

عنوان مقاله:

Low Complex Standard Conformable Transceiver based on Doppler Spread for DVB-T₂ Systems

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خلاصه مقاله:

This paper addresses a novel Alamouti space-frequency block decoding scheme with discontinuous Doppler diversity (DDoD) and cyclic delay diversity (CDD). We investigate different antenna diversity concepts, which can be applied to orthogonal frequency division multiplexing (OFDM) systems over highly frequency selective channels. The main object of this research is standard compatibility and the effect of simple diversity techniques on the channel fading properties. Therefore, we analyze a receiver in terms of the effective channel transfer function, which leads to the possibility of optimizing diversity. Besides, a novel transceiver using DDoD is proposed, which increases the Doppler spread of the multipath fading channel without causing additional Intercarrier Interference (ICI). Moreover, an efficient Alamouti encoder and decoder based on CDD is proposed, which allows a high reliability and capacity enhancement. In order to evaluate the capability of that, we have implemented this scheme for the second-generation terrestrial video broadcasting (DVB-T₂) system over different channels. Furthermore, mathematical analysis and simulation results show the bit error performance of the modified encoding method with these diversity techniques, performs mostly better than the other forms of encoding Alamouti over highly frequency-selective channels such as single frequency networks (SFN). The other advantages of the proposed method are simplicity, flexibility, and standard compatibility

کلمات کلیدی:

SFBC; Transceivers; Diversity; MIMO; OFDM

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