time domain.

[0047] In this embodiment, the first configuration information may be used to indicate the time-frequency position of the SSB corresponding to the CORESET of the current RMSI. Since FIGS. 1B-1D show three time-frequency position relationships, the first configuration information is to occupy 2 bits. For example, three code points, (00, 01, 10), may be used to represent the three time-frequency position relationships shown in FIGS. 1B-1D, and the remaining code point, (11), may be used as a reserved bit or an extended bit.

[0048] At step S102, the first configuration information is sent to a UE.

[0049] As shown in FIG. 2, sending the first configuration information to the UE may include steps S201 to S203.

[0050] At step S201, the first configuration information is added to an information element (IE).

[0051] The IE is a data structure that may be used to carry information, for example, the first configuration information. The base station may add the first configuration information to a preset IE. The preset IE refers to the IE that may carry the first configuration information.

[0052] At step S202, the IE is added to second configuration information, where the second configuration information is used to configure a bandwidth part corresponding to the CORESET of the current RMSI as an active bandwidth part (active BWP).

[0053] At step S203, the second configuration information is sent to the UE through radio resource control (RRC) signaling.

[0054] Since the first configuration information is included in the IE and the IE is included in the second configuration information, by sending the second configuration information to the UE through RRC signaling, an objective of sending the first configuration information to the UE is achieved with the simple implementation.

[0055] In the above embodiment, by generating and sending to the UE the first configuration information indicating the time-frequency position of the SSB corresponding to the CORESET of the current RMSI, a flexible configuration for time-frequency position

of SSB can be realized, and the UE can easily get the time-frequency position of the SSB corresponding to the CORESET of the current RMSI based on the position of the CORESET of the current RMSI and the received first configuration information.

[0056] FIG. 3 is a flowchart of a method of determining a time-frequency position according to an exemplary embodiment of the present application. This embodiment is described from a UE side. As shown in FIG. 3, the method includes steps S301 to S302.

[0057] At step S301, first configuration information sent by a base station is received, where the first configuration information indicates a time-frequency position of an SSB corresponding to a CORESET of current RMSI.

[0058] The UE may receive second configuration information sent by the base station through radio resource control (RRC) signaling, where the second configuration information is used to configure the bandwidth part corresponding to the CORESET of the current RMSI as an active bandwidth part, and obtain an IE by parsing the second configuration information, and obtain the first configuration information by parsing the IE.

[0059] At step S302, the time-frequency position of the SSB corresponding to the CORESET of the current RMSI is determined based on a position of the CORESET of the current RMSI and the first configuration information.

[0060] In this embodiment, in response to receiving the first configuration information, the UE may determine the time-frequency position of the SSB corresponding to the CORESET of the current RMSI based on the position of the CORESET of the current RMSI and the first configuration information.

[0061] In the above embodiment, by receiving the first configuration information and determining the time-frequency position of the SSB corresponding to the CORESET of the current RMSI based on the position of the CORESET of the current RMSI and the first configuration information, errors during performing subsequent rate matching can be avoided.

[0062] FIG. 4 is a flowchart of another method of determining a time-frequency position according to an exemplary embodiment of the present application. As shown in FIG. 4, following step S302, the method may further include step S303.

[0063] At step S303, the rate matching is performed with downlink data of a random access process based on the time-frequency position of the SSB.

[0064] In this embodiment, in response to that the time-frequency position of the SSB has been determined, the rate matching may be performed with the downlink data in the random access process, and errors caused by obtaining an incorrect time-frequency position of the SSB may be avoided.

[0065] In the above embodiment, by performing the rate matching with the downlink data in the random access process based on the time-frequency position of the SSB, errors during performing the rate matching can be avoided.

[0066] FIG. 5 is a flowchart of another method of determining a time-frequency position according to an exemplary embodiment of the present application. As shown in FIG. 5, following step S302, the method may further include steps S304 to S306.

[0067] At step S304, the rate matching is performed with downlink data of a random access process based on the time-frequency position of the SSB.

[0068] At step S305, the SSB is received.

[0069] At step S306, the received SSB is set as a reference beam.

[0070] In this embodiment, in response to that the time-frequency position of the SSB has been determined, the rate matching may be performed with the downlink data in the random access process, and at the same time, the SSB may be received and set as the reference beam.

[0071] In the above embodiment, by performing the rate matching with the downlink data in the random access process based on the time-frequency position of the SSB, and receiving the SSB to make the UE being capable of setting the received SSB as the reference beam, a condition for correct data transmission is provided.

[0072] FIG. 6 is a signaling flowchart of a method of determining a time-frequency position according to an exemplary embodiment of the present application. This embodiment is described from the perspective of the interaction between a UE and a base station. As shown in FIG. 6, the method includes steps S601 to S605.

configuration information, where the first configuration information has been added to the IE by the first adding submodule 721, and the second configuration information is used to configure the bandwidth part corresponding to the CORESET of the current RMSI as an active bandwidth part.

