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

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Supersedes: none

To: ALL INSTRUMENT SALES AND SERVICE OFFICES

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

Subject: PRODUCT SUPPORT PLAN FOR MODEL ~~83592A~~ .01-20.0 GHz RF PLUG-IN

The 83592A is a broad band RF plug-in compatible with the 8350A sweep oscillator, covering frequencies from 10 MHz to 20 GHz in a continuous sweep. There are four separate frequency bands available. Band 0 (10 MHz to 2.4 GHz), Band 1 (2.3 to 7.0 GHz), Band 2 (6.9 to 13.5 GHz) and Band 3 (13.4 to 20.0 GHz) or all four bands can be swept sequentially for 10 MHz to 20 GHz frequency coverages. The specified maximum leveled output power is +10 dBm with ≤ 20 KHz peak residual FM. The 83592A uses a Switched YIG Tuned Multiplier (SYTM), which allows the selection of the heterodyned frequencies .01 to 2.4 GHz (Band "0"), the fundamental 2.3 to 7.0 GHz (Band 1) or the second or third harmonic of the fundamental. The 83592A 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 83592A U.S.A. list price is \$23,500. The first customer shipment was March 27, 1981.

REPAIR STRATEGY

The repair strategy is bench repair to the component level. There are six microcircuits, all of which are on the Rebuilt Exchange program (Blue Stripe).

Description	Part Numbers	
	New	Restored
YIG Oscillator 2.2-7.0 GHz	5086-7337	5086-6337
SYTM .01-20.0 GHz	5086-7341	5086-6341
Power Amp 2.0-7.0 GHz	5086-7342	5086-6342
Power Amp .01-2.4 GHz	5086-7217	5086-6217
Modulator-Splitter	5086-7339	5086-6339
Modulator-Mixer	5086-7219	5086-6219

Jim Arnold


**HEWLETT
PACKARD**

SERVICE TRAINING

The new product training for the 8350A mainframe and the family of six RF Plug-ins was completed last fall. (83525A, 83540A, 83522A, 83545A, 83570A, and 83592A). The similarity of these RF plug-ins with their counterparts in the 86200 series RF plug-ins and the Operating and Service manuals should be adequate training for most locations. Product Service training is scheduled for this fall in HPSA. U.S. seminars are planned for early FY '82.

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 May. The final manual will be distributed in August, 1981.

BASIC SERVICE INFORMATION

The expected failure rate for the 83592A is less than 25% with a mean time to repair of less than six hours, ARC \$550. The calibration cycle will be twice a year with a calibration time of less than two hours. A list of recommended test equipment to support the 83592A is provided in Attachment I. The Weinschel power splitter and attenuators are necessary to ensure accurate power related measurements from 18 to 20 GHz.

PARTS STOCKING RECOMMENDATIONS

A parts stocking recommendation will be sent to CPC and PCE for those parts that are unique to the 83592A. This will include both purchased and fabricated parts. The expected number of repairs per region per quarter are shown in the following table.

83592A Projected Repairs

	NEELY	EAST	MIDWEST	SOUTH	EUROPE	JAPAN	ICON	Total
Q3	0	0	0	0	1	0	0	1
Q4	1	1	0	0	2	0	0	4
Q1	3	2	1	1	4	1	1	13
Q2	6	4	2	3	8	3	2	28
Total	10	7	3	4	15	4	3	46

Attachment I

Table 1-4. Recommended Test Equipment

<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: +0.01% Input Impedance: $\geq 10M$ Ohms	HP 3455A	P,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 20.0 GHz Input Impedance: 50 Ohms Resolution: ≤ 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: ≤ 0.25 dB	HP 8755C	P,A
Display Mainframe	Compatible with 8755C Swept Amplitude Analyzer	HP 180T/TR, 182T/TR	P,A
Detector	Compatible with Swept Amplitude Analyzer Frequency Range: 0.01 to 20.0 GHz Power Range -20 to +10 dBm	HP 11664B	P,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	HP 536A HP 537A HP P532A	P,A P,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: ≤ 1.75	HP 8478B	P,A

Table 1-4. Recommended Test Equipment

<u>Instrument</u>	<u>Critical Specifications</u>	<u>Recommended Model</u>	<u>Use*</u>
Thermistor Sensor	Frequency Range: 18 to 20.0 GHz Maximum SWR: ≤ 2.0	HP K486	A
Adaptor	Waveguide to APC 3.5 (f) (for use with HP K486)	HP K281C	A
Power Meter	Power Range: 1 μ 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: +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 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: ≥ 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 11692D	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

Table 1-4. Recommended Test Equipment

<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 1953-2	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 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

11667A

