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KN, KP, KR, KW, KZ, LA, LC, LK,**(54) Title of invention**MESSAGE-DECODING METHOD,
TRANSMITTING END DEVICE, AND
RECEIVING END DEVICE**(57) Abstract**

Embodiments of the present disclosure provide a message-decoding method, transmitting end device, and receiving end device, and the method may comprise: a receiving end device receiving a second message associated with a first message from a transmitting end device; said receiving end device determining, based on said second message, a target receiver parameter for decoding said first message; and said receiving end device decoding said first message transmitted by said transmitting end device based on said target receiver parameter. Thus, embodiments of the present disclosure enable a receiving end device to determine a receiver parameter based on a second message associated with a first message and can also improve message transmission performance.

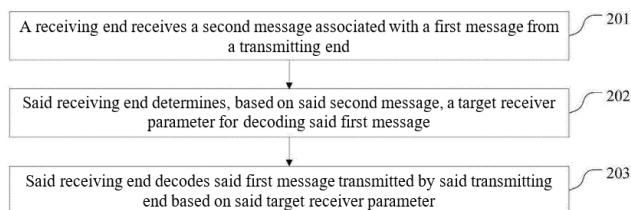


FIG. 2



LR, LS, LU, LY, MA, MD, ME, MG, MK, MN, MW,
MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PA, PE, PG,
PH, PL, PT, RO, RS, RU, RW, SA, SC, SD, SE, SG, SK,
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MESSAGE-DECODING METHOD, TRANSMITTING END DEVICE, AND RECEIVING END DEVICE

Cross Reference to Related Applications

The present application claims priority of Chinese Patent Application No. 201710307962.5 filed on May 4, 2017, the entire content of which is incorporated herein by reference thereto.

Field of the Invention

Embodiments of the present disclosure relate to the field of communications technology and in particular relates to a message-decoding method, a transmitting end device, and a receiving end device.

Background of the Invention

With the development of communications technology, all communications devices now support multiple antenna systems. For example, they support as many as 128, 256, or 512 antenna units and as many as 128, 256, or 512 transceiver units, wherein each antenna unit connects to one transceiver unit. In addition, current communications devices also support multiple wave beams, and the coverages of different wave beams may vary. Thus, when a transmitting end device (e.g., a network-side device) is transmitting information, it may select the appropriate transmitter parameter from among multiple transmitter parameters (e.g., transmission beam) for performing transmission and thereby improve communication performance. As for how a receiving end device (e.g., a user terminal) selects the appropriate receiver parameter (e.g., reception beam) to decode a message transmitted by the transmitting end device is still unclear at present. It is thus obvious that the question of how a receiving end device selects an appropriate receiver parameter to decode a message transmitted by a transmitting end device is a technical problem that currently is urgently in need of a solution.

Summary of the Invention

The object of embodiments of the present disclosure is to provide a message-decoding method, a transmitting end device, and a receiving end device so as to solve the technical problem of how a receiving end device selects an appropriate receiver parameter to decode a message transmitted by a transmitting end device.

To attain the object described above, embodiments of the present disclosure provide, in a first aspect, a message-decoding method, comprising:

a receiving end device receiving a second message associated with a first message from a transmitting end device;

said receiving end device determining, based on said second message, a target receiver parameter for decoding said first message;

and

said receiving end device decoding said first message transmitted by said transmitting end device based on said target receiver parameter.

In a feasible embodiment of the present disclosure, if said second message comprises parameter indication information, then said target receiver parameter is a receiver parameter indicated by said parameter indication information;

if said second message does not comprise parameter indication information, then said target receiver parameter is a default receiver parameter of said receiving end device.

In a feasible embodiment of the present disclosure, the default receiver parameter of said receiving end device comprises:

a receiver parameter currently used by said receiving end device, a receiver parameter indicated by the second message most recently received by said receiving end device, a predefined receiver parameter, or a receiver parameter corresponding to the transmitter parameter most recently reported by said receiving end device to said transmitting end device.

In a feasible embodiment of the present disclosure, said parameter indication information explicitly or implicitly indicates said target receiver parameter.

In a feasible embodiment of the present disclosure, if said parameter indication information implicitly indicates said target receiver parameter, then said parameter indication information comprises a transmitter parameter selected by said transmitting end device, and said receiving end device treats a receiver parameter preselected for said transmitter parameter as said target receiver parameter.

In a feasible embodiment of the present disclosure, if said second message is received within a scheduling time unit corresponding to a predetermined parameter switching indication set, then said second message comprises parameter indication information, and a gap exists between said second message and said first message; and

if said second message is received outside of a scheduling time unit corresponding to said parameter switching indication set, then said second message does not comprise parameter indication

information, and no gap exists between said second message and said first message.

In a feasible embodiment of the present disclosure, the scheduling time unit corresponding to said parameter switching indication set exists periodically in a time domain; and/or

the scheduling time unit corresponding to said parameter switching indication set is configured semi-statically or semi-persistently by said transmitting end device, and said receiving end device is notified thereof.

In a feasible embodiment of the present disclosure, said first message is divided into first part content and second part content that are consecutive in a time domain,

wherein said first part content is located before said second part content, said first part content is consecutive to said second message in a time domain, said second message is located before said first part content, and said receiving end device decoding said first message based on said target receiver parameter comprises:

if said second message comprises parameter indication information, then said receiving end device decodes said second part content based on said target receiver parameter indicated by said parameter indication information; or

if said second message comprises parameter indication information, then said receiving end device discards said first part content and decodes said second part content based on said target receiver parameter indicated by said parameter indication information; or

if said second message comprises parameter indication information, then said receiving end device decodes said first part content based on the default receiver parameter and decodes said second part content based on said target receiver parameter indicated by said parameter indication information; or

if said second message does not comprise parameter indication information, then said receiving end device decodes said first part content and said second part content based on the default receiver parameter; or

if said second message comprises a parameter indication field, and said parameter indication field comprises parameter indication information, then said receiving end device decodes said second part content based on said target receiver parameter indicated by said parameter indication information; or

if said second message comprises a parameter indication field, and said parameter indication field comprises parameter indication information, then said receiving end device discards said first part content and decodes said second part content based on said target receiver parameter indicated by said parameter indication information; or

if said second message comprises a parameter indication field, and said parameter indication field comprises parameter indication information, then said receiving end device decodes said first part content based on the default receiver parameter and decodes said second part content based on said target receiver parameter indicated by said parameter indication information; or

if said second message comprises a parameter indication field, and said parameter indication field indicates no parameter indication information or no parameter change, then said receiving end device decodes said first part content and said second part content based on the default receiver parameter.

In a feasible embodiment of the present disclosure, said method further comprises:

said receiving end device receiving a third message from said transmitting end device, wherein said third message is for indicating whether said second message comprises parameter indication information, and if said third message indicates

that said second message comprises parameter indication information, then a gap exists between said second message and said first message; and if said third message indicates that said second message does not comprise parameter indication information, then no gap exists between said second message and said first message.

In a feasible embodiment of the present disclosure, said third message is for indicating whether a second message in M time units comprises parameter indication information, where said M is an integer greater than or equal to 1, and said M time units are consecutive or nonconsecutive.

In a feasible embodiment of the present disclosure, said target receiver parameter comprises a receiver parameter in at least one of a time domain, a frequency domain, and a space domain.

In a feasible embodiment of the present disclosure, a receiver parameter in said space domain comprises a reception beam for said receiving end device.

In a second aspect, embodiments of the present disclosure further provide a message-decoding method, comprising:

a transmitting end device transmitting a second message associated with a first message to a receiving end device, wherein said second message is used by said receiving end device to determine a target receiver parameter for decoding said first message; and

said transmitting end device transmitting said first message to said receiving end device.

In a feasible embodiment of the present disclosure, if said second message comprises parameter indication information, then said target receiver parameter is a receiver parameter indicated by said parameter indication information; and

if said second message does not comprise parameter indication information, then said target receiver parameter is a default receiver parameter of said receiving end device.

In a feasible embodiment of the present disclosure, the default receiver parameter of said receiving end device comprises:

a receiver parameter currently used by said receiving end device, a receiver parameter indicated by the second message most recently received by said receiving end device, a predefined receiver parameter, or a receiver parameter corresponding to the transmitter parameter most recently reported by said receiving end device to said transmitting end device.

In a feasible embodiment of the present disclosure, said parameter indication information explicitly or implicitly indicates said target receiver parameter.

In a feasible embodiment of the present disclosure, if said parameter indication information implicitly indicates said target receiver parameter, then said parameter indication information comprises a transmitter parameter selected by said transmitting end device, and said receiving end device treats a receiver parameter preselected for said transmitter parameter as said target receiver parameter.

In a feasible embodiment of the present disclosure, if said second message is

received within a scheduling time unit corresponding to a predetermined parameter switching indication set, then said second message comprises parameter indication information, and a gap exists between said second message and said first message; and

if said second message is received outside of a scheduling time unit corresponding to said parameter switching indication set, then said second message does not comprise parameter indication information, and no gap exists between said second message and said first message.

In a feasible embodiment of the present disclosure, the scheduling time unit corresponding to said parameter switching indication set exists periodically in a time domain; and/or

the scheduling time unit corresponding to said parameter switching indication set is configured semi-statically or semi-persistently by said transmitting end device, and said receiving end device is notified thereof.

In a feasible embodiment of the present disclosure, said first message is divided into first part content and second part content that are consecutive in a time domain, wherein said first part content is located before said second part content, said first part content is consecutive to said second message in a time domain, and said second message is located before said first part content.

In a feasible embodiment of the present disclosure, said method further comprises:

said transmitting end device transmitting a third message to said receiving end device, wherein said third message is for indicating whether said second message comprises parameter indication information, and if said third message indicates that said second message comprises parameter indication information, then a gap exists between said second message and said first message; and if said third message indicates that said second message does not comprise parameter indication information, then no gap exists between said second message and said first message.

In a feasible embodiment of the present disclosure, said third message is for indicating whether a second message in M time units comprises parameter indication information, where said M is an integer greater than or equal to 1, and said M time units are consecutive or nonconsecutive.

In a feasible embodiment of the present disclosure, said target receiver parameter comprises a receiver parameter in at least one of a time domain, a frequency domain, and a space domain.

In a feasible embodiment of the present disclosure, a receiver parameter in said space domain comprises a reception beam for said receiving end device.

In a third aspect, embodiments of the present disclosure further provide a receiving end device, comprising:

a first receiving module, which is for receiving a second message associated with a first message from a transmitting end device;

a determining module, which is for determining, based on said second message,

a target receiver parameter for decoding said first message; and

a decoding module, which is for decoding said first message transmitted by said transmitting end device based on said target receiver parameter.

In a feasible embodiment of the present disclosure, if said second message comprises parameter indication information, then said target receiver parameter is a receiver parameter indicated by said parameter indication information;

if said second message does not comprise parameter indication information, then said target receiver parameter is a default receiver parameter of said receiving end device.

In a feasible embodiment of the present disclosure, the default receiver parameter of said receiving end device comprises:

a receiver parameter currently used by said receiving end device, a receiver parameter indicated by the second message most recently received by said receiving end device, a predefined receiver parameter, or a receiver parameter corresponding to the transmitter parameter most recently reported by said receiving end device to said transmitting end device.

In a feasible embodiment of the present disclosure, said parameter indication information explicitly or implicitly indicates said target receiver parameter.

In a feasible embodiment of the present disclosure, if said parameter indication information implicitly indicates said target receiver parameter, then said parameter indication information comprises a transmitter parameter selected by said transmitting end device, and said receiving end device treats a receiver parameter preselected for said transmitter parameter as said target receiver parameter.

In a feasible embodiment of the present disclosure, if said second message is received within a scheduling time unit corresponding to a predetermined parameter switching indication set, then said second message comprises parameter indication information, and a gap exists between said second message and said first message; and

if said second message is received outside of a scheduling time unit corresponding to said parameter switching indication set, then said second message does not comprise parameter indication information, and no gap exists between said second message and said first message.

In a feasible embodiment of the present disclosure, the scheduling time unit corresponding to said parameter switching indication set exists periodically in a time domain; and/or

the scheduling time unit corresponding to said parameter switching indication set is configured semi-statically or semi-persistently by said transmitting end device, and said receiving end device is notified thereof.

In a feasible embodiment of the present disclosure, said first message is divided into first part content and second part content that are consecutive in a time domain, wherein said first part content is located before said second part content,

said first part content is consecutive to said second message in a time domain, and said second message is located before said first part content;

said decoding module is for decoding said second part content based on said target receiver parameter indicated by said parameter indication information if said second message comprises parameter indication information; or

said decoding module is for discarding said first part content and decoding said second part content based on said target receiver parameter indicated by said parameter indication information if said second message comprises parameter indication information; or

said decoding module is for decoding said first part content based on the default receiver parameter and decoding said second part content based on said target receiver parameter indicated by said parameter indication information if said second message comprises parameter indication information; or

said decoding module is for decoding said first part content and said second part content based on the default receiver parameter if said second message does not comprise parameter indication information; or

said decoding module is for decoding said second part content based on said target receiver parameter indicated by said parameter indication information if said second message comprises a parameter indication field, and said parameter indication field comprises parameter indication information; or

said decoding module is for discarding said first part content and decoding said second part content based on said target receiver parameter indicated by said parameter indication information if said second message comprises a parameter indication field, and said parameter indication field comprises

parameter indication information; or

said decoding module is for decoding said first part content based on the default receiver parameter and decoding said second part content based on said target receiver parameter indicated by said parameter indication information if said second message comprises a parameter indication field, and said parameter indication field comprises parameter indication information; or

said decoding module is for decoding said first part content and said second part content based on the default receiver parameter if said second message comprises a parameter indication field, and said parameter indication field indicates no parameter indication information or no parameter change.

In a feasible embodiment of the present disclosure, said receiving end device further comprises:

a second receiving module, which is for receiving a third message from said transmitting end device, wherein said third message is for indicating whether said second message comprises parameter indication information, and if said third message indicates that said second message comprises parameter indication information, then a gap exists between said second message and said first message;

and if said third message indicates that said second message does not comprise parameter indication information, then no gap exists between said second message and said first message.

In a feasible embodiment of the present disclosure, said third message is for indicating whether a second message in M time units comprises parameter indication information, where said M is an integer greater than or equal to 1, and said M time units are consecutive or nonconsecutive.

In a feasible embodiment of the present disclosure, said target receiver parameter comprises a receiver parameter in at least one of a time domain, a frequency domain, and a space domain.

In a feasible embodiment of the present disclosure, a receiver parameter in said space domain comprises a reception beam for said receiving end device.

In a fourth aspect, embodiments of the present disclosure further provide a transmitting end device, comprising:

a first transmitting module, which is used by the transmitting end device for transmitting a second message associated with a first message to a receiving end device, wherein said second message is used by said receiving end device to determine a target receiver parameter for decoding said first message; and

a second transmitting module, which is for transmitting said first message to said receiving end device.

In a feasible embodiment of the present disclosure, if said second message comprises parameter indication information, then said target receiver parameter is a receiver parameter indicated by said parameter indication information; and

if said second message does not comprise parameter indication information, then said target receiver parameter is a default receiver parameter of said receiving end device.

In a feasible embodiment of the present disclosure, the default receiver parameter of said receiving end device comprises:

a receiver parameter currently used by said receiving end device, a receiver parameter indicated by the second message most recently received by said receiving end device, a predefined receiver parameter, or a receiver parameter corresponding to the transmitter parameter most recently reported by said receiving end device to said transmitting end device.

In a feasible embodiment of the present disclosure, said parameter indication information explicitly or implicitly indicates said target receiver parameter.

In a feasible embodiment of the present disclosure, if said parameter indication information implicitly indicates said target receiver parameter, then said parameter indication information comprises a transmitter parameter selected by said transmitting end device, and said receiving end device treats a receiver parameter preselected for said transmitter parameter as said target receiver parameter.

In a feasible embodiment of the present disclosure, if said second message is

received within a scheduling time unit corresponding to a predetermined parameter switching indication set, then said second message comprises parameter indication information, and a gap exists between said second message and said first message; and

if said second message is received outside of a scheduling time unit corresponding to said parameter switching indication set, then said second message does not comprise parameter indication information, and no gap exists between said second message and said first message.

In a feasible embodiment of the present disclosure, the scheduling time unit corresponding to said parameter switching indication set exists periodically in a time domain; and/or

the scheduling time unit corresponding to said parameter switching indication set is configured semi-statically or semi-persistently by said transmitting end device, and said receiving end device is notified thereof.

In a feasible embodiment of the present disclosure, said first message is divided into first part content and second part content that are consecutive in a time domain, wherein said first part content is located before said second part content, said first part content is consecutive to said second message in a time domain, and said second message is located before said first part content.

In a feasible embodiment of the present disclosure, said transmitting end device further comprises:

a third transmitting module, which is for transmitting a third message to said receiving end device, wherein said third message is for indicating whether said second message comprises parameter indication information, and if said third message indicates that said second message comprises parameter indication information, then a gap exists between said second message and said first message; and if said third message indicates that said second message does not comprise parameter indication information, then no gap exists between said second message and said first message.

In a feasible embodiment of the present disclosure, said third message is for indicating whether a second message in M time units comprises parameter indication information, where said M is an integer greater than or equal to 1, and said M time units are consecutive or nonconsecutive.

In a feasible embodiment of the present disclosure, said target receiver parameter comprises a receiver parameter in at least one of a time domain, a frequency domain, and a space domain.

In a feasible embodiment of the present disclosure, a receiver parameter in said space domain comprises a reception beam for said receiving end device.

In a fifth aspect, embodiments of the present disclosure further provide a receiving end device, comprising a processor, a transceiver, memory, a user interface, and a bus interface, wherein:

said processor is for reading programs in said memory and executing

the steps in the message-decoding method corresponding to the receiving end device as provided by embodiments of the present disclosure.

In a sixth aspect, embodiments of the present disclosure further provide a transmitting end device, comprising a processor, a transceiver, memory, a user interface, and a bus interface, wherein:

said processor is for reading programs in said memory and executing the steps in the message-decoding method corresponding to the transmitting end device as provided by embodiments of the present disclosure.

In a seventh aspect, embodiments of the present disclosure further provide a computer-readable storage medium, which stores computer programs that, when executed by a processor, implement steps in the message-decoding method corresponding to the receiving end device provided by embodiments of the present disclosure.

In an eighth aspect, embodiments of the present disclosure further provide a computer-readable storage medium, which stores computer programs that, when executed by a processor, implement steps in the message-decoding method corresponding to the transmitting end device provided by embodiments of the present disclosure.

The above-described technical scheme of embodiments of the present disclosure has at least the following beneficial effects:

According to embodiments of the present disclosure, a receiving end device receives a second message associated with a first message from a transmitting end device; said receiving end device determines, based on said second message, a target receiver parameter for decoding said first message; and said receiving end device decodes said first message transmitted by said transmitting end device based on said target receiver parameter. Thus, it is possible for a receiving end device to determine a receiver parameter based on a second message associated with a first message and also to improve message transmission performance.

Explanation of the Drawings

For a clearer explanation of embodiments of the present disclosure or technical solutions of the related art, drawings required for description of the embodiments or the prior art are introduced in a simple manner below; obviously, the drawings described below are merely some embodiments of the present disclosure; a person with ordinary skill in the art would be able to obtain other drawings based on these drawings without expending creative effort.

FIG. 1 is a diagram of an applicable network architecture of an embodiment of the present disclosure.

FIG. 2 is a flowchart of a message-decoding method provided by an embodiment of the present disclosure.

FIG. 3 is a diagram of a message transmission provided by an embodiment of the present disclosure.

FIG. 4 is a diagram of another message transmission provided by an embodiment of the present disclosure.

FIG. 5 is a diagram of another message transmission provided by an embodiment of the present disclosure.

FIG. 6 is a diagram of another message transmission provided by an embodiment of the present disclosure.

FIG. 7 is a flowchart of another message-decoding method provided by an embodiment of the present disclosure.

FIG. 8 is a structural diagram of a receiving end device provided by an embodiment of the present disclosure.

FIG. 9 is a structural diagram of another receiving end device provided by an embodiment of the present disclosure.

FIG. 10 is a structural diagram of a transmitting end device provided by an embodiment of the present disclosure.

FIG. 11 is a structural diagram of another transmitting end device provided by an embodiment of the present disclosure.

FIG. 12 is a structural diagram of another receiving end device provided by an embodiment of the present disclosure.

FIG. 13 is a structural diagram of another transmitting end device provided by an embodiment of the present disclosure.

Specific Embodiments

To further clarify the technical problem that the present disclosure will solve, in addition to its technical solutions and advantages, a detailed description is provided below in light of the drawings and specific embodiments.

Refer to FIG. 1, which is a diagram of an applicable network architecture of an embodiment of the present disclosure. As shown in FIG. 1, it comprises a transmitting end device 11 and a receiving end device 12. Therein, the transmitting end device 11 may be base station or a terminal, and the receiving end device 12 may also be a terminal or a base station. For example, the transmitting end device 11 is a base station, and the receiving end device 12 is a terminal, in which case communications between the terminal and the base station may be realized; or the transmitting end device 11 is a terminal, and the receiving end device 12 is a base station, in which case communications between the terminal and the base station may be realized; or the transmitting end device 11 is a base station, and the receiving end device 12 is also a base station, in which case base station-to-base station communications may be realized; or the transmitting end device 11 is a terminal, and the receiving end device 12 is also a terminal, in which case terminal-to-terminal communications may be realized. Of course, in embodiments of the present disclosure, the transmitting end device 11 is not limited to a terminal or a base station, e.g., the transmitting end device 11 may also be another network-side device. Likewise, the receiving end device 12 is not limited to a terminal or a base station, e.g., the receiving end device 12 may also be another network-side device; the embodiments of the present disclosure impose no restrictions with regard to these matters. FIG. 1 provides an exemplary illustration in which the transmitting end device 11 is a base station, and the receiving end device 12 is a terminal. The terminal may be a user terminal (or user equipment, UE), e.g., a terminal-side device such as a mobile telephone, a tablet computer, a laptop computer, a personal digital assistant (PDA), a mobile Internet device (MID), or a wearable device. It should be stated that embodiments of the present disclosure are not limited to specific types of terminals. The base station may be a macrocell, such as LTE, eNB, and 5G NR/NB, or it may be a small cell, such as a low power node (LPN), pico,

or femto; or it may be an access point (AP). The base station may also be a network node composed of a central unit (CU) and multiple transmission reception points (TRPs) controlled by the CU. In addition, there are one or more cells (e.g., split into different frequency points or sectors) under one base station. It should be stated that, in embodiments of the present disclosure, the specific types of base stations are not limited.

Please refer to FIG. 2, which is a flowchart of a message-decoding method provided by an embodiment of the present disclosure; as shown in FIG. 2, it includes the steps below:

201: a receiving end device receiving a second message associated with a first message from a transmitting end device;

202: said receiving end device determining, based on said second message, a target receiver parameter for decoding said first message; and

203: said receiving end device decoding said first message transmitted by said transmitting end device based on said target receiver parameter.

Therein, said first message may be a signal, e.g., a data and/or control message, that the transmitting end device needs to transmit to the receiving end device; for example, said first message may be a downlink signal. In addition, in an embodiment of the present disclosure, the first message may be defined as msg1. And said second message may be understood as a message for notifying the receiving end device of a receiver reference, e.g., a control message or a scheduling message. In addition, the second message in an embodiment of the present disclosure may be defined as msg2.

“Determining, based on said second message, a target receiver parameter for decoding said first message,” as stated above, may be as follows: if said second message includes parameter indication information, then determining that a receiver parameter indicated by the parameter indication information serves as said target device parameter; and if said second message does not include parameter indication information, then determining that the default receiver parameter information serves as said target device parameter. That is, in embodiments of the present disclosure, two situations may exist concerning said second message: one is that it contains parameter indication information, in which case the receiving end device may need to switch the receiver parameter and then decode the message transmitted by the transmitting end device. Another is that it does not contain parameter indication information, in which case the receiving end device may directly decode the message transmitted by the receiving end device without having to switch the beam receiver parameter. In addition, the target receiver parameter may be a relevant parameter of a receiver in the receiving end device, e.g., at least one of parameters such as reception beam, equalizer, and reception filter, concerning which the present disclosure imposes no restrictions. To take a target reception beam as an example of a target receiver parameter, determining the target reception beam for decoding said first message, as described above, may be as follows: selecting one or more reception beams from among a plurality of reception beams (Rx beams) of the receiving end device.

Moreover, a plurality of receiver parameters of the receiving end device may be unrelated to the transmitting end device, or a plurality of receiver parameters of the receiving end device may be already known to the transmitting end device, e.g., through pre-configuration or a feedback notification to the transmitting end device, concerning which embodiments of the present disclosure impose no restriction.

