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(54) **METHOD OF TRANSMITTING/RECEIVING LTE SYSTEM INFORMATION IN A WIRELESS COMMUNICATION SYSTEM**

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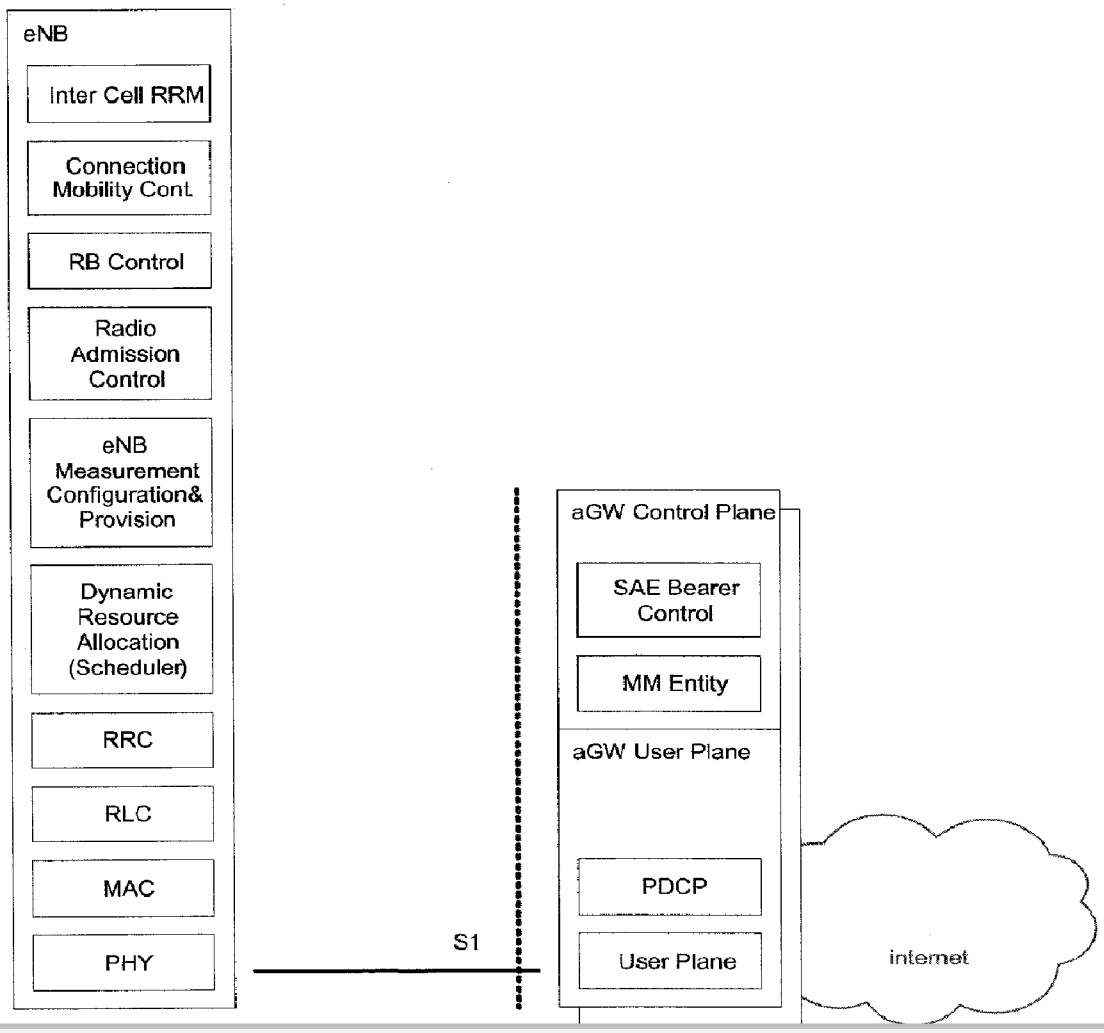
(57) **ABSTRACT**

In a wireless mobile communications system, the system information is grouped or classified in different types according to the characteristics of the system information, and the system information is transmitted to channels with specific functions that allow the optimization of the resource usage and the reception by the User Equipment (UE).



