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Sommario/riassunto

How to acquire the input frequency from an unlocked stateA phase locked loop (PLL) by itself cannot become useful until it has acquired the applied signal's frequency. Often, a PLL will never reach frequency acquisition (capture) without explicit assistive circuits. Curiously, few books on PLLs treat the topic of frequency acquisition in any depth or detail. Frequency Acquisition Techniques for Phase Locked Loops offers a no-nonsense treatment that is equally useful for engineers, technicians, and managers. Since mathematical rigor for its own sake can degenerate into intellectual "rigor mortis," the author introduces readers to the basics and delivers useful information with clear language and minimal mathematics. With most of the approaches having been developed through years of experience, this completely practical guide explores methods for achieving the locked state in a variety of conditions as it examines:.. Performance limitations of phase/frequency detector-based phase locked loops. The quadricorrelator method for both continuous and sampled modes. Sawtooth ramp-and-sample phase detector and how its waveform contains frequency error information that can be extracted. The benefits of a self-sweeping, self-extinguishing topology. Sweep methods using quadrature mixer-based lock detection. The use of digital implementations versus analogFrequency Acquisition Techniques for Phase Locked Loops is an important resource for RF/microwave engineers, in particular, circuit designers; practicing electronics engineers involved in frequency synthesis, phase locked loops, carrier or clock recovery loops, radio-frequency integrated circuit design, and aerospace electronics; and managers wanting to understand the technology of phase locked loops and frequency acquisition assistance techniques or jitter attenuating loops.
