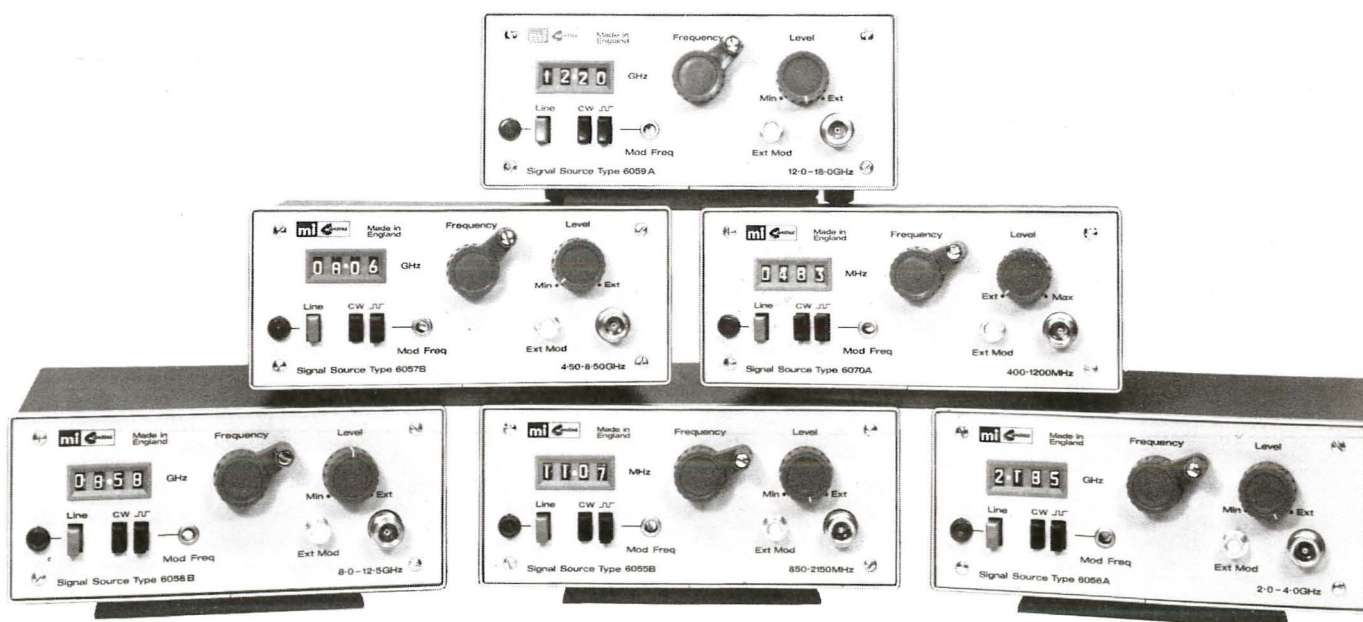


# Solid State Signal Sources

- ☐ 400 MHz to 18 GHz
- ☐ Digital Frequency Readout
- ☐ 1 kHz Internal Amplitude Modulation
- ☐ External Levelling Capability
- ☐ Manual Sweep Facility
- ☐ Small Size and Low Weight



This range of all solid state microwave signal sources operates within the frequency range 400 MHz to 18 GHz. Two types of oscillators are used to achieve the wide frequency coverage. The 6070A, 6055B and 6056B (400 MHz to 4 GHz), use a high frequency transistor oscillator while the 6057B/1, 6058B and the 6059A (4.0-18.0 GHz) use a Gunn diode operating in fundamental mode coaxial cavities.