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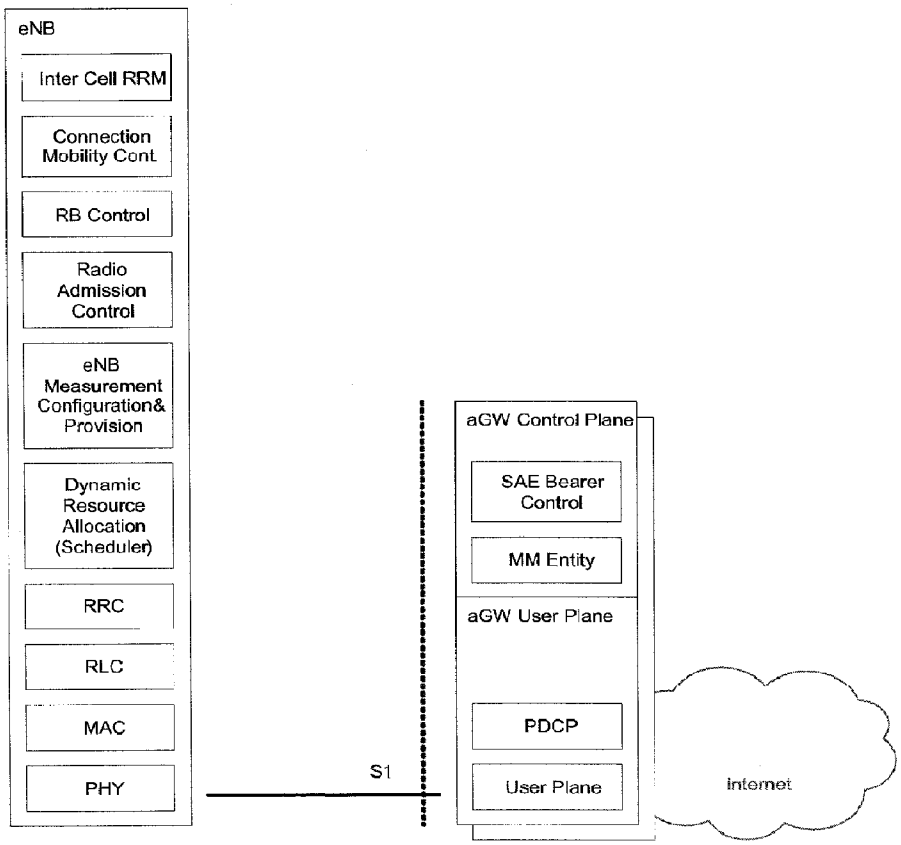
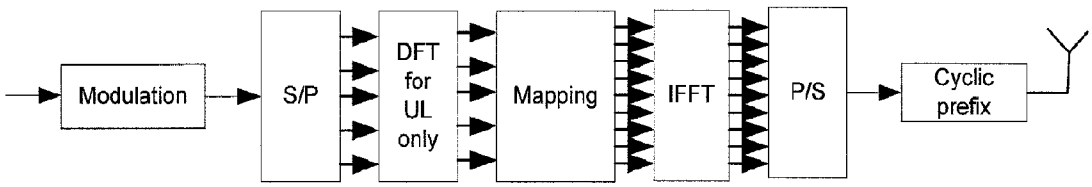
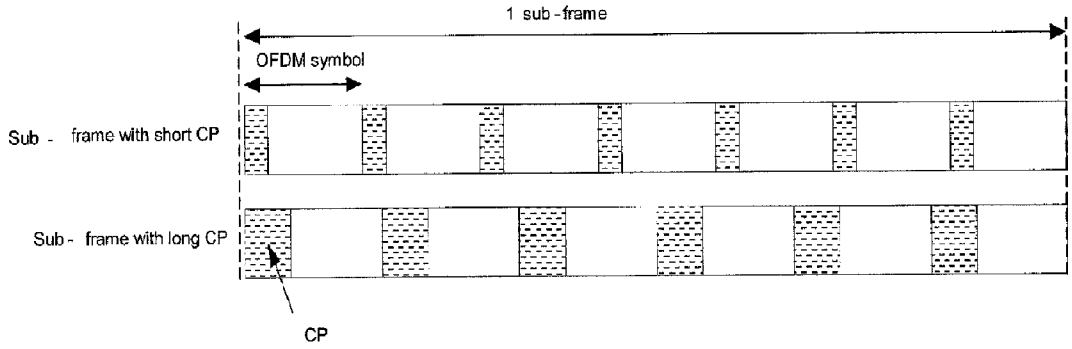
[Fig. 1]



