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(54) **WIDEBAND VOLTAGE-CONTROLLED OSCILLATOR CIRCUITRY**

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(57) **ABSTRACT**

An electronic device may include a transceiver with mixer circuitry that up-converts or down-converts signals based on a voltage-controlled oscillator (VCO) signal. The transceiver circuitry may include first, second, third, and fourth VCOs. Each VCO may include a VCO core that receives a control voltage and an inductor coupled to the VCO core. Fixed linear capacitors may be coupled between the VCO cores. A switching network may be coupled between the VCOs. Control circuitry may place the VCO circuitry in one of four different operating modes and may switch between the operating modes to selectively control current direction in each of the inductors. The VCO circuitry may generate the VCO signal within a respective frequency range in each of the operating modes. The VCO circuitry may exhibit a relatively wide frequency range across all of the operating modes while introducing minimal phase noise to the system.