In embodiments of the present disclosure, it is possible, through the steps described above, to notify a receiving end device, via a specialized second message, of the reception beam for a first message transmitted by a transmitting end device, thus causing the receiving end device and the transmitting end device to obtain more accurate beam combination information, to support multi-beam transmission, and to improve beam transmission performance. In addition, embodiments of the present disclosure may be used for analogue beam switching for the receiving end device in a wireless communication system, or it may be used for digital beam switching for the receiving end device; embodiments of the present disclosure impose no restrictions concerning the above.

In a feasible embodiment of the present disclosure, if said second message comprises parameter indication information, then said target receiver parameter is a receiver parameter indicated by said parameter indication information; and

if said second message does not comprise parameter indication information, then said target receiver parameter is a default receiver parameter of said receiving end device.

In this implementation, said second message may include or not include the parameter indication information; if it does include it, then the receiver parameter indicated by the parameter indication information serves as said target receiver parameter. Therein, a reception beam indicated by the parameter indication information may be a receiver parameter different from the receiver parameter currently used by the receiving end device; at this time, the receiving end device needs to switch the receiver parameter. It is not necessary to switch if the default receiver parameter is used; for example, the default receiver parameter may be the receiver parameter currently used by the receiving end device for rapid decoding of the message transmitted by the transmitting end device. In addition, in embodiments of the present disclosure, the parameter indication information in the second message may be a parameter indication field in the second message, i.e., the second message may have or not have this parameter indication field.

For example, the default receiver parameter of said receiving end device includes:

a receiver parameter currently used by said receiving end device, a receiver parameter indicated by the second message most recently received by said receiving end device, a predefined receiver parameter, or a receiver parameter corresponding to the transmitter parameter most recently reported by said receiving end device to said transmitting end device.

In this implementation, it is possible, through said default beam, to reduce receiver parameter switching, e.g., reduce reception beam switching, so as to improve transmission performance. For example, it is possible that no gap exists between the second message and the first message.

In addition, in embodiments of the present disclosure, said parameter indication information may explicitly or implicitly indicate said

target receiver parameter. For example, it explicitly or implicitly indicates said target reception beam.

Explicit indication may be understood as direct indication; to take a reception beam as an example, the receiving end device has a group of L preconfigured reception beams, which may already be known to the transmitting end device. Thus, the above-stated parameter indication information may, for example, carry a field of $\log_2(L)$ bits so as to indicate a recommended reception beam for the receiving end device. After receiving the second message, the receiving end device may determine a corresponding reception beam for decoding msg1. Said implicit indication may be understood as an indirect indication; for example, said parameter indication information may indicate a transmission beam (Tx beam), and a reception beam corresponding to the transmission beam may be implicitly indicated by the indicated transmission beam. In this implementation, it is possible, in the implicit or explicit manner described above, to flexibly indicate the reception beam to the receiving end device and thereby improve system flexibility.

In a feasible embodiment of the present disclosure, if said parameter indication information implicitly indicates said target receiver parameter, then said parameter indication information comprises a transmitter parameter selected by said transmitting end device, and said receiving end device treats a receiver parameter preselected for said transmitter parameter as said target receiver parameter.

In this implementation, the receiver parameter may be implicitly indicated by the transmitter parameter; to take a target receiver parameter that is a target beam as an example, the transmitting end device may have M candidate transmission beams for downlink transmission. The transmitting end device configures M reference symbol (RS) resources and applies each transmission beam to a corresponding RS resource. For each RS resource, the receiving end device may test one group of candidate reception beams and determine the optimal reception beam for each RS resource (e.g., transmission beam). In a feasible embodiment of the present disclosure, the receiving end device may at least provide information about recommended transmission beams as feedback, e.g., in the form of recommended RS resources, to the transmitting end device, but this step is optional. Prior to transmitting the first message, the transmitting end device transmits the indication of the transmission beam selected by it in the form of a second message. After the receiving end device receives the second message, it obtains information about the used transmission beam and obtains the optimal reception beam to serve as the above-stated target reception beam; this optimal reception beam may be known from previous measurements and saved in the receiving end device.

In this implementation, the receiver parameter may be implicitly indicated by the transmitter parameter and thus facilitate transmission between the receiving end device and the transmitting end device. Of course, in some implementations, the transmitting end device may autonomously select a corresponding transmitter parameter, such as a transmission beam, based on recommendation information sent back by the receiving end device.

In a feasible embodiment of the present disclosure, if said second message is

received within a scheduling time unit corresponding to a predetermined parameter switching indication set, then said second message comprises parameter indication information, and a gap exists between said second message and said first message; and

if said second message is received outside of a scheduling time unit corresponding to said parameter switching indication set, then said second message does not comprise parameter indication information, and no gap exists between said second message and said first message.

In this implementation, the scheduling time unit corresponding to the above-stated parameter switching indication set (BSIS) may be a time unit such as a sub-frame or a slot. Moreover, the transmitting end device and the receiving end device may understand the BSIS in the same way. The second message may carry parameter indication information only when in the slot (using slots as an example here) corresponding to the BSIS; otherwise, the second message does not carry parameter indication information. This means that in all slots other than the one corresponding to the BSIS it is not necessary to execute receiver parameter switching, e.g., reception beam switching, and that receiver parameter switching is executed only in a periodically selected slot (such as the slot in the BSIS).

In addition, because a gap exists between said second message and said first message when the second message comprises parameter indication information, the receiving end device may switch the receiver parameter, e.g., switch the reception beam, during this gap and thus not affect message transmission. When said second message does not comprise parameter indication information, it is possible that no gap exists between said second message and said first message; it is thus possible to conserve transmission resources. This is because, in this situation, the receiving end device may not need to switch the receiver parameter, e.g., switch the reception beam, and then continuous transmission of the second message and the first message will not affect receiving end device decoding. The above-stated second message and first message may be transmitted using the same frequency domain resource or the same channel; embodiments of the present disclosure impose no restrictions in this regard.

For example, a second message transmitted within a slot in the BSIS carries parameter indication information. In such a situation, there is switching time between the first message and the second message in the same slot. Otherwise, for second message transmission within a slot outside of the BSIS, the transmitting end device transmits the second message without carrying a beam indication field. In such a situation, the receiving end device may prepare to receive the first message immediately (no gap) after the second message. For example, there is the second slot shown in FIG. 3. In addition, when it attempts to receive the second message or the first message in each slot, the receiving end device may decode the second message based on the assumption that parameter indication information exists or does not exist. In other words, the second message may carry parameter indication information within a slot in the BSIS, and the receiving end device attempts to decode the second message on the assumption that there is a piece of parameter indication information. Within other slots, the receiver decodes the second message on the assumption that there is no parameter indication information.

In a slot where the second message does not carry parameter indication information, the receiving end device still may select one receiver parameter (e.g., reception beam) to decode the first message. The receiving end device may use a receiver parameter indicated in the most recent second message carrying a parameter indication field. If no parameter indication information is received, the receiver may use a default receiver parameter to decode the first message.

In a feasible embodiment of the present disclosure, the scheduling time unit corresponding to said parameter switching indication set exists periodically in a time domain; and/or

the scheduling time unit corresponding to said parameter switching indication set is configured semi-statically or semi-persistently by said transmitting end device, and said receiving end device is notified thereof.

It was stated above that the scheduling time unit corresponding to said parameter switching indication set exists periodically in a time domain; this may be as follows: the above-stated scheduling time unit corresponding to said parameter switching indication set is periodic; for example, the parameter switching indication set in a time domain may periodically have preconfigured periods and timing offsets, wherein the timing offset may be the offset relative to another timing reference, e.g., a frame boundary. For example, the parameter switching indication set may have a 10 ms period, which indicates that the second message transmitted in one of 10 slots may carry parameter indication information, and the second message in the other 9 slots does not carry parameter indication information. It was stated above that the scheduling time unit corresponding to said parameter switching indication set is configured semi-statically or semi-persistently by said transmitting end device, and said receiving end device is notified thereof; this may be as follows: the transmitting end device configures semi-statically or semi-persistently and notifies the receiving end device of a set of parameter switching indication sets, i.e., it indicates that there is a plurality of parameter switching indication sets. Or said parameter switching indication set may be obtained by the receiving end device and be fed back to the transmitting end device as a recommendation. The transmitting end device may use the parameter switching indication set recommended by the receiving end device or cover the parameter switching indication set recommended by the receiving end device and select a new parameter switching indication set. The transmitting end device may need to indicate to the receiving end device whether to confirm the parameter switching indication set recommended by the receiving end device or indicate the parameter switching indication set that it selected to the receiving end device.

In a feasible embodiment of the present disclosure, said first message is divided into first part content and second part content that are consecutive in a time domain, wherein said first part content is located before said second part content, said first part content is consecutive to said second message in a time domain, said second message is located before said first part content, and said receiving end device decoding said first message based on said target receiver parameter comprises:

if said second message comprises parameter indication information, then said receiving end device decodes said second part content based on said target receiver parameter indicated by said parameter indication information; or

if said second message comprises parameter indication information, then said receiving end device discards said first part content and decodes said second part content based on said target receiver parameter indicated by said parameter indication information; or

if said second message comprises parameter indication information, then said receiving end device decodes said first part content based on the default receiver parameter and decodes said second part content based on said target receiver parameter indicated by said parameter indication information; or

if said second message does not comprise parameter indication information, then said receiving end device decodes said first part content and said second part content based on the default receiver parameter.

In this implementation, the division of said first message into first part content and second part content that are consecutive in a time domain may be as follows: the receiving end device divides the first message into two parts; this division of the first message into two parts may be understood as treating the first message as though it has two parts, for the receiving end device has not received the first message at this point and thus cannot split it apart.

For example, the transmitting end device may transmit the second message carrying relevant downlink scheduling information associated with the reception of the first message. The second message may carry or not carry parameter indication information, concerning which the receiving end device may not have prior knowledge. If the second message does not have parameter indication information, the payload of the second message will be relatively small (expressed as A bits). If the second message does have parameter indication information, the payload of the second message will be relatively large (expressed as B bits, where $B > A$). After the transmitting end device transmits the second message, the receiving end device may attempt to blindly decode the second message. The receiving end device does not have prior information concerning the payload of the second message and therefore needs to execute blind decoding on the basis of different possible second message payloads. For example, the receiving end device will execute a first blind decoding on the assumption that the second message has a payload of A bits and blindly decode another second message on the assumption that it has a payload of B bits. Thus, one of the two blind decodings will successfully decode the second message according to the actual payload of the second message. Subsequently, the receiving end device may divide the first message into first part content and second part content (part 1 and part 2), wherein the first part content is located before the second part content and is time-division multiplexed (TDM) in a time domain. The first part of the first message immediately follows the second message, i.e. with no gap between them, and the second part content of the first message is adjacent to the first part content, e.g., the second slot shown in FIG. 4.

In addition, because the first part content and the second part content belong to the same message, the receiving end device may execute symbol-level processing separately on the first part content and the second part content.

In this implementation, because said second message includes parameter indication information, said receiving

end device uses said target receiver parameter indicated by said parameter indication information to decode said second part content, wherein said transmitting end device has not yet transmitted said first part content. For example, the first slot shown in FIG. 4. It is possible in this way to improve the accuracy of receiving end device decoding.

In addition, when the second message includes parameter indication information, it is possible to discard said first part content and use said target receiver parameter indicated by said parameter indication information to decode said second part content. That is, it is possible to discard the first part content of the second slot shown in FIG. 4, while also being able to ensure performance between the transmitting end device and the receiving end device because the transmitting end device in this situation may transmit non-important information in the first part content and important information in the second part content. Of course, the embodiments of the present disclosure are not limited to the above; when the first message includes parameter indication information, the transmitting end device may also transmit important information in the first part content and transmit non-important information in the second part content.

In addition, when the second message includes parameter indication information, the default receiver parameter may be used to decode said first part content, and said target receiver parameter indicated by said parameter indication information may be used to decode said second part content. Thus, it is possible for the receiving end to precisely decode first part and second part content.

In addition, when the second message does not include parameter indication information, the default receiver parameter may be used to decode said first part content and said second part content. That is, the third slot shown in FIG. 4.

In addition, the transmitting end device and receiving end device may align their precise understandings of first message decoding actions on the receiving end device. This may be configured semi-statically or semi-persistently by the network for the receiving end device or indicated dynamically to the receiving end device using another dynamic control message.

Optionally, said first message is divided into first part content and second part content that are consecutive in a time domain, wherein said first part content is located before said second part content, said first part content is consecutive to said second message in a time domain, said second message is located before said first part content, and said receiving end device decoding said first message transmitted by said transmitting end device based on said target receiver parameter comprises:

if said second message comprises a parameter indication field, and said parameter indication field comprises parameter indication information, then said receiving end device decodes said second part content based on said target receiver parameter indicated by said parameter indication information; or

if said second message comprises a parameter indication field, and said parameter indication field comprises parameter indication information, then said receiving end device discards said first part content and decodes said second part content based on said target receiver parameter indicated by said parameter indication information; or

if said second message comprises a parameter indication field, and said parameter indication field comprises parameter indication information, then said receiving end device decodes said first part content based on the default receiver parameter and decodes said second part content based on said target receiver parameter indicated by said parameter indication information; or

if said second message comprises a parameter indication field, and said parameter indication field indicates no parameter indication information or no parameter change, then said receiving end device decodes said first part content and said second part content based on the default receiver parameter.

In this implementation, the second message may always have a parameter indication field, e.g., a beam indication field having, for example, S bits. Moreover, the parameter indication field has at least one status indication, i.e., a status indication of no parameter indication information or no parameter change, and may also indicate other statuses of the receiver parameter for decoding the first message. Therefore, the payload of the second message was known to the transmitting end device and the receiving end device in advance. For example, S = 2 corresponds to four possible receiver parameter indication statuses. One status indicates to the receiver that there is “no parameter indication information or no parameter change,” and the other 3 statuses indicate the receiver parameter to the receiver.

In addition, regarding the first part content and second part content in this implementation, one may refer to the corresponding descriptions in the foregoing implementation; they will not be discussed further here.

Moreover, with regard to whether the second message includes parameter indication information and how first part content and second part content are decoded, one may refer to the corresponding descriptions in the foregoing implementation; the same or similar beneficial effect may be attained without discussing them further here.

In a feasible embodiment of the present disclosure, said method further comprises:

said receiving end device receiving a third message from said transmitting end device, wherein said third message is for indicating whether said second message comprises parameter indication information, and if said third message indicates that said second message comprises parameter indication information, then a gap exists between said second message and said first message; and if said third message indicates that said second message does not comprise parameter indication information, then no gap exists between said second message and said first message.

The above-described third message may be defined as msg3; in this implementation, the third message

notifies the receiving end device whether the second message includes parameter indication information; more specifically, it can indicate whether the receiver parameter indicated by the second message has changed with respect to the receiving end device; thus, it is possible, when there is no receiver parameter change or when no parameter indication information is included, for the receiving end device to directly use the current receiver parameter to decode the first message even without having received the second message. In addition, in some implementations, the third message may have a fixed payload, wherein the presence or absence of parameter indication information in the second message corresponds to two different statuses in the third message. For example, the third message has one bit indicating whether the second message carries parameter indication information.

In addition, in an embodiment of the present disclosure, the above-described third message may correspond to one second message, i.e., one third message indicates one second message, as shown in FIG. 5. Moreover, the third message and the second message may be transmitted using the same scheduling time unit (e.g., a slot), an example of which is given in FIG. 5. Different scheduling time units may be used to transmit the third and second message. If the second message has parameter indication information, there may be one gap between the first message and the second message. If the second message does not have parameter indication information, there may not be a gap between the first message and the second message.

In a feasible embodiment of the present disclosure, said third message is for indicating whether a second message in M time units comprises parameter indication information, where said M is an integer greater than or equal to 1, and said M time units are consecutive or nonconsecutive.

In this implementation, the third message may indicate a plurality of second messages; for example, the third message is for indicating whether M second messages in M slots include parameter indication information as a way to reduce message overhead. In addition, the value of the above-described M and the time positions of the M second messages may be configured semi-statically or semi-persistently in a predefined manner and already be known to both the transmitting end device and receiving end device. In the example presented in FIG. 6, $M = 3$. As soon as the third message is received, the third message indicates to the receiving end device whether the second messages in the corresponding M slots carry parameter indication information.

In addition, the third message may be transmitted in each scheduling time unit (e.g., slots) or in a subset of slots preconfigured by the transmitting end device (e.g., it has preconfigured transmission periods and offsets). In the latter situation, the transmitting end device may indicate the occurrence of the third message to the receiving end device in advance.

In a feasible embodiment of the present disclosure, in an embodiment of the present disclosure, the target receiver parameter comprises a receiver parameter in at least one of a time domain, a frequency domain, and a space domain.

Thus, it is possible to flexibly select a receiver parameter in at least one of a time domain, a frequency domain, and a space domain

based on the second message from the transmitting end device and to decode the first message. In a feasible embodiment of the present disclosure, said space domain receiver parameter includes a reception beam for said receiving end device. Thus, the receiving end device can determine the reception beam based on the second message associated with the first message, and beam transmission performance can be improved.

It should be stated that all of the many optional implementations introduced by embodiments of the present disclosure may be implemented in combination or separately; embodiments of the present disclosure impose no restrictions in this regard.

In an embodiment of the present disclosure, a receiving end device receives a second message associated with a first message from a transmitting end device; said receiving end device determines, based on said second message, a target receiver parameter for decoding said first message; and said receiving end device decodes said first message transmitted by said transmitting end device based on said target receiver parameter. Thus, the receiving end device can determine the receiver parameter based on the second message associated with the first message, and message transmission performance can be improved.

Refer to FIG. 7, which is a flowchart of another message-decoding method provided by an embodiment of the present disclosure; as shown in FIG. 7, the method comprises the steps below:

701: a transmitting end device transmitting a second message associated with a first message to a receiving end device, wherein said second message is used by said receiving end device to determine a target receiver parameter for decoding said first message; and

702: said transmitting end device transmitting said first message to said receiving end device.

In a feasible embodiment of the present disclosure, if said second message comprises parameter indication information, then said target receiver parameter is a receiver parameter indicated by said parameter indication information; and

if said second message does not comprise parameter indication information, then said target receiver parameter is a default receiver parameter of said receiving end device.

In a feasible embodiment of the present disclosure, the default receiver parameter of said receiving end device comprises:

a receiver parameter currently used by said receiving end device, a receiver parameter indicated by the second message most recently received by said receiving end device, a predefined receiver parameter, or a receiver parameter corresponding to the transmitter parameter most recently reported by said receiving end device to said transmitting end device.

In a feasible embodiment of the present disclosure, said parameter indication information explicitly or implicitly indicates said target receiver parameter.

In a feasible embodiment of the present disclosure, if said parameter indication information implicitly indicates said target receiver parameter, then said parameter indication information comprises a transmitter parameter selected by said transmitting end device, and said receiving end device treats a receiver parameter preselected for said transmitter parameter as said target

receiver parameter.

In a feasible embodiment of the present disclosure, if said second message is received within a scheduling time unit corresponding to a predetermined parameter switching indication set, then said second message comprises parameter indication information, and a gap exists between said second message and said first message; and

if said second message is received outside of a scheduling time unit corresponding to said parameter switching indication set, then said second message does not comprise parameter indication information, and no gap exists between said second message and said first message.

In a feasible embodiment of the present disclosure, the scheduling time unit corresponding to said parameter switching indication set exists periodically in a time domain; and/or

the scheduling time unit corresponding to said parameter switching indication set is configured semi-statically or semi-persistently by said transmitting end device, and said receiving end device is notified thereof.

In a feasible embodiment of the present disclosure, said first message is divided into first part content and second part content that are consecutive in a time domain, wherein said first part content is located before said second part content, said first part content is consecutive to said second message in a time domain, and said second message is located before said first part content.

In a feasible embodiment of the present disclosure, said method further comprises:

said transmitting end device transmitting a third message to said receiving end device, wherein said third message is for indicating whether said second message comprises parameter indication information, and if said third message indicates that said second message comprises parameter indication information, then a gap exists between said second message and said first message; and if said third message indicates that said second message does not comprise parameter indication information, then no gap exists between said second message and said first message.

In a feasible embodiment of the present disclosure, said third message is for indicating whether a second message in M time units comprises parameter indication information, where said M is an integer greater than or equal to 1, and said M time units are consecutive or nonconsecutive.

In a feasible embodiment of the present disclosure, said target receiver parameter comprises a receiver parameter in at least one of a time domain, a frequency domain, and a space domain.

In a feasible embodiment of the present disclosure, a receiver parameter of said space domain comprises a reception beam for said receiving end device.

It should be stated that the present embodiment serves as an implementation of the transmitting end device corresponding to the one in the embodiment shown in FIG. 2;

for its specific implementation, one may refer to the relevant explanations of the embodiment shown in FIG. 2; to avoid repetition, the present embodiment will not be discussed further, yet the same or similar beneficial effects may be attained.

Refer to FIG. 8, which is a structural diagram of a receiving end device provided by an embodiment of the present disclosure; as shown in FIG. 8, the receiving end device 800 comprises:

- a first receiving module 801, which is for receiving a second message associated with a first message from a transmitting end device;

- a determining module 802, which is for determining, based on said second message, a target receiver parameter for decoding said first message; and

- a decoding module 803, which is for decoding said first message transmitted by said transmitting end device based on said target receiver parameter.

In a feasible embodiment of the present disclosure, if said second message comprises parameter indication information, then said target receiver parameter is a receiver parameter indicated by said parameter indication information;

if said second message does not comprise parameter indication information, then said target receiver parameter is a default receiver parameter of said receiving end device.

In a feasible embodiment of the present disclosure, the default receiver parameter of said receiving end device comprises:

- a receiver parameter currently used by said receiving end device, a receiver parameter indicated by the second message most recently received by said receiving end device, a predefined receiver parameter, or a receiver parameter corresponding to the transmitter parameter most recently reported by said receiving end device to said transmitting end device.

In a feasible embodiment of the present disclosure, said parameter indication information explicitly or implicitly indicates said target receiver parameter.

In a feasible embodiment of the present disclosure, if said parameter indication information implicitly indicates said target receiver parameter, then said parameter indication information comprises a transmitter parameter selected by said transmitting end device, and said receiving end device treats a receiver parameter preselected for said transmitter parameter as said target receiver parameter.

In a feasible embodiment of the present disclosure, if said second message is received within a scheduling time unit corresponding to a predetermined parameter switching indication set, then said second message comprises parameter indication information, and a gap exists between said second message and said first message; and

if said second message is received outside of a scheduling time unit corresponding to said parameter switching indication set, then said second message does not comprise parameter indication information, and

no gap exists between said second message and said first message.

In a feasible embodiment of the present disclosure, the scheduling time unit corresponding to said parameter switching indication set exists periodically in a time domain; and/or

the scheduling time unit corresponding to said parameter switching indication set is configured semi-statically or semi-persistently by said transmitting end device, and said receiving end device is notified thereof.

In a feasible embodiment of the present disclosure, said first message is divided into first part content and second part content that are consecutive in a time domain, wherein said first part content is located before said second part content, said first part content is consecutive to said second message in a time domain, and said second message is located before said first part content:

said decoding module 803 is for decoding said second part content based on said target receiver parameter indicated by said parameter indication information if said second message comprises parameter indication information; or

said decoding module 803 is for discarding said first part content and decoding said second part content based on said target receiver parameter indicated by said parameter indication information if said second message comprises parameter indication information; or

said decoding module 803 is for decoding said first part content based on the default receiver parameter and decoding said second part content based on said target receiver parameter indicated by said parameter indication information if said second message comprises parameter indication information; or

said decoding module 803 is for decoding said first part content and said second part content based on the default receiver parameter if said second message does not comprise parameter indication information; or

said decoding module 803 is for decoding said second part content based on said target receiver parameter indicated by said parameter indication information if said second message comprises a parameter indication field, and said parameter indication field comprises parameter indication information; or

said decoding module 803 is for discarding said first part content and decoding said second part content based on said target receiver parameter indicated by said parameter indication information if said second message comprises a parameter indication field, and said parameter indication field comprises parameter indication information; or

said decoding module 803 is for decoding said first part content based on the default receiver parameter and decoding said second part content based on said target receiver parameter indicated by said parameter indication information if said second message comprises a parameter indication field, and said parameter indication field comprises parameter indication information;

or

said decoding module 803 is for decoding said first part content and said second part content based on the default receiver parameter if said second message comprises a parameter indication field, and said parameter indication field indicates no parameter indication information or no parameter change.

In a feasible embodiment of the present disclosure, as shown in FIG. 9, said receiving end device 800 further comprises:

a second receiving module 804, which is for receiving a third message from said transmitting end device, wherein said third message is for indicating whether said second message comprises parameter indication information, and if said third message indicates that said second message comprises parameter indication information, then a gap exists between said second message and said first message; and if said third message indicates that said second message does not comprise parameter indication information, then no gap exists between said second message and said first message.

