Conferences papers

البحث رقم (1)

Puplished In

2008 5th International Multi-Conference on Systems, Signals and Devices

Title

BLUETOOTH PERFORMANCE IMPROVEMENT OVER DIFFERENT CHANNELS THROUGH CHANNEL CODING

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ABSTRACT

It is known that Bluetooth systems employ a Hamming (15, 10) code for error correction. In this paper, we propose different error correction coding schemes for this purpose. A comparison study between the Hamming (7, 4), the cyclic (15, 11) and the BCH (15, 7) codes is held in the paper to choose an alternative to the Hamming (15, 10) code. The simulation experiments are held over both an Additive White Gaussian Noise (AWGN) channel and a Rayleigh fading channel. The experimental results reveal the superiority of the BCH (15, 7) code to all other coding schemes if a large redundancy is accepted. If the issue of redundancy is of major concern, the Hamming (7,4) code is the best.

Keywords:

block codes, Bluetooth, fading channels.

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البحث رقم (2)

Puplished In:

2nd International Conference on Electrical Systems Design & Technologies, Hammamet Tunisia, Nov. 8-10, 2008

Title

Bluetooth Performance Improvement Using Convolutional Codes

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Abstract:

— In this paper, convolutional codes are used as error correcting codes for Bluetooth packets. The traditional coding scheme in standard Bluetooth packets depends on the Hamming (15,10) code in the payload field of each packet. This paper investigates the use of convolutional codes for this purpose. Two different versions of convolutional codes are studied based on the code constraint length. The simulation experiments are performed for the cases of additive white Gaussian noise (AWGN) and Rayleigh flat fading channels. The simulation results reveal the superiority of convolutional codes to the Hamming (15, 10) code used in the standard Bluetooth packets in the cases of AWGN and flat fading channels.

Index Terms :

— Bluetooth, convolutional code, AWGN channel, wireless communications.

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البحث رقم (3)

Puplished In:

Title

New Single Carrier FDMA System Based On The Discrete Cosine Transform.

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Abstract:

In this paper, a new single carrier frequency division multiple access (SC-FDMA) system based on the discrete cosine transform (DCT) for uplink wireless transmissions, is introduced. The time domain expressions of the DCT SC-FDMA signals are derived. The peak to average power ratio (PAPR) of the DCT SC-FDMA signals is compared with that of the discrete Fourier transform (DFT) SC-FDMA and orthogonal frequency division multiple access (OFDMA) signals. Simulation results show that the proposed DCT SC-FDMA system provides a better bit error rate (BER) performance than the DFT SC-FDMA and the OFDMA systems. In addition, it is found that the PAPR of the DCT SCFDMA signals is lower than that of OFDMA signals.

Index Terms:

SC-FDMA, DCT, OFDMA.

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Biographies

Faisal S. Al-kamali received the B.Sc. degree in Electronics and Communications Engineering from the Faculty of Engineering, Baghdad University, Baghdad, Iraq, in 2001. He received the M.Sc. degree in Communication Engineering from the Faculty of Electronic Engineering, Menoufia University, Menouf, Egypt, in 2008. He is

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البحث رقم (4)

Puplished In:

Academy of Scientific Research and Technology
27th National Radio Science Conference
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16-18 March 2010

Title

Low-Complexity Equalization Scheme for Uplink MIMO SC-FDMA Systems

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Abstract

In this paper, we propose an efficient low-complexity equalization scheme for multiple-input multipleoutput (MIMO) uplink single-carrier frequency division multiple access (SC-FDMA) systems. The proposed scheme avoids the complexity problem associated with the conventional MIMO zero forcing (ZF) equalizer as well as the noise enhancement problem. The matrix inversion process associated with the proposed equalization scheme is performed in two steps to reduce complexity. A regularization term is added in the second step of the matrix inversion to avoid the noise enhancement. Simulation experiments on uplink MIMO SC-FDMA systems show that the proposed equalization scheme provides better performance than that of the ZF equalizer and its complexity is far less than that of the ZF equalizer.

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البحث رقم (5)

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16-18 March 2010

Title

Real-Time Audio Signal Transmission Over The ACL Link In Bluetooth Systems.

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Abstract:

- In this paper, we propose the transmission of audio signals over the asynchronous connectionless (ACL) link in Bluetooth systems. In traditional Bluetooth systems, audio signals are transmitted over the synchronous connection-oriented (SCO) link, which has a limited data rate. The SCO link requires the transmission of two, four, or six slots for transmitting HV1 packets, HV2 packets, and HV3 packets, respectively. By the proposed approach of transmitting the audio signals over the ACL link, we can use DH or AM packets for audio signal transmission, and enables the transmission of up to 30 bytes in each time slot. Bit level interleavers are suggested for this paper with the proposed implementation to reduce channel effects. Simulation experiments reveal the superiority of the proposed implementation for audio signal transmission over Bluetooth systems.

Keywords:

Bluetooth, audio signals, Interleaving.

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