

Abstract**PHASE MIXER**

A phase mixer is provided which locks a signal to a non-integer multiple of a reference signal. A phase mixer according to the present invention is provided which generates non-integer multiples of a stable reference source, such that an
5 output frequency to an input frequency of the phase mixer has a frequency ratio

of $f_{out} = f_{in} \times \frac{N}{N \pm M}$, where N is an integer number of phases of the reference

signal and M is an integer less than N and the "+" operation is used when selecting phases in ascending order and the "-" operation is used when selecting

10 phases in descending order. Briefly, the phase mixer according to one embodiment includes a recirculating shift register (108) and a multiplexer (110).

The shift register (108) output addresses the multiplexer (110), and the multiplexer (110) in turn selects as the output one of the phases of the reference oscillator. The output of the multiplexer (110) is used to clock the shift register

15 (108). Because the reference oscillator phases are themselves shifted with reference to one another, sequential selection of the phase pulses as output pulses results in an output which is a non-integer multiple of the reference oscillator frequency.

This Sheet Has Been Replaced