In a feasible embodiment of the present disclosure, said third message is for indicating whether a second message in M time units comprises parameter indication information, where said M is an integer greater than or equal to 1, and said M time units are consecutive or nonconsecutive.

In a feasible embodiment of the present disclosure, said target receiver parameter comprises a receiver parameter in at least one of a time domain, a frequency domain, and a space domain.

In a feasible embodiment of the present disclosure, a receiver parameter in said space domain comprises a reception beam for said receiving end device.

It should be stated that said receiving end device 800 in the present embodiment may be a receiving end device of any implementation among the method embodiments of the present disclosure; any implementation of the receiving end device among the method embodiments of the present disclosure may be implemented by the above-described receiving end device 800 in the present embodiment with the same or similar beneficial effects; this matter will not be discussed further here.

Refer to FIG. 10, which is a structural diagram of a transmitting end device provided by an embodiment of the present disclosure; as shown in FIG. 10, the transmitting end device 1000 comprises:

a first transmitting module 1001, which is used by the transmitting end device for transmitting a second message associated with a first message to a receiving end device, wherein said second message is used by said receiving end device to determine a target receiver parameter for decoding said first message;

a second transmitting module 1002, which is for transmitting said first message to said receiving end device.

In a feasible embodiment of the present disclosure, if said second message comprises parameter indication information, then

said target receiver parameter is a receiver parameter indicated by said parameter indication information; and

if said second message does not comprise parameter indication information, then said target receiver parameter is a default receiver parameter of said receiving end device.

In a feasible embodiment of the present disclosure, the default receiver parameter of said receiving end device comprises:

a receiver parameter currently used by said receiving end device, a receiver parameter indicated by the second message most recently received by said receiving end device, a predefined receiver parameter, or a receiver parameter corresponding to the transmitter parameter most recently reported by said receiving end device to said transmitting end device.

In a feasible embodiment of the present disclosure, said parameter indication information explicitly or implicitly indicates said target receiver parameter.

In a feasible embodiment of the present disclosure, if said parameter indication information implicitly indicates said target receiver parameter, then said parameter indication information comprises a transmitter parameter selected by said transmitting end device, and said receiving end device treats a receiver parameter preselected for said transmitter parameter as said target receiver parameter.

In a feasible embodiment of the present disclosure, if said second message is received within a scheduling time unit corresponding to a predetermined parameter switching indication set, then said second message comprises parameter indication information, and a gap exists between said second message and said first message; and

if said second message is received outside of a scheduling time unit corresponding to said parameter switching indication set, then said second message does not comprise parameter indication information, and no gap exists between said second message and said first message.

In a feasible embodiment of the present disclosure, the scheduling time unit corresponding to said parameter switching indication set exists periodically in a time domain; and/or

the scheduling time unit corresponding to said parameter switching indication set is configured semi-statically or semi-persistently by said transmitting end device, and said receiving end device is notified thereof.

In a feasible embodiment of the present disclosure, said first message is divided into first part content and second part content that are consecutive in a time domain, wherein said first part content is located before said second part content, said first part content is consecutive to said second message in a time domain, and said second message is located before said first part content.

In a feasible embodiment of the present disclosure, as shown in FIG. 11, said transmitting end device further comprises:

a third transmitting module 1003, which is for transmitting a third message to said receiving end device, wherein said third message

is for indicating whether said second message comprises parameter indication information, and if said third message indicates that said second message comprises parameter indication information, then a gap exists between said second message and said first message; and if said third message indicates that said second message does not comprise parameter indication information, then no gap exists between said second message and said first message.

In a feasible embodiment of the present disclosure, said third message is for indicating whether a second message in M time units comprises parameter indication information, where said M is an integer greater than or equal to 1, and said M time units are consecutive or nonconsecutive.

In a feasible embodiment of the present disclosure, said target receiver parameter comprises a receiver parameter in at least one of a time domain, a frequency domain, and a space domain.

In a feasible embodiment of the present disclosure, a receiver parameter in said space domain comprises a reception beam for said receiving end device.

It should be stated that the above-described transmitting end device 1000 in the present embodiment may be a transmitting end device of any implementation among the method embodiments of the present disclosure; any implementation of the transmitting end device among the method embodiments of the present disclosure may be implemented by the above-described transmitting end device 1000 in the present embodiment with the same or similar beneficial effects; this matter will not be discussed further here.

Refer to FIG. 12, which is a structural diagram of another receiving end device provided by an embodiment of the present disclosure; as shown in FIG. 12, the receiving end device comprises a processor 1200, a transceiver 1210, memory 1220, a user interface 1230, and a bus interface, wherein:

the processor 1200 is for reading programs in the memory 1220 and executing the process below:

the receiving end device receiving, via the transceiver 1210, a second message associated with a first message from a transmitting end device;

determining, based on said second message, a target receiver parameter for decoding said first message; and

decoding said first message transmitted by said transmitting end device based on said target receiver parameter.

Therein, the transceiver 1210 is for receiving and transmitting data under the control of the processor 1200.

In FIG. 12, the bus architecture may include any number of interconnected buses and bridges, which specifically link together various circuits of one or more processors represented by processor 1200 and memories represented by memory 1220. The bus architecture may also link together various other circuits, such as circuits for a peripheral device, a voltage stabilizer, and a power management circuit, all of which is known in the art and therefore will

not be described further in this document. The bus interface provides an interface. The transceiver 1210 may have multiple components, i.e., may include a transmitter and a receiver, and provide units for communicating over a transmission medium with various other apparatuses. With regard to different user devices, the user interface 1230 can also connect externally or internally with the interfaces of necessary devices; connected devices include but are not limited to a keypad, a display, a speaker, a microphone, and a joystick.

The processor 1200 is responsible for managing the bus architecture and general processing, and the memory 1220 may store data used by the processor 1200 when executing operations.

In a feasible embodiment of the present disclosure, if said second message comprises parameter indication information, then said target receiver parameter is a receiver parameter indicated by said parameter indication information;

if said second message does not comprise parameter indication information, then said target receiver parameter is a default receiver parameter of said receiving end device.

In a feasible embodiment of the present disclosure, the default receiver parameter of said receiving end device comprises:

a receiver parameter currently used by said receiving end device, a receiver parameter indicated by the second message most recently received by said receiving end device, a predefined receiver parameter, or a receiver parameter corresponding to the transmitter parameter most recently reported by said receiving end device to said transmitting end device.

In a feasible embodiment of the present disclosure, said parameter indication information explicitly or implicitly indicates said target receiver parameter.

In a feasible embodiment of the present disclosure, if said parameter indication information implicitly indicates said target receiver parameter, then said parameter indication information comprises a transmitter parameter selected by said transmitting end device, and said receiving end device treats a receiver parameter preselected for said transmitter parameter as said target receiver parameter.

In a feasible embodiment of the present disclosure, if said second message is received within a scheduling time unit corresponding to a predetermined parameter switching indication set, then said second message comprises parameter indication information, and a gap exists between said second message and said first message; and

if said second message is received outside of a scheduling time unit corresponding to said parameter switching indication set, then said second message does not comprise parameter indication information, and no gap exists between said second message and said first message.

In a feasible embodiment of the present disclosure, the scheduling time unit corresponding to said parameter switching indication set exists periodically in a time domain; and/or

the scheduling time unit corresponding to said parameter switching indication set is configured semi-statically or

semi-persistently by said transmitting end device, and said receiving end device is notified thereof.

In a feasible embodiment of the present disclosure, said first message is divided into first part content and second part content that are consecutive in a time domain, wherein said first part content is located before said second part content, said first part content is consecutive to said second message in a time domain, said second message is located before said first part content, and said receiving end decoding said first message based on said target receiver parameter comprises:

if said second message comprises parameter indication information, then decoding said second part content based on said target receiver parameter indicated by said parameter indication information; or

if said second message comprises parameter indication information, then discarding said first part content and decoding said second part content based on said target receiver parameter indicated by said parameter indication information; or

if said second message comprises parameter indication information, then decoding said first part content based on the default receiver parameter and decoding said second part content based on said target receiver parameter indicated by said parameter indication information; or

if said second message does not comprise parameter indication information, then decoding said first part content and said second part content based on the default receiver parameter; or

if said second message comprises a parameter indication field, and said parameter indication field comprises parameter indication information, then decoding said second part content based on said target receiver parameter indicated by said parameter indication information; or

if said second message comprises a parameter indication field, and said parameter indication field comprises parameter indication information, then discarding said first part content and decoding said second part content based on said target receiver parameter indicated by said parameter indication information; or

if said second message comprises a parameter indication field, and said parameter indication field comprises parameter indication information, then decoding said first part content based on the default receiver parameter and decoding said second part content based on said target receiver parameter indicated by said parameter indication information; or

if said second message comprises a parameter indication field, and said parameter indication field indicates no parameter indication information or no parameter change, then decoding said first part content and said second part content based on the default receiver parameter.

In a feasible embodiment of the present disclosure, the processor 1200 is further for:

receiving a third message from said transmitting end device via the transceiver 1210, wherein said third message is for indicating whether said second message comprises parameter indication information, and if said third message indicates that said second message comprises parameter indication information, then a gap exists between said second message and said first message; and if said third message indicates that said second message does not comprise parameter indication information, then no gap exists between said second message and said first message.

In a feasible embodiment of the present disclosure, said third message is for indicating whether a second message in M time units comprises parameter indication information, where said M is an integer greater than or equal to 1, and said M time units are consecutive or nonconsecutive.

In a feasible embodiment of the present disclosure, said target receiver parameter comprises a receiver parameter in at least one of a time domain, a frequency domain, and a space domain.

In a feasible embodiment of the present disclosure, a receiver parameter in said space domain comprises a reception beam for said receiving end device.

It should be stated that the above-described receiving end device in the present embodiment may be a terminal in the embodiments shown in FIGS. 1–7; any implementation of the receiving end device among the embodiments shown in FIGS. 1–7 may be implemented by the above-described receiving end device in the present embodiment with the same or similar beneficial effects; this matter will not be discussed further here.

Refer to FIG. 13, which is a structural diagram of another transmitting end device provided by an embodiment of the present disclosure; as shown in FIG. 13, the transmitting end device comprises a processor 1300, a transceiver 1310, memory 1320, a user interface 1330, and a bus interface, wherein:

the processor 1300 is for reading programs in the memory 1320 and executing the process below:

transmitting via the transceiver 1310 a second message associated with a first message to a receiving end device, wherein said second message is used by said receiving end device to determine a target receiver parameter for decoding said first message; and

transmitting said first message via said transceiver 1310 to said receiving end device.

Therein, the transceiver 1310 is for receiving and transmitting data under the control of the processor 1300.

In FIG. 13, the bus architecture may include any number of interconnected buses and bridges, which specifically link together various circuits of one or more processors represented by processor 1300 and memories represented by memory 1320. The bus architecture may also link together various other circuits, such as circuits for a peripheral device and a voltage stabilizer and a power management circuit, all of which is known in the art and which therefore will

not be described further in this document. The bus interface provides an interface. The transceiver 1310 may have multiple components, i.e., may include a transmitter and a receiver, and provide units for communicating over a transmission medium with various other apparatuses. With regard to different user devices, the user interface 1330 can also connect externally or internally with the interfaces of necessary devices; connected devices include but are not limited to a keypad, a display, a speaker, a microphone, and a joystick.

The processor 1300 is responsible for managing the bus architecture and general processing, and the memory 1320 may store data used by the processor 1300 when executing operations.

In a feasible embodiment of the present disclosure, if said second message comprises parameter indication information, then said target receiver parameter is a receiver parameter indicated by said parameter indication information; and

if said second message does not comprise parameter indication information, then said target receiver parameter is a default receiver parameter of said receiving end device.

In a feasible embodiment of the present disclosure, the default receiver parameter of said receiving end device comprises:

a receiver parameter currently used by said receiving end device, a receiver parameter indicated by the second message most recently received by said receiving end device, a predefined receiver parameter, or a receiver parameter corresponding to the transmitter parameter most recently reported by said receiving end device to said transmitting end device.

In a feasible embodiment of the present disclosure, said parameter indication information explicitly or implicitly indicates said target receiver parameter.

In a feasible embodiment of the present disclosure, if said parameter indication information implicitly indicates said target receiver parameter, then said parameter indication information comprises a transmitter parameter selected by said transmitting end device, and said receiving end device treats a receiver parameter preselected for said transmitter parameter as said target receiver parameter.

In a feasible embodiment of the present disclosure, if said second message is received within a scheduling time unit corresponding to a predetermined parameter switching indication set, then said second message comprises parameter indication information, and a gap exists between said second message and said first message; and

if said second message is received outside of a scheduling time unit corresponding to said parameter switching indication set, then said second message does not comprise parameter indication information, and no gap exists between said second message and said first message.

In a feasible embodiment of the present disclosure, the scheduling time unit corresponding to said parameter switching indication set exists periodically in a time domain; and/or

the scheduling time unit corresponding to said parameter switching indication set is configured semi-statically or

semi-persistently by said transmitting end device, and said receiving end device is notified thereof.

In a feasible embodiment of the present disclosure, said first message is divided into first part content and second part content that are consecutive in a time domain, wherein said first part content is located before said second part content, said first part content is consecutive to said second message in a time domain, and said second message is located before said first part content.

In a feasible embodiment of the present disclosure, the processor 1300 is further for:

transmitting a third message to said receiving end device via the transceiver 1310, wherein said third message is for indicating whether said second message comprises parameter indication information, and if said third message indicates that said second message comprises parameter indication information, then a gap exists between said second message and said first message; and if said third message indicates that said second message does not comprise parameter indication information, then no gap exists between said second message and said first message.

In a feasible embodiment of the present disclosure, said third message is for indicating whether a second message in M time units comprises parameter indication information, where said M is an integer greater than or equal to 1, and said M time units are consecutive or nonconsecutive.

In a feasible embodiment of the present disclosure, said target receiver parameter comprises a receiver parameter in at least one of a time domain, a frequency domain, and a space domain.

In a feasible embodiment of the present disclosure, a receiver parameter in said space domain comprises a reception beam for said receiving end device.

It should be stated that the above-described transmitting end device in the present embodiment may be a transmitting end device in the embodiments shown in FIGS. 1–7; any implementation of the transmitting end device among the embodiments shown in FIGS. 1–7 may be implemented by the above-described transmitting end device in the present embodiment with the same or similar beneficial effects; this matter will not be discussed further here.

It should be understood that, among the several embodiments provided by the present application, the disclosed methods and apparatuses may be otherwise implemented. For example, the apparatus embodiments described above are merely illustrative; for example, partitioning into said units is merely a partitioning into logical functions; during actual implementation, there may be other manners of partitioning, e.g., a plurality of units or components may be combined or may be integrated into another system, or some features may be omitted or not executed. In addition, depicted or discussed coupling connections, direct couplings, or communication connections may be realized through interfaces; indirect couplings of apparatuses or units or communication connections may be electrical or mechanical or may assume some other form.

In addition, the functional units in all the embodiments of the present disclosure may be integrated into one processing unit, or each unit may individually be physically included; or two or more units may be integrated in a single unit. The above-described integrated unit may be implemented in hardware form or may be implemented in the form of hardware with functional software units.

Integrated units implemented in the form of the above-described functional software units may be stored in one computer-readable storage medium. The above-described functional software units stored in one storage medium include a number of instructions whose purpose is to cause a computer device (which could be a personal computer, a server, or a network device) to execute some of the steps in the reception and transmission methods described in the various embodiments of the present disclosure. Moreover, the previously described storage medium includes various media capable of storing program code, such as USB flash drives, portable hard drives, read-only memory (ROM), random access memory (RAM), magnetic disks, or optical disks.

The above are preferred implementations of the present disclosure. It should be pointed out that it is possible for a person with ordinary skill in the art to make a number of improvements and refinements without departing from the principles described by the present disclosure and that these improvements and refinements should also be regarded as within the protective scope of the present disclosure.

1. A message-decoding method, comprising:
 - a receiving end device receiving a second message associated with a first message from a transmitting end device;
 - said receiving end device determining, based on said second message, a target receiver parameter for decoding said first message; and
 - said receiving end device decoding said first message transmitted by said transmitting end device based on said target receiver parameter.
2. The method as described in claim 1, wherein, if said second message comprises parameter indication information, then said target receiver parameter is a receiver parameter indicated by said parameter indication information; and
 - if said second message does not comprise parameter indication information, then said target receiver parameter is a default receiver parameter of said receiving end device.
3. The method as described in claim 2, wherein the default receiver parameter of said receiving end device comprises:
 - a receiver parameter currently used by said receiving end device, a receiver parameter indicated by the second message most recently received by said receiving end device, a predefined receiver parameter, or a receiver parameter corresponding to the transmitter parameter most recently reported by said receiving end device to said transmitting end device.
4. The method as described in claim 2 or 3, wherein said parameter indication information explicitly or implicitly indicates said target receiver parameter.
5. The method as described in claim 4, wherein, if said parameter indication information implicitly indicates said target receiver parameter, then said parameter indication information comprises a transmitter parameter selected by said transmitting end device, and said receiving end device treats a receiver parameter preselected for said transmitter parameter as said target receiver parameter.
6. The method as described in any one of claims 1 through 5, wherein, if said second message is received within a scheduling time unit corresponding to a predetermined parameter switching indication set, then said second message comprises parameter indication information, and a gap exists between said second message and said first message; and
 - if said second message is received outside of a scheduling time unit corresponding to said parameter switching indication set, then said second message does not comprise parameter indication information, and no gap exists between said second message and said first message.

7. The method as described in claim 6, wherein the scheduling time unit corresponding to said parameter switching indication set exists periodically in a time domain; and/or

the scheduling time unit corresponding to said parameter switching indication set is configured semi-statically or semi-persistently by said transmitting end device, and said receiving end device is notified thereof.

8. The method as described in any one of claims 1 through 5, wherein said first message is divided into first part content and second part content that are consecutive in a time domain, wherein said first part content is located before said second part content, said first part content is consecutive to said second message in a time domain, said second message is located before said first part content, and said receiving end device decoding said first message based on said target receiver parameter comprises:

if said second message comprises parameter indication information, then said receiving end device decodes said second part content based on said target receiver parameter indicated by said parameter indication information; or

if said second message comprises parameter indication information, then said receiving end device discards said first part content and decodes said second part content based on said target receiver parameter indicated by said parameter indication information; or

if said second message comprises parameter indication information, then said receiving end device decodes said first part content based on the default receiver parameter and decodes said second part content based on said target receiver parameter indicated by said parameter indication information; or

if said second message does not comprise parameter indication information, then said receiving end device decodes said first part content and said second part content based on the default receiver parameter; or

if said second message comprises a parameter indication field, and said parameter indication field comprises parameter indication information, then said receiving end device decodes said second part content based on said target receiver parameter indicated by said parameter indication information; or

if said second message comprises a parameter indication field, and said parameter indication field comprises parameter indication information, then said receiving end device discards said first part content and decodes said second part content based on said target receiver parameter indicated by said parameter indication information; or

if said second message comprises a parameter indication field, and said parameter indication field comprises parameter indication information, then said receiving end device decodes said first part content based on the default receiver parameter and decodes said second part content based on said target receiver parameter indicated by said parameter indication information; or

if said second message comprises a parameter indication field, and said parameter indication field indicates no parameter indication information or no parameter change, then said receiving end device decodes said first part content and said second part content based on the default receiver parameter.

9. The method as described in any one of claims 1 through 5, wherein said method further comprises:

said receiving end device receiving a third message from said transmitting end device, wherein said third message is for indicating whether said second message comprises parameter indication information, and if said third message indicates that said second message comprises parameter indication information, then a gap exists between said second message and said first message; and if said third message indicates that said second message does not comprise parameter indication information, then no gap exists between said second message and said first message.

10. The method as described in claim 9, wherein said third message is for indicating whether a second message in M time units comprises parameter indication information, where said M is an integer greater than or equal to 1, and said M time units are consecutive or nonconsecutive.

11. The method as described in any one of claims 1 through 5, wherein said target receiver parameter comprises a receiver parameter in at least one of a time domain, a frequency domain, and a space domain.

12. The method as described in claim 11, wherein a receiver parameter in said space domain comprises a reception beam for said receiving end device.

13. A message-decoding method, comprising:

a transmitting end device transmitting a second message associated with a first message to a receiving end device, wherein said second message is used by said receiving end device to determine a target receiver parameter for decoding said first message; and

said transmitting end device transmitting said first message to said receiving end device.

14. The method as described in claim 13, wherein, if said second message comprises parameter indication information, then said target receiver parameter is a receiver parameter indicated by said parameter indication information; and

if said second message does not comprise parameter indication information, then said target receiver parameter is a default receiver parameter of said receiving end device.

15. The method as described in claim 14, wherein the default receiver parameter of said receiving end device comprises:

a receiver parameter currently used by said receiving end device, a receiver parameter indicated by the second message most recently received by said receiving end device, a predefined receiver parameter, or a receiver parameter corresponding to the transmitter parameter most recently reported by said receiving end device to said transmitting end device.

16. The method as described in claim 14 or 15, wherein said parameter indication information explicitly or implicitly indicates said target receiver parameter.

17. The method as described in claim 16, wherein, if said parameter indication information implicitly indicates said target receiver parameter, then said parameter indication information

comprises a transmitter parameter selected by said transmitting end device, and said receiving end device treats a receiver parameter preselected for said transmitter parameter as said target receiver parameter.

18. The method as described in any one of claims 13 through 17, wherein, if said second message is received within a scheduling time unit corresponding to a predetermined parameter switching indication set, then said second message comprises parameter indication information, and a gap exists between said second message and said first message; and

if said second message is received outside of a scheduling time unit corresponding to said parameter switching indication set, then said second message does not comprise parameter indication information, and no gap exists between said second message and said first message.

19. The method as described in claim 18, wherein the scheduling time unit corresponding to said parameter switching indication set exists periodically in a time domain; and/or

the scheduling time unit corresponding to said parameter switching indication set is configured semi-statically or semi-persistently by said transmitting end device, and said receiving end device is notified thereof.

20. The method as described in any one of claims 13 through 17, wherein said first message is divided into first part content and second part content that are consecutive in a time domain, wherein said first part content is located before said second part content, said first part content is consecutive to said second message in a time domain, and said second message is located before said first part content.

21. The method as described in any one of claims 13 through 17, wherein it further comprises:

said transmitting end device transmitting a third message to said receiving end device, wherein said third message is for indicating whether said second message comprises parameter indication information, and if said third message indicates that said second message comprises parameter indication information, then a gap exists between said second message and said first message; and if said third message indicates that said second message does not comprise parameter indication information, then no gap exists between said second message and said first message.

22. The method as described in claim 21, wherein said third message is for indicating whether a second message in M time units comprises parameter indication information, where said M is an integer greater than or equal to 1, and said M time units are consecutive or nonconsecutive.

23. The method as described in any one of claims 13 through 17, wherein said target receiver parameter comprises a receiver parameter in at least one of a time domain, a frequency domain, and a space domain.

24. The method as described in claim 23, wherein a receiver parameter in said space domain comprises a reception beam for said receiving end device.

25. A receiving end device, comprising:

a first receiving module, which is for receiving a second message associated with a first message from a transmitting end device;

a determining module, which is for determining, based on said second message, a target receiver parameter for decoding said first message; and

a decoding module, which is for decoding said first message transmitted by said transmitting end device based on said target receiver parameter.

26. The receiving end device as described in claim 25, wherein, if said second message comprises parameter indication information, then said target receiver parameter is a receiver parameter indicated by said parameter indication information;

if said second message does not comprise parameter indication information, then said target receiver parameter is a default receiver parameter of said receiving end device.

27. The receiving end device as described in claim 25 or 26, wherein, if said second message is received within a scheduling time unit corresponding to a predetermined parameter switching indication set, then said second message comprises parameter indication information, and a gap exists between said second message and said first message; and

if said second message is received outside of a scheduling time unit corresponding to said parameter switching indication set, then said second message does not comprise parameter indication information, and no gap exists between said second message and said first message.

28. The receiving end device as described in claim 25 or 26, wherein said first message is divided into first part content and second part content that are consecutive in a time domain, wherein said first part content is located before said second part content, said first part content is consecutive to said second message in a time domain, and said second message is located before said first part content:

said decoding module is for decoding said second part content based on said target receiver parameter indicated by said parameter indication information if said second message comprises parameter indication information; or

said decoding module is for discarding said first part content and decoding said second part content based on said target receiver parameter indicated by said parameter indication information if said second message comprises parameter indication information; or

said decoding module is for decoding said first part content based on the default receiver parameter and decoding said second part content based on said target receiver parameter indicated by said parameter indication information if said second message comprises parameter indication information; or

said decoding module is for decoding said first part content and said second part content based on the default receiver parameter if said second message does not comprise parameter indication information; or

said decoding module is for decoding said second part content based on said target receiver parameter indicated by said parameter indication information if said second message comprises a parameter indication field, and said parameter indication field comprises parameter indication information; or

said decoding module is for discarding said first part content and decoding said second part content based on said target receiver parameter indicated by said parameter indication information if said second message comprises a parameter indication field, and said parameter indication field comprises parameter indication information; or

said decoding module is for decoding said first part content based on the default receiver parameter and decoding said second part content based on said target receiver parameter indicated by said parameter indication information if said second message comprises a parameter indication field, and said parameter indication field comprises parameter indication information; or

said decoding module is for decoding said first part content and said second part content based on the default receiver parameter if said second message comprises a parameter indication field, and said parameter indication field indicates no parameter indication information or no parameter change.

