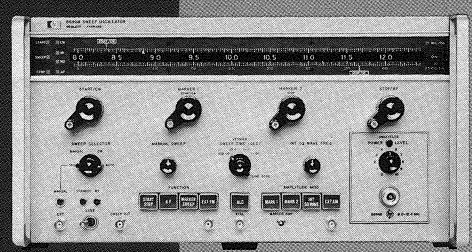
8690B
SALES AMPLIFIER

1
2
3
4
5

REASONS
to buy an
8690B
sweep oscillator



PRIVATE INFORMATION

HEWLETT hp PACKARD

8690B
SWEEP OSCILLATOR

SALES AMPLIFIER

TABLE OF CONTENTS

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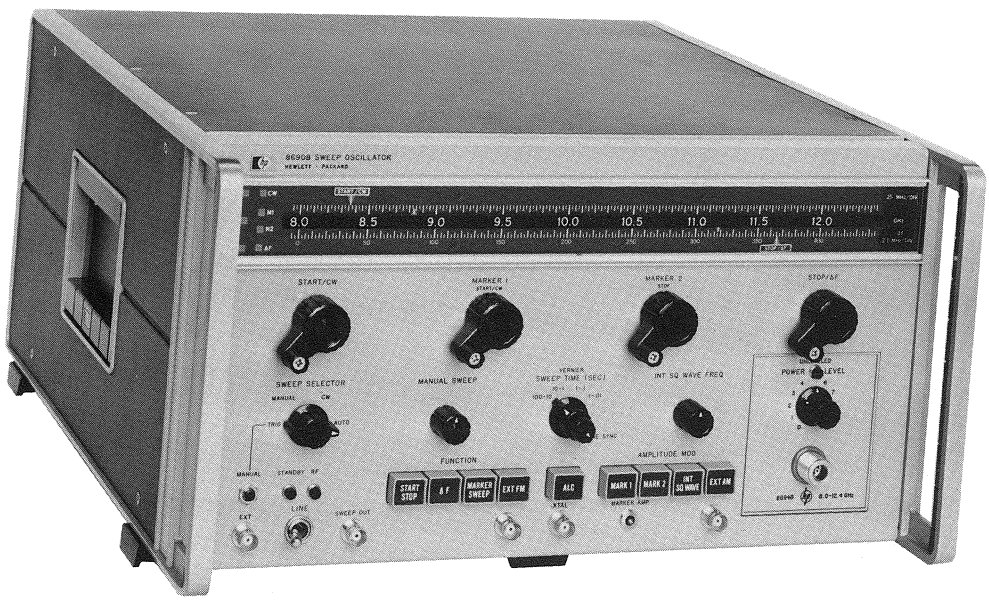
HEWLETT hp PACKARD

Private Information



8690B Sweep Oscillator

Attached is a copy of the 8690B data sheet. The 8690B Sweep Oscillator replaces the 8690A. The change in model number reflects the completion of a series of redesigns since last April to make the 8690 the most reliable and best performing sweeper on the market today. Here are its competitive advantages:

1. LOW RESIDUAL FM:

GHz	HP 8690B B-RF Units		HP 8690A	Alfred 650	Micro-power 220/21	Kruse-Stork 5000	AIL 210	Servo 404
		kHz pk	kHz pk	kHz pk	kHz pk	kHz pk	kHz pk	kHz pk
1-2	8691B	10*	30	30	4*	4**	typically 50	50
	8691D	20	30					
2-4	8692B	15	30	30	8*	10**		
4-8	8693B	15	50	50	16*	None	50	
8-12	8694B	15	60	50	30*		85	50

*HP specs ±50% change with 10% line voltage. Micropower specs ±250% change (5 PPM).

**8699B solid-state equivalent is less than 10 kHz pk. HP specs include while sweeping. KS specs 10 kHz pk, 1-2 GHz and 25 kHz pk, 2-4 GHz while sweeping.

SUMMARY

a. HP 8690B residual FM is better than all BWO sweepers including Micropower's.

b. HP 8690B with solid-state 8699B is comparable to the Kruse-Storke unit at half the cost for similar frequency coverage.

THIS MEANS:

a. Better narrow-band measurements.