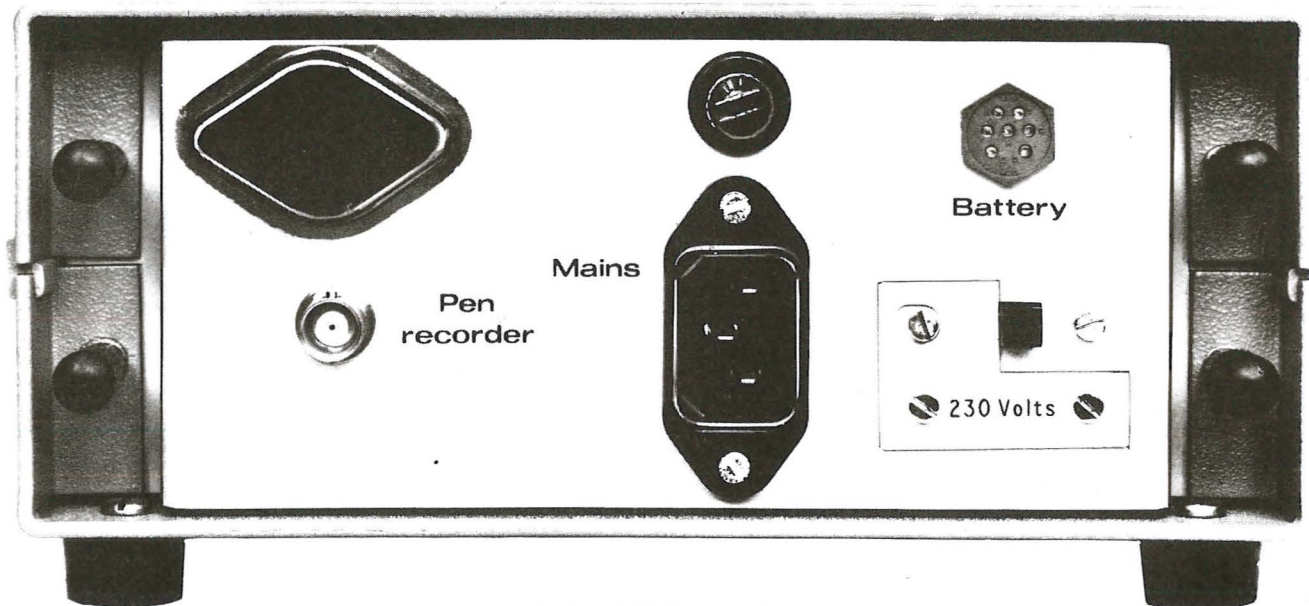
R.F. power is adjusted by means of an electrically variable PIN diode attenuator. Internal facilities include CW operation and 1 kHz (or 3 kHz option) square wave modulation. There is also access to the PIN diode attenuator via a front panel mounted BNC socket. The excellent modulation sensitivity of the PIN device enables a diverse range of amplitude modulation conditions to be achieved including r.f. levelling. This latter possibility coupled with the d.c. output voltage

proportional to frequency, available on the rear panel, enables manual swept frequency measurements to be carried out. The 6587 levelling amplifier is fully compatible with all models.

A miniature ferrite isolator is fitted to all models above 2 GHz which minimises the effect of load variations and prevents damage being caused by external mismatches. Models below 2 GHz have built-in protection by means of the coupling factor between the cavity and the r.f. output probe.

Also included in the r.f. output line is a low pass filter to reduce the second harmonic component to a low level. In-band harmonics are minimised by ensuring that the cavity design excludes spurious modes of operation.

A mains selector switch enables the units to be operated from a 230 volt or 110 volt supply.



#### REAR PANEL FACILITIES

BNC CONNECTOR PROVIDING OUTPUT VOLTAGE DIRECTLY PROPORTIONAL TO FREQUENCY.

EUROPEAN TYPE MAINS CONNECTOR.

BATTERY CONNECTIONS. (SEE TABLE BELOW).

MAINS VOLTAGE SELECTOR SWITCH.

FUSE.