29. The receiving end device as described in claim 25 or 26, wherein said receiving end device further comprises:

a second receiving module, which is for receiving a third message from said transmitting end device, wherein said third message is for indicating whether said second message comprises parameter indication information, and if said third message indicates that said second message comprises parameter indication information, then a gap exists between said second message and said first message; and if said third message indicates that said second message does not comprise parameter indication information, then no gap exists between said second message and said first message.

30. A transmitting end device, comprising:

a first transmitting module, which is used by the transmitting end device for transmitting a second message associated with a first message to a receiving end device, wherein said second message is used by said receiving end device to determine a target receiver parameter for decoding said first message; and

a second transmitting module, which is for transmitting said first message to said receiving end device.

31. The transmitting end device as described in claim 30, wherein, if said second message comprises parameter indication information, then said target receiver parameter is a receiver parameter indicated by said parameter indication information; and

if said second message does not comprise parameter indication information, then said target receiver parameter is a default receiver parameter of said receiving end device.

32. The transmitting end device as described in claim 30 or 31, wherein, if said second message is received within a scheduling time unit corresponding to a predetermined parameter switching indication set, then said second message comprises parameter indication information, and a gap exists between said second message and said first message; and

if said second message is received outside of a scheduling time unit corresponding to said parameter switching indication set, then said second message does not comprise parameter indication information, and no gap exists between said second message and said first message.

33. The transmitting end device as described in 30 or 31, wherein said first message is divided into first part content and second part content that are consecutive in a time domain, wherein said first part content is located before said second part content, said first part content is consecutive to said second message in a time domain, and said second message is located before said first part content.

34. The transmitting end device as described in 30 or 31, wherein said transmitting end device further comprises:

a third transmitting module, which is for transmitting a third message to said receiving end device, wherein said third message is for indicating whether said second message comprises parameter indication information, and if said third message indicates that said second message comprises parameter indication information, then a gap exists between said second message and said first message; and if said third message indicates that said second message does not comprise parameter indication information, then no gap exists between said second message and said first message.

35. A receiving end device, comprising: a processor, memory, and computer programs stored in said memory and capable of running on said processor; when executed by said processor, said computer programs implement the steps of the message-decoding method described in any of claims 1 through 12.

36. A transmitting end device, comprising: a processor, memory, and computer programs stored in said memory and capable of running on said processor; when executed by said processor, said computer programs implement the steps of the message-decoding method described in any of claims 13 through 24.

37. A computer-readable storage medium, which stores computer programs

that, when executed by a processor, implement steps in the message-decoding method described in any of claims 1 through 12.

38. A computer-readable storage medium, which stores computer programs that, when executed by a processor, implement steps in the message-decoding method described in any of claims 13 through 24.

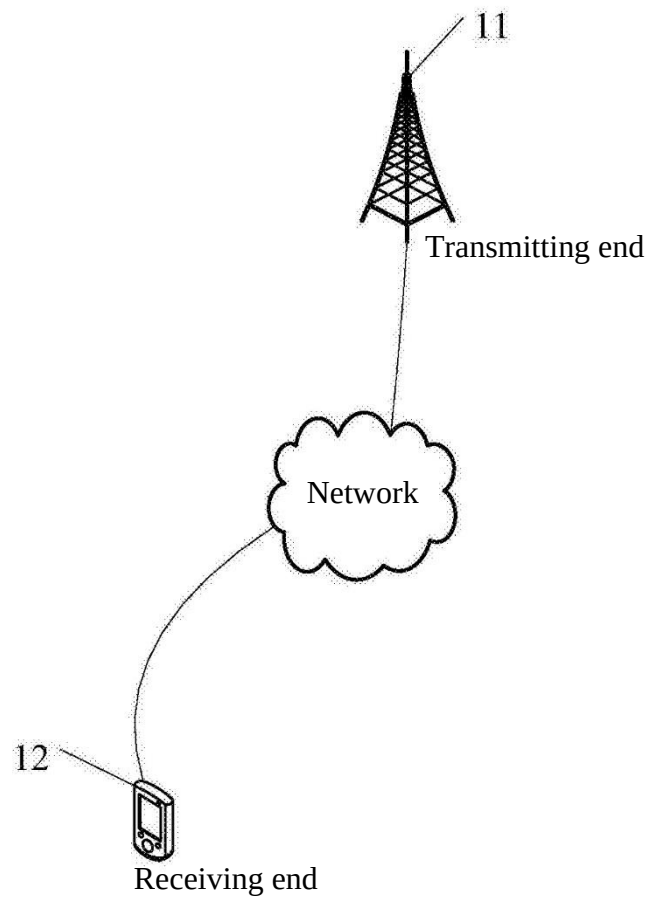


FIG. 1

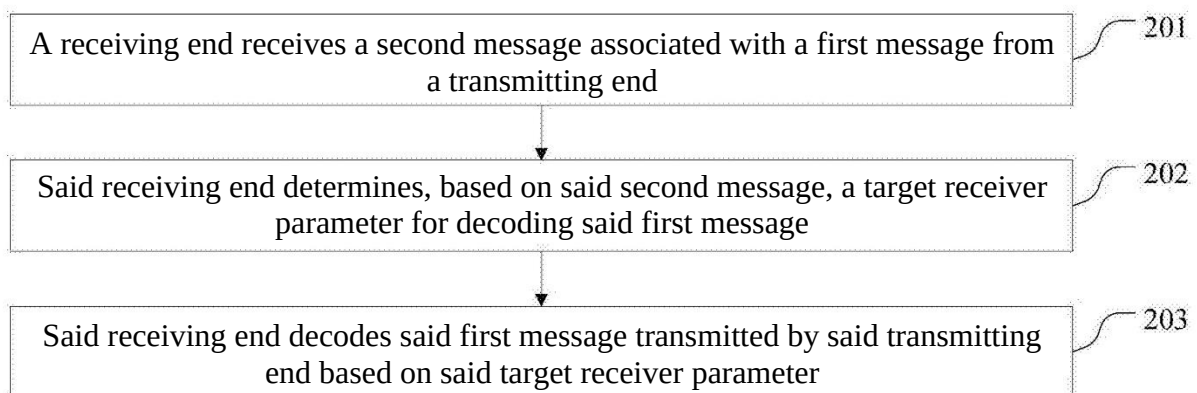


FIG. 2

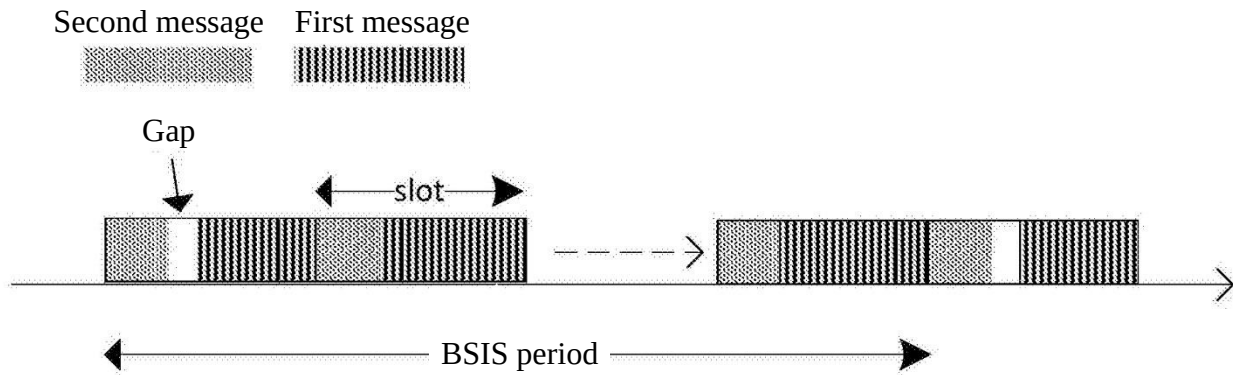


FIG. 3

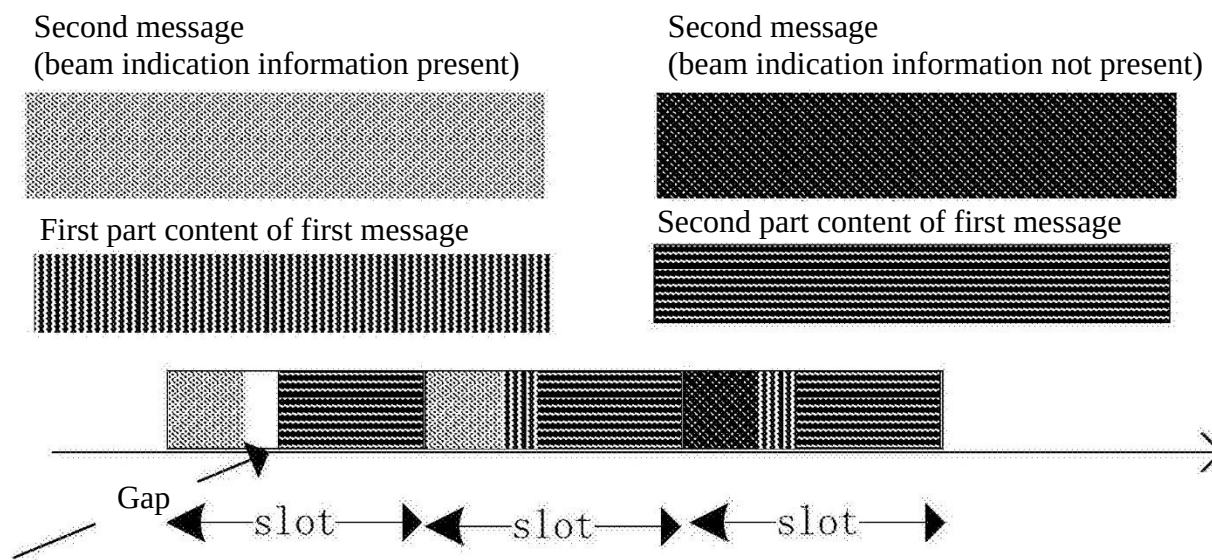


FIG. 4

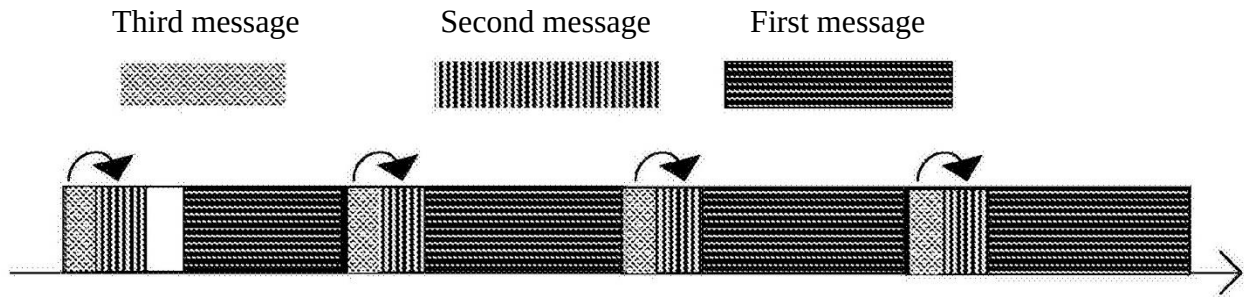


FIG. 5

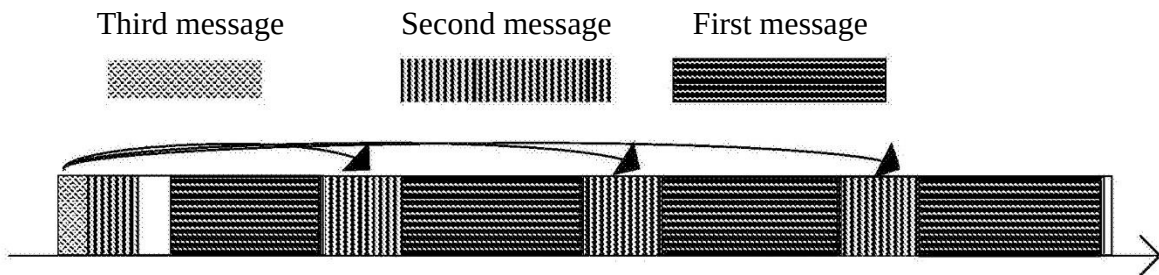


FIG. 6

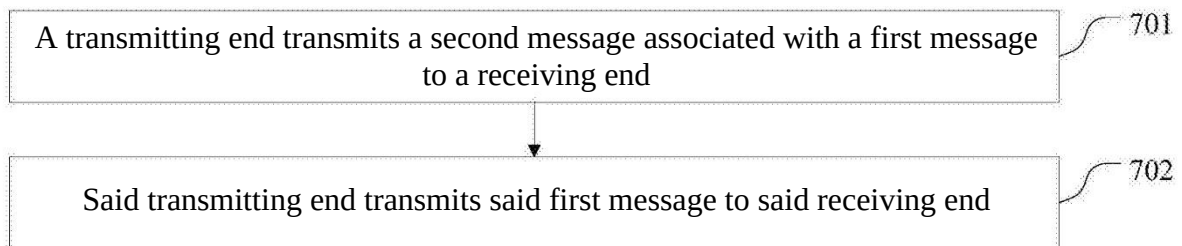


FIG. 7

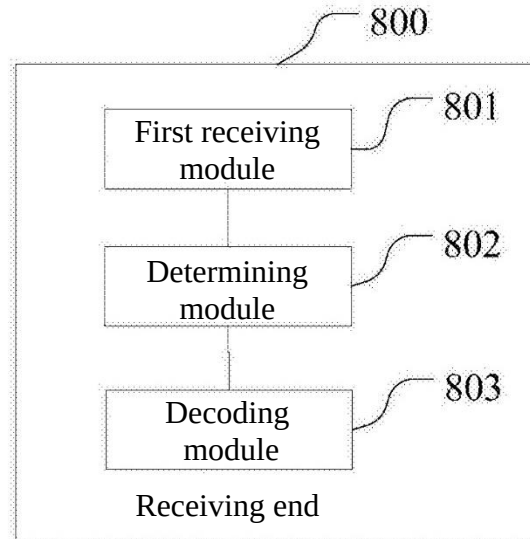


FIG. 8

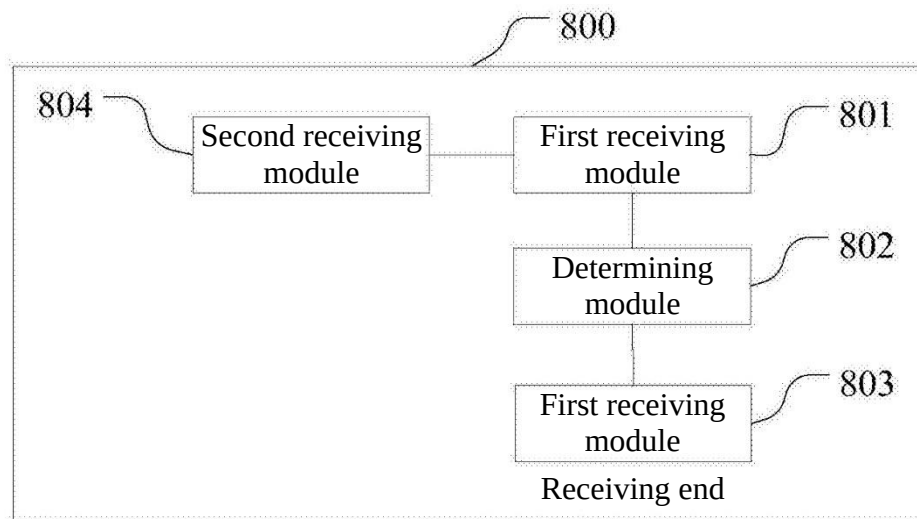


FIG. 9

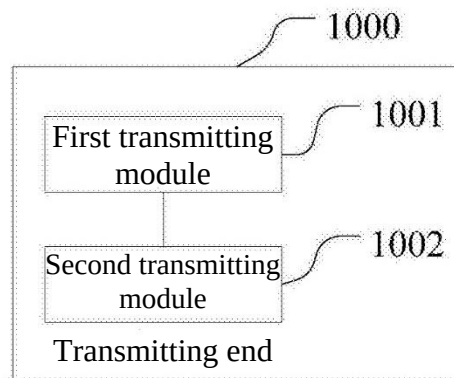


FIG. 10

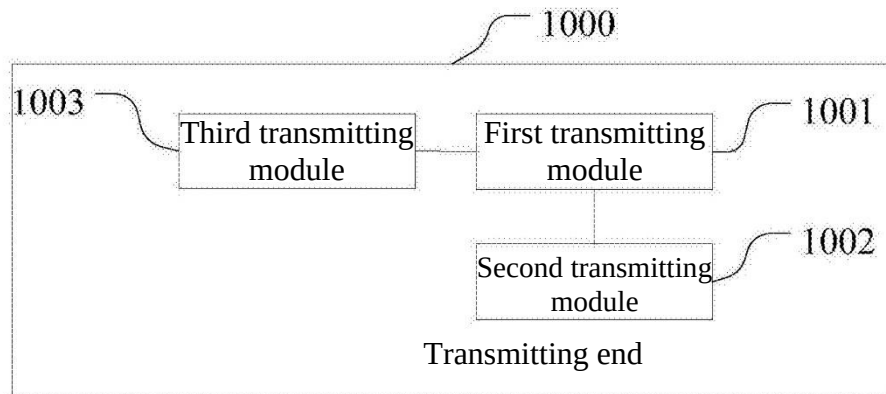


FIG. 11

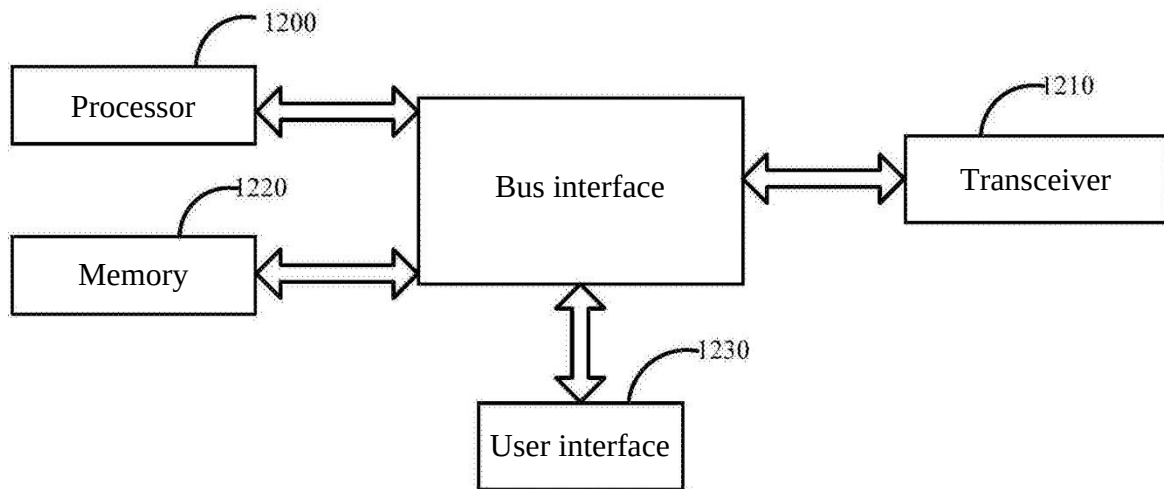


FIG. 12

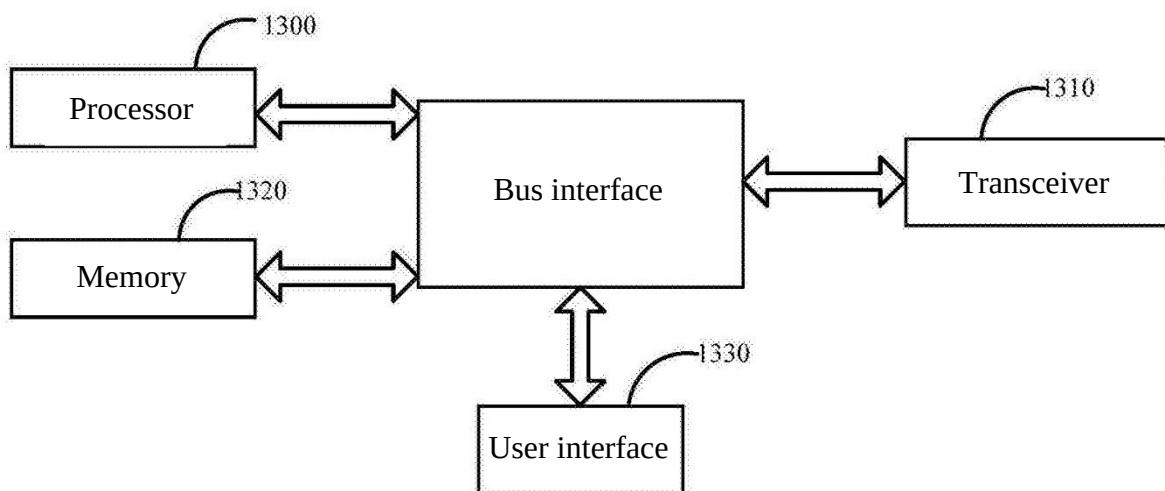
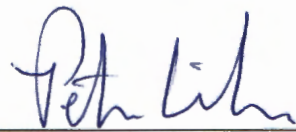


FIG. 13

I, Peter Erickson, declare as follows:

1. I am over 21 years of age and am competent to make this declaration.
2. I am a native speaker of English.
3. I am fluent in Chinese.
4. I have over 30 years of experience translating Chinese to English.
5. I translated the attached patent document "WO2018201861A1" from Chinese to English.
6. I certify that the translation of the document "WO2018201861A1" is, to the best of my knowledge, a true and accurate translation from Chinese to English.
7. In signing this declaration, I understand that the translation and this declaration may be filed as evidence in a contested case. I acknowledge that I may be subject to cross-examination within the United States.
8. I declare under penalty of perjury that all statements made herein are true and accurate to the best of my knowledge and belief, and that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code.

Executed: February 24, 2023

By: _____

Peter Erickson

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(19) 世界知识产权组织
国际局

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(54) Title: MESSAGE DECODING METHOD, SENDING TERMINAL DEVICE AND RECEIVING TERMINAL DEVICE

(54) 发明名称: 一种消息解码方法、发送端设备和接收端设备

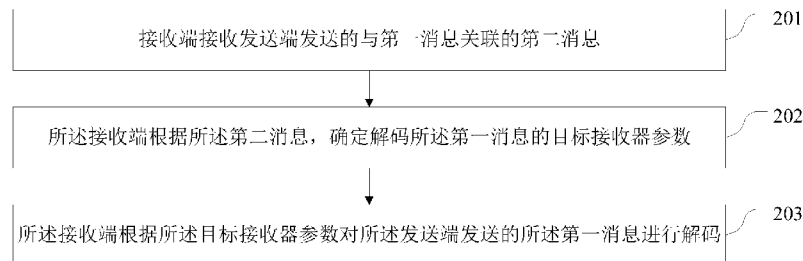


图 2

- 201 A receiving terminal receives a second message sent by a sending terminal and associated with a first message
- 202 The receiving terminal determines target receiver parameters for decoding the first message, according to the second message
- 203 The receiving terminal decodes the first message sent by the sending terminal according to the target receiver parameters

(57) Abstract: Provided in embodiments of the present disclosure are a message decoding method, a sending terminal device and a receiving terminal device. The method may comprise: a receiving terminal device receiving a second message sent by a sending terminal and associated with a first message; the receiving terminal device determining target receiver parameters for decoding the first message, according to the second message; the receiving terminal device decoding the first message sent by the sending terminal device according to the target receiver parameters. In this way, an embodiment of the present disclosure can implement a receiving terminal device determining receiver parameters according to a second message associated with a first message, and can increase message transmission functionality.

