

I N T E R - O F F I C E S E R V I C E M E M O

June 15, 1981

To: ALL INSTRUMENT SALES AND SERVICE MANAGERS

From: NETWORK MEASUREMENTS DIVISION (45), SANTA ROSA
PRODUCT SUPPORT (PL 14)

Subject: 83545A RF PLUG-IN
PRODUCT SUPPORT PLAN

The 83545A is an RF Plug-in compatible with 8350A Sweep Oscillator, covering the frequency range of 5.9 to 12.4 GHz. It provides up to +17 dBm of leveled RF output power, with internal leveling standard. There are two options available:

OPTION 002: Programmable 70 dB Attenuator

OPTION 004: Rear Panel RF Output

REPAIR STRATEGY

The repair strategy will be bench repair to the component level. There are two microcircuits used; both of which will be on the Blue Stripe Rebuilt Exchange Program.

Description	Part Number	
	New	Rebuilt
Modulator/Amplifier	5086-7346	5086-6346
YIG Oscillator	5086-7343	5086-6343

SERVICE TRAINING

The similarity of this plug-in to the equivalent 86200 series, the 83500 series plug-in service training provided last October–November and the completeness of the 83545A Operating and Service Manual will suffice to support the 83545A early repairs. An in-depth factory service training seminar for the complete 83500 family is planned for early FY '82. European service training will be in the September–October time frame. The first customer shipment was April, 1981.

Jim Arnold, Product Support Manager



**HEWLETT
PACKARD**

DOCUMENTATION

The first customer shipments are being supported with a preliminary manual, Part Number 83545-90001. The final manual, Part Number 83545-90006 is scheduled for completion the first of July, 1981.

BASIC SERVICE INFORMATION

The annual failure rate should be less than 15% with an average repair cost of less than \$425 per repair with the mean time to repair less than 5 hours. The calibration cycle will be once per year and should require less than 1.5 hours.

PARTS STOCKING RECOMMENDATION

A parts stocking recommendation has been submitted to CPC for parts stocking at both CPC and PCE. The recommendation is for both unique fabricated and purchased parts.

PREDICTED REPAIRS

The predicted repairs per region per quarter for the first year are shown below:

83545A Repairs By Region

	NEELY	EAST	MIDWEST	SOUTH	EUROPE	JAPAN	ICON	Total per Quarter
Q3	0	0	0	0	0	0	0	0
Q4	0	0	0	0	1	0	0	1
Q1	2	1	0	0	2	0	0	5
Q2	3	2	1	2	4	2	1	15
Total per Region	5	3	1	2	7	2	1	21

TEST EQUIPMENT

A complete list of recommended test equipment to support the 83545A is attached. Please take note of the unique or special test equipment noted by the asterisk. A high pass filter, made from the waveguide and adaptor, is required to make optimum adjustments for lowest harmonics and maximum RF power.

Any comments or questions on this product or the support plan for this product are welcomed by Jim Arnold (Div. 4500, Ext. 2162, Santa Rosa, telephone (707) 525-1400.

Attachment
Recommended Test Equipment (1 of 3)

Instrument	Critical Specifications	Recommended Model	Use ¹
Sweep Oscillator	No Substitute	HP 8350A	P, A, T
Spectrum Analyzer	Frequency Range: 5.9 to 24.8 GHz with External Mixer Residual FM: ≤ 100 Hz Must have auxiliary IF output when used with the HP 8901A Modulation Analyzer.	HP 8565A or HP 8566A HP 11517A	P, T P
Oscilloscope	Dual channel X vs. Y display mode Sensitivity: ≤ 5 mV Horizontal Sweep Rate: ≤ 0.1 μ S/DIV	HP 1740A	P, A, T
Display Mainframe	Compatible with HP 8755C Swept Amplitude Analyzer and HP 8750A Storage Normalizer	HP 182T, 180TR	P, A, T
Swept Amplitude Analyzer	Capable of transmission measurements Power Resolution: ≤ 0.25 dB/DIV	HP 8755C	P, A, T
Detector	Compatible with Swept Amplitude Analyzer Frequency Range: 5.9 to 12.4 GHz Power Range: -20 to $+10$ dBm	HP 11664A	P, A, T
Power Splitter	Frequency Range: 5.9 to 12.4 GHz Output Port Tracking: ≤ 0.25 dB Maximum Input Power: $\geq +20$ dBm	HP 11667A	P, A
Storage-Normalizer	Compatible with Display Mainframe and Swept Amplitude Analyzer	HP 8750A	P
Digital Voltmeter	Accuracy: $\leq 0.005\%$ Input Impedance: ≥ 10 MOhms Resolution: ≥ 1 μ V	HP 3455A	A, T
Oscilloscope Probes	1:1 General Purpose Probe 10:1 Miniature Probe	HP 10008B HP 10040A	A A,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 8910A	P
Power Meter	Power Range: -20 to $+10$ dBm (No substitution when used for external power meter leveling).	HP 432A	P, A
Thermistor Sensor	Frequency Range: 5.9 to 12.4 GHz Maximum SWR: ≤ 1.75	HP 8478B	P, A
Power Meter	Power Range: 1 μ W to 100 mW	HP 436A	P, A

