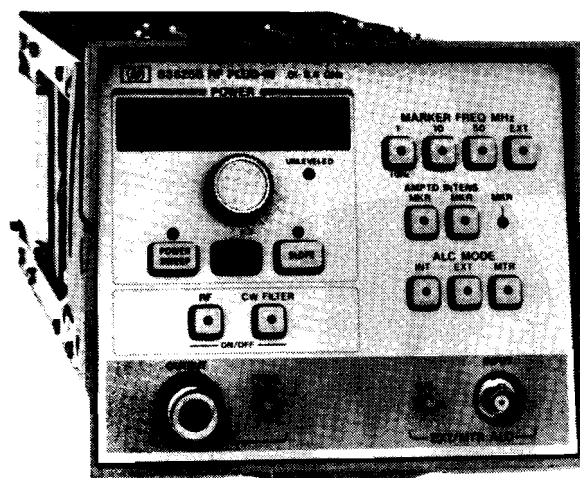
The 83525B RF plug-in is compatible with the 8350A sweep oscillator, covering frequencies from 10 MHz to 8.4 GHz in a continuous sweep. There are two separate frequency bands available. Band 0 (10 MHz to 2.1 GHz), and Band 1 (2.0 to 8.4 GHz), or both bands can be swept sequentially for 10 MHz to 8.4 GHz frequency coverages. The specified maximum leveled output power is +10 dBm with  $\leq 7$  kHz peak residual FM. The 83525B uses a YIG Tuned filter which is built into the YIG Tuned Oscillator (YFO) to reduce harmonics in the 2.0 to 8.4 GHz frequency range to better than 45 dBc. The 83525B has internal leveling standard. The available options are:

- Option 002 — Internal 70 dB Step Attenuator
- Option 004 — Rear Panel RF Output

The 83525B U.S.A. list price is \$15,500. The first customer shipment is September 1, 1982.

## SUPPORT STRATEGY

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



## WARRANTY

The 83525B carries the standard instrument product warranty, one year return to Hewlett Packard.

## TRAINING

There is no additional service training planned for the 83525B. Thirty-five technicians have been trained worldwide to service the 8350A and its series of RF Plug-ins. The 83525B is identical to the 83525A with the exception of the RF path. See simplified block diagram (Attachment II).

Jim Stead

 **HEWLETT  
PACKARD**

## LITERATURE

The first customer shipments are being made with the first edition manual (HP Part Number 83525-90008). The final manual will be distributed in April, 1983.

## BASIC SUPPORT DATA

The expected failure rate for the 83525B is less than 15% with a mean time to repair of less than four hours, ARC \$450. The calibration cycle will be once a year with a calibration time of less than three hours.

## SUPPORT EQUIPMENT

A list of service accessories and recommended test equipment to support the 83525B is provided in Attachment III.

## PARTS SUPPORT

A parts stocking recommendation will be sent to CPC and PCE for those parts that are unique to the 83525B. This will include both purchased and fabricated parts. The expected number of repairs per region per quarter are shown in Attachment IV.

