

ABSTRACT

APPARATUS AND METHODS FOR DEMODULATING A SIGNAL

n apparatus for demodulating an analogue input signal comprises a hard limiter for converting the signal to a two level signal. A digital down converter/narrow band pass filter converts the signal to a base band signal, and a symbol synchronization stage extracts symbol timing. An instantaneous phase detector calculates the instantaneous phase of the one or more symbols associated with the input signal. If the input signal has been modulated according to a $\pi/4$ DQPSK, $\pi/2$ DBPSK, GMSK, or a GFSK modulation scheme, a differential detector determines a difference in the phase between adjacent symbols, a coarse frequency offset compensation stage applies a compensation signal to compensate for frequency offset, and a frequency offset estimation stage updates this compensation signal. A demapper generates a demodulated output signal after compensation by the frequency offset compensation stage. If the input signal is a DMPK or an MPK modulated signal, a fine frequency offset compensation signal is applied to the output signal of the instantaneous detector and a phase compensation signal is applied to the frequency compensated signal. An estimated phase offset updates the phase offset compensation signal; and a demapper demodulates the signal after frequency and phase compensation.

[FIG 3]



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