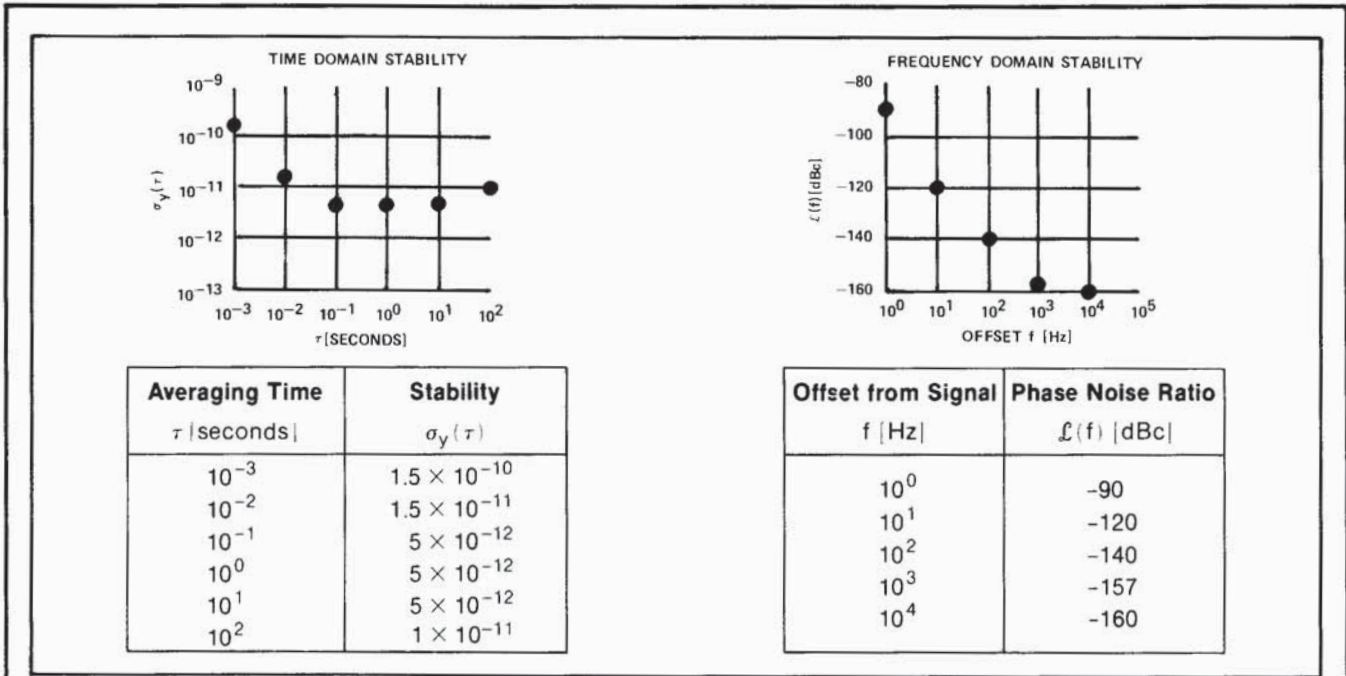


Table 1-1. Specifications



Frequency Stability: (See Definition of Terms)

Long Term (Aging Rate): $<5 \times 10^{-10}$ / day after 24-hour warm-up. See Note 1.

$<1 \times 10^{-7}$ /year for continuous operation.

Short Term: Refer to tables and figures above.

Environmental Sensitivity:

Temperature: $<4.5 \times 10^{-9}$ over a -55°C to 71°C range. $<2.5 \times 10^{-9}$ over a 0°C to 71°C range.

Operating: -55°C to $+71^\circ\text{C}$.

Storage: -55°C to $+85^\circ\text{C}$.

Load: $<5 \times 10^{-10}$ for a $\pm 10\%$ change in 50 ohm load. $<5 \times 10^{-10}$ for a $\pm 25\%$ change in 1K Ω load.

Power Supplies:

Oscillator Supply: $<2 \times 10^{-10}$ for 1% change. $<100\mu\text{v}$ ripple and noise required.

Oven Supply: $<1 \times 10^{-10}$ for 10% change. $<30\text{ mV}$ ripple and noise required.

Gravitational Field: $<4 \times 10^{-9}$ for 2g static shift (turn-over).

Magnetic Field: $<-90\text{ dBc}$ sidebands due to 0.1 millitesla (1 Gauss) rms at 100 Hz.

Humidity (typical): 1×10^{-9} for 95% RH at 40°C .

Shock (survival): 30 g, 11 ms, $\frac{1}{2}$ sinewave.
Altitude (typical): 2×10^{-9} for 0 to 50,000 ft.

Warmup

10 min. after turn-on within 5×10^{-9} of final value, at 25°C and 20 Vdc. See Notes 1 & 2.

Adjustment

Coarse Frequency Range: $>\pm 1 \times 10^{-6}$ ($\pm 10\text{ Hz}$) with 18 turn control.

Elec. Frequency Control (EFC): $\geq 1 \times 10^{-7}$ (1 Hz) total, control range -5 Vdc to $+5\text{ Vdc}$.

Output

Frequency: 10 MHz

Voltage: $0.55 \pm 0.05\text{ V}$ rms into 50 ohm. 1V rms $\pm 20\%$, into 1K ohm.

Harmonic Distortion: Down more than 25 dB from output.

Spurious Phase Modulation: Down more than 100 dB from output (discrete sidebands 10 Hz to 25 kHz).

Power Requirements

Oscillator Circuit: 11.0 to 13.5 Vdc. 30 mA typical. 40 mA max.

Oven Circuit: 20 to 30 Vdc; turn on load is 42 ohm minimum. Steady-state power drops to a typical value of 2.0W at 25°C in still air with 20 Vdc applied.

Connectors

10811A: Mates with CINCH 250-15-30-210 (HP 1251-0160) or equivalent (not supplied).
10811B: Solder terminals and SMB Snap-on connectors. Mates with Cablewave Systems, Inc. #700156 or equivalent (not supplied).

Accessories Available:

Service Manual: HP 19811-90002: (not supplied).

Size:

72 mm \times 52 mm \times 62 mm, (see Figure 1).
(2-13/16" \times 2-1/32" \times 2-7/16", 14 cu. in.).

Weight: 0.31 kg (11 oz.)

Definition of Terms

Long-Term Frequency Stability is defined as the absolute value (magnitude) of the fractional frequency change with time. An observation time sufficiently long to reduce the effects of random noise to an insignificant value is implied. Frequency changes due to environmental effects must be considered separately.

Time Domain Stability $\sigma_y(\tau)$ is defined as the two-sample deviation of fractional frequency fluctuations due to random noise in the oscillator. The measurement bandwidth is 100 kHz.

Frequency Domain Stability is defined as the single sideband phase noise-to-signal ratio per Hertz of bandwidth (a power spectral density). This ratio is analogous to a spectrum analyzer display of the carrier versus either phase modulation sideband. See "NBS-Monograph 140" for measurement details.

Notes:

1. For oscillator off-time less than 24 hours.
2. Final value is defined as frequency 24 hours after turn-on.

*Specifications describe the instrument's warranted performance. Supplemental characteristics are intended to provide information useful in applying the instrument by giving TYPICAL or NOMINAL, but nonwarranted performance parameters. Definition of terms is provided at the end of the specification section.