

# The Oscillator Specification Sheet

## Carrier Frequency

Generally specified in Hertz (Hz).

## Carrier Power

Generally specified in dBm for low-power oscillators, Watts for high-power oscillators.

Typical values for "small-signal" oscillators are 5 to 20 dBm (hey, the same values as for mixer LO drive power—what a coincidence!).

## Stability

Specified in ppm over the temperature range of the device (e.g.,  $-25^{\circ}\text{C}$  to  $85^{\circ}\text{C}$ ).

## Phase Noise

Specified in dBc in a one Hz bandwidth at some specific frequency from the carrier.

*e.g., -80 dBc in a 1Hz bandwidth at 1 kHz from  $f_0$*

## Frequency Pushing

Expressed in units of  $Hz/V$  or  $Hz/mV$ . Can be either a positive or a negative number.

## Frequency Pulling

Specified as the maximum frequency shift from nominal frequency  $\omega_0$ , due to some worst-case load (expressed in VSWR, return loss, etc.).

## Harmonics and Spurs

Specified as the power of the largest spurious and/or harmonic signal, typically in terms dBc (e.g.,  $< -50$  dBc).

## Noise

This is the thermal noise (as opposed to phase noise) at the output of the oscillator. It is specified in terms of its **spectral power density**, assumed to be constant value in Watts/Hz.

bn b  
bhymnuOi'ip9898olkmp 'np p