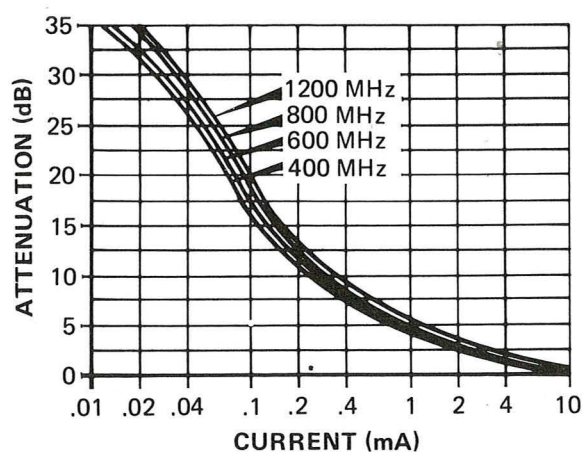
BATTERY CONNECTIONS TO SIGNAL SOURCES

SIGNAL SOURCE	BATTERY VOLTAGES	CURRENT RATINGS	SUGGESTED BATTERY CAPACITIES	SOCKET CONNECTIONS TO BATTERY
6070A	36 VOLTS	200 mA	36 VOLTS at 2.5 AH	+VE to E, -VE to D
6055B	36 VOLTS	150 mA	36 VOLTS at 1.5 AH	+VE to E, -VE to D
6056B	30 VOLTS AND 22 VOLTS	100 mA AND 100 mA	30 VOLTS at 1.0 AH AND 22 VOLTS at 1.0 AH	+VE to A -VE to D AND +VE to C -VE to H
6057B/1 6058B 6059A	30 VOLTS AND 22 VOLTS	400 mA AND 50 mA	30 VOLTS at 4.0 AH AND 22 VOLTS at 0.5 AH	+VE to A -VE to D AND +VE to C -VE to H

