# SMART REACH
## (S/W CREATORS & TRAINERS)

ISO 9001:2008 CERTIFIED COMPANY

Ph: 9585554590, 9585554599
Email: support@salemsmartreach.com
URL: www.salemsmartreach.com

# Maximum a Posteriori Based Channel Estimation Strategy for Two-Way Relaying Channels

## Abstract:

Wireless network coding can significantly improve the spectrum efficiency for relaying transmission when receivers can acquire accurate channel state information (CSI). In this paper, the channel estimation problem for two-way relaying channels is considered where two sources exchange information through an amplify-and-forward relay employing analog network coding protocol. By taking advantage of the apriori information of wireless channels to further improve channel estimation accuracy, the maximum a posteriori (MAP) based estimation schemes are developed to estimate the composite source-source channel coefficients and the amplitude of individual source-relay channels with apriori knowledge of channel distribution information (CDI). Variations of MAP estimation algorithms are also developed for systems under practical constraints where channel CDI needs to be estimated. In particular, scale MAP estimator as well as a long term estimation algorithm is developed to effectively control the negative impact of CDI estimation error on MAP estimation performance. The simulation results show that the MAP based estimation strategies consistently outperform maximum likelihood estimation methods in the measure of mean square error, thus establishes the advantage of presented MAP based schemes.