

APPARATUS AND METHOD FOR CONTROLLING THE LOOP BANDWIDTH OF A PHASE LOCKED LOOP

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Abstract of the Disclosure

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In a phase locked loop (PLL) (308), an edge proximity detector (302) identifies a phase error, indicative of a difference between a phase of a reference frequency signal (115) and a phase of an output frequency signal (116 or 117), as either desirable or undesirable. When the phase error is identified as desirable, a counter (301) determines a rate of change of the phase error over a first predetermined time period (412) to provide an indication of frequency error (306) between the frequency of the reference frequency signal (206) and the frequency of the output frequency signal (116 or 117); and a loop bandwidth adjuster (310) controls a transition between a first and a second loop bandwidth state of the PLL (308) responsive to the indication of the frequency error (306). When the phase error is identified as undesirable, the PLL (308) operates in the second loop bandwidth state. The present invention advantageously provides an accurate determination of when to vary the loop bandwidth of the PLL (308).