ABSTRAC

Ultra Wideband (UWB) is a wireless application technology which is operated in 3.1-10.6 GHz and its fractional bandwidth is larger than 0.2 UWB which results many advantages, as followed: (a) higher data rate, (b) power pathloss and more resistable againts multipath propagation, (c) more simplified transceiver and cheaper in cost, (d) low transmition power and low interference, (e) transmition security is good.

Supported with its low transmition power, UWB may be applied in either indoor and outdoor channel condition have more multipath components, causing UWB requires additional system so that it would be resistable againts the multipath channel condition. Rake receiver has been proven as a system performance booster in this multipath channel condition. By using Rake receiver, it is expected to resulting diversity advantages and enhancement towards coding gain.

The existing condition in this research is to determine the performance of singleband DS-UWB by implementing M-ary mapping PAM. The comparative mapping is 2, 4 8 and 16-PAM mapping using outdoor channel with Rayleigh Channel and indoor channel with Saleh Valenzuela channel modelling.

It is concluded from the simulation result that 2-PAM mapping provides better performance than 4, 8 or 16-PAM mapping. In DS-UWB system within Rayleigh channel, it could reach BER 10^{-3} using 6 fingers. Meanwhile, in Saleh Valenzuela channel within DS-UWB BER 10^{-3}, it results by using 10 finger rake.

Key words: DS-UWB, PAM, Rake receiver, Rayleigh, Saleh Valenzuela