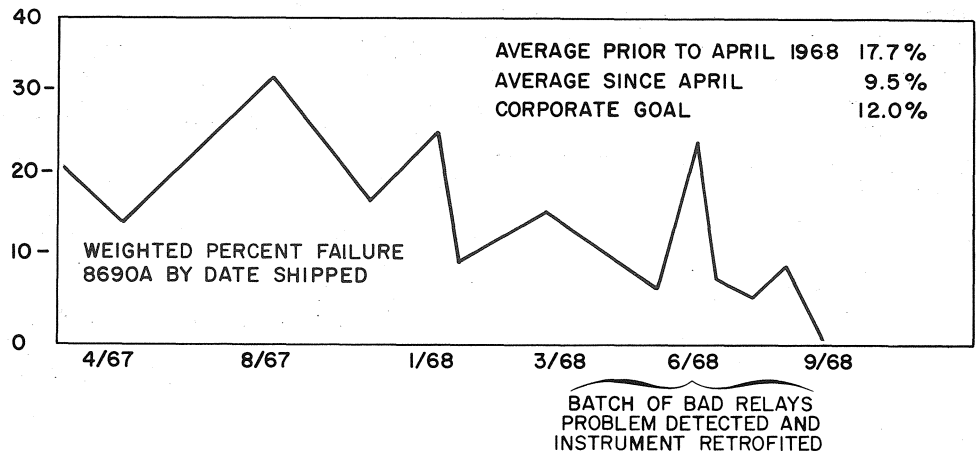
b. Less need for phase locking.

c. More accurate frequency plots with swept techniques.

d. Signal generator capability in CW mode.

2. RUGGED POWER SUPPLIES – PROVEN PERFORMANCE:

Failures of +275 and -300 volt supplies accounted for almost 40% of 8690A field failures prior to the introduction of a new supply with both current and voltage limiting protection in April 1968. The chart below shows 8690A failures by month shipped as a percent of annual shipments. (Failures in recent shipments are weighted heavily to give an expected annual rate.)



SUMMARY

a. Failure rate has declined rapidly from an average of 17.7% before April 1968 to 9.5% since April. This means that the 8690B has demonstrated a MTBF of 10,000 hours or 5 years based upon a 2000 hours/year use with a return rate of 50% on an annual rate! Purchasing an 8690B results in fewer repair costs and less down time than with competitive instruments.

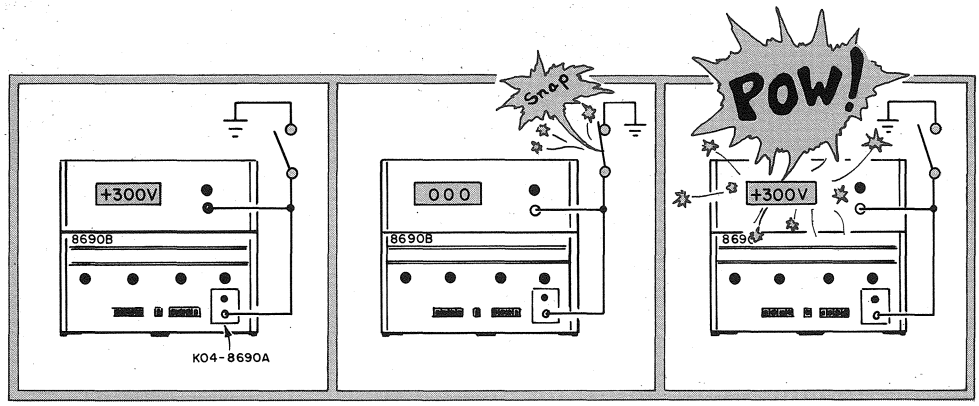
b. 8690B reliability is proven and is considerably better than the average HP product.

c. Based on market inputs, 8690B reliability is twice as good as Kruse-Storke's and Alfred's!

NOTE

New power supplies are retrofittable in 8690A's shipped before April 1965 (serial 803-2061). They are replaced directly in failures under warranty. Cost to customer is $100 for instruments out of

warranty. (Refer to Service Note P-0869-643.) If your customer doesn't believe the reliability, try this test: Insert a K04-8690A power supply checker in an 8690B. Set it to +275 or -300 volts and monitor the output on a DVM. Short the supply and watch it bounce back!!



CAUTION: Do not try this on +20V or -6.3V - you will blow a fuse.

3. SHIELDED BWO'S WITH UNCONDITIONAL 1 YEAR WARRANTY AND NOW — NO TIMER!

Only the HP 8690B provides magnetically shielded backward wave oscillators in all frequency ranges. All 8691 - 8697 RF units have shielded BWO's.

