

## ABSTRACT

Space Time Shift Keying (STSK) modulation is a modulation scheme which is integrated with MIMO communication system. One of the advantages of this system is that the coding and decoding process is much simpler than other MIMO communication system. Not only that, the other advantage that this modulation has is its flexibility to get the tradeoff between diversity and the data rate. It is obtained by increasing or decreasing the number of dispersion matrices that used.

STSK modulation scheme does not only encode information in the form of phase shift modulation such as Phase Shift Keying (PSK), or coding in the form of combined changes in amplitude and phase such as Quadrature Amplitude Modulation (QAM), but also determined by the encoding of dispersion matrices. Besides the encode function, dispersion matrices also has a function to spread information symbol as an output of PSK or QAM modulation in time and space domain.

The simulation result shows that the performance of STSK modulation schemes on MIMO systems has a better performance if it compared with STBC method. STSK modulation scheme provides SNR improvement of 4 dB to 5dB for a target BER of  $10^{-4}$ . The best performance is shown in the BPSK STSK (2,2,2,1) modulation scheme in which to achieve the target BER of  $10^{-4}$  is only required SNR by 1dB.

**Keyword :** *Multiple Input Multiple Output (MIMO), Phase Shift Keying (PSK), Quadrature Amplitude Modulation (QAM), Space Time Shift Keying (STSK), Dispersion Matrices.*