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(54) **PHASE LOCKED LOOP ASSISTED FAST START-UP APPARATUS AND METHOD**

(71) Applicant: **Intel Corporation**, Santa Clara, CA (US)

(72) Inventors: **Somnath Kundu**, Hillsboro, OR (US); **Hao Luo**, Milpitas, CA (US); **Brent Carlton**, Portland, OR (US)

(73) Assignee: **Intel Corporation**, Santa Clara, CA (US)

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(57) **ABSTRACT**

An apparatus and method are provided to re-configure an existing low-jitter phase locked loop (PLL) circuit for fast start-up during system wake-up. During system start-up, a feed-back path of the PLL is disconnected to independently control the VCO frequency. This independently controlled VCO then injects energy into a resonator (e.g., a crustal oscillator) for its fast start-up. Once a resonance frequency of the resonator is detected and an oscillation builds up in the resonator, a VCO control voltage is stored. The PLL feed-back is then restored and the stored VCO control voltage is applied to perform phase-locking operation. Since the PLL control voltage is already set to the desired operating point, the PLL lock time is very small.