DIRECT PHASE DIGITIZING APPARATUS AND METHOD

Abstract of the Disclosure

A radio receiver directly digitizes the phase of an intermediate frequency (IF) signal with a desired resolution. The frequency of the reference oscillator (503) in the direct phase digitizer (403) is reduced when compared to the frequency previously required for the same resolution. The reduction in the reference oscillator frequency is accomplished by differentiating between IF zero-crossings that occur during the first half of a reference oscillator cycle and zero-crossings which occur during the second half of the reference oscillator cycle. The apparatus utilizes 2 zero-crossing detectors (503, 505), the first zero-crossing detector (503) is driven by a positive edge of the reference oscillator signal and the second zero-crossing detector (505) is driven by a negative edge of the reference oscillator signal. Depending upon the alignment of the negative edge zero-crossing indicator and the positive edge zero-crossing indicator, the N-bit phase signal is modified or shifted by one-half a phase sector.

FIG. 5 accompanies this abstract.