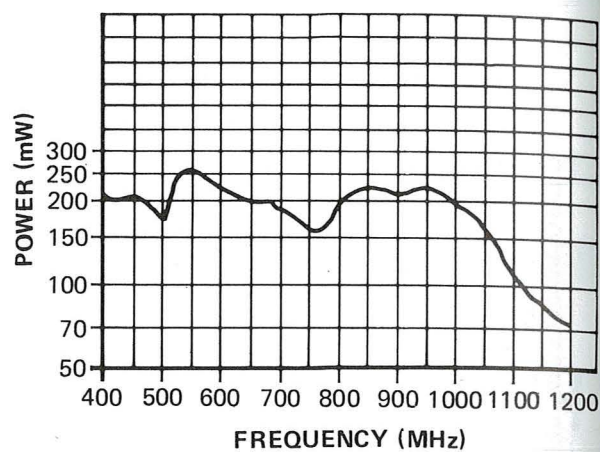


# Type 6055B Series

## Type 6070A

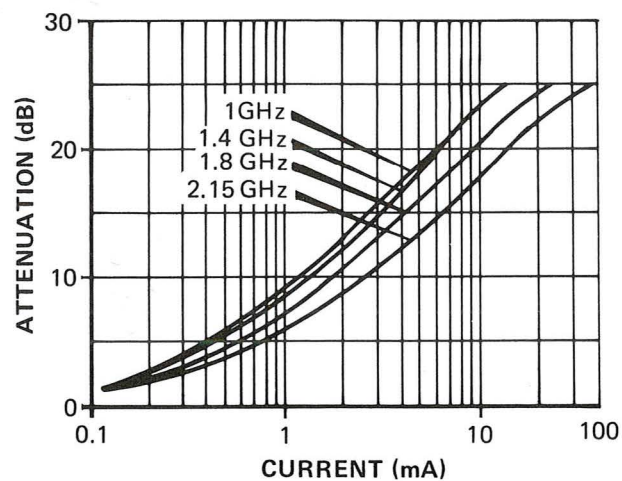


Typical Modulator Performance

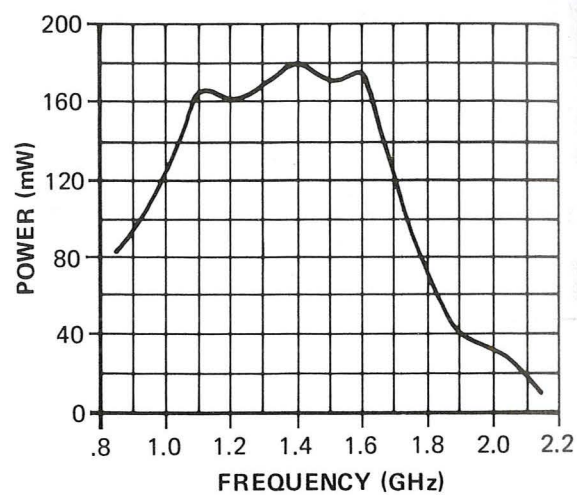


Typical Power Output

## Type 6055B

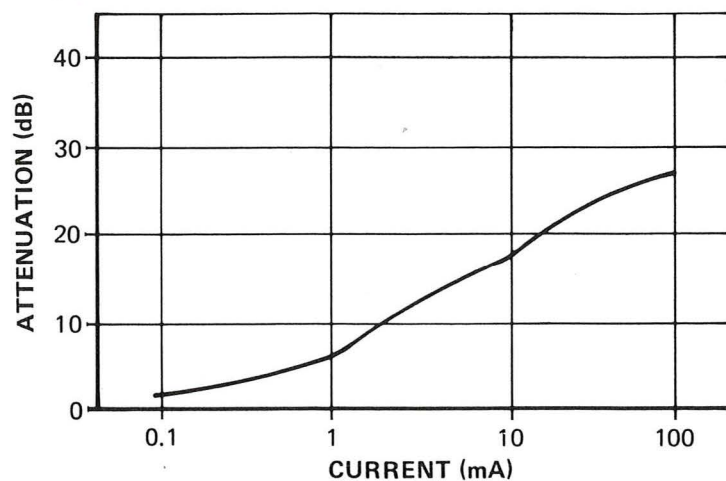


Typical Modulator Performance

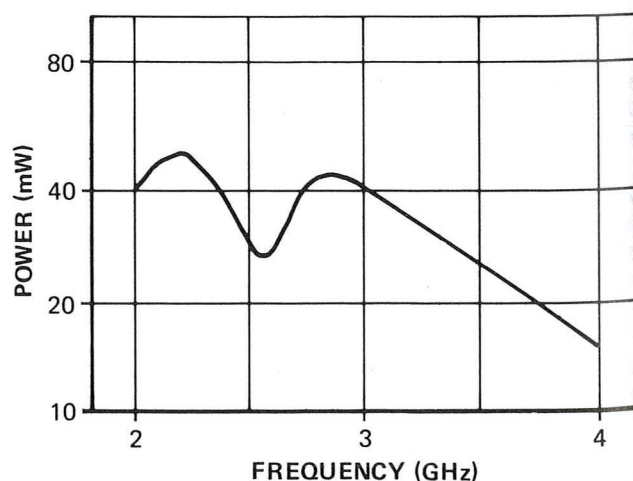


Typical Power Output

## Type 6056B

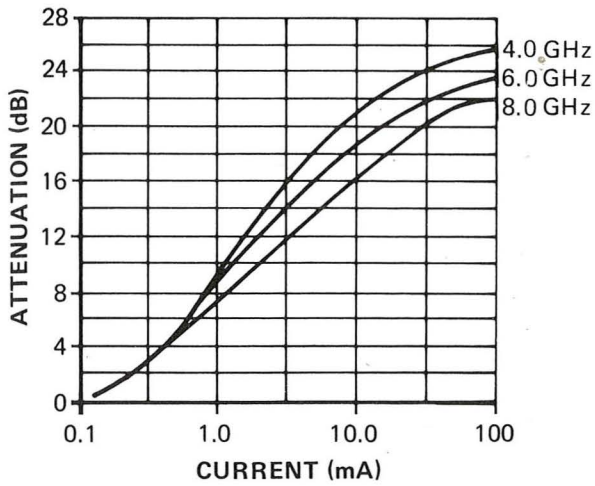


Typical Modulator Performance

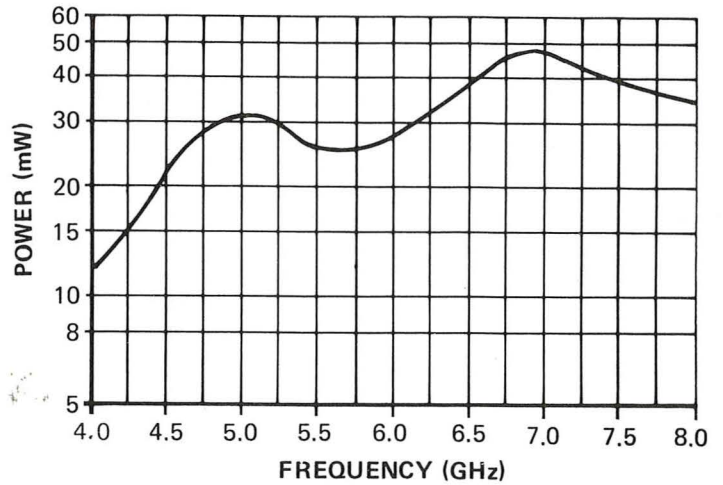


Typical Power Output

## Type 6O57B/1

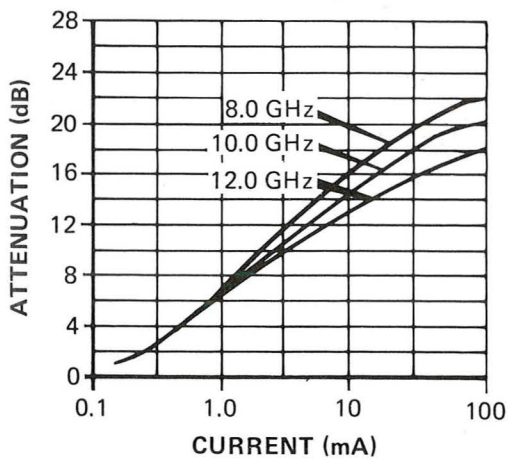


Typical Modulator Performance

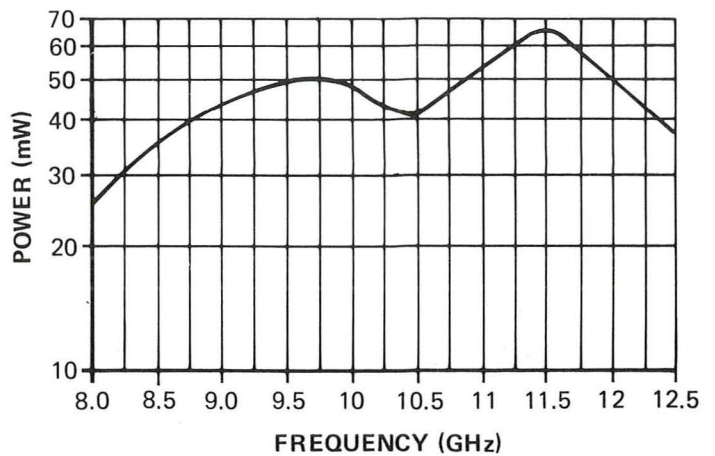


Typical Power Output

## Type 6O58B

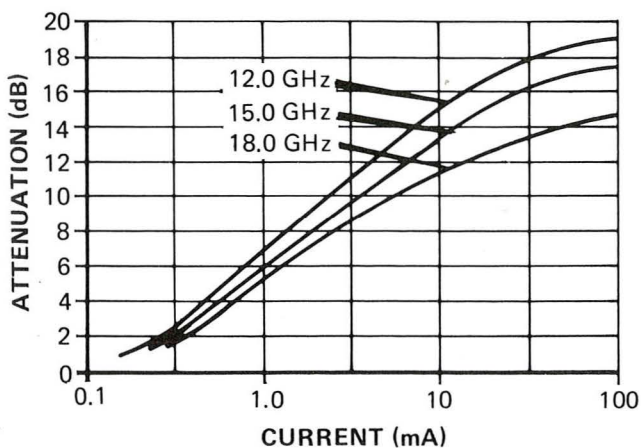


Typical Modulator Performance

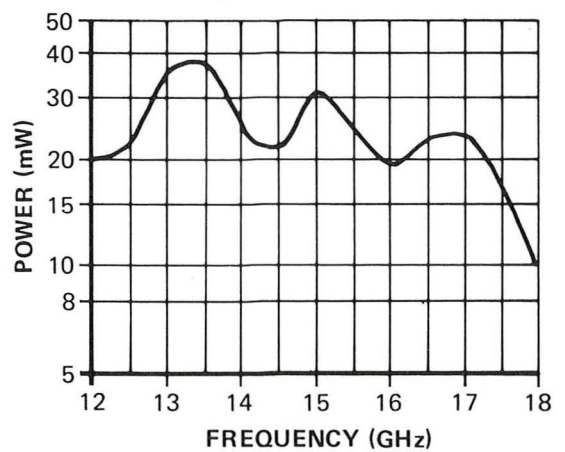


Typical Power Output

## Type 6O59A



Typical Modulator Performance



Typical Power Output



# Type 6055B Series

## SPECIFICATIONS

### TRANSISTOR FUNDAMENTAL OSCILLATORS

### GUNN FUNDAMENTAL OSCILLATORS

MODEL	6070A	6055B	6056B	6057B/1	6058B	6059A		