(57) 摘要: 本公开实施例提供一种消息解码方法、发送端设备和接收端设备。该方法可包括: 接收端设备接收发送端设备发送的与第一消息关联的第二消息; 所述接收端设备根据所述第二消息, 确定解码所述第一消息的目标接收器参数; 所述接收端设备根据所述目标接收器参数对所述发送端设备发送的所述第一消息进行解码。这样本公开实施例可以实现接收端设备根据与第一消息关联的第二消息确定接收器参数, 且还可以提高消息传输性能。

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一种消息解码方法、发送端设备和接收端设备

相关申请的交叉引用

本申请主张在 2017 年 5 月 4 日在中国提交的中国专利申请号 No. 201710307962.5 的优先权，其全部内容通过引用包含于此。

技术领域

本公开实施例涉及通信技术领域，特别涉及一种消息解码方法、发送端设备和接收端设备。

背景技术

随着通信技术的发展，目前通信设备均支持多天线系统。例如：支持高达 128、256 或者 512 个天线单元，以及高达 128、256 或者 512 个收发单元，其中每个天线单元连接一个收发单元。此外，目前通信设备还支持多波束，不同的波束的覆盖范围可以不同。这样发送端设备（例如：网络侧设备）在发送消息时，就可以在多个发送器参数（例如：发送波束）中选择相应的发送器参数进行发送，以提高通信性能。而接收端设备（例如：用户终端）如何选择相应的接收器参数（例如：接收波束）对发送端设备发送的消息进行解码目前还未明确。可见，接收端设备如何选择相应的接收器参数对发送端设备发送的消息进行解码是当前急需解决的技术问题。

发明内容

本公开实施例的目的在于提供一种消息解码方法、发送端设备和接收端设备，以解决接收端设备如何选择相应的接收器参数对发送端设备发送的消息进行解码的技术问题。

为了达到上述目的，在第一个方面中，本公开实施例提供一种消息解码方法，包括：

接收端设备接收发送端设备发送的与第一消息关联的第二消息；

所述接收端设备根据所述第二消息，确定解码所述第一消息的目标接收

器参数；以及

所述接收端设备根据所述目标接收器参数对所述发送端设备发送的所述第一消息进行解码。

在本公开的一个可行实施例中，若所述第二消息包括参数指示信息，则所述目标接收器参数为所述参数指示信息指示的接收器参数；

若所述第二消息不包括参数指示信息，则所述目标接收器参数为所述接收端设备默认的接收器参数。

在本公开的一个可行实施例中，所述接收端设备默认的接收器参数包括：

所述接收端设备当前使用的接收器参数、所述接收端设备接收到的时间最近的第二消息指示的接收器参数、预先定义的接收器参数或者所述接收端设备向所述发送端设备上报时间最近的发送器参数对应的接收器参数。

在本公开的一个可行实施例中，所述参数指示信息显式或者隐式指示所述目标接收器参数。

在本公开的一个可行实施例中，若所述参数指示信息隐式指示所述目标接收器参数，则所述参数指示信息包括所述发送端设备选择的发送器参数，所述接收端设备将预先为所述发送器参数选择的接收器参数作为所述目标接收器参数。

在本公开的一个可行实施例中，若所述第二消息是在预先确定的参数切换指示集对应的调度时间单位内接收到的，则所述第二消息包括参数指示信息，且所述第二消息与所述第一消息之间存在间隙；

若所述第二消息是在所述参数切换指示集对应的调度时间单位外接收到的，则所述第二消息不包括参数指示信息，且所述第二消息与所述第一消息之间不存在间隙。

在本公开的一个可行实施例中，所述参数切换指示集对应的调度时间单位在时域上周期性存在；和/或

所述参数切换指示集对应的调度时间单位由所述发送端设备半静态或半持续配置，并通知所述接收端设备。

在本公开的一个可行实施例中，所述第一消息分为时域上连续的第一部分内容和第二部分内容，且所述第一部分内容在所述第二部分内容的前面，

以及所述第一部分内容与所述第二消息在时域连续，所述第二消息在所述第一部分内容之前，所述接收端设备根据所述目标接收器参数对所述第一消息进行解码，包括：

若所述第二消息包括参数指示信息，则所述接收端设备根据所述参数指示信息指示的所述目标接收器参数对所述第二部分内容进行解码；或者

若所述第二消息包括参数指示信息，则所述接收端设备丢弃所述第一部分内容，以及根据所述参数指示信息指示的所述目标接收器参数对所述第二部分内容进行解码；或者

若所述第二消息包括参数指示信息，则所述接收端设备根据默认接收器参数对所述第一部分内容进行解码，以及根据所述参数指示信息指示的所述目标接收器参数对所述第二部分内容进行解码；或者

若所述第二消息不包括参数指示信息，则所述接收端设备根据默认接收器参数对所述第一部分内容和所述第二部分内容进行解码；或者

若所述第二消息包括参数指示字段，且所述参数指示字段包括参数指示信息，则所述接收端设备根据所述参数指示信息指示的所述目标接收器参数对所述第二部分内容进行解码；或者

若所述第二消息包括参数指示字段，且所述参数指示字段包括参数指示信息，则所述接收端设备丢弃所述第一部分内容，以及根据所述参数指示信息指示的所述目标接收器参数对所述第二部分内容进行解码；或者

若所述第二消息包括参数指示字段，且所述参数指示字段包括参数指示信息，则所述接收端设备根据默认接收器参数对所述第一部分内容进行解码，以及根据所述参数指示信息指示的所述目标接收器参数对所述第二部分内容进行解码；或者

若所述第二消息包括参数指示字段，且所述参数指示字段指示没有参数指示信息或者没有参数改变，则所述接收端设备根据默认接收器参数对所述第一部分内容和所述第二部分内容进行解码。

在本公开的一个可行实施例中，所述方法还包括：

所述接收端设备接收所述发送端设备发送的第三消息，所述第三消息用于指示所述第二消息是否包括参数指示信息，且若所述第三消息指示所述第

二消息包括参数指示信息，则所述第二消息与所述第一消息之间存在间隙，若所述第三消息指示所述第二消息不包括参数指示信息，则所述第二消息与所述第一消息之间不存在间隙。

在本公开的一个可行实施例中，所述第三消息用于指示 M 个时间单位内的第二消息是否包括参数指示信息，所述 M 为大于或者等于 1 的整数，所述 M 个时间单位连续或者不连续。

在本公开的一个可行实施例中，所述目标接收器参数包括时域、频域和空域中的至少一项的接收器参数。

在本公开的一个可行实施例中，所述空域的接收器参数包括所述接收端设备的接收波束。

在第二个方面中，本公开实施例还提供一种消息解码方法，包括：

发送端设备向接收端设备发送与第一消息关联的第二消息，所述第二消息用于所述接收端设备确定解码所述第一消息的目标接收器参数；以及
所述发送端设备向所述接收端设备发送所述第一消息。

在本公开的一个可行实施例中，若所述第二消息包括参数指示信息，则所述目标接收器参数为所述参数指示信息指示的接收器参数；

若所述第二消息不包括参数指示信息，则所述目标接收器参数为所述接收端设备默认的接收器参数。

在本公开的一个可行实施例中，所述接收端设备默认的接收器参数包括：

所述接收端设备当前使用的接收器参数、所述接收端设备接收到的时间最近的第二消息指示的接收器参数、预先定义的接收器参数或者所述接收端设备向所述发送端设备上报时间最近的发送器参数对应的接收器参数。

在本公开的一个可行实施例中，所述参数指示信息显式或者隐式指示所述目标接收器参数。

在本公开的一个可行实施例中，若所述参数指示信息隐式指示所述目标接收器参数，则所述参数指示信息包括所述发送端设备选择的发送器参数，所述接收端设备将预先为所述发送器参数选择的接收器参数作为所述目标接收器参数。

在本公开的一个可行实施例中，若所述第二消息是在预先确定的参数切

换指示集对应的调度时间单位内接收到的，则所述第二消息包括参数指示信息，且所述第二消息与所述第一消息之间存在间隙；

若所述第二消息是在所述参数切换指示集对应的调度时间单位外接收到的，则所述第二消息不包括参数指示信息，且所述第二消息与所述第一消息之间不存在间隙。

在本公开的一个可行实施例中，所述参数切换指示集对应的调度时间单位在时域上周期性存在；和/或

所述参数切换指示集对应的调度时间单位由所述发送端设备半静态或半持续配置，并通知所述接收端设备。

在本公开的一个可行实施例中，所述第一消息分为时域上连续的第一部分内容和第二部分内容，且所述第一部分内容在所述第二部分内容的前面，以及所述第一部分内容与所述第二消息在时域连续，所述第二消息在所述第一部分内容之前。

在本公开的一个可行实施例中，所述方法还包括：

所述发送端设备向所述接收端设备发送第三消息，所述第三消息用于指示所述第二消息是否包括参数指示信息，且若所述第三消息指示所述第二消息包括参数指示信息，则所述第二消息与所述第一消息之间存在间隙，若所述第三消息指示所述第二消息不包括参数指示信息，则所述第二消息与所述第一消息之间不存在间隙。

在本公开的一个可行实施例中，所述第三消息用于指示 M 个时间单位内的第二消息是否包括参数指示信息，所述 M 为大于或者等于 1 的整数，所述 M 个时间单位连续或者不连续。

在本公开的一个可行实施例中，所述目标接收器参数包括时域、频域和空域中的至少一项的接收器参数。

在本公开的一个可行实施例中，所述空域的接收器参数包括所述接收端设备的接收波束。

在第三个方面中，本公开实施例还提供一种接收端设备，包括：

第一接收模块，用于接收发送端设备发送的与第一消息关联的第二消息；
确定模块，用于根据所述第二消息，确定解码所述第一消息的目标接收

器参数；以及

解码模块，用于根据所述目标接收器参数对所述发送端设备发送的所述第一消息进行解码。

在本公开的一个可行实施例中，若所述第二消息包括参数指示信息，则所述目标接收器参数为所述参数指示信息指示的接收器参数；

若所述第二消息不包括参数指示信息，则所述目标接收器参数为所述接收端设备默认的接收器参数。

在本公开的一个可行实施例中，所述接收端设备默认的接收器参数包括：所述接收端设备当前使用的接收器参数、所述接收端设备接收到的时间最近的第二消息指示的接收器参数、预先定义的接收器参数或者所述接收端设备向所述发送端设备上报时间最近的发送器参数对应的接收器参数。

在本公开的一个可行实施例中，所述参数指示信息显式或者隐式指示所述目标接收器参数。

在本公开的一个可行实施例中，若所述参数指示信息隐式指示所述目标接收器参数，则所述参数指示信息包括所述发送端设备选择的发送器参数，所述接收端设备将预先为所述发送器参数选择的接收器参数作为所述目标接收器参数。

在本公开的一个可行实施例中，若所述第二消息是在预先确定的参数切换指示集对应的调度时间单位内接收到的，则所述第二消息包括参数指示信息，且所述第二消息与所述第一消息之间存在间隙；

若所述第二消息是在所述参数切换指示集对应的调度时间单位外接收到的，则所述第二消息不包括参数指示信息，且所述第二消息与所述第一消息之间不存在间隙。

在本公开的一个可行实施例中，所述参数切换指示集对应的调度时间单位在时域上周期性存在；和/或

所述参数切换指示集对应的调度时间单位由所述发送端设备半静态或半持续配置，并通知所述接收端设备。

在本公开的一个可行实施例中，所述第一消息分为时域上连续的第一部分内容和第二部分内容，且所述第一部分内容在所述第二部分内容的前面，

以及所述第一部分内容与所述第二消息在时域连续，所述第二消息在所述第一部分内容之前；

所述解码模块用于若所述第二消息包括参数指示信息，则根据所述参数指示信息指示的所述目标接收器参数对所述第二部分内容进行解码；或者

所述解码模块用于若所述第二消息包括参数指示信息，则丢弃所述第一部分内容，以及根据所述参数指示信息指示的所述目标接收器参数对所述第二部分内容进行解码；或者

所述解码模块用于若所述第二消息包括参数指示信息，则根据默认接收器参数对所述第一部分内容进行解码，以及根据所述参数指示信息指示的所述目标接收器参数对所述第二部分内容进行解码；或者

所述解码模块用于若所述第二消息不包括参数指示信息，则根据默认接收器参数对所述第一部分内容和所述第二部分内容进行解码；或者

所述解码模块用于若所述第二消息包括参数指示字段，且所述参数指示字段包括参数指示信息，则根据所述参数指示信息指示的所述目标接收器参数对所述第二部分内容进行解码；或者

所述解码模块用于若所述第二消息包括参数指示字段，且所述参数指示字段包括参数指示信息，则丢弃所述第一部分内容，以及根据所述参数指示信息指示的所述目标接收器参数对所述第二部分内容进行解码；或者

所述解码模块用于若所述第二消息包括参数指示字段，且所述参数指示字段包括参数指示信息，则根据默认接收器参数对所述第一部分内容进行解码，以及根据所述参数指示信息指示的所述目标接收器参数对所述第二部分内容进行解码；或者

所述解码模块用于若所述第二消息包括参数指示字段，且所述参数指示字段指示没有参数指示信息或者没有参数改变，则根据默认接收器参数对所述第一部分内容和所述第二部分内容进行解码。

在本公开的一个可行实施例中，所述接收端设备还包括：

第二接收模块，用于接收所述发送端设备发送的第三消息，所述第三消息用于指示所述第二消息是否包括参数指示信息，且若所述第三消息指示所述第二消息包括参数指示信息，则所述第二消息与所述第一消息之间存在间

隙，若所述第三消息指示所述第二消息不包括参数指示信息，则所述第二消息与所述第一消息之间不存在间隙。

在本公开的一个可行实施例中，所述第三消息用于指示 M 个时间单位内的第二消息是否包括参数指示信息，所述 M 为大于或者等于 1 的整数，所述 M 个时间单位连续或者不连续。

在本公开的一个可行实施例中，所述目标接收器参数包括时域、频域和空域中的至少一项的接收器参数。

在本公开的一个可行实施例中，所述空域的接收器参数包括所述接收端设备的接收波束。

在第四个方面中，本公开实施例还提供一种发送端设备，包括：

第一发送模块，用于发送端设备向接收端设备发送与第一消息关联的第二消息，所述第二消息用于所述接收端设备确定解码所述第一消息的目标接收器参数；以及

第二发送模块，用于向所述接收端设备发送所述第一消息。

在本公开的一个可行实施例中，若所述第二消息包括参数指示信息，则所述目标接收器参数为所述参数指示信息指示的接收器参数；

若所述第二消息不包括参数指示信息，则所述目标接收器参数为所述接收端设备默认的接收器参数。

在本公开的一个可行实施例中，所述接收端设备默认的接收器参数包括：

所述接收端设备当前使用的接收器参数、所述接收端设备接收到的时间最近的第二消息指示的接收器参数、预先定义的接收器参数或者所述接收端设备向所述发送端设备上报时间最近的发送器参数对应的接收器参数。

在本公开的一个可行实施例中，所述参数指示信息显式或者隐式指示所述目标接收器参数。

在本公开的一个可行实施例中，若所述参数指示信息隐式指示所述目标接收器参数，则所述参数指示信息包括所述发送端设备选择的发送器参数，所述接收端设备将预先为所述发送器参数选择的接收器参数作为所述目标接收器参数。

在本公开的一个可行实施例中，若所述第二消息是在预先确定的参数切

换指示集对应的调度时间单位内接收到的，则所述第二消息包括参数指示信息，且所述第二消息与所述第一消息之间存在间隙；

若所述第二消息是在所述参数切换指示集对应的调度时间单位外接收到的，则所述第二消息不包括参数指示信息，且所述第二消息与所述第一消息之间不存在间隙。

在本公开的一个可行实施例中，所述参数切换指示集对应的调度时间单位在时域上周期性存在；和/或

所述参数切换指示集对应的调度时间单位由所述发送端设备半静态或半持续配置，并通知所述接收端设备。

在本公开的一个可行实施例中，所述第一消息分为时域上连续的第一部分内容和第二部分内容，且所述第一部分内容在所述第二部分内容的前面，以及所述第一部分内容与所述第二消息在时域连续，所述第二消息在所述第一部分内容之前。

在本公开的一个可行实施例中，所述发送端设备还包括：

第三发送模块，用于向所述接收端设备发送第三消息，所述第三消息用于指示所述第二消息是否包括参数指示信息，且若所述第三消息指示所述第二消息包括参数指示信息，则所述第二消息与所述第一消息之间存在间隙，若所述第三消息指示所述第二消息不包括参数指示信息，则所述第二消息与所述第一消息之间不存在间隙。

在本公开的一个可行实施例中，所述第三消息用于指示 M 个时间单位内的第二消息是否包括参数指示信息，所述 M 为大于或者等于 1 的整数，所述 M 个时间单位连续或者不连续。

在本公开的一个可行实施例中，所述目标接收器参数包括时域、频域和空域中的至少一项的接收器参数。

在本公开的一个可行实施例中，所述空域的接收器参数包括所述接收端设备的接收波束。

在第五个方面中，本公开实施例还提供一种接收端设备，包括：处理器、收发机、存储器、用户接口和总线接口，其中：

所述处理器，用于读取所述存储器中的程序，执行本公开实施例提供的

接收端设备对应的消息解码方法中的步骤。

在第六个方面中，本公开实施例还提供一种发送端设备，包括：处理器、收发机、存储器、用户接口和总线接口，其中：

所述处理器，用于读取所述存储器中的程序，执行本公开实施例提供的发送端设备对应的消息解码方法的步骤。

在第七个方面中，本公开实施例还提供一种计算机可读存储介质，所述计算机可读存储介质上存储有计算机程序，所述计算机程序被处理器执行时实现本公开实施例提供的接收端设备对应的消息解码方法中的步骤。

在第八个方面中，本公开实施例还提供一种计算机可读存储介质，所述计算机可读存储介质上存储有计算机程序，所述计算机程序被处理器执行时实现本公开实施例提供的发送端设备对应的消息解码方法的步骤。

本公开实施例所提供的上述技术方案至少具有如下有益效果：

根据本公开实施例，接收端设备接收发送端设备发送的与第一消息关联的第二消息；所述接收端设备根据所述第二消息，确定解码所述第一消息的目标接收器参数；所述接收端设备根据所述目标接收器参数对所述发送端设备发送的所述第一消息进行解码。这样可以实现接收端设备根据与第一消息关联的第二消息确定接收器参数，且还可以提高消息传输性能。

附图说明

为了更清楚地说明本公开文本实施例或相关技术中的技术方案，下面将对实施例描述中所需要使用的附图作简单地介绍，显而易见地，下面描述中的附图仅仅是本公开文本的一些实施例，对于本领域普通技术人员来讲，在不付出创造性劳动的前提下，还可以根据这些附图获得其他的附图。

图 1 为本公开实施例可应用的网络结构示意图；

图 2 为本公开实施例提供的一种消息解码方法的流程图；

图 3 为本公开实施例提供的一种消息发送的示意图；

图 4 为本公开实施例提供的另一种消息发送的示意图；

图 5 为本公开实施例提供的另一种消息发送的示意图；

图 6 为本公开实施例提供的另一种消息发送的示意图；

图 7 为本公开实施例提供的另一种消息解码方法的流程图；
图 8 为本公开实施例提供的一种接收端设备的结构示意图；
图 9 为本公开实施例提供的另一种接收端设备的结构示意图；
图 10 为本公开实施例提供的一种发送端设备的结构示意图；
图 11 为本公开实施例提供的另一种发送端设备的结构示意图；
图 12 为本公开实施例提供的另一种接收端设备的结构示意图；以及
图 13 为本公开实施例提供的另一种发送端设备的结构示意图。

具体实施方式

为使本公开要解决的技术问题、技术方案和优点更加清楚，下面将结合附图及具体实施例进行详细描述。

参见图 1，图 1 为本公开实施例可应用的网络结构示意图。如图 1 所示，包括发送端设备 11 和接收端设备 12。其中，发送端设备 11 可以是基站或者终端，而接收端设备 12 也可以是终端或者基站。例如：发送端设备 11 为基站，接收端设备 12 为终端，则可以实现终端与基站之间的通信，又或者发送端设备 11 为终端，则接收端设备 12 为基站，也可以实现终端与基站之间的通信，又或者发送端设备 11 为基站，接收端设备 12 也为基站，则可以实现基站与基站之间的通信，又或者发送端设备 11 为终端，接收端设备 12 也为终端，则可以实现终端与终端之间的通信。当然，本公开实施例中，并不限定发送端设备 11 只能是终端或者基站，例如：发送端设备 11 还可以是其他的网络侧设备。同理，接收端设备 12 也并不限定只是终端或者设备，例如：接收端设备 12 还可以是其他的网络侧设备，对此本公开实施例不作限定。其中，附图 1，以发送端设备 11 为基站，接收端设备 12 为终端进行举例示意。终端可以是用户终端（User Equipment, UE），例如：可以是手机、平板电脑（Tablet Personal Computer）、膝上型电脑（Laptop Computer）、个人数字助理（personal digital assistant, 简称 PDA）、移动上网装置（Mobile Internet Device, MID）或可穿戴式设备（Wearable Device）等终端侧设备。需要说明的是，在本公开实施例中并不限定终端的具体类型。基站可以是宏站，如 LTE eNB、5G NR NB 等；也可以是小站，如低功率节点（LPN: low power node）pico、

femto 等小站，或者可以是接入点（AP，access point）。基站也可以是中央单元（CU，central unit）与其管理和控制的多个传输接收点（TRP，Transmission Reception Point）共同组成的网络节点。另外，一个基站下有一个或多个小区（例如：不同的频点或扇区分裂）。需要说明的是，在本公开实施例中并不限定基站的具体类型。

请参考图 2，图 2 是本公开实施例提供一种消息解码方法的流程图，如图 2 所示，包括以下步骤：

201、接收端设备接收发送端设备发送的与第一消息关联的第二消息；

202、所述接收端设备根据所述第二消息，确定解码所述第一消息的目标接收器参数；以及

203、所述接收端设备根据所述目标接收器参数对所述发送端设备发送的所述第一消息进行解码。

其中，上述第一消息可以是发送端设备需要向接收端设备发送的信号，例如：数据和/或控制消息等等，如上述第一消息可以是下行链路信号。另外，本公开实施例中，可以将第一消息定义为 msg1。而上述第二消息可以理解为用于通知接收端设备接收器参考的消息，例如：控制消息或者调度消息等等。另外，本公开实施例中第二消息可以定义为 msg2。

上述根据所述第二消息，确定解码所述第一消息的目标接收器参数可以是，若上述第二消息中包括了参数指示信息，则确定该参数指示信息指示的接收器参数作为上述目标器参数，若上述第二消息中不包括参数指示信息，则确定默认接收器参数作为上述目标器参数。即本公开实施例中，上述第二消息可以存在两种情况，一种是存在参数指示信息，该情况下接收端设备可能需要进行接收器参数切换，再对发送端设备发送的消息进行解码。另一种是不存在参数指示信息，该情况下接收端设备可能不需要进行波束接收器参数切换，直接对接收端设备发送的消息进行解码。另外，目标接收器参数可以是接收端设备中接收器的相关参数，例如：接收波束、均衡器和接收滤波器等参数中的至少一项，对此本公开实施例不作限定。例如：以目标接收器参数为目标接收波束为例，上述确定解码所述第一消息的目标接收波束还可以是在接收端设备的多个接收波束（Rx 波束）中选择一个或者多个接收波

束。且接收端设备的多个接收器参数可以是与发送端设备无关的，或者接收端设备的多个接收器参数对于发送端设备来说也可以是已知的，例如：通过预配置或反馈通知发送端设备，对此本公开实施例不作限定。

本公开实施例中，通过上述步骤就可以实现通过专门的第二消息向接收端设备通知发送端设备发送的第一消息的接收波束，从而使得接收端设备和发送端设备获得更准确的波束组合信息，支持多波束传输，以及提高波束传输性能。另外，本公开实施例可以用于在无线通信系统中的接收端设备的模拟波束切换，以及还可以用于接收端设备的数字波束切换等，对此本公开实施例不作限定。

在本公开的一个可行实施例中，若所述第二消息包括参数指示信息，则所述目标接收器参数为所述参数指示信息指示的接收器参数；

若所述第二消息不包括参数指示信息，则所述目标接收器参数为所述接收端设备默认的接收器参数。

该实施方式中，可以实现上述第二消息中包括或者不包括参数指示信息，若包括，则将参数指示信息指示的接收器参数作为上述目标接收器参数。其中，参数指示信息指示接收波束可以是与接收端设备当前使用的接收器参数为不同的接收器参数，这时接收端设备需要进行接收器参数切换。而使用默认的接收器参数，可以不进行切换，例如：默认的接收器参数就可以是接收端设备当前使用的接收器参数，以快速对发送端设备发送的消息进行解码。另外，本公开实施例中，第二消息中的参数指示信息可以是，第二消息中的参数指示字段，即第二消息中可以存在或者不存在该参数指示字段。

例如：所述接收端设备默认的接收器参数包括：

所述接收端设备当前使用的接收器参数、所述接收端设备接收到的时间最近的第二消息指示的接收器参数、预先定义的接收器参数或者所述接收端设备向所述发送端设备上报时间最近的发送器参数对应的接收器参数。

