

## Frequency Meter

### General

Passive frequency meters are intended for moderate ( $\pm 0.05\%$ ) accuracy applications in microwave measuring setups. Reaction cavity types are usually best for this purpose since they permit full power flow down the transmission line except at the precise tuned frequency. At the tuned frequency, a slight amount of power (1.5 dB dip) is absorbed by the cavity which is visible on a scope or SWR meter display.

### Key Specifications

- SWR
- Insertion loss
- Accuracy
- Tuning dip
- Spurious response

Low SWR and insertion loss are important to provide flat power transmission off-frequency. HP's frequency meter features broadband coupling loops that are very flat versus frequency. Accurate calibration is maintained by attention to thermal considerations and metal selection in design. Long effective scales are provided with a highly-readable spiral dial.

Constant tuning dip is necessary to yield readable indications at all frequencies in the band. The HP frequency meter is carefully designed and tested for uniformity of tuning dip. Likewise, spurious responses are undesirable since two responses near the same input frequency cause confusion. Although this meter covers more than 1 octave, the design uses a loaded coaxial cavity that prevents resonance at  $3/4 \lambda$  tuned frequencies providing low-error operation.



### HP 537A

This direct-reading frequency meter measures frequencies from 3.7 to 12.4 GHz quickly and accurately. Its long scale length and numerous calibration marks provide high resolution. This is particularly useful when measuring frequency differences or small frequency changes. Frequency is read directly in GHz so interpolation or charts are not required.

The instrument comprises a special transmission section with a high-Q resonant cavity tuned by a choke plunger. A 1-dB or greater dip in output indicates resonance; virtually full power is transmitted off resonance. Tuning is by a precision lead screw, spring-loaded to eliminate backlash.

Resolution is enhanced by a long, spiral scale calibrated in small frequency increments. Resettability is extremely good, and all frequency calibrations are visible so that the measurement point is directly indicated. Overall accuracy of the frequency meter includes allowance for 0 to 100 percent relative humidity and temperature variation from 13 to 33 °C. There are no spurious modes or resonances.

### Specifications

HP Model	Frequency Range	Dial Accuracy	Overall Accuracy	Minimum Dip at Resonance	Calibration Increment	Connector	Dimensions mm (in)	Shipping Weight kg (lb)
537A	3.7 to 12.4 GHz	0.100%	0.170%	1 dB	10 MHz	N (f)	118 x 146 x 89 (4.6 x 5.8 x 3.5)	2.3 (5)