[0091] The sending submodule 723 is configured to send the second configuration information to the UE through RRC signaling, where the IE has been added to the second configuration information by the second adding submodule 722.

[0092] In the above embodiment, since the first configuration information is included in the IE, and the IE is included in the second configuration information, by sending the second configuration information to the UE through RRC signaling, an objective of sending the first configuration information to the UE is achieved with the simple implementation.

[0093] FIG. 9 is a block diagram of an apparatus for determining a time-frequency position according to an exemplary embodiment. The apparatus may be located in a UE. As shown in FIG. 9, the apparatus includes a first receiving module 91 and a first determining module 92.

[0094] The first receiving module 91 is configured to receive first configuration information sent by a base station, where the first configuration information indicates a time-frequency position of a synchronization signal block (SSB) corresponding to a common control resource set (CORESET) of current remaining minimum system information (RMSI).

[0095] The UE may receive second configuration information sent by the base station through RRC signaling, where the second configuration information is used to configure the bandwidth part corresponding to the CORESET of the current RMSI as an active bandwidth part, and obtain an IE by parsing the second configuration information, and obtain the first configuration information by parsing the IE.

[0096] The first determining module 92 is configured to determine the time-frequency position of the SSB corresponding to the CORESET of the current RMSI based on the position of the CORESET of the current RMSI and the first configuration information received by the first receiving module 91.

[0097] In this embodiment, in response to receiving the first configuration information,

the UE may determine the time-frequency position of the SSB corresponding to the CORESET of the current RMSI based on the position of the CORESET of the current RMSI and the first configuration information.

[0098] In the above embodiment, by receiving the first configuration information and determining the time-frequency position of the SSB corresponding to the CORESET of the current RMSI based on the position of the CORESET of the current RMSI and the first configuration information, errors during performing subsequent rate matching can be avoided.

[0099] FIG. 10 is a block diagram of another apparatus for determining a time-frequency position according to an exemplary embodiment. As shown in FIG. 10, on the basis of the embodiment shown in FIG. 9, the apparatus may include a rate matching module 93.

[00100] The rate matching module 93 is configured to, in response to the first determining module 92 determining the time-frequency position of the SSB corresponding to the CORESET of the current RMSI, perform the rate matching with downlink data of a random access process based on the time-frequency position of the SSB.

[00101] In this embodiment, in response to that the time-frequency position of the SSB has been determined, the rate matching may be performed with the downlink data in the random access process, and errors caused by obtaining an incorrect time-frequency position of the SSB may be avoided.

[00102] In the above embodiment, by performing the rate matching with the downlink data in the random access process based on the time-frequency position of the SSB, errors during performing the rate matching can be avoided.

[00103] FIG. 11 is a block diagram of another apparatus for determining a time-frequency position according to an exemplary embodiment. As shown in FIG. 11, on the basis of the embodiment shown in FIG. 9, the apparatus may include a rate matching module 94, a second receiving module 95 and a second determining module 96.

[00104] The rate matching module 94 is configured to, in response to the first determining module determining the time-frequency position of the SSB corresponding to the CORESET of the current RMSI, perform rate matching with downlink data of a

CLAIMS

1. A method of configuring information, applicable to a base station, comprising:

generating first configuration information, wherein the first configuration information indicates a time-frequency position of a synchronization signal block (SSB) corresponding to a common control resource set (CORESET) of current remaining minimum system information (RMSI);

adding the first configuration information to an information element (IE);

adding the IE to second configuration information, wherein the second configuration information is used to configure a bandwidth part corresponding to the CORESET of the current RMSI as an active bandwidth part; and

sending the second configuration information to user equipment (UE) through radio resource control (RRC) signaling.

2. A method of determining a time-frequency position, applicable to user equipment (UE), comprising:

receiving first configuration information included in an information element (IE) which is included in second configuration information sent by a base station through radio resource control (RRC) signaling, wherein the first configuration information indicates a time-frequency position of a synchronization signal block (SSB) corresponding to a common control resource set (CORESET) of current remaining minimum system information (RMSI); and

determining the time-frequency position of the SSB corresponding to the CORESET of the current RMSI based on a position of the CORESET of the current RMSI and the first configuration information;

wherein the second configuration information is used to configure a bandwidth part corresponding to the CORESET of the current RMSI as an active bandwidth part.

3. The method according to claim 2, further comprising:

in response to that the time-frequency position of the SSB corresponding to the CORESET of the current RMSI has been determined based on the position of the CORESET of the current RMSI and the first configuration information, performing rate matching with downlink data of a random access process based on the time-frequency position of the SSB.