Recommended Test Equipment (2 of 3)

Instrument	Critical Specifications	Recommended Model	Use¹
Power Sensor	Frequency Range: 5.9 to 12.4 GHz Maximum SWR: ≤ 1.18	HP 8481A	P, A
Frequency Counter	Frequency Range: 5.9 to 12.4 GHz Sensitivity: ≤ -20 dBm Maximum Input Power: ≥ 0 dBm Frequency Accuracy: ≤ 1 kHz	HP 5343A	P, A
Directional Coupler (2 required)	Frequency Range: 5.9 to 12.4 GHz Mean Output Coupling: ≥ 20 dB Output Coupling Variation: $\leq \pm 1$ dB Minimum Directivity: ≥ 26 dB	HP 779D	P, A
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
Function Generator	Frequency Range: 0.1 Hz to 10 MHz Output Level: 10 Vp-p into 50 Ohms Output Level Flatness: $\leq \pm 3\%$ from 10 Hz to 100 kHz $\leq \pm 10\%$ from 100 kHz to 10 MHz	HP 3312A	P, T
Crystal Detector	Frequency Response: 5.9 to 12.4 GHz Maximum Input Power: ≥ 100 mW	HP 423B	P, A, T
Air Line Extension (2 required)	Impedance: 50 Ohms Frequency Range: dc to 12.4 GHz Reflection Coefficient: 0.018 + 0.001 (times the frequency in GHz)	HP 11567A	P
RF Cable	Impedance: 50 Ohms Length: 61 cm. (24 in.)	HP 11770B	P
Step Attenuator	Frequency Range: dc to 12.4 GHz Incremental Attenuation: 1 to 70 dB in 10 dB steps Calibration Accuracy: $\leq \pm 0.1$ dB at all steps	HP 8495A Option 890	P
Attenuator	Attenuation: 3 dB ± 0.5 dB Frequency Range: 0.01 to 12.4 GHz Maximum Input Power: $\geq +20$ dBm	HP 8491B Option 003	P
Attenuator	Attenuation: 6 dB ± 0.5 dB Frequency Range: 0.01 to 12.4 GHz Maximum Input Power: $\geq +20$ dBm	HP 8491B Option 006	P
Attenuator	Attenuation: 10 ± 0.5 dB Frequency Range: 0.01 to 12.4 GHz Maximum Input Power: $\geq +20$ dBm	HP 8491B Option 010	P
Attenuator	Attenuation: 20 ± 0.5 dB Frequency Range: 0.01 to 12.4 GHz Maximum Input Power: $\geq +20$ dBm	HP 8491B Option 020	P

Recommended Test Equipment (3 of 3)

Instrument	Critical Specifications	Recommended Model	Use ¹
Adjustable Short	Frequency Range: 1.8 to 12.4 GHz Impedance: 50 ±1.5 Ohms	Maury Microwave ² 1953-2	P
Adjustable AC Line Transformer	Select to cover line voltage used 100–120 volt 220–240 volt	General Radio ³ W5MTB General Radio W10HM73	P P
Line Voltage Monitor	To be used with above Adjustable AC Line Transformers 120 volt Monitor 240 volt Monitor	RCA ⁴ 5 120B RCA WV 503A	P P
Frequency Meter	Frequency Accuracy: ≤0.17% Calibration Increments: ≤2 MHz 5.9 to 12.4 GHz	HP 537A	P, A
DC Power Supply	DC Output: 0 to 6.5 Vdc ±0.05 Vdc	HP 6213A	A
50 Ohm Termination	Type N, 50 ±0.5 Ohms	HP 909A	P, A
Adapter	APC-7 to Type N (m)	HP 11525A	P
Adapter	APC-3.5(f) to Type N(m)	Amphenol ⁵ 131-7018	P
Adapter	Type N(m) to Type N(m)	HP Part Number 1250-1528	A
Adapter (2 required)	Waveguide (WR51) to Waveguide (WR42)	HP NP292	A
Adapter (2 required)	Coaxial Type N to Waveguide (WR42) Frequency Range: 12.4 to 18 GHz	HP P281B, Opt 013	A
Delay Line Discriminator	Refer to Figure 1-3		P