THIS MEANS:

a. Lowest residual FM.

b. Undistorted measurements when sweeper is placed near scope or circuit susceptible to BWO flux.

c. Accurate operation when placed on metal benches, etc. Metal contact will defocus a nonshielded BWO causing helix overload.

Last summer we obtained from Varian and Watkins-Johnson unconditional one year or 2500 hours warranty on backward wave oscillators, thus eliminating the cost to the customer of prorated usage. Now in the 8690B we can eliminate the glass usage timer. The 2500 hour restriction is retained in contract, but only estimated. The warranty applies not only to the first failure but is extended an additional year on each replacement tube.

4. SOLID-STATE PLUG-INS 400 KHZ TO 4 GHZ IN JUST TWO RF UNITS

With the introduction of the 8699B the 8690 has solid-state capability from 400 kHz to 4 GHz that excels competitive products in price, performance or delivery:

OUR COMPETITIVE EDGES:

a. HP versus Kruse-Storke - KS costs $4730 more for same frequency coverage; KS has no coverage to 40 GHz. See attached KS sales amplifier.

b. HP versus Alfred - Alfred solid-state 6151 has production problems. Alfred expects to ship no units until January 1969. We will be shipping in December (although new orders will be shipped late March). Alfred solid-state coverage is to 1 GHz only.

c. HP versus everyone - solid-state to 4 GHz; BWO coverage to 40 GHz.

5. MULTIBAND CAPABILITY

With the 8706/7 head holder and now the 8705 multiplexer, a customer can use one 8690B to give coverage over 0.1 to 12 GHz out one RF port - ideal for use with the HP 8410 Network Analyzer.

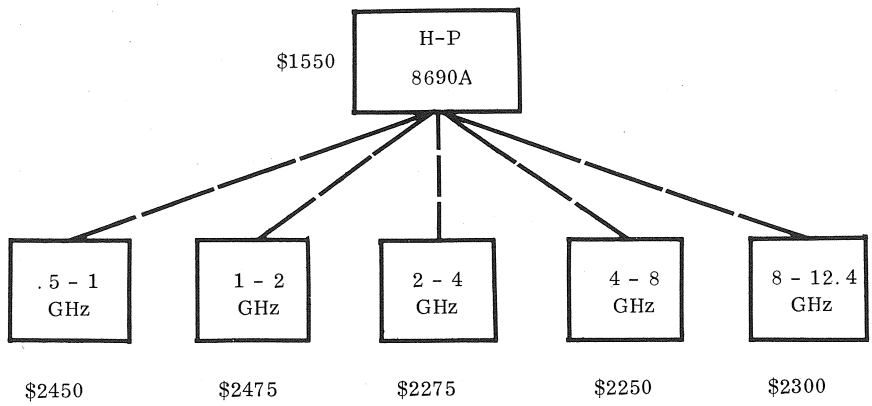
Finally, the 8690B fan is considerably quieter than that used in 8690A's shipped prior to April of 1968. The 8690 is one of HP's largest selling instruments. We dominate the market with sales of over 100/mo. Alfred, our biggest competitor has continued to loose market share and now sells less than 35/month. A continuing program of upgrading the 8690B and extending its capability should give us the ability to increase HP sales penetration further in fiscal year 1969. Good luck and good selling.

KS KRUSE STORKE

HOW TO SAVE $3000 PER YEAR AND GET A FREE TEST STATION

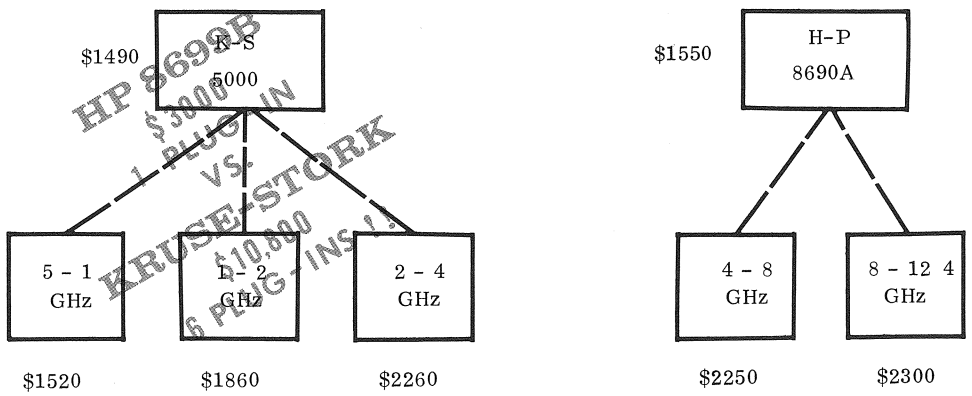
- Suppose you need a leveled sweeper and a set of plug-ins to cover 500 to 12,400 MHz.
- A complete Hewlett Packard set-up costs over $13,300 now and uses 5 BWO plug-ins. (The Model H-10-8691D covers 500 to 1000 MHz and costs over $2450.) Costs $5000 per year for maintenance ($1000 per plug-in).

