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An apparatus comprising a local oscillator for driving a mixer

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Abstract of GB2599809 (A)

Apparatus is disclosed comprising a mixer and a local oscillator (LO) with an oscillation frequency. The apparatus generates a set of LO signals to drive the mixer. Each LO drive signal has a frequency equal to the oscillation frequency multiplied by a first integer multiplication factor m, where m ≥ 2. Each LO drive signal is separated from adjacent LO signals by a phase difference of 360/n°, where n is an integer ≥ 2. In an embodiment, the oscillation frequency is that of a ring oscillator 402. The frequency multiplication is carried out by logic cells 408 which combine square waves from stages of the ring oscillator (figure 5 a & b). In contrast to prior art where a 9-stage ring oscillator operates at fRF/3, the present disclosure provides a 9-stage ring oscillator that operates at fRF/9. The lower oscillator frequency reduces power consumption, which is important in 'wake-up' receivers.