该实施方式中，通过上述默认波束可以减少接收器参数的切换，例如：减少接收波束的切换，以提高传输性能。例如，第二消息与第一消息之间可以不存在间隙。

另外，本公开实施例中，上述参数指示信息可以显式或者隐式指示所述

目标接收器参数。例如：显式或者隐式指示所述目标接收波束。

其中，显式指示可以理解为直接指示，例如：以接收波束举例，接收端设备具有一组 L 个预配置的接收波束，这些对于发送端设备可以是已知的。这样上述参数指示信息例如可以携带 $\log_2(L)$ 位的字段，以指示接收端设备的推荐接收波束。在接收到第二消息后，接收端设备就可以确定对应的接收波束用于解码 msg1。而上述隐式指示可以理解为间接指示，例如：上述参数指示信息可以是指示发送波束（Tx 波束），通过指示的发送波束隐式指示该发送波束对应的接收波束。该实施方式中，通过上述显式或者隐式的方式可以实现灵活地向接收端设备指示接收波束，以提高系统的灵活性。

在本公开的一个可行实施例中，若所述参数指示信息隐式指示所述目标接收器参数，则所述参数指示信息包括所述发送端设备选择的发送器参数，所述接收端设备将预先为所述发送器参数选择的接收器参数作为所述目标接收器参数。

该实施方式中，可以实现通过发送器参数来隐式指示接收器参数，例如：以目标接收器参数为目标波束举例，发送端设备可以具有用于下行链路传输的 M 个候选发送波束。发送端设备配置 M 个参考符号（RS）资源，并将每个发送波束应用于相应的 RS 资源。对于每个 RS 资源，接收端设备可以测试一组候选接收波束，并确定每个 RS 资源（例如发送波束）的最佳接收波束。在本公开的一个可行实施例中，接收端设备可以将至少推荐的发送波束的信息反馈给发送端设备，例如，以推荐的 RS 资源的形式，但这一步是可选的。在发送第一消息之前，发送端设备以第二消息的方式发送其选定的发送波束的指示。接收端设备接收到第二消息后，获得所使用的发送波束的信息，并获得最佳的接收波束作为上述目标接收波束，该最佳的接收波束可以从先前的测量已知并保存在接收端设备中。

该实施方式中，可以实现通过发送器参数来隐式指示接收器参数，从而有利于接收端设备与发送端设备之间的传输。当然，在一些实施方式中，发送端设备可以根据接收端设备返回的推荐信息自主选择相应的发送器参数，例如：发送波束。

在本公开的一个可行实施例中，若所述第二消息是在预先确定的参数切

换指示集对应的调度时间单位内接收到的，则所述第二消息包括参数指示信息，且所述第二消息与所述第一消息之间存在间隙；

若所述第二消息是在所述参数切换指示集对应的调度时间单位外接收到的，则所述第二消息不包括参数指示信息，且所述第二消息与所述第一消息之间不存在间隙。

该实施方式中，上述参数切换指示集（BSIS）对应的调度时间单位可以是子帧或者时隙（slots）等时间单位。且发送端设备和接收端设备对 BSIS 可以具有一致的认识。只有在 BSIS 对应的 slot（这里以 slot 为例）中，第二消息才可能会携带参数指示信息，否则第二消息不携带参数指示信息。这意味着在 BSIS 对应的时隙之外的所有时隙中可以不执行接收器参数切换，例如：接收波束切换，而仅在周期性的选定时隙（例如 BSIS 中的时隙）中执行接收器参数切换。

另外，由于第二消息包括参数指示信息时，所述第二消息与所述第一消息之间存在间隙，这样接收端设备可以是在该间隙切换进行接收器参数切换，例如：接收波束切换，从而不影响消息的传输。而所述第二消息不包括参数指示信息时，所述第二消息与所述第一消息之间可以不存在间隙，这样可以节约传输资源。这是因为该情况下，接收端设备可能是不需要进行接收器参数切换，例如：接收波束切换，进而第二消息和第一消息连续传输也不会影响接收端设备的解码。且上述第二消息和第一消息可以采用相同的频域资源发送的，或者采用相同的信道发送等，对此本公开实施例不作限定。

例如：对于在 BSIS 中的时隙中发送的第二消息，携带参数指示信息。在这种情况下，同一时隙中的第一消息和第二消息之间有切换时间。否则对于 BSIS 外的时隙中的第二消息传输，发送端设备发送第二消息，而不携带波束指示字段。在这种情况下，接收端设备可以准备在第二消息之后立即接收第一消息（没有间隙）。例如：图 3 所示的第二个 slot。另外，当尝试在每个时隙中接收到第二消息或者第一消息时，接收端设备可以根据假定存在或者不存在参数指示信息来解码第二消息。换句话说，在 BSIS 中的时隙中，第二消息可以携带参数指示信息，接收端设备尝试解码第二消息，假设有一个参数指示信息。在其他时隙中，接收器解码第二消息，假设没有参数指示信息。

在第二消息不携带参数指示信息的时隙中，接收端设备仍然可以选择一个接收器参数（例如：接收波束）来解码第一消息。接收端设备可以使用在最新的携带参数指示字段的第二消息中指示的接收器参数。如果没有接收到参数指示信息，则接收机可以使用默认的接收器参数来解码第一消息。

在本公开的一个可行实施例中，所述参数切换指示集对应的调度时间单位在时域上周期性存在；和/或

所述参数切换指示集对应的调度时间单位由所述发送端设备半静态或半持续(semi-persistent)配置，并通知所述接收端设备。

其中，上述参数切换指示集对应的调度时间单位在时域上周期性存在可以是，上述参数切换指示集对应的调度时间单位具有周期性，例如：参数切换指示集在时域中可以周期性地具有预配置的周期和定时偏移，其中，该定时偏移可以是相对于另一个定时参考的偏移，如帧边界。例如，参数切换指示集可以具有 10ms 的周期，其指示在 10 个 slots 中的 1 个中发送的第二消息可能会携带参数指示信息，而其他 9 个 slots 中的第二消息不携带参数指示信息。上述参数切换指示集对应的调度时间单位由所述发送端设备半静态或半持续配置，并通知所述接收端设备可以是，发送端设备半静态或半持续配置，并通知接收端设备参数切换指示集的集合，即指示多个参数切换指示集。或者上述参数切换指示集可以由接收端设备获得，并作为推荐被反馈给发送端设备。发送端设备可以使用接收端设备推荐的参数切换指示集，或覆盖接收端设备推荐的参数切换指示集，并选择一个新的参数切换指示集。发送端设备可以需要向接收端设备指示是否确认接收端设备推荐的参数切换指示集，或者将其选择的参数切换指示集指示给接收端设备。

在本公开的一个可行实施例中，所述第一消息分为时域上连续的第一部分内容和第二部分内容，且所述第一部分内容在所述第二部分内容的前面，以及所述第一部分内容与所述第二消息在时域连续，所述第二消息在所述第一部分内容之前，所述接收端设备根据所述目标接收器参数对所述第一消息进行解码，包括：

若所述第二消息包括参数指示信息，则所述接收端设备根据所述参数指示信息指示的所述目标接收器参数对所述第二部分内容进行解码；或者

若所述第二消息包括参数指示信息，则所述接收端设备丢弃所述第一部分内容，以及根据所述参数指示信息指示的所述目标接收器参数对所述第二部分内容进行解码；或者

若所述第二消息包括参数指示信息，则所述接收端设备根据默认接收器参数对所述第一部分内容进行解码，以及根据所述参数指示信息指示的所述目标接收器参数对所述第二部分内容进行解码；或者

若所述第二消息不包括参数指示信息，则所述接收端设备根据默认接收器参数对所述第一部分内容和所述第二部分内容进行解码。

该实施方式中，所述第一消息分为时域上连续的第一部分内容和第二部分内容可以是接收端设备将第一消息分为两个部分，这里将第一消息分为两个部分可以理解为将第一消息看作两个部分，这是因为此时接收端设备还未接收到第一消息，不能对其进行拆分。

例如：发送端设备可以发送携带与接收第一消息有关的下行调度信息的第二消息。第二消息可以携带或不携带参数指示信息，对此接收端设备可以没有先验知识。如果第二消息没有参数指示信息，则第二消息的有效载荷较小（表示为 A 位）。如果第二消息具有参数指示信息，则第二消息的有效载荷较大（表示为 B 位，其中 $B > A$ ）。在发送端设备发送第二消息后，接收端设备可以尝试用盲解码第二消息。因为接收端设备没有关于第二消息的有效载荷的先验信息，因此需要基于不同的可能的第二消息有效载荷来执行盲解码。例如，接收端设备将执行假设有效载荷 A 位的第二消息的一次盲解码，以及假设 B 位的有效载荷的另一个第二消息的盲解码。这样根据第二消息的实际有效负载，两个盲解码之一将成功解码第二消息。之后，接收端设备就可以将第一消息分为第一部分内容和第二部分内容（part 1 and part 2），第一部分内容在第二部分内容前面，并且在时域中为时分复用（TDM）。第一消息的第一部分部分紧随着第二消息，即两者没有间隙，第一消息的第二部分内容紧邻第一部分内容，例如：图 4 所示的第二个 slot。

另外，由于第一部分内容和第二部分内容属于同一消息，从而接收端设备可以分别对第一部分内容和第二部分内容执行符号级处理。

该实施方式中，由于若所述第二消息包括参数指示信息时，则所述接收

端设备使用所述参数指示信息指示的所述目标接收器参数对所述第二部分内容进行解码，其中，所述发送端设备未发送所述第一部分内容。例如：图 4 所示的第一个 slot。这样可以提高接收端设备解码的准确性。

另外，由于第二消息包括参数指示信息时，可以丢弃所述第一部分内容，以及使用所述参数指示信息指示的所述目标接收器参数对所述第二部分内容进行解码。即可以丢弃图 4 所示的第二个 slot 的第一部分内容，同样能够保证发送端设备与接收端设备之间的性能，这是因为在该情况下发送端设备可以在第一部分内容中传输非重要信息，而在第二部分内容中传输重要信息。当然，本公开实施例并不以此为限，在第一消息包括参数指示信息时，还可以是发送端设备可以在第一部分内容中传输重要信息，而在第二部分内容中传输非重要信息。

另外，由于第二消息包括参数指示信息时，可以使用默认的接收器参数对所述第一部分内容进行解码，以及使用所述参数指示信息指示的所述目标接收器参数对所述第二部分内容进行解码。这样可以实现接收到准备地解码第一部分部分和第二部分内容。

另外，由于第二消息不包括参数指示信息，可以实现使用默认的接收器参数对所述第一部分内容和所述第二部分内容进行解码。即图 4 所示的第三个 slot。

另外，发送端设备和接收端设备可以将其对接收端设备上确切的第一消息解码行为的理解对齐。这可以由网络半静态地或半持续地配置给接收端设备，或者使用另一个动态控制消息动态地指示给接收端设备。

可选的，所述第一消息分为时域上连续的第一部分内容和第二部分内容，且所述第一部分内容在所述第二部分内容的前面，以及所述第一部分内容与所述第二消息在时域连续，所述第二消息在所述第一部分内容之前，所述接收端设备根据所述目标接收器参数对所述发送端设备发送的所述第一消息进行解码，包括：

若所述第二消息包括参数指示字段，且所述参数指示字段包括参数指示信息，则所述接收端设备根据所述参数指示信息指示的所述目标接收器参数对所述第二部分内容进行解码；或者

若所述第二消息包括参数指示字段，且所述参数指示字段包括参数指示信息，则所述接收端设备丢弃所述第一部分内容，以及根据所述参数指示信息指示的所述目标接收器参数对所述第二部分内容进行解码；或者

若所述第二消息包括参数指示字段，且所述参数指示字段包括参数指示信息，则所述接收端设备根据默认的接收器参数对所述第一部分内容进行解码，以及根据所述参数指示信息指示的所述目标接收器参数对所述第二部分内容进行解码；或者

若所述第二消息包括参数指示字段，且所述参数指示字段指示没有参数指示信息或者没有参数改变，则所述接收端设备根据默认的接收器参数对所述第一部分内容和所述第二部分内容进行解码。

该实施方式中，可以实现第二消息始终具有参数指示字段，例如：波束指示字段，例如 S 比特位。且参数指示字段具有至少一个状态指示，即没有参数指示信息或者没有参数改变的状态指示，以及还可以指示用于解码第一消息的接收器参数的其他状态。因此，第二消息的有效载荷预先已知到发送端设备和接收端设备。例如对应于 4 个可能的接收器参数指示状态的 S=2。一个状态向接收机指示存在“没有参数指示信息或者没有参数改变”，而其他 3 个状态指示到接收机的接收器参数。

另外，该实施方式中，关于第一消息的第一部分内容和第二部分内容可以参考上一实施方式中的相应描述，此处不作赘述。

且关于第二消息中是否包括参数指示信息的情况，如何对第一部分内容和第二部分内容的解码，可以参见上述实施方式的相应描述，此处不作赘述，且可以达到相同或相似的有益效果。

在本公开的一个可行实施例中，所述方法还包括：

所述接收端设备接收所述发送端设备发送的第三消息，所述第三消息用于指示所述第二消息是否包括参数指示信息，且若所述第三消息指示所述第二消息包括参数指示信息，则所述第二消息与所述第一消息之间存在间隙，若所述第三消息指示所述第二消息不包括参数指示信息，则所述第二消息与所述第一消息之间不存在间隙。

其中，上述第三消息可以定义为 msg3，该实施方式中，通过第三消息通

知接收端设备第二消息是否包括参数指示信息，更为具体的可以指示第二消息指示的接收器参数对于接收端设备是否存在接收器参数改变，这样可以实现当不存在接收器参数改变或者不包括参数指示信息时，接收端设备甚至可以接收第二消息，直接使用当前的接收器参数对第一消息进行解码。另外，在一些实施方式中，第三消息可以具有固定有效载荷，其中第二消息中的参数指示信息的存在或者不存在对应于第三消息中的两个不同状态。例如，第三消息有 1 位表示第二消息是否携带参数指示信息。

另外，本公开实施例中，上述第三消息可以对应于一个第二消息，即一个第三消息指示一个第二消息，例如：如图 5 所示。且第三消息、第二消息可以是以相同的调度时间单位（例如，时隙）发送，其中图 5 给出了一个示例。可以以不同的调度时间单位发送的第三消息和第二消息。如果第二消息有参数指示信息，第一消息和第二消息之间可以有一个间隙。如果第二消息没有参数指示信息，第一消息和第二消息之间可以没有间隙。

在本公开的一个可行实施例中，所述第三消息用于指示 M 个时间单位内的第二消息是否包括参数指示信息，所述 M 为大于或者等于 1 的整数，所述 M 个时间单位连续或者不连续。

该实施方式中，可以实现通过第三消息指示多个第二消息，例如：第三消息用于指示 M 个时隙中的 M 个第二消息是否包括参数指示信息，这样可以节省消息开销。另外，上述 M 的值和 M 个第二消息的时间位置可以预定义的半静态或半持续配置的，并且对发送端设备和接收端设备均是已知的。其中，图 6 示出了一个例子，其中 $M=3$ 。一旦接收到第三消息，该第三消息就向接收端设备指示相应的 M 个时隙中的第二消息是否携带参数指示信息。

另外，第三消息可以是可以在每个调度时间单位（例如 slots）或在由发送端设备预配置的时隙的子集（例如，具有预先配置的传输周期和偏移）中被发送。对于后一种情况，发送端设备可以事先向接收端设备指示第三消息的发生。

在本公开的一个可行实施例中，本公开实施例中，目标接收器参数包括时域、频域和空域中的至少一项的接收器参数。

这样可以实现根据发送端设备的第二消息灵活选择时域、频域和空域中

的至少一项的接收器参数，对第一消息进行解码。在本公开的一个可行实施例中，所述空域的接收器参数包括所述接收端设备的接收波束。这样可以实现接收端设备根据与第一消息关联的第二消息确定接收波束，且还可以提高波束传输性能。

需要说明的是，本公开实施例介绍的多种可选的实施方式均可以相互结合实现，也可以单独实现，对此本公开实施例不作限定。

本公开实施例，接收端设备接收发送端设备发送的与第一消息关联的第二消息；所述接收端设备根据所述第二消息，确定解码所述第一消息的目标接收器参数；所述接收端设备根据所述目标接收器参数对所述发送端设备发送的所述第一消息进行解码。这样可以实现接收端设备根据与第一消息关联的第二消息确定接收器参数，且还可以提高消息传输性能。

请参阅图 7，图 7 是本公开实施例提供的另一种消息解码方法的流程图，如图 7 所示，包括以下步骤：

701、发送端设备向接收端设备发送与第一消息关联的第二消息，所述第二消息用于所述接收端设备确定解码所述第一消息的目标接收器参数；以及

702、所述发送端设备向所述接收端设备发送所述第一消息。

在本公开的一个可行实施例中，若所述第二消息包括参数指示信息，则所述目标接收器参数为所述参数指示信息指示的接收器参数；

若所述第二消息不包括参数指示信息，则所述目标接收器参数为所述接收端设备默认的接收器参数。

在本公开的一个可行实施例中，所述接收端设备默认的接收器参数包括：

所述接收端设备当前使用的接收器参数、所述接收端设备接收到的时间最近的第二消息指示的接收器参数、预先定义的接收器参数或者所述接收端设备向所述发送端设备上报时间最近的发送器参数对应的接收器参数。

在本公开的一个可行实施例中，所述参数指示信息显式或者隐式指示所述目标接收器参数。

在本公开的一个可行实施例中，若所述参数指示信息隐式指示所述目标接收器参数，则所述参数指示信息包括所述发送端设备选择的发送器参数，所述接收端设备将预先为所述发送器参数选择的接收器参数作为所述目标接

收器参数。

在本公开的一个可行实施例中，若所述第二消息是在预先确定的参数切换指示集对应的调度时间单位内接收到的，则所述第二消息包括参数指示信息，且所述第二消息与所述第一消息之间存在间隙；

若所述第二消息是在所述参数切换指示集对应的调度时间单位外接收到的，则所述第二消息不包括参数指示信息，且所述第二消息与所述第一消息之间不存在间隙。

在本公开的一个可行实施例中，所述参数切换指示集对应的调度时间单位在时域上周期性存在；和/或

所述参数切换指示集对应的调度时间单位由所述发送端设备半静态或半持续配置，并通知所述接收端设备。

在本公开的一个可行实施例中，所述第一消息分为时域上连续的第一部分内容和第二部分内容，且所述第一部分内容在所述第二部分内容的前面，以及所述第一部分内容与所述第二消息在时域连续，所述第二消息在所述第一部分内容之前。

在本公开的一个可行实施例中，所述方法还包括：

所述发送端设备向所述接收端设备发送第三消息，所述第三消息用于指示所述第二消息是否包括参数指示信息，且若所述第三消息指示所述第二消息包括参数指示信息，则所述第二消息与所述第一消息之间存在间隙，若所述第三消息指示所述第二消息不包括参数指示信息，则所述第二消息与所述第一消息之间不存在间隙。

在本公开的一个可行实施例中，所述第三消息用于指示 M 个时间单位内的第二消息是否包括参数指示信息，所述 M 为大于或者等于 1 的整数，所述 M 个时间单位连续或者不连续。

在本公开的一个可行实施例中，所述目标接收器参数包括时域、频域和空域中的至少一项的接收器参数。

在本公开的一个可行实施例中，所述空域的接收器参数包括所述接收端设备的接收波束。

需要说明的是，本实施例作为与图 2 所示的实施例中对应的发送端设备

的实施方式，其具体的实施方式可以参见图 2 所示的实施例的相关说明，为了避免重复说明，本实施例不再赘述，且还可以达到相同或相似有益效果。

请参考图 8，图 8 是本公开实施例提供一种接收端设备的结构图，如图 8 所示，接收端设备 800 包括：

第一接收模块 801，用于接收发送端设备发送的与第一消息关联的第二消息；

确定模块 802，用于根据所述第二消息，确定解码所述第一消息的目标接收器参数；以及

解码模块 803，用于根据所述目标接收器参数对所述发送端设备发送的所述第一消息进行解码。

在本公开的一个可行实施例中，若所述第二消息包括参数指示信息，则所述目标接收器参数为所述参数指示信息指示的接收器参数；

若所述第二消息不包括参数指示信息，则所述目标接收器参数为所述接收端设备默认的接收器参数。

在本公开的一个可行实施例中，所述接收端设备默认的接收器参数包括：

所述接收端设备当前使用的接收器参数、所述接收端设备接收到的时间最近的第二消息指示的接收器参数、预先定义的接收器参数或者所述接收端设备向所述发送端设备上报时间最近的发送器参数对应的接收器参数。

在本公开的一个可行实施例中，所述参数指示信息显式或者隐式指示所述目标接收器参数。

在本公开的一个可行实施例中，若所述参数指示信息隐式指示所述目标接收器参数，则所述参数指示信息包括所述发送端设备选择的发送器参数，所述接收端设备将预先为所述发送器参数选择的接收器参数作为所述目标接收器参数。

在本公开的一个可行实施例中，若所述第二消息是在预先确定的参数切换指示集对应的调度时间单位内接收到的，则所述第二消息包括参数指示信息，且所述第二消息与所述第一消息之间存在间隙；

若所述第二消息是在所述参数切换指示集对应的调度时间单位外接收到的，则所述第二消息不包括参数指示信息，且所述第二消息与所述第一消息

之间不存在间隙。

在本公开的一个可行实施例中，所述参数切换指示集对应的调度时间单位在时域上周期性存在；和/或

所述参数切换指示集对应的调度时间单位由所述发送端设备半静态或半持续配置，并通知所述接收端设备。

在本公开的一个可行实施例中，所述第一消息分为时域上连续的第一部分内容和第二部分内容，且所述第一部分内容在所述第二部分内容的前面，以及所述第一部分内容与所述第二消息在时域连续，所述第二消息在所述第一部分内容之前；

所述解码模块 803 用于若所述第二消息包括参数指示信息，则根据所述参数指示信息指示的所述目标接收器参数对所述第二部分内容进行解码；或者

所述解码模块 803 用于若所述第二消息包括参数指示信息，则丢弃所述第一部分内容，以及根据所述参数指示信息指示的所述目标接收器参数对所述第二部分内容进行解码；或者

所述解码模块 803 用于若所述第二消息包括参数指示信息，则根据默认的接收器参数对所述第一部分内容进行解码，以及根据所述参数指示信息指示的所述目标接收器参数对所述第二部分内容进行解码；或者

所述解码模块 803 用于若所述第二消息不包括参数指示信息，则根据默认的接收器参数对所述第一部分内容和所述第二部分内容进行解码；或者

所述解码模块 803 用于若所述第二消息包括参数指示字段，且所述参数指示字段包括参数指示信息，则根据所述参数指示信息指示的所述目标接收器参数对所述第二部分内容进行解码；或者

所述解码模块 803 用于若所述第二消息包括参数指示字段，且所述参数指示字段包括参数指示信息，则丢弃所述第一部分内容，以及根据所述参数指示信息指示的所述目标接收器参数对所述第二部分内容进行解码；或者

所述解码模块 803 用于若所述第二消息包括参数指示字段，且所述参数指示字段包括参数指示信息，则根据默认的接收器参数对所述第一部分内容进行解码，以及根据所述参数指示信息指示的所述目标接收器参数对所述第

二部分内容进行解码；或者

所述解码模块 803 用于若所述第二消息包括参数指示字段，且所述参数指示字段指示没有参数指示信息或者没有参数改变，则根据默认接收器参数对所述第一部分内容和所述第二部分内容进行解码。

在本公开的一个可行实施例中，如图 9 所示，所述接收端设备 800 还包括：

第二接收模块 804，用于接收所述发送端设备发送的第三消息，所述第三消息用于指示所述第二消息是否包括参数指示信息，且若所述第三消息指示所述第二消息包括参数指示信息，则所述第二消息与所述第一消息之间存在间隙，若所述第三消息指示所述第二消息不包括参数指示信息，则所述第二消息与所述第一消息之间不存在间隙。

在本公开的一个可行实施例中，所述第三消息用于指示 M 个时间单位内的第二消息是否包括参数指示信息，所述 M 为大于或者等于 1 的整数，所述 M 个时间单位连续或者不连续。

在本公开的一个可行实施例中，所述目标接收器参数包括时域、频域和空域中的至少一项的接收器参数。

在本公开的一个可行实施例中，所述空域的接收器参数包括所述接收端设备的接收波束。

需要说明的是，本实施例中上述接收端设备 800 可以是本公开实施例中方法实施例中任意实施方式的接收端设备，本公开实施例中方法实施例中接收端设备的任意实施方式都可以被本实施例中的上述接收端设备 800 所实现，以及达到相同或相似的有益效果，此处不再赘述。