1 TEST STATION COSTING OVER $13,300 NOW PLUS $5000 PER YEAR



- Here's how you can get an extra test station saving over $70 now and $3000 per year in maintenance costs. Buy a Kruse-Storke Model 5000, 3 plug-ins and samplers for 500 to 4000 MHz. Buy a Hewlett Packard 8690A Sweeper and two H-P internally leveled plug-ins for 4000 - 12,400 MHz. You pay only $13,230 plus $2000 per year to take care of BWO's.

2 TEST STATIONS COSTING $13,230 NOW PLUS $2000 PER YEAR



6/29/67

KRUSE-STORKE ELECTRONICS
790 HEMMETER LANE • MOUNTAIN VIEW, CALIFORNIA 94040, U.S.A. • (415) 967-2299

COMPETITIVE INFORMATION COMPARING 8690B TO: ALFRED 650, KRUSE-STORKE 5000, EH 570, AIL 210, MICROPOWER 221

8690B VERSUS ALFRED 650

	8690B	650
1. Power Level Control	More than 20 dB	5 dB down from leveled point
2. Magnetically Shielded BWO's	Standard except 1-2 GHz available in 8691D	Not used
3. External AM	Continuously variable	+10 Volts to turn on RF
4. Markers	Work anytime	No markers when unleveled
5. ΔF	Calibrated	Uncalibrated
6. Wideband Sweeps	Two	One
7. Manual Sweep	All sweep modes operate in manual	No ΔF in manual
8. Residual FM	B-RF units are better. See data sheet.	Same as old 8690A specs
9. Frequency Range	400 kHz - 40 GHz	250 MHz - 40 GHz

8690B VERSUS EH 570 SERIES

	8690B	570
1. Plug-in Capability	Yes	No
2. PIN Leveling	Yes	No
3. Residual FM	B Model RF Units 2 to 3 times better	
4. Mangetically Shielded BWO's	Yes	No

HP 8690B VERSUS MICROPOWER 221

	8690B	221
1. Frequency Coverage	400 kHz - 40 GHz	0.2 - 40 GHz
2. ΔF	Continuous calibration	calibrated in steps
3. Residual FM	B Model RF units are better. See data sheets.	
4. PIN Leveling	Absorptive low inc. FM	Reflective high and not spec'd incidental FM

HP 8690B VERSUS KRUSE-STORKE MODEL 5000

	8690B	KS 5000
1. Frequency Range	400 kHz - 40 GHz	10 MHz - 4.2 GHz
2. Wide Band RF Units	Two RF units cover 400 kHz-4 GHz with 8690B price is less than $6000	Six RF units cover 10 MHz-4 GHz with 5000 price is $9610
3. Residual FM	Better below 110 MHz 500 Hz pk	1.5 kHz pk
	B-RF units are better while sweeping: 1-2 GHz, 10 kHz pk; 2-4 GHz, 15 kHz pk	while sweeping 1-2 GHz, 10 kHz pk
4. Power Output	BWO: 1-2 $\geq$ 70 mW 2-4 $\geq$ 40 mW	1-2, 20 mW 2-4, 10 mW

HP 8690B VERSUS AIL 210 (M.E.S.L.)

	8690B	AIL 210
1. Frequency Range	400 kHz - 40 GHz	0.5 - 40 GHz
2. Solid-state Oscillator	Yes below 4 GHz	No
3. Leveling	Grid or PIN	Only PIN in coax
4. Power Out	Higher in grid leveled units	
5. ΔF	Continuous calibration	Calibrated in steps
6. Residual FM	B models are better	