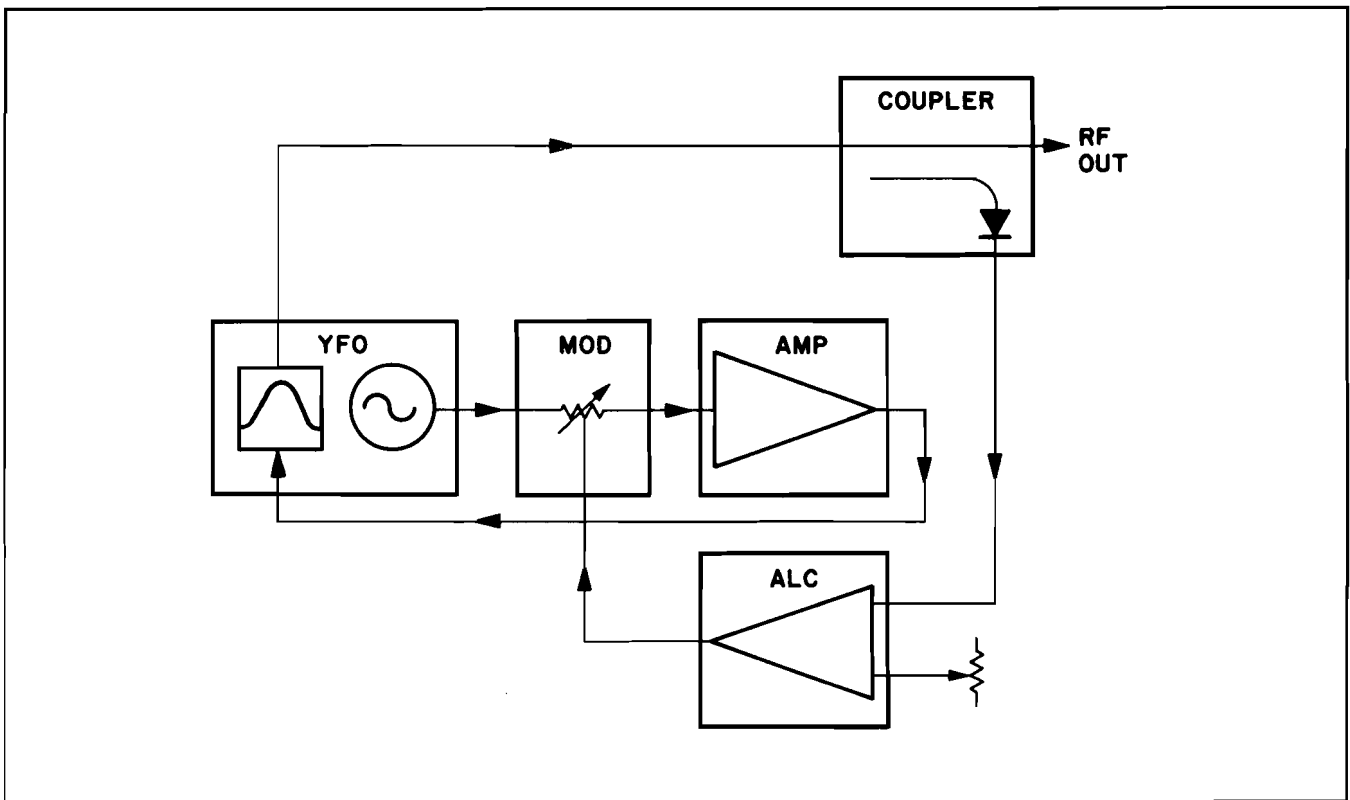
## ATTACHMENTS:

- I. Rebuilt Exchange Parts
- II. Simplified RF Block Diagram
- III. Service Accessories Available and Recommended Test Equipment.
- IV. Projected Repairs by Region
- V. Basic Support Data
- VI. Parts Stocking Recommendation
- VII. 8350A Family Prioritized Parts Stocking Recommendation

*Attachment I. Rebuilt Exchange Parts*

Description	Part Numbers		New Price	Exchange Price
	New	Restored		
YIG Oscillator 2.0—8.4GHz	5086-7250	5086-6250	4000	1950
Modulator/Amp 2.0—8.4 GHz	5086-7249	5086-6249	1650	900
Amp .01—2.1 GHz	5086-7354	5086-6354	1500	800
Modulator-Mixer	5086-7219	5086-6219	725	475

Attachment II. Simplified RF Block Diagram



*Attachment III. Recommended Test Equipment*

Instrument	Critical Specifications	Recommended Model	Use <sup>1</sup>
Sweep Oscillator	No substitute	HP 8350A	P,A,T
Digital Voltmeter (DVM)	Range: -50V to +50V Accuracy: ±0.01% Input Impedance: ≥10M Ohms	HP3455A	P,A,T
Oscilloscope	Dual Channel Bandwidth: dc to 100 MHz Vertical Sensitivity: ≤5 mV/Div Horizontal Sweep Rate: ≤0.1 μ S/Div X vs. Y Display Mode	HP 1740A	P,A,T
Frequency Counter	Frequency Range: 0.01 to 8.4 GHz	HP 5343A	P,A
Spectrum Analyzer	Frequency Range: 0.01 to 18 GHz Residual FM: ≤100 Hz Must have auxiliary IF output when used with the HP 8901A Modulation Analyzer	HP 8565A or HP 8566A	P,T
Modulation Analyzer	(May be used in addition to Spectrum Analyzer). Frequency Range: Must cover auxiliary IF Output frequency of Spectrum Analyzer used. Residual FM: ≤10 Hz	HP 8901A	P,T
Swept Amplitude Analyzer	Capable of Transmission and Reflection measurements. Power Resolution: ≤0.25 dB/Div	HP 8755C	P,A
Display Mainframe	Compatible with HP 8755C Swept Amplitude Analyzer and HP 8750A Storage-Normalizer	HP 182T, TR	P,A
Detector	Compatible with Swept Amplitude Analyzer Frequency Range: 0.01 to 8.4 GHz Power Range: - 20 to +10 dBm	HP 11664A	P,A
Storage-Normalizer	Compatible with Display Mainframe and Swept Amplitude Analyzer	HP 8750A	P,A
RF Marker Source	CW Frequency: 1.2 GHz Output Power Level: ≥-10 dBm	HP 8350A/83522A	A
Frequency Meter	Frequency Accuracy: ≤0.17% Calibration Increments: ≤2 MHz Frequency Range: 0.96 to 4.0 GHz 4.0 to 8.4 GHz	HP 536A HP 537A	P,A P,A