FOOTNOTES

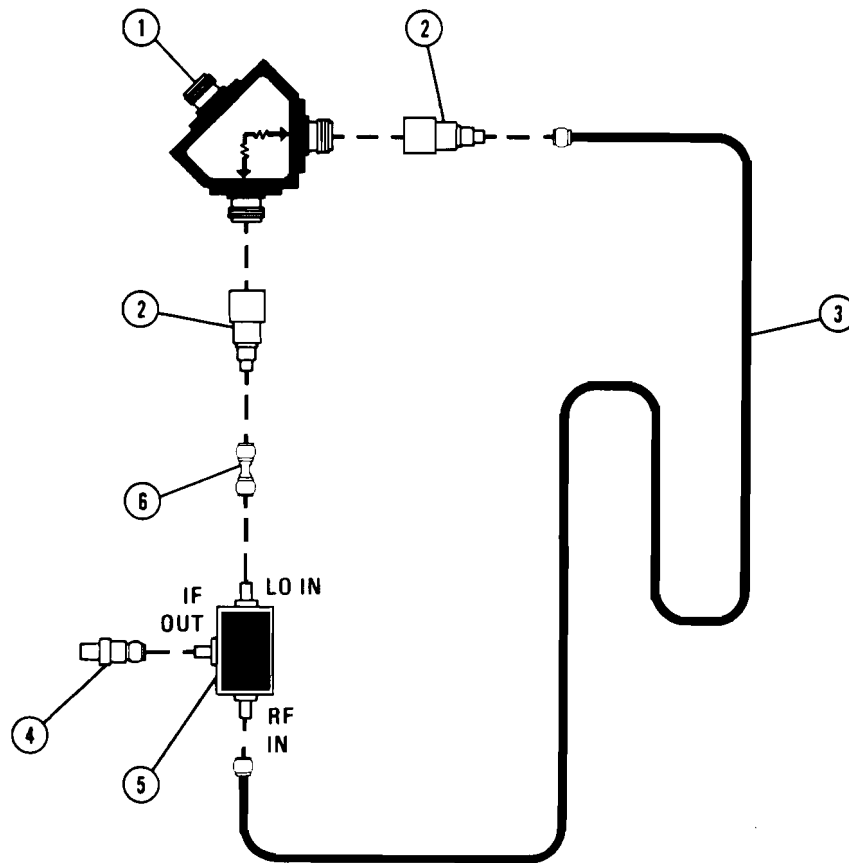
¹ P=Performance Test; A=Adjustments; T=Troubleshooting

² Maury Microwave Corp., 8610 Helms Ave., Cucamonga, CA 91730

³ General Radio, 300 Baker Ave., Concord, MA 01742

⁴ RCA Distribution & Special Products Div., Dept. EM, New Holland Ave., Lancaster PA 17604

⁵ Amphenol North America, Bunker-Ramo Corp., RF Operation, 33 E. Franklin St., Danbury, CT 06810



Item	Description	HP Part Number
1	Power Splitter	HP 11667A
2	Adapter: Type N Male to SMA Female (2 required)	1250-1250
3	Delay Line: >1 meter (3 feet) in length, SMA male connectors	08503-20038
4	Adapter: BNC Female to Male SMA	1250-1200
5	Mixer: Double Balanced 1 to 12 GHz: RHG Electronics Part No. DM 1-12 1 to 18 GHz: RHG Electronics Part No. DM 1-18 RHG Electronics Laboratories, Inc. Deer Park, NY 11729	0960-0451 0960-0543
6	Adapter: SMA Male to SMA Male	1250-1159

Figure 1-3. Delay Line Discriminator