请参阅图 10，图 10 是本公开实施例提供的一种发送端设备的结构图，如图 10 所示，发送端设备 1000 包括：

第一发送模块 1001，用于发送端设备向接收端设备发送与第一消息关联的第二消息，所述第二消息用于所述接收端设备确定解码所述第一消息的目标接收器参数；

第二发送模块 1002，用于向所述接收端设备发送所述第一消息。

在本公开的一个可行实施例中，若所述第二消息包括参数指示信息，则

所述目标接收器参数为所述参数指示信息指示的接收器参数；

若所述第二消息不包括参数指示信息，则所述目标接收器参数为所述接收端设备默认的接收器参数。

在本公开的一个可行实施例中，所述接收端设备默认的接收器参数包括：

所述接收端设备当前使用的接收器参数、所述接收端设备接收到的时间最近的第二消息指示的接收器参数、预先定义的接收器参数或者所述接收端设备向所述发送端设备上报时间最近的发送器参数对应的接收器参数。

在本公开的一个可行实施例中，所述参数指示信息显式或者隐式指示所述目标接收器参数。

在本公开的一个可行实施例中，若所述参数指示信息隐式指示所述目标接收器参数，则所述参数指示信息包括所述发送端设备选择的发送器参数，所述接收端设备将预先为所述发送器参数选择的接收器参数作为所述目标接收器参数。

在本公开的一个可行实施例中，若所述第二消息是在预先确定的参数切换指示集对应的调度时间单位内接收到的，则所述第二消息包括参数指示信息，且所述第二消息与所述第一消息之间存在间隙；

若所述第二消息是在所述参数切换指示集对应的调度时间单位外接收到的，则所述第二消息不包括参数指示信息，且所述第二消息与所述第一消息之间不存在间隙。

在本公开的一个可行实施例中，所述参数切换指示集对应的调度时间单位在时域上周期性存在；和/或

所述参数切换指示集对应的调度时间单位由所述发送端设备半静态或半持续配置，并通知所述接收端设备。

在本公开的一个可行实施例中，所述第一消息分为时域上连续的第一部分内容和第二部分内容，且所述第一部分内容在所述第二部分内容的前面，以及所述第一部分内容与所述第二消息在时域连续，所述第二消息在所述第一部分内容之前。

在本公开的一个可行实施例中，如图 11 所示，所述发送端设备还包括：第三发送模块 1003，用于向所述接收端设备发送第三消息，所述第三消

息用于指示所述第二消息是否包括参数指示信息，且若所述第三消息指示所述第二消息包括参数指示信息，则所述第二消息与所述第一消息之间存在间隙，若所述第三消息指示所述第二消息不包括参数指示信息，则所述第二消息与所述第一消息之间不存在间隙。

在本公开的一个可行实施例中，所述第三消息用于指示 M 个时间单位内的第二消息是否包括参数指示信息，所述 M 为大于或者等于 1 的整数，所述 M 个时间单位连续或者不连续。

在本公开的一个可行实施例中，所述目标接收器参数包括时域、频域和空域中的至少一项的接收器参数。

在本公开的一个可行实施例中，所述空域的接收器参数包括所述接收端设备的接收波束。

需要说明的是，本实施例中上述发送端设备 1000 可以是本公开实施例中方法实施例中任意实施方式的发送端设备，本公开实施例中方法实施例中发送端设备的任意实施方式都可以被本实施例中的上述发送端设备 1000 所实现，以及达到相同或相似的有益效果，此处不再赘述。

请参考图 12，图 12 是本公开实施例提供的另一种接收端设备的结构图，如图 12 所示，该接收端设备包括：处理器 1200、收发机 1210、存储器 1220、用户接口 1230 和总线接口，其中：

处理器 1200，用于读取存储器 1220 中的程序，执行下列过程：

通过收发机 1210 接收端设备接收发送端设备发送的与第一消息关联的第二消息；

根据所述第二消息，确定解码所述第一消息的目标接收器参数；

根据所述目标接收器参数对所述发送端设备发送的所述第一消息进行解码。

其中，收发机 1210，用于在处理器 1200 的控制下接收和发送数据。

在图 12 中，总线架构可以包括任意数量的互联的总线和桥，具体由处理器 1200 代表的一个或多个处理器和存储器 1220 代表的存储器的各种电路链接在一起。总线架构还可以将诸如外围设备、稳压器和功率管理电路等之类的各种其他电路链接在一起，这些都是本领域所公知的，因此，本文不再对

其进行进一步描述。总线接口提供接口。收发机 1210 可以是多个元件，即包括发送机和接收机，提供用于在传输介质上与各种其他装置通信的单元。针对不同的用户设备，用户接口 1230 还可以是能够外接内接需要设备的接口，连接的设备包括但不限于小键盘、显示器、扬声器、麦克风、操纵杆等。

处理器 1200 负责管理总线架构和通常的处理，存储器 1220 可以存储处理器 1200 在执行操作时所使用的数据。

在本公开的一个可行实施例中，若所述第二消息包括参数指示信息，则所述目标接收器参数为所述参数指示信息指示的接收器参数；

若所述第二消息不包括参数指示信息，则所述目标接收器参数为所述接收端设备默认的接收器参数。

在本公开的一个可行实施例中，所述接收端设备默认的接收器参数包括：所述接收端设备当前使用的接收器参数、所述接收端设备接收到的时间最近的第二消息指示的接收器参数、预先定义的接收器参数或者所述接收端设备向所述发送端设备上报时间最近的发送器参数对应的接收器参数。

在本公开的一个可行实施例中，所述参数指示信息显式或者隐式指示所述目标接收器参数。

在本公开的一个可行实施例中，若所述参数指示信息隐式指示所述目标接收器参数，则所述参数指示信息包括所述发送端设备选择的发送器参数，所述接收端设备将预先为所述发送器参数选择的接收器参数作为所述目标接收器参数。

在本公开的一个可行实施例中，若所述第二消息是在预先确定的参数切换指示集对应的调度时间单位内接收到的，则所述第二消息包括参数指示信息，且所述第二消息与所述第一消息之间存在间隙；

若所述第二消息是在所述参数切换指示集对应的调度时间单位外接收到的，则所述第二消息不包括参数指示信息，且所述第二消息与所述第一消息之间不存在间隙。

在本公开的一个可行实施例中，所述参数切换指示集对应的调度时间单位在时域上周期性存在；和/或

所述参数切换指示集对应的调度时间单位由所述发送端设备半静态或半

持续配置，并通知所述接收端设备。

在本公开的一个可行实施例中，所述第一消息分为时域上连续的第一部分内容和第二部分内容，且所述第一部分内容在所述第二部分内容的前面，以及所述第一部分内容与所述第二消息在时域连续，所述第二消息在所述第一部分内容之前，所述根据所述目标接收器参数对所述第一消息进行解码，包括：

若所述第二消息包括参数指示信息，则根据所述参数指示信息指示的所述目标接收器参数对所述第二部分内容进行解码；或者

若所述第二消息包括参数指示信息，则丢弃所述第一部分内容，以及根据所述参数指示信息指示的所述目标接收器参数对所述第二部分内容进行解码；或者

若所述第二消息包括参数指示信息，则根据默认的接收器参数对所述第一部分内容进行解码，以及根据所述参数指示信息指示的所述目标接收器参数对所述第二部分内容进行解码；或者

若所述第二消息不包括参数指示信息，则根据默认的接收器参数对所述第一部分内容和所述第二部分内容进行解码；或者

若所述第二消息包括参数指示字段，且所述参数指示字段包括参数指示信息，则根据所述参数指示信息指示的所述目标接收器参数对所述第二部分内容进行解码；或者

若所述第二消息包括参数指示字段，且所述参数指示字段包括参数指示信息，则丢弃所述第一部分内容，以及根据所述参数指示信息指示的所述目标接收器参数对所述第二部分内容进行解码；或者

若所述第二消息包括参数指示字段，且所述参数指示字段包括参数指示信息，则根据默认的接收器参数对所述第一部分内容进行解码，以及根据所述参数指示信息指示的所述目标接收器参数对所述第二部分内容进行解码；或者

若所述第二消息包括参数指示字段，且所述参数指示字段指示没有参数指示信息或者没有参数改变，则根据默认的接收器参数对所述第一部分内容和所述第二部分内容进行解码。

在本公开的一个可行实施例中，处理器 1200 还用于：

通过收发机 1210 接收所述发送端设备发送的第三消息，所述第三消息用于指示所述第二消息是否包括参数指示信息，且若所述第三消息指示所述第二消息包括参数指示信息，则所述第二消息与所述第一消息之间存在间隙，若所述第三消息指示所述第二消息不包括参数指示信息，则所述第二消息与所述第一消息之间不存在间隙。

在本公开的一个可行实施例中，所述第三消息用于指示 M 个时间单位内的第二消息是否包括参数指示信息，所述 M 为大于或者等于 1 的整数，所述 M 个时间单位连续或者不连续。

在本公开的一个可行实施例中，所述目标接收器参数包括时域、频域和空域中的至少一项的接收器参数。

在本公开的一个可行实施例中，所述空域的接收器参数包括所述接收端设备的接收波束。

需要说明的是，本实施例中上述接收端设备可以是图 1-图 7 所示的实施例中的终端，图 1-图 7 所示实施例中接收端设备的任意实施方式都可以被本实施例中的上述接收端设备所实现，以及达到相同或相似的有益效果，此处不再赘述。

请参考图 13，图 13 是本公开实施例提供的另一种发送端设备的结构图，如图 13 所示，该发送端设备包括：处理器 1300、收发机 1310、存储器 1320、用户接口 1330 和总线接口，其中：

处理器 1300，用于读取存储器 1320 中的程序，执行下列过程：

通过收发机 1310 向接收端设备发送与第一消息关联的第二消息，所述第二消息用于所述接收端设备确定解码所述第一消息的目标接收器参数；

通过收发机 1310 向所述接收端设备发送所述第一消息。

其中，收发机 1310，用于在处理器 1300 的控制下接收和发送数据。

在图 13 中，总线架构可以包括任意数量的互联的总线和桥，具体由处理器 1300 代表的一个或多个处理器和存储器 1320 代表的存储器的各种电路链接在一起。总线架构还可以将诸如外围设备、稳压器和功率管理电路等之类的各种其他电路链接在一起，这些都是本领域所公知的，因此，本文不再对

其进行进一步描述。总线接口提供接口。收发机 1310 可以是多个元件，即包括发送机和接收机，提供用于在传输介质上与各种其他装置通信的单元。针对不同的用户设备，用户接口 1330 还可以是能够外接内接需要设备的接口，连接的设备包括但不限于小键盘、显示器、扬声器、麦克风、操纵杆等。

处理器 1300 负责管理总线架构和通常的处理，存储器 1320 可以存储处理器 1300 在执行操作时所使用的数据。

在本公开的一个可行实施例中，若所述第二消息包括参数指示信息，则所述目标接收器参数为所述参数指示信息指示的接收器参数；

若所述第二消息不包括参数指示信息，则所述目标接收器参数为所述接收端设备默认的接收器参数。

在本公开的一个可行实施例中，所述接收端设备默认的接收器参数包括：所述接收端设备当前使用的接收器参数、所述接收端设备接收到的时间最近的第二消息指示的接收器参数、预先定义的接收器参数或者所述接收端设备向所述发送端设备上报时间最近的发送器参数对应的接收器参数。

在本公开的一个可行实施例中，所述参数指示信息显式或者隐式指示所述目标接收器参数。

在本公开的一个可行实施例中，若所述参数指示信息隐式指示所述目标接收器参数，则所述参数指示信息包括所述发送端设备选择的发送器参数，所述接收端设备将预先为所述发送器参数选择的接收器参数作为所述目标接收器参数。

在本公开的一个可行实施例中，若所述第二消息是在预先确定的参数切换指示集对应的调度时间单位内接收到的，则所述第二消息包括参数指示信息，且所述第二消息与所述第一消息之间存在间隙；

若所述第二消息是在所述参数切换指示集对应的调度时间单位外接收到的，则所述第二消息不包括参数指示信息，且所述第二消息与所述第一消息之间不存在间隙。

在本公开的一个可行实施例中，所述参数切换指示集对应的调度时间单位在时域上周期性存在；和/或

所述参数切换指示集对应的调度时间单位由所述发送端设备半静态或半

持续配置，并通知所述接收端设备。

在本公开的一个可行实施例中，所述第一消息分为时域上连续的第一部分内容和第二部分内容，且所述第一部分内容在所述第二部分内容的前面，以及所述第一部分内容与所述第二消息在时域连续，所述第二消息在所述第一部分内容之前。

在本公开的一个可行实施例中，处理器 1300 还用于：

通过收发机 1310 向所述接收端设备发送第三消息，所述第三消息用于指示所述第二消息是否包括参数指示信息，且若所述第三消息指示所述第二消息包括参数指示信息，则所述第二消息与所述第一消息之间存在间隙，若所述第三消息指示所述第二消息不包括参数指示信息，则所述第二消息与所述第一消息之间不存在间隙。

在本公开的一个可行实施例中，所述第三消息用于指示 M 个时间单位内的第二消息是否包括参数指示信息，所述 M 为大于或者等于 1 的整数，所述 M 个时间单位连续或者不连续。

在本公开的一个可行实施例中，所述目标接收器参数包括时域、频域和空域中的至少一项的接收器参数。

在本公开的一个可行实施例中，所述空域的接收器参数包括所述接收端设备的接收波束。

需要说明的是，本实施例中上述发送端设备可以是图 1-图 7 所示的实施例中的发送端设备，图 1-图 7 所示实施例中发送端设备的任意实施方式都可以被本实施例中的上述发送端设备所实现，以及达到相同或相似的有益效果，此处不再赘述。

在本申请所提供的几个实施例中，应该理解到，所揭露方法和装置，可以通过其它的方式实现。例如，以上所描述的装置实施例仅仅是示意性的。例如，所述单元的划分，仅仅为一种逻辑功能划分，实际实现时可以有另外的划分方式，例如多个单元或组件可以结合或者可以集成到另一个系统，或一些特征可以忽略，或不执行。另一点，所显示或讨论的相互之间的耦合或直接耦合或通信连接可以是通过一些接口，装置或单元的间接耦合或通信连接，可以是电性，机械或其它的形式。

另外，在本公开各个实施例中的各功能单元可以集成在一个处理单元中，也可以是各个单元单独物理包括，也可以两个或两个以上单元集成在一个单元中。上述集成的单元既可以采用硬件的形式实现，也可以采用硬件加软件功能单元的形式实现。

上述以软件功能单元的形式实现的集成的单元，可以存储在一个计算机可读取存储介质中。上述软件功能单元存储在一个存储介质中，包括若干指令用以使得一台计算机设备（可以是个人计算机，服务器，或者网络设备等）执行本公开各个实施例所述收发方法的部分步骤。而前述的存储介质包括：U 盘、移动硬盘、只读存储器（Read-Only Memory，简称 ROM）、随机存取存储器（Random Access Memory，简称 RAM）、磁碟或者光盘等各种可以存储程序代码的介质。

以上所述是本公开的优选实施方式，应当指出，对于本技术领域的普通技术人员来说，在不脱离本公开所述原理的前提下，还可以作出若干改进和润饰，这些改进和润饰也应视为本公开的保护范围。

权 利 要 求 书

1. 一种消息解码方法，包括：

接收端设备接收发送端设备发送的与第一消息关联的第二消息；

所述接收端设备根据所述第二消息，确定解码所述第一消息的目标接收器参数；以及

所述接收端设备根据所述目标接收器参数对所述发送端设备发送的所述第一消息进行解码。

2. 如权利要求 1 所述的方法，其中，若所述第二消息包括参数指示信息，则所述目标接收器参数为所述参数指示信息指示的接收器参数；

若所述第二消息不包括参数指示信息，则所述目标接收器参数为所述接收端设备默认的接收器参数。

3. 如权利要求 2 所述的方法，其中，所述接收端设备默认的接收器参数包括：

所述接收端设备当前使用的接收器参数、所述接收端设备接收到的时间最近的第二消息指示的接收器参数、预先定义的接收器参数或者所述接收端设备向所述发送端设备上报时间最近的发送器参数对应的接收器参数。

4. 如权利要求 2 或 3 所述的方法，其中，所述参数指示信息显式或者隐式指示所述目标接收器参数。

5. 如权利要求 4 所述的方法，其中，若所述参数指示信息隐式指示所述目标接收器参数，则所述参数指示信息包括所述发送端设备选择的发送器参数，所述接收端设备将预先为所述发送器参数选择的接收器参数作为所述目标接收器参数。

6. 如权利要求 1-5 中任一项所述的方法，其中，若所述第二消息是在预先确定的参数切换指示集对应的调度时间单位内接收到的，则所述第二消息包括参数指示信息，且所述第二消息与所述第一消息之间存在间隙；

若所述第二消息是在所述参数切换指示集对应的调度时间单位外接收到的，则所述第二消息不包括参数指示信息，且所述第二消息与所述第一消息之间不存在间隙。

7. 如权利要求 6 所述的方法，其中，所述参数切换指示集对应的调度时间单位在时域上周期性存在；和/或

所述参数切换指示集对应的调度时间单位由所述发送端设备半静态或半持续配置，并通知所述接收端设备。

8. 如权利要求 1-5 中任一项所述的方法，其中，所述第一消息分为时域上连续的第一部分内容和第二部分内容，且所述第一部分内容在所述第二部分内容的前面，以及所述第一部分内容与所述第二消息在时域连续，所述第二消息在所述第一部分内容之前，所述接收端设备根据所述目标接收器参数对所述第一消息进行解码，包括：

若所述第二消息包括参数指示信息，则所述接收端设备根据所述参数指示信息指示的所述目标接收器参数对所述第二部分内容进行解码；或者

若所述第二消息包括参数指示信息，则所述接收端设备丢弃所述第一部分内容，以及根据所述参数指示信息指示的所述目标接收器参数对所述第二部分内容进行解码；或者

若所述第二消息包括参数指示信息，则所述接收端设备根据默认接收器参数对所述第一部分内容进行解码，以及根据所述参数指示信息指示的所述目标接收器参数对所述第二部分内容进行解码；或者

若所述第二消息不包括参数指示信息，则所述接收端设备根据默认接收器参数对所述第一部分内容和所述第二部分内容进行解码；或者

若所述第二消息包括参数指示字段，且所述参数指示字段包括参数指示信息，则所述接收端设备根据所述参数指示信息指示的所述目标接收器参数对所述第二部分内容进行解码；或者

若所述第二消息包括参数指示字段，且所述参数指示字段包括参数指示信息，则所述接收端设备丢弃所述第一部分内容，以及根据所述参数指示信息指示的所述目标接收器参数对所述第二部分内容进行解码；或者

若所述第二消息包括参数指示字段，且所述参数指示字段包括参数指示信息，则所述接收端设备根据默认接收器参数对所述第一部分内容进行解码，以及根据所述参数指示信息指示的所述目标接收器参数对所述第二部分内容进行解码；或者

若所述第二消息包括参数指示字段，且所述参数指示字段指示没有参数指示信息或者没有参数改变，则所述接收端设备根据默认接收器参数对所述第一部分内容和所述第二部分内容进行解码。

9. 如权利要求 1-5 中任一项所述的方法，其中，所述方法还包括：

所述接收端设备接收所述发送端设备发送的第三消息，所述第三消息用于指示所述第二消息是否包括参数指示信息，且若所述第三消息指示所述第二消息包括参数指示信息，则所述第二消息与所述第一消息之间存在间隙，若所述第三消息指示所述第二消息不包括参数指示信息，则所述第二消息与所述第一消息之间不存在间隙。

10. 如权利要求 9 所述的方法，其中，所述第三消息用于指示 M 个时间单位内的第二消息是否包括参数指示信息，所述 M 为大于或者等于 1 的整数，所述 M 个时间单位连续或者不连续。

11. 如权利要求 1-5 中任一项所述的方法，其中，所述目标接收器参数包括时域、频域和空域中的至少一项的接收器参数。

12. 如权利要求 11 所述的方法，其中，所述空域的接收器参数包括所述接收端设备的接收波束。

13. 一种消息解码方法，包括：

发送端设备向接收端设备发送与第一消息关联的第二消息，所述第二消息用于所述接收端设备确定解码所述第一消息的目标接收器参数；以及
所述发送端设备向所述接收端设备发送所述第一消息。

14. 如权利要求 13 所述的方法，其中，若所述第二消息包括参数指示信息，则所述目标接收器参数为所述参数指示信息指示的接收器参数；

若所述第二消息不包括参数指示信息，则所述目标接收器参数为所述接收端设备默认的接收器参数。

15. 如权利要求 14 所述的方法，其中，所述接收端设备默认的接收器参数包括：

所述接收端设备当前使用的接收器参数、所述接收端设备接收到的时间最近的第二消息指示的接收器参数、预先定义的接收器参数或者所述接收端设备向所述发送端设备上报时间最近的发送器参数对应的接收器参数。

16. 如权利要求 14 或 15 所述的方法，其中，所述参数指示信息显式或者隐式指示所述目标接收器参数。

17. 如权利要求 16 所述的方法，其中，若所述参数指示信息隐式指示所述目标接收器参数，则所述参数指示信息包括所述发送端设备选择的发送器参数，所述接收端设备将预先为所述发送器参数选择的接收器参数作为所述目标接收器参数。

18. 如权利要求 13-17 中任一项所述的方法，其中，若所述第二消息是在预先确定的参数切换指示集对应的调度时间单位内接收到的，则所述第二消息包括参数指示信息，且所述第二消息与所述第一消息之间存在间隙；

若所述第二消息是在所述参数切换指示集对应的调度时间单位外接收到的，则所述第二消息不包括参数指示信息，且所述第二消息与所述第一消息之间不存在间隙。

19. 如权利要求 18 所述的方法，其中，所述参数切换指示集对应的调度时间单位在时域上周期性存在；和/或

所述参数切换指示集对应的调度时间单位由所述发送端设备半静态或半持续配置，并通知所述接收端设备。

20. 如权利要求 13-17 中任一项所述的方法，其中，所述第一消息分为时域上连续的第一部分内容和第二部分内容，且所述第一部分内容在所述第二部分内容的前面，以及所述第一部分内容与所述第二消息在时域连续，所述第二消息在所述第一部分内容之前。

21. 如权利要求 13-17 中任一项所述的方法，其中，所述方法还包括：

所述发送端设备向所述接收端设备发送第三消息，所述第三消息用于指示所述第二消息是否包括参数指示信息，且若所述第三消息指示所述第二消息包括参数指示信息，则所述第二消息与所述第一消息之间存在间隙，若所述第三消息指示所述第二消息不包括参数指示信息，则所述第二消息与所述第一消息之间不存在间隙。

22. 如权利要求 21 所述的方法，其中，所述第三消息用于指示 M 个时间单位内的第二消息是否包括参数指示信息，所述 M 为大于或者等于 1 的整数，所述 M 个时间单位连续或者不连续。

23. 如权利要求 13-17 中任一项所述的方法，其中，所述目标接收器参数包括时域、频域和空域中的至少一项的接收器参数。

24. 如权利要求 23 所述的方法，其中，所述空域的接收器参数包括所述接收端设备的接收波束。

25. 一种接收端设备，包括：

第一接收模块，用于接收发送端设备发送的与第一消息关联的第二消息；
确定模块，用于根据所述第二消息，确定解码所述第一消息的目标接收器参数；以及

解码模块，用于根据所述目标接收器参数对所述发送端设备发送的所述第一消息进行解码。

26. 如权利要求 25 所述的接收端设备，其中，若所述第二消息包括参数指示信息，则所述目标接收器参数为所述参数指示信息指示的接收器参数；

若所述第二消息不包括参数指示信息，则所述目标接收器参数为所述接收端设备默认接收器参数。

27. 如权利要求 25 或 26 所述的接收端设备，其中，若所述第二消息是在预先确定的参数切换指示集对应的调度时间单位内接收到的，则所述第二消息包括参数指示信息，且所述第二消息与所述第一消息之间存在间隙；

若所述第二消息是在所述参数切换指示集对应的调度时间单位外接收到的，则所述第二消息不包括参数指示信息，且所述第二消息与所述第一消息之间不存在间隙。

28. 如权利要求 25 或 26 所述的接收端设备，其中，所述第一消息分为时域上连续的第一部分内容和第二部分内容，且所述第一部分内容在所述第二部分内容的前面，以及所述第一部分内容与所述第二消息在时域连续，所述第二消息在所述第一部分内容之前；

所述解码模块用于若所述第二消息包括参数指示信息，则根据所述参数指示信息指示的所述目标接收器参数对所述第二部分内容进行解码；或者

所述解码模块用于若所述第二消息包括参数指示信息，则丢弃所述第一部分内容，以及根据所述参数指示信息指示的所述目标接收器参数对所述第二部分内容进行解码；或者

所述解码模块用于若所述第二消息包括参数指示信息，则根据默认接收器参数对所述第一部分内容进行解码，以及根据所述参数指示信息指示的所述目标接收器参数对所述第二部分内容进行解码；或者

