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(54) PROCEDE PERMETTANT D'AFFECTER UNE LARGEUR DE BANDE DE SPECTRE DE FREQUENCES D'UN SYSTEME DE COEXISTENCE OFDM ET OFDMA

(54) A METHOD FOR ASSIGNING FREQUENCY SPECTRUM BANDWIDTH OF A OFDM AND OFDMA COEXISTENCE SYSTEM

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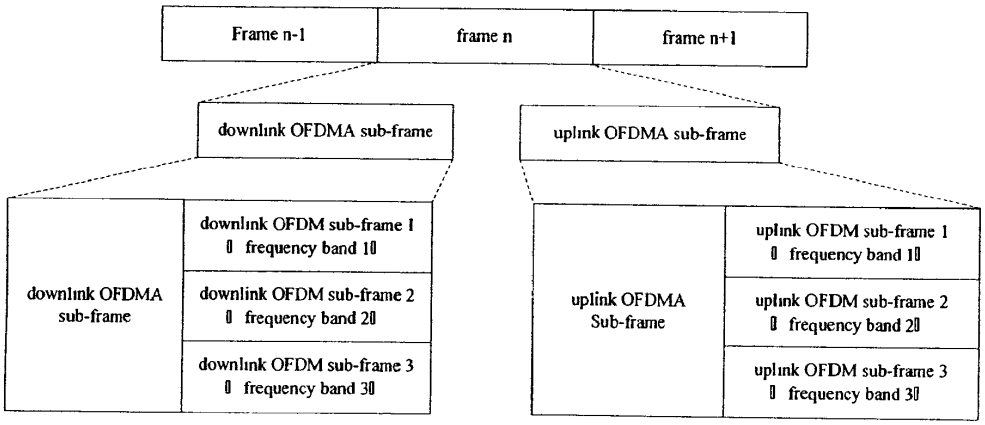

(57) Abrégé/Abstract:
A method for assigning frequency spectrum bandwidth of a OFDM and OFDM coexistence system,the BS system combines the upward and downward data containing OFDM sub-frame and OFDMA sub-frame in TD fashion, and assigns frequency spectrum reasonably according to the different bandwidth require of OFDM and OFDMA and the use condition of the frequency band , constitutes the frame structure realizing OFDM and OFDMA coexistence to transmit upward/downward data of OFDM and OFDMA . The method for assigning frequency spectrum bandwidth of the present invention can achieve higher frequency spectrum utilization efficiency of OFDM and OFDMA coexistence system , and can avoid the waste of frequency spectrum resource of operator , it also can realize flexible networking .

Abstract

The present invention relates to a method for assigning frequency spectrum bandwidth of an OFDM and OFDMA coexistence system, and the base station system combines uplink and downlink data containing OFDM sub-frames and OFDMA sub-frames in a time division fashion, assigns the frequency spectrum reasonably according to the different bandwidth requirements of the OFDM and the OFDMA and the use condition of the frequency band, and constitutes a frame structure realizing the coexistence of the OFDM and the OFDMA, so as to send the OFDMA uplink/downlink data and the OFDM uplink/downlink data. The method for assigning frequency spectrum bandwidth according to the present invention can achieve a higher frequency spectrum utilization efficiency of an OFDM and OFDMA coexistence system, avoid the waste of the frequency spectrum resource of a service provider; and can also realize more flexible networking.

Method for Assigning Frequency Spectrum Bandwidth of an OFDM and OFDMA Coexistence System

Field of the Invention

The present invention relates to a method for assigning frequency spectrum bandwidth of a communication system, and especially relates to a method for assigning frequency spectrum bandwidth of an OFDM (Orthogonal Frequency Division Multiplexing) and OFDMA (Orthogonal Frequency Division Multiplexing Access) coexistence system.

Background Art

Orthogonal frequency division multiplexing (OFDM) technology was firstly used in military field in 1960s, the modulating mode has very high frequency spectrum utilization efficiency and is suitable for wireless data transmission, so it has been used widely as a wireless access method.

OFDM system adopts multi-carrier technique, and a high

speed data stream is transmitted by serial to parallel convert, so that the duration of data symbols in each sub-carrier increases relatively, and then the ISI (InterSymbol Interference) brought by the time dispersion of wireless channel could be reduced efficiently, thereby reducing the complexity of balance in a receiver, and even avoiding using an equalizer and only using the method of inserting cyclic prefix to eliminate the unfavorable influence of ISI. Orthogonality exists among the sub-carriers of the OFDM system, which permits mutual overlap of the frequency spectrum of each sub-carrier, and therefore, compared with the conventional frequency division multiplexing system, the OFDM system could maximize the use of frequency spectrum resources. Figure 1 is a time domain wave shape view of an OFDM symbol in which the prefix is inserted cyclically.

In figure 1, Tb represents the effective symbol cycle in OFDM signals, Tg represents the inserted cyclic prefix, and the contents of Tg is the copy of the last part of contents in Tb period, and Ts is the cycle of the whole OFDM symbols. As long as the length of the cyclic prefix is longer than the maximum time delay extension of OFDM symbols, the

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