ABSTRACT

Universal Mobile Telecommunication System (UMTS) is third generation (3G) from mobile communication system which is planed for supporting variety of application coverage in different Quality of Service (QOS). UMTS air interface base on *Code Division Multiple Access* (CDMA) has capable to transmit data using high bit rate and wideband in multimedia service, called Wideband Code Divison Multiple Access (WCDMA)

Base on multiuser CDMA concept made some interferes will be happened, like Multiple Access Interference (MAI). It is caused by using the same frequency at he same time. MAI gives bad effect in WCDMA performance it self, specially decreasing QOS value indirectly.

Right management on WCDMA system will be needed for giving better network performance and higher QOS. In this final task, writer use Multiuser Detection (MUD) technique. Decorrelator algorithm is one of MUD tools with high performance, but without hard complexity. It is also no need information on power level for each user as parameter. Focus in specific user made Decorrelator to be independent performance for other users who as a interference.

The research result shows that in using Decorrelator for receiver side, it gives BER and SNR improvement than only using konvensional receiver in WCDMA performance. Maximal improvement happen when BER value is zero (0) for single user in case speed differentiation and 46,62% improvement in case different active users. Beside, only using AWGN than Rayleigh fading canal gives BER improvement in WCDMA performance. Lately, right spreading code election will improve performance system because MAI effect can be decreased by orthogonality of spreading code which is used

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Keyword : UMTS, WCDMA, RRM, Deccorelator algorithm