[Fig. 2]



[Fig. 3]



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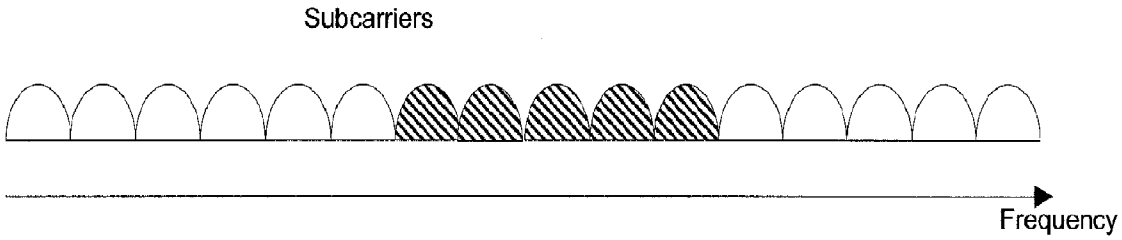
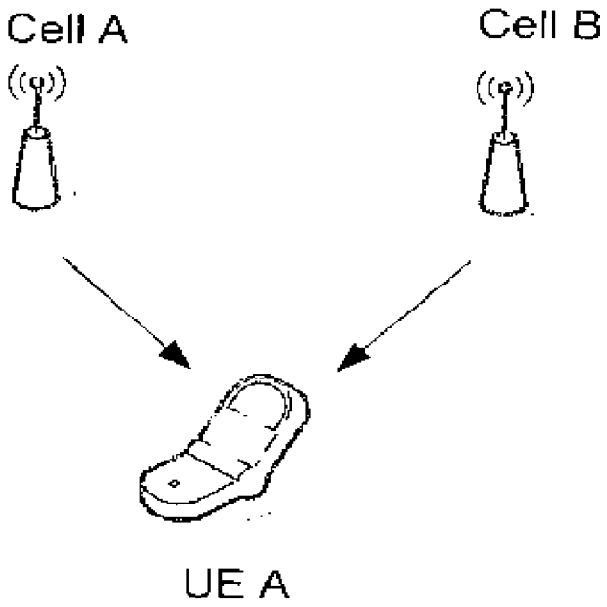
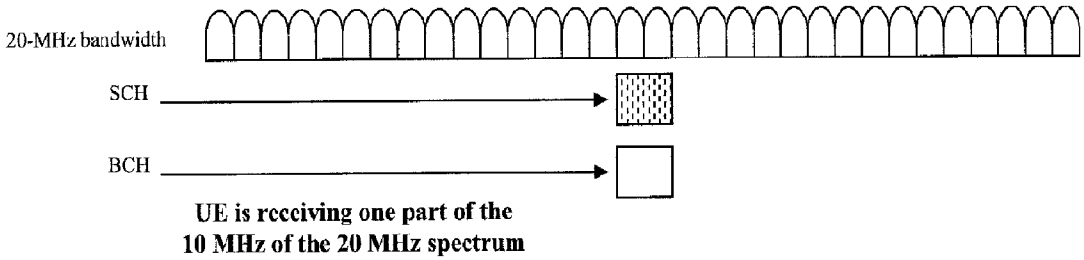
[Fig. 4]



[Fig. 5]



[Fig. 6]