FREQUENCY RANGE	400 to 1200 MHz	850 to 2150 MHz	210 to 4.0 GHz	4.0 to 8.0 GHz	8.0 to 12.5 GHz	12.0 to 18.0 GHz		
R.F. POWER OUTPUT Minimum Typical	50 mW 150 mW	10 mW 50 mW	10 mW 30 mW	5 mW 10 mW	20 mW 40 mW	5 mW 20 mW		
FREQUENCY ACCURACY AT 22°C AND MAXIMUM R.F. POWER	±1% ①	±1%	±1%	±1%	±1%	±1%		
FREQUENCY PULLING (Typical)	Effect of V.S.W.R. of 1:25:1 0.08% at 400 MHz 0.02% at 500 MHz 0.005% at 1000 MHz	Effect of V.S.W.R. of 1:25:1 0.01% at 1000 MHz 0.01% at 1500 MHz 0.01% at 2000 MHz	Effect of V.S.W.R. of 3:1 0.1% at 2 GHz 0.05% at 3 GHz 0.1% at 4 GHz	Effect of V.S.W.R. of 3:1 0.1% at 4.0 GHz 0.08% at 6.0 GHz 0.1% at 8.0 GHz	Effect of V.S.W.R. of 3:1 0.09% at 8.0 GHz 0.06% at 10.0 GHz 0.09% at 12.0 GHz	Effect of V.S.W.R. of 3:1 0.2% at 12.0 GHz 0.1% at 15.0 GHz 0.2% at 18.0 GHz		
R.F. LEVEL CONTROL (Internal and External)	25 dB	20 dB	20 dB	20 dB	15 dB	10 dB		
HARMONIC LEVEL Minimum Typical	-20 dB -25 dB	-20 dB ② -30 dB	-20 dB ③ -30 dB	-20 dB -30 dB	-20 dB -30 dB	-20 dB -30 dB		
