

ABSTRACT**A multi-user code division multiple access receiver**

A receiver and method for receiving a code-division multiple-access (CDMA) signal combining symbol values spread by a plurality of spreading codes, which method comprises the steps of:

- (a) converting the CDMA signal to a baseband signal;
- (b) recognising symbol boundaries in every multipath for every user in the baseband signal to produce a delay estimate;
- (c) estimating the attenuation and phase rotation impressed on the signal by each multipath to produce channel estimates;
- (d) generating new symbol estimates for every user at the sampling rate;
- (e) generating an estimate of the received signal using said symbol estimates and channel estimates;
- (f) comparing the received signal with its estimate and feeding the estimation error back to the means for estimating the transmitted symbols;
- (g) sampling the symbol estimates at the estimated symbol boundaries of each user to obtain the final symbol estimates; and
- (h) repeating steps (b) through (g) with every new sample.

FIGURE 1