*Attachment III. Recommended Test Equipment*

Instrument	Critical Specifications	Recommended Model	Use <sup>1</sup>
Attenuator	Attenuation: 3 dB ± 0.5 dB Frequency Range: 0.01 to 8.4 GHz Maximum Input Power: ≥ +20 dBm Type-N Connector	HP 8491B Option 003	P
Attenuator	Attenuation: 6 dB ± 0.5 dB Frequency Range: 0.01 to 8.4 GHz Maximum Input Power: ≥ +20 dBm Type-N Connector	HP 8491B Option 006	P
Attenuator	Attenuation: 10 ± 0.5 dB Frequency Range: 0.01 to 8.4 GHz Maximum Input Power: ≥ +20 dBm Type-N Connector	HP 8491B Option 010	P,A
Attenuator	Attenuation: 20 ± 0.5 dB Frequency Range: 0.01 to 8.4 GHz Maximum Input Power: ≥ +20 dBm Type-N Connector	HP 8491B Option 020	P
Adjustable Short	Frequency Range: 1.8 to 12.4 GHz Impedance: 50 ± 1.5 Ohms	Maury Microwave <sup>2</sup> 1953-2	P
Adapter	APC-7 to Type N(m)	HP 11525A	P
Adapter	APC-3.5(f) to Type N(m)	HP 1250-1744	P
Directional Coupler	Frequency Range: 0.1 to 2.0 GHz Nominal Coupling: ≥ 20 dB Maximum Coupling Variation: ≤ ± 1 dB Minimum Directivity: ≥ 32 dB	HP 778D	P
Directional Coupler	Frequency Range: 2 to 8.4 GHz Mean Output Coupling: ≥ 20 dB Output Coupling Variation: ≤ ± 1 dB Minimum Directivity: ≥ 26 dB	HP 779D	P
RMS Voltmeter	dB Range: -20 to -70 dBm (0 dBm = 1 mW into 600 Ohms) Frequency Range: 10 Hz to 10 MHz Accuracy: ±5% of full scale	HP 3400A	P
Air Line Extension (2 required)	Impedance: 50 Ohms Frequency Range: dc to 8.4 GHz Reflection Coefficient: 0.018 + 0.001 (times the frequency in GHz)	HP 11567A	P
Step Attenuator	Frequency Range: dc to 8.4 GHz Incremental Attenuation: 0 to 70 dB in 10 dB steps Calibration Accuracy: ≤ ± 0.1 dB at all steps	HP 8495A Option 890	P

*Attachment III. Recommended Test Equipment*

Instrument	Critical Specifications	Recommended Model	Use <sup>1</sup>
Function Generator	Frequency Range: 0.1 Hz to 10 MHz Sine wave and square wave output Output Level: 10 V p-p into 50 Ohms Output Level Flatness: ≤ ± 3% from 10 Hz to 100 kHz ≤ ± 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 (Used with HP 432A)	Frequency Range: 0.01 to 8.4 GHz Maximum SWR: ≤ 1.75	HP 8478B	P,A
Power Meter	Power Range: 1 μW to 100 mW	HP 436A	P,A
Power Sensor (Used with HP 436A)	Frequency Range: 0.01 to 8.4 GHz	HP 8481A	P,A
Crystal Detector	Frequency Response: 0.01 to 8.4 GHz Maximum Input Power: 100 mW	HP 423B	P,A
Power Splitter	Frequency Range: 0.01 to 8.4 GHz Output Port Tracking: ≤ 0.25 dB Maximum Input Power: +20 dBm	HP 11667A	P,A
Band Pass Filters	Frequency Range: 4 to 8 GHz 6 to 8 GHz 8 to 12.4 GHz	HP Part No. 0960-0402 HP Part No. 0960-0200 HP Part No. 0960-0403	A A A
DC Power Supply	DC Output: 0 to 6.5 Vdc ± 0.05 Vdc	HP 6213A	A
50 Ohm Termination	Type N, 50 Ohms ± 0.5 Ohms	HP 909A	P,A
Delay Line Discriminator	Refer to Figure 1-3.		