AMPLITUDE MODULATION Internal depth (1 kHz ±100 Hz min)  External Depth  Rise Time	100%  25 dB For 24 volts Input <1 µsec	20 dB  20 dB For 20 volts Input <1 µsec	20 dB  20 dB For 20 volts Input <1 µsec	20 dB  20 dB For 100 mA Input <5 µsec	15 dB  17 dB For 100 mA Input <5 µsec	10 dB  14 dB For 100 mA Input <5 µsec		
FREQUENCY STABILITY (Typical) ④ Short Term ⑤ Long Term ⑥ With Temperature ⑦	0.001% 0.006% 0.006%	0.0015% 0.006% 0.006%	0.0015% 0.005% 0.006%	0.004% 0.007% 0.007%	0.003% 0.008% 0.006%	0.002% 0.009% 0.007%		
With Line Voltage	0.001% per 10 volt change in the range 220 to 250 volts.							
RESIDUAL FM	3 p.p.m.			10 p.p.m.				
OUTPUT LEVELLING USING AMPLIFIER TYPE 6587	Within ±0.1 dB (Plus Coupler and Detector Variation)			Within ± 0.1 dB (Plus Coupler and Detector Variation)				
OUTPUT CONNECTOR	N' Type Female 50 Ω			Precision Stainless Steel 'N' Type Female 50 Ω				
POWER REQUIREMENTS	100-120 or 200-250 volts, 50-60 Hz, 12 VA or battery operation			100-120 or 200-250 volts, 50-60 Hz, 20 VA or battery operation				
DIMENSIONS AND WEIGHT	Height 98 mm 3 7⁄8 in	Width 203 mm 8 in	Depth 298.5 mm 11 3⁄4 in	Weight 3.4 kg 8 lb	Height 98 mm 3 7⁄8 in	Width 203 mm 8 in	Depth 298.5 mm 11 3⁄4 in	Weight 4.0 kg 8 1⁄2 lb

