

Development of modified double-weight code and its implementation in multi-rate transmissions

ABSTRACT

This paper presents a new code structure and its ability in supporting multiple transmission rates in point to point Spectral Amplitude Coding- Optical Code Division Multiple Access (SAC-OCDMA) links. The Double-Weight (DW) code family that has a basic fixed weight of 2 was proposed. Modified Double Weight (MDW) Code is a DW code family variation that has variable weight of greater than two. The ability of MDW codes to support simultaneous transmissions at different bit rates is shown through simulated results of the bit error rate (BER) and the eye patterns. Four MDW encoded channels were used at the bit rates of 2.5Gbps and 10Gbps. MDW code shown here significantly performs better than Hadamard and Modified Frequency Hopping (MFH) codes.

Keyword: Double weight (DW) code; Modified double weight (MDW) code; Multi-rate transmission; SAC-OCDMA