4. The method according to claim 2, further comprising:

in response to that the time-frequency position of the SSB corresponding to the CORESET of the current RMSI has been determined based on the position of the CORESET of the current RMSI and the first configuration information, performing rate matching with downlink data of a random access process based on the time-frequency position of the SSB;

receiving the SSB; and

setting the received SSB as a reference beam.

5. The method according to claim 2, wherein the receiving the first configuration information included in the IE which is included in the second configuration information sent by the base station through the RRC signaling comprises:

receiving the second configuration information sent by the base station through the RRC signaling;

obtaining the IE by parsing the second configuration information; and

obtaining the first configuration information by parsing the IE.

6. An apparatus for configuring information, applicable to a base station, comprising:

a generating module, configured to generate first configuration information, wherein the first configuration information indicates a time-frequency position of a synchronization signal

block (SSB) corresponding to a common control resource set (CORESET) of current remaining minimum system information (RMSI);

a first adding submodule, configured to add the first configuration information to an information element (IE);

a second adding submodule, configured to add the IE to the second configuration information, wherein the first configuration information has been added to the IE by the first adding submodule, and the second configuration information is used to configure a bandwidth part corresponding to the CORESET of the current RMSI as an active bandwidth part; and

a sending submodule, configured to send the second configuration information to user equipment (UE) through radio resource control (RRC) signaling, wherein the IE has been added to the second configuration information by the second adding submodule.

7. An apparatus for determining a time-frequency position, applicable to user equipment (UE), comprising:

a first receiving module, configured to receive first configuration information included in an information element (IE) which is included in second configuration information sent by a base station through radio resource control (RRC) signaling, wherein the first configuration information indicates a time-frequency position of a synchronization signal block (SSB) corresponding to a common control resource set (CORESET) of current remaining minimum system information (RMSI); and

a first determining module, configured to determine the time-frequency position of the SSB corresponding to the CORESET of the current RMSI based on a position of the CORESET of the current RMSI and the first configuration information received by the first receiving module;

wherein the second configuration information is used to configure a bandwidth part corresponding to the CORESET of the current RMSI as an active bandwidth part.

8. The apparatus according to claim 7, wherein the apparatus further comprises:

a rate matching module, configured to, in response to the first determining module determining the time-frequency position of the SSB corresponding to the CORESET of the current RMSI, perform rate matching with downlink data of a random access process based on the time-frequency position of the SSB.

9. The apparatus according to claim 7, wherein the apparatus further comprises:

a rate matching module, configured to, in response to the first determining module determining the time-frequency position of the SSB corresponding to the CORESET of the current RMSI, perform rate matching with downlink data of a random access process based on the time-frequency position of the SSB;

a second receiving module, configured to receive the SSB in response to the rate matching module performing the rate matching; and

a second determining module, configured to set the SSB received by the second receiving module as a reference beam.

10. The apparatus according to claim 7, wherein the first receiving module comprises:

a receiving submodule, configured to receive the second configuration information sent by the base station through the RRC signaling;

a first parsing submodule, configured to obtain the IE by parsing the second configuration information received by the receiving submodule; and

a second parsing submodule, configured to obtain the first configuration information by parsing the IE which has been obtained by parsing by the first parsing submodule.

11. A base station, comprising:

a processor;

memory for storing executable instructions by the processor;

wherein the processor is configured to:

generate first configuration information, wherein the first configuration information indicates a time-frequency position of a synchronization signal block (SSB) corresponding to a common control resource set (CORESET) of current remaining minimum system information (RMSI);

add the first configuration information to an information element (IE);

add the IE to second configuration information, wherein the second configuration information is used to configure a bandwidth part corresponding to the CORESET of the current RMSI as an active bandwidth part; and

send the second configuration information to user equipment (UE) through radio resource control (RRC) signaling.

12. User equipment, comprising:

a processor;

memory for storing executable instructions by the processor;

wherein the processor is configured to:

receive first configuration information included in an information element (IE) which is included in second configuration information sent by a base station through radio resource control (RRC) signaling, wherein the first configuration information indicates a time-frequency position of a synchronization signal block (SSB) corresponding to a common control resource set (CORESET) of current remaining minimum system information (RMSI); and

determine the time-frequency position of the SSB corresponding to the CORESET of the current RMSI based on a position of the CORESET of the current RMSI and the first

configuration information;

wherein the second configuration information is used to configure a bandwidth part corresponding to the CORESET of the current RMSI as an active bandwidth part.

13. A computer-readable storage medium with computer instructions stored thereon, which, when executed by a processor, implement the steps of the method of configuring information according to claim 1.

14. A computer-readable storage medium with computer instructions stored thereon, which, when executed by a processor, implement the steps of the method of determining a time-frequency position according to any of claims 2 to 5.