① Except in the frequency range 400 to 550 MHz where the frequency accuracy is ±2%.

② -17 dB below 1000 MHz.

③ -15 dB below 2150 MHz.

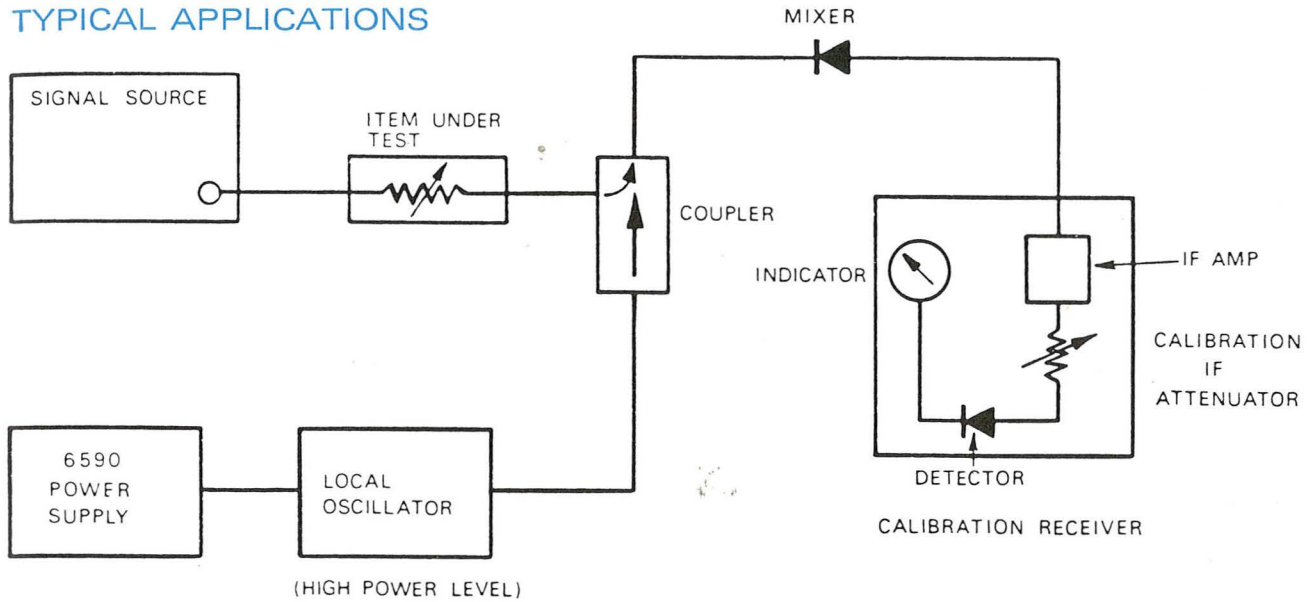
④ After 1 hour warm-up in a constant environment.