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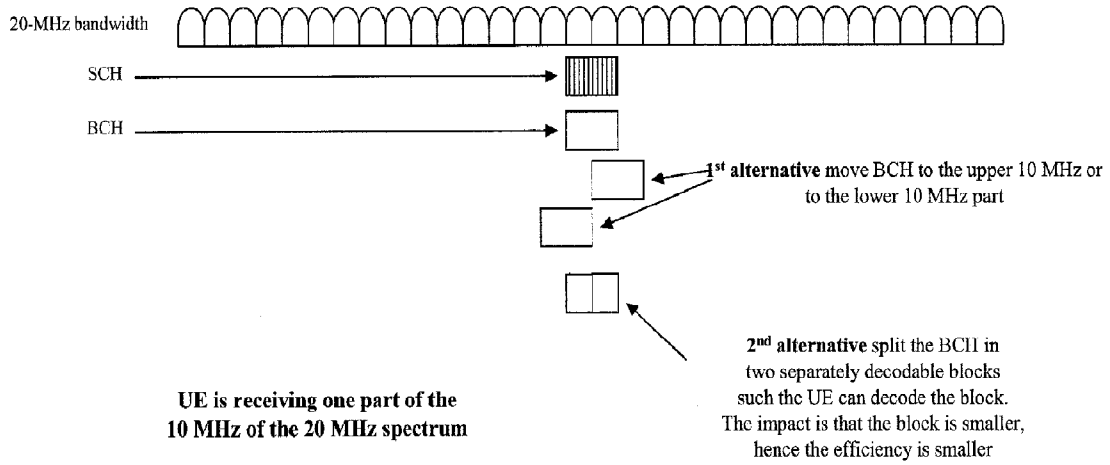
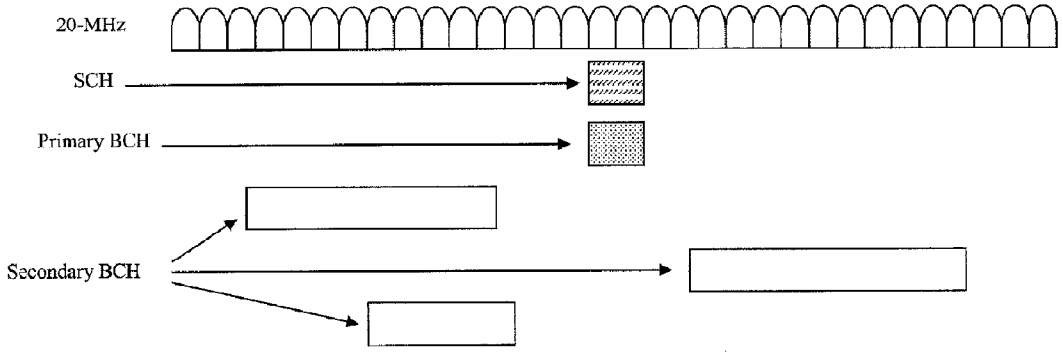
[Fig. 7]



[Fig. 8]



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METHOD OF TRANSMITTING/RECEIVING LTE SYSTEM INFORMATION IN A WIRELESS COMMUNICATION SYSTEM

[0001] This application claims priority to U.S. Patent Provisional Application No. 60/784,680, filed on Mar. 21, 2006, which is incorporated herein by reference.

DISCLOSURE OF INVENTION

Technical Solution

[0002] This disclosure relates to a wireless communication system, more particularly, to a method of transmitting/receiving LTE system information in a wireless communication system.

[0003] In the related art, the system information is mainly broadcasted through a channel [i.e., P-CCPCH channel] having a constant data rate in the Universal Mobile Telecommunications System (UMTS). This implies that the transmission of system information has static characteristic. When the system information is transmitted through the fixed radio resources, the network cannot have flexibility for scheduling of data transmission so that it becomes hard to be applicable to the change of radio environment. As such, the transmission of system information is not coordinated between different cells. Therefore, in the case of OFDM, using only one static channel for the transmission of system information would not allow to optimize the transmission or reception of the system information.

