

ABSTRACT OF THE DISCLOSURE

An implementation of coherent diversity combining in a RAKE receiver that uses energy in signal echoes by integrating information from main-
5 path and bit-period-delayed signal propagation paths to remove echo distortion, or time dispersion, is described. If delayed by one chip in a CDMA system, such echoes appear as uncorrelated interference. The RAKE receiver correlates a despreading code with the
10 current (main-path) signal samples and with the signal samples delayed by 1, 2, 4, ... bit periods, and combines the correlation results to determine the information content of the signal. After appropriate conditioning, the received signal is digitized and
15 the signal samples are stored. Groups of samples are Fast Walsh Transformed, and the real and imaginary transforms are scaled according to a table of coefficients; the scaled results are stored. Weighted, scaled transforms of groups shifted by 1,
20 2, 4, ... samples are accumulated, and the index of the largest-magnitude accumulation is used to select real and imaginary transform values. The selected values are transferred to a RAKE coefficient computer and quantizer that determines from the sequence of
25 values presented the mean value and trend of the real and imaginary components. A Kalman filter may use these values to estimate the values that will occur during the next group analysis period.