⑤ Over a 5 minute period and with a settling time of 15 minutes, after the frequency change.

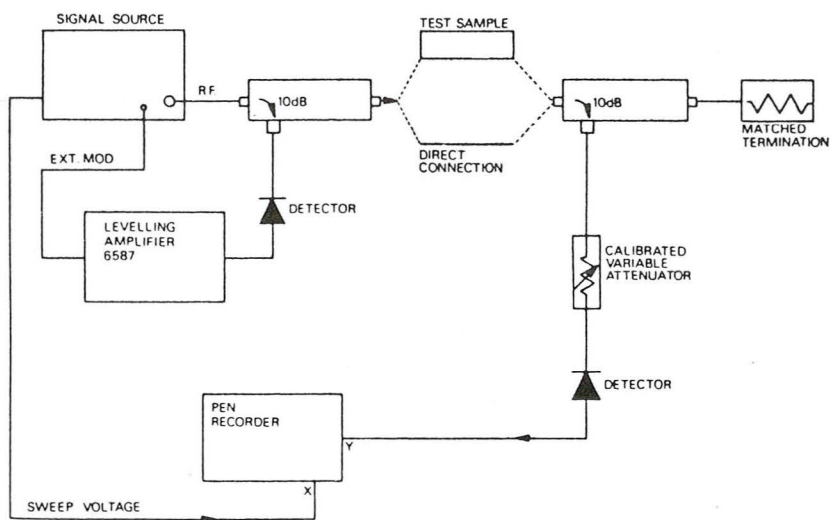
⑥ Over a 1 hour period.

⑦ Change per °C in the range +10°C to +50°C.

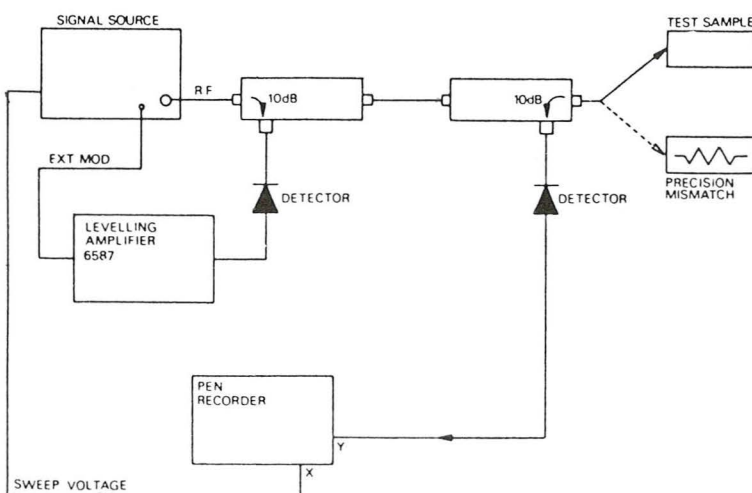
## TYPICAL APPLICATIONS



## High Attenuation Measurement



## Transmission Loss Measurements



## V.S.W.R. Measurements