[0004] This disclosure has been developed in order to solve the above described problems of the related art. As a result, this disclosure provides a method of transmitting and/or receiving the system information on an OFDM air interface in an efficient manner.

[0005] Accordingly, this disclosure is directed to a method of transmitting and/ or receiving the system information in a mobile communication system that substantially obviates one or more problems due to limitations and disadvantages of the related art.

[0006] To implement at least the above feature in whole or in parts, this disclosure may provide a method of broadcasting or receiving the system information in a mobile communication system, the system information is grouped or classified in different types according to the characteristics of the system information, and then the system information is transmitted or received via different types of channels with specific functions that allow the optimization of the resource usage and the reception by the User Equipment (UE), wherein the different types of channels may be a statically scheduled channel and/ or a flexibly scheduled channel.

[0007] Additional features of this disclosure will be set forth in part in the description which follows and in part will become apparent to those having ordinary skill in the art upon examination of the following or may be learned from practice of this disclosure. The objectives and other advantages of this disclosure may be realized and attained by the structure particularly pointed out in the written description and claims hereof as well as the appended drawings.

[0008] FIG. **1** is an exemplary diagram illustrating protocol architecture of the E-UTRAN.

[0010] FIG. **3** shows an exemplary structure of an OFDM sub-frame structure.

[0011] FIG. **4** shows an exemplary diagram illustrating sub-carriers in transmission bandwidth.

[0012] FIG. **5** shows an exemplary diagram illustrating a reception of several cells by a

[0013] UE.

[0014] FIG. **6** shows an exemplary diagram illustrating 10 MHz UE in 20 MHz spectrum in accordance with a present disclosure.

[0015] FIG. **7** shows an exemplary diagram illustrating a reception of the BCH in the case of 20 MHz system bandwidth in accordance with a present disclosure.

[0016] FIG. **8** shows an exemplary diagram illustrating a primary and a secondary BCH in accordance with a present disclosure.

[0017] One aspect of this disclosure is the recognition by the present inventors regarding the problems and drawbacks of the related art described above and explained in more detail hereafter. Based upon such recognition, the features of this disclosure have been developed.

[0018] Although this disclosure is shown to be implemented in a mobile communication system, such as a UMTS developed under 3GPP specifications, this disclosure can also be applied to other communication systems operating in conformity with different standards and specifications.

[0019] FIG. **1** is a block diagram of a network structure of an E-UMTS (Evolved-Universal Mobile Telecommunications System) to which technical features of this disclosure may be applied. Recently, an initiative has been started in the scope of the 3GPP (3^{rd} Generation Partnership Project). project to standardize a new air interface for a mobile communication system compared to the second generation air interface (as known under the name of GSM based on TDM (Time division multiplexing) and FDM (Frequency division multiplexing)), and the 3^{rd} generation air interface (as known under the name UMTS and based on CDMA (Code division multiplexing)). The new air interface that is currently discussed as LTE (Long Term Evolution) is based on OFDM (Orthogonal Frequency Division Multiplexing). The E-UMTS is a system evolving from the conventional UMTS and its basic standardization is currently handled by the 3GPP.

[0020] Referring to FIG. **1**, an E-UMTS network includes a user equipment (hereinafter abbreviated 'UE'), a base station (hereinafter named 'eNode B' or 'eNB') and an access gateway (hereinafter abbreviated 'aGW') connected to an external network by being located at an end of the E-UMTS network. The eNB and the aGW are connected via an interface called S1. The aGW may be classified into a part for handling user traffic and a part for handling control traffic. A first aGW for processing new user traffic may communicate with a second AGW for processing control traffic via a new interface. A first interface for transmitting user traffic or a second interface for transmitting control traffic may be located between several eNBs. Here, the eNB may include at least one cell.

[0021] The eNB may perform functions of selection for Access gateway (AGW), a routing toward the AGW during a Radio Resource Control (RRC) activation, a scheduling and transmitting of paging messages, a scheduling and transmitting of Broadcast Channel (BCCH) information, a dynamic

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