<sup>1</sup> P = Performance Test; A = Adjustments; T = Troubleshooting  
<sup>2</sup> Maury Microwave Corp., 8610 Helms Ave., Cucamonga, CA 91730

*Attachment IV. 83525B Projected Repairs*

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

Attachment V. Basic Support Data

Division 4500 Model # 83525B Date 8/30/82

A. ROUTINE PREVENTATIVE MAINTENANCE

- 1. PM Frequency 0 per year
- 2. Average PM Time \_\_\_\_\_ hours
- 3. Total PM Time \_\_\_\_\_ 0 hrs/yr

B. CALIBRATION

- 1. Calibration Frequency 1 per year
- 2. Average Calibration Time 3 hours
- 3. Total Calibration Time \_\_\_\_\_ 3 hrs/yr

C. REPAIR

- 1. Estimated Failure Factor .15 failures/yr
- 2. Average Repair Time 4 hours
- 3. Total Repair Time \_\_\_\_\_ .6 hrs/yr
- 4. Estimated Parts Charge 210 \$/repair
- 5. Total Parts Charge \_\_\_\_\_ 31.50 \$/yr

D. SPECIAL COSTS NOT COVERED ABOVE (Period Overhauls, Expensive Parts, PM Supplies, Vendor Repairs, Special Calibrations, etc.)

- 1. Describe Costs \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_
- 2. Total Labor House \_\_\_\_\_ 3.6 hrs/yr
- 3. Total Parts Charge \_\_\_\_\_ 31.50 \$/yr
- 4. Additional Costs \_\_\_\_\_ 0 \$/yr

E. COMMENTS

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Note: Data should be based on 2000 hours per year of instrument use under environmental and operating conditions similar to those at your division.



*Attachment VI. Parts Stocking Recommendation*

HP Part Number	CD	Description	6 Month Demand		Recommended List
			CPC	PCE	
83525-00015	1	Dress Front/Panel	1	1	40.00
83525-00017	3	Bracket — Det	0	0	8.00
83525-20064	2	Cable — RF YFO/SW	0	0	25.00
83525-60059	9	Marker Board Assy.	0	0	360.00
83525-60062	4	Motherboard	0	0	200.00
83525-60063	5	ALC Board Assy.	1	1	525.00
83525-60064	6	Cable Assy. — Rear Connector	0	0	170.00
83525-60066	8	Cable Assy. — Power Supply	0	0	75.00
83525-60067	9	Cable Assy. — RF Path	0	0	42.00
83525-90006	9	O & S Manual	0	0	25.00
83525-60068	0	Digital Interface	1	1	280.00
5081-8176	4	EPROM — Programmed	0	0	41.00
5081-8177	5	EPROM — Programmed	0	0	41.00

*Attachment VII. 8350A Family Prioritized Parts Stocking Recommendation*

<b>Priority</b>	<b>HP Part Number</b>	<b>CD</b>	<b>Description</b>	<b>Reason</b>	<b>Instrument</b>
1	1813-0100	7	+5VA Regulator	Update	8350A
2	5061-5304	2	RF Output Conn.	Update	83590A/92A
3	1826-0758	8	Analog Multiplier	Fail Rate	RF Plug-ins
4	1826-0690	7	-10V/-15V Regulator	Fail Rate	8350A
5	08350-60052	3	64-pin Ribbon Cable	Fail Rate	8350A
6	08350-60010	3	Power Supply Cable	Fail Rate	8350A
7	83525-60025	9	64-pin Ribbon Cable	Fail Rate	83525A
8	1826-0610	1	Analog Switch	Fail Rate	RF Plug-ins
9	1826-0471	2	Op Amp	High Usage	All
10	1820-1730	6	Data Latch	High Usage	All





**HEWLETT  
PACKARD**