所述解码模块用于若所述第二消息不包括参数指示信息，则根据默认接收器参数对所述第一部分内容和所述第二部分内容进行解码；或者

所述解码模块用于若所述第二消息包括参数指示字段，且所述参数指示字段包括参数指示信息，则根据所述参数指示信息指示的所述目标接收器参数对所述第二部分内容进行解码；或者

所述解码模块用于若所述第二消息包括参数指示字段，且所述参数指示字段包括参数指示信息，则丢弃所述第一部分内容，以及根据所述参数指示信息指示的所述目标接收器参数对所述第二部分内容进行解码；或者

所述解码模块用于若所述第二消息包括参数指示字段，且所述参数指示字段包括参数指示信息，则根据默认接收器参数对所述第一部分内容进行解码，以及根据所述参数指示信息指示的所述目标接收器参数对所述第二部分内容进行解码；或者

所述解码模块用于若所述第二消息包括参数指示字段，且所述参数指示字段指示没有参数指示信息或者没有参数改变，则根据默认接收器参数对所述第一部分内容和所述第二部分内容进行解码。

29. 如权利要求 25 或 26 所述的接收端设备，其中，所述接收端设备还包括：

第二接收模块，用于接收所述发送端设备发送的第三消息，所述第三消息用于指示所述第二消息是否包括参数指示信息，且若所述第三消息指示所述第二消息包括参数指示信息，则所述第二消息与所述第一消息之间存在间隙，若所述第三消息指示所述第二消息不包括参数指示信息，则所述第二消息与所述第一消息之间不存在间隙。

30. 一种发送端设备，包括：

第一发送模块，用于发送端设备向接收端设备发送与第一消息关联的第二消息，所述第二消息用于所述接收端设备确定解码所述第一消息的目标接收器参数；以及

第二发送模块，用于向所述接收端设备发送所述第一消息。

31. 如权利要求 30 所述的发送端设备，其中，若所述第二消息包括参数指示信息，则所述目标接收器参数为所述参数指示信息指示的接收器参数；

若所述第二消息不包括参数指示信息，则所述目标接收器参数为所述接收端设备默认的接收器参数。

32. 如权利要求 30 或 31 所述的发送端设备，其中，若所述第二消息是在预先确定的参数切换指示集对应的调度时间单位内接收到的，则所述第二消息包括参数指示信息，且所述第二消息与所述第一消息之间存在间隙；

若所述第二消息是在所述参数切换指示集对应的调度时间单位外接收到的，则所述第二消息不包括参数指示信息，且所述第二消息与所述第一消息之间不存在间隙。

33. 如权利要求 30 或 31 所述的发送端设备，其中，所述第一消息分为时域上连续的第一部分内容和第二部分内容，且所述第一部分内容在所述第二部分内容的前面，以及所述第一部分内容与所述第二消息在时域连续，所述第二消息在所述第一部分内容之前。

34. 如权利要求 30 或 31 所述的发送端设备，其中，所述发送端设备还包括：

第三发送模块，用于向所述接收端设备发送第三消息，所述第三消息用于指示所述第二消息是否包括参数指示信息，且若所述第三消息指示所述第二消息包括参数指示信息，则所述第二消息与所述第一消息之间存在间隙，若所述第三消息指示所述第二消息不包括参数指示信息，则所述第二消息与所述第一消息之间不存在间隙。

35. 一种接收端设备，包括：处理器、存储器及存储在所述存储器上并可在所述处理器上运行的计算机程序，所述计算机程序被所述处理器执行时实现如权利要求 1 至 12 中任一项所述的消息解码方法中的步骤。

36. 一种发送端设备，包括：处理器、存储器及存储在所述存储器上并可在所述处理器上运行的计算机程序，所述计算机程序被所述处理器执行时实现如权利要求 13 至 24 中任一项所述的消息解码方法中的步骤。

37. 一种计算机可读存储介质，所述计算机可读存储介质上存储有计算

机程序，所述计算机程序被处理器执行时实现如权利要求 1 至 12 中任一项所述的消息解码方法中的步骤。

38. 一种计算机可读存储介质，所述计算机可读存储介质上存储有计算机程序，所述计算机程序被处理器执行时实现如权利要求 13 至 24 中任一项所述的消息解码方法中的步骤。

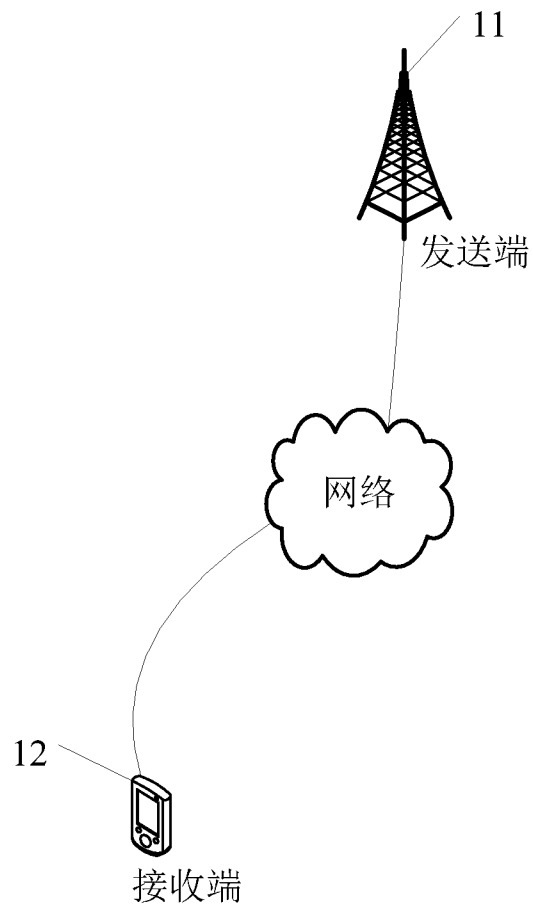


图 1

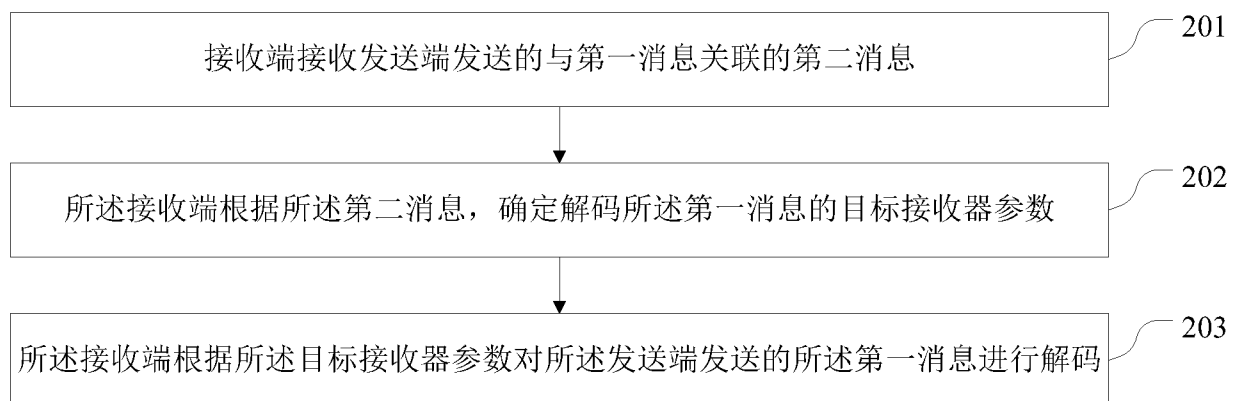


图 2

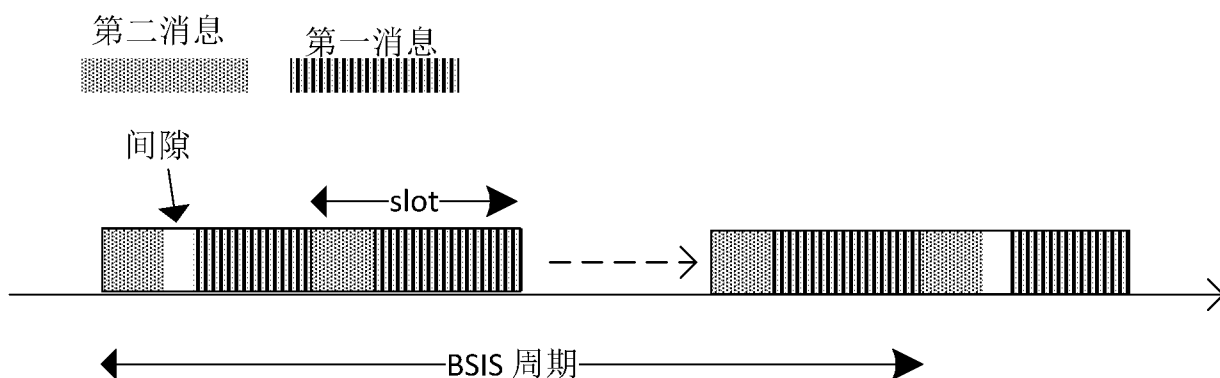


图 3

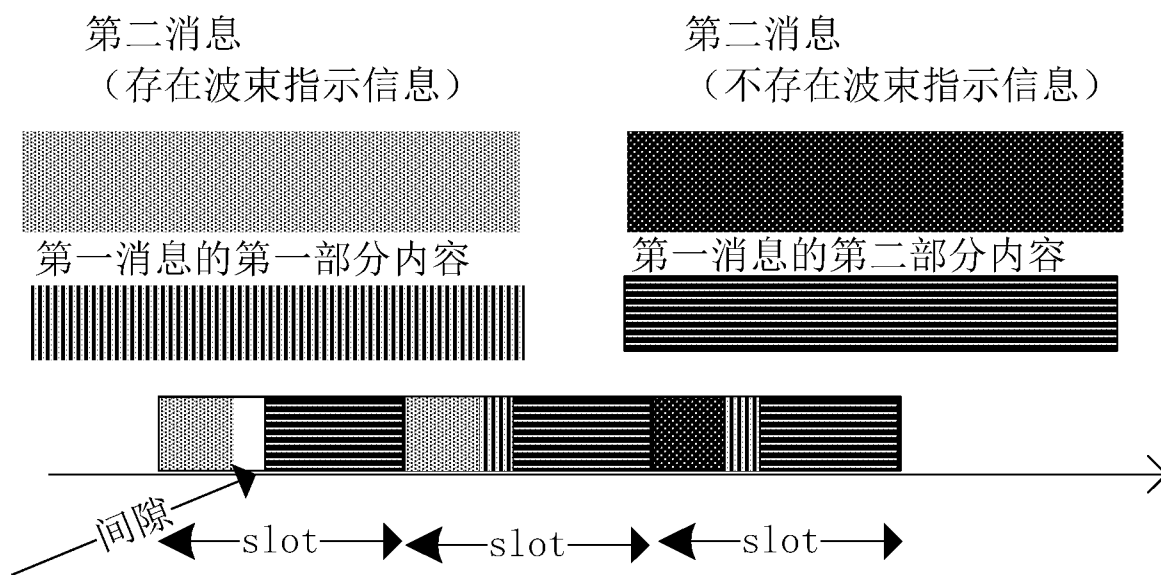


图 4

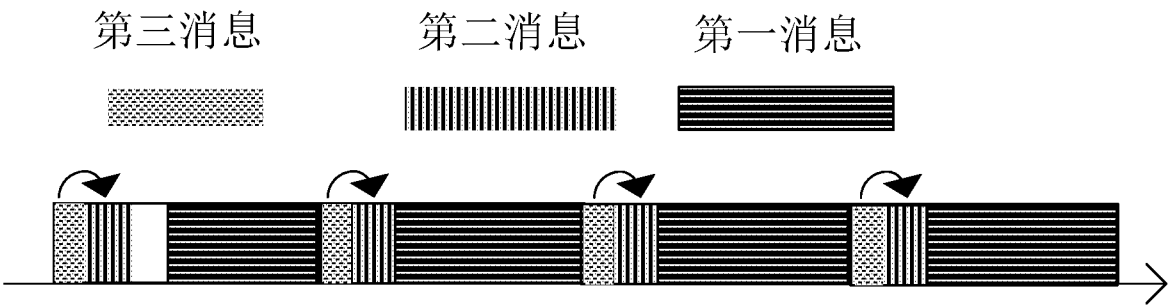


图 5

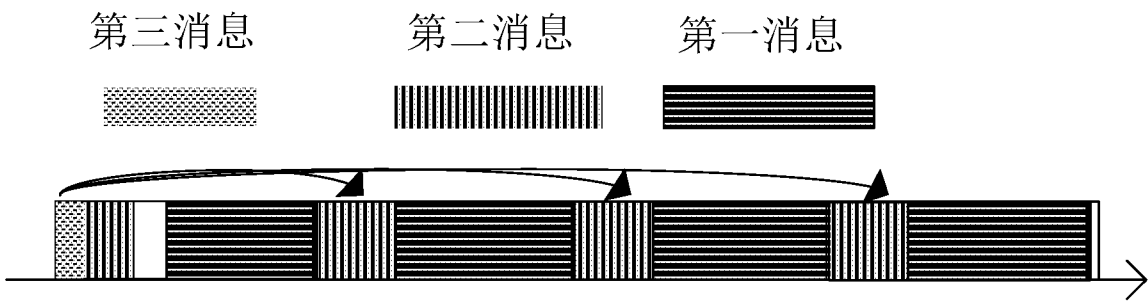


图 6

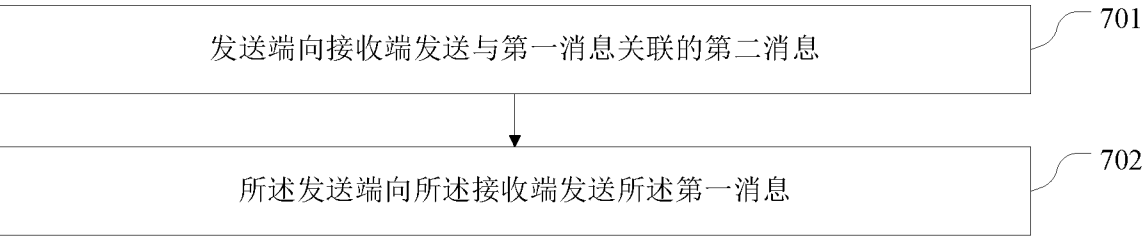


图 7

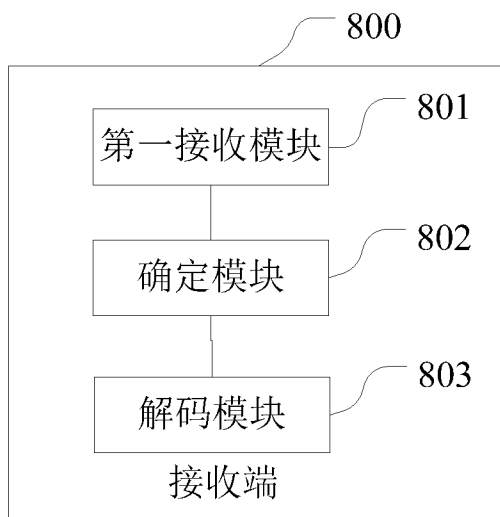


图 8

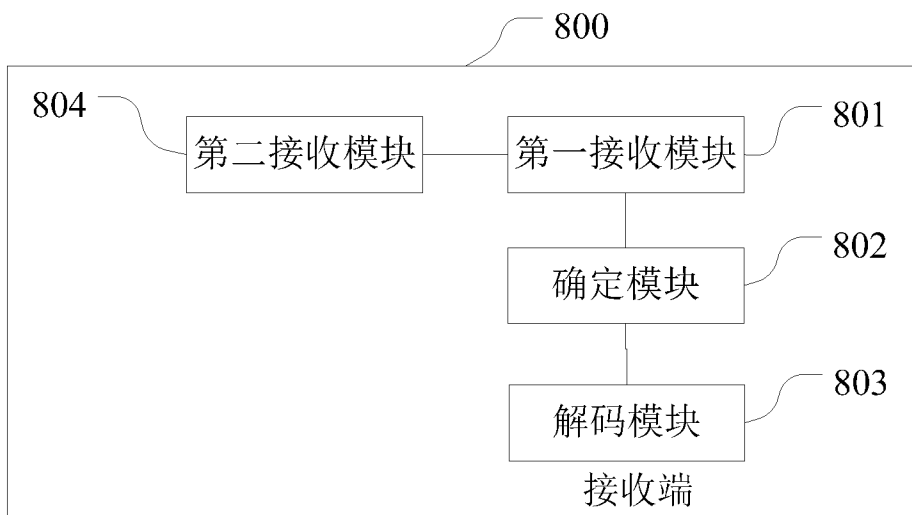


图 9

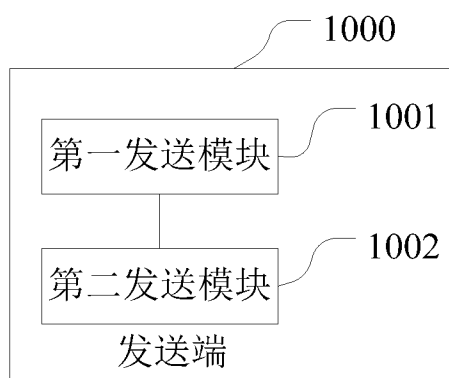


图 10

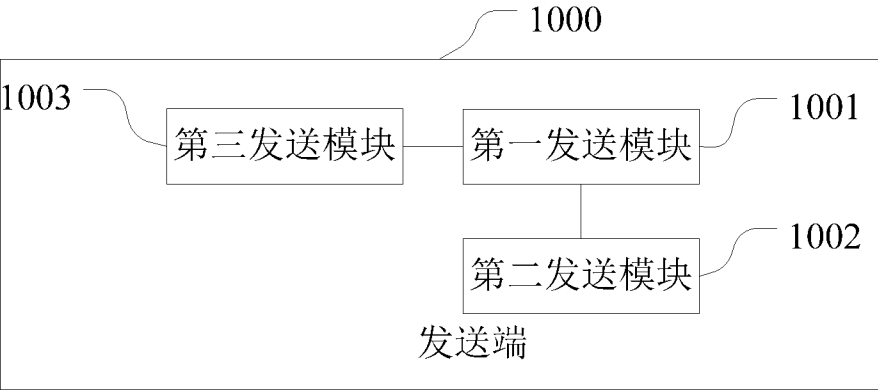


图 11

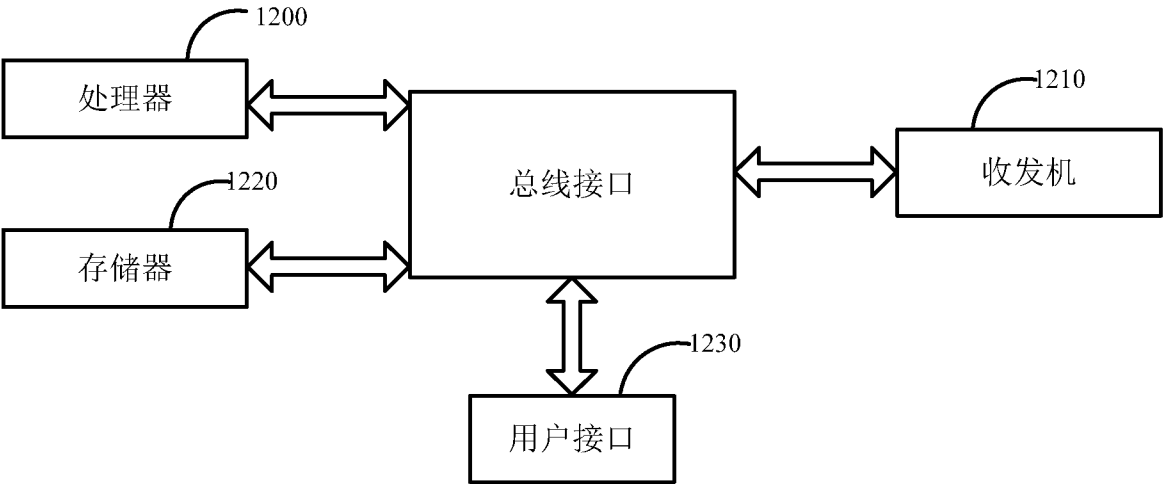


图 12

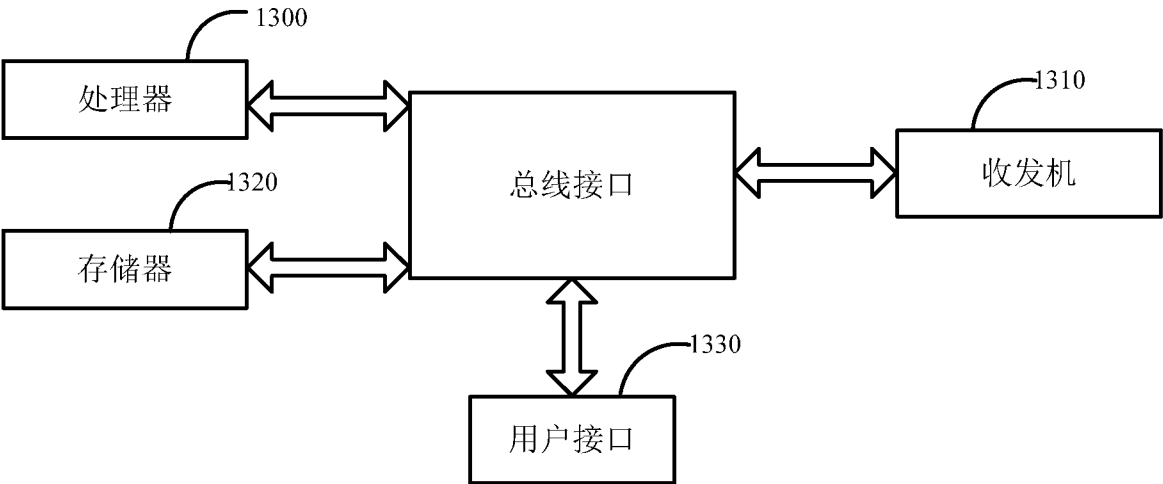


图 13

INTERNATIONAL SEARCH REPORT

International application No.
PCT/CN2018/082472

A. CLASSIFICATION OF SUBJECT MATTER

H04L 29/02 (2006.01) i

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

H04L; H04W; H04Q

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

CNPAT, CNKI, EPODOC, WPI, 3GPP: 解码, 盲检, 检测, 指示, 推荐, 通知, 接收器参数, 接收参数, 波束, decod???, indicat???, inform???, beam, receiv+, parameter

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	CATT, "Beam Management for Control and Data Channel", 3GPP TSG RAN WG1 AH_NR Meeting R1-1700192, 20 January 2017 (20.01.2017), section 2	1-38
X	CATT, "Beamforming for Data and Control Channel", 3GPP TSG RAN WG1 Meeting #87 R1-1611386, 18 November 2016 (18.11.2016), section 2	1-38
A	SONY, "RACH Procedure for Multi-beam Operation", 3GPP TSG RAN WG1 Meeting #88bis R1-1705212, 07 April 2017 (07.04.2017), entire document	1-38
A	INTEL CORPORATION, "On Beam Indication on Control and Data Channel", 3GPP TSG RAN WG1 #88 R1-1702200, 17 February 2017 (17.02.2017), entire document	1-38
A	CN 104380140 A (TELEFONAKTIEBOLAGET LM ERICSSON), 25 February 2015 (25.02.2015), entire document	1-38
A	EP 2661033 A2 (MEDIA TEK SINGAPORE PTE LTD.), 06 November 2013 (06.11.2013), entire document	1-38

☒ Further documents are listed in the continuation of Box C.

☒ See patent family annex.

* Special categories of cited documents:	"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"A" document defining the general state of the art which is not considered to be of particular relevance	"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"E" earlier application or patent but published on or after the international filing date	"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)	"&" document member of the same patent family
"O" document referring to an oral disclosure, use, exhibition or other means	
"P" document published prior to the international filing date but later than the priority date claimed	

Date of the actual completion of the international search 05 June 2018	Date of mailing of the international search report 27 June 2018
Name and mailing address of the ISA State Intellectual Property Office of the P. R. China No. 6, Xitucheng Road, Jimenqiao Haidian District, Beijing 100088, China Facsimile No. (86-10) 62019451	Authorized officer LIU, Hanyan Telephone No. 86-010-53961659

Form PCT/ISA/210 (second sheet) (January 2015)

INTERNATIONAL SEARCH REPORT

International application No.
PCT/CN2018/082472

C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	WO 2016066536 A1 (SONY CORPORATION et al.), 06 May 2016 (06.05.2016), entire document	1-38

Form PCT/ISA/210 (continuation of second sheet) (January 2015)

INTERNATIONAL SEARCH REPORT
Information on patent family members

International application No.
PCT/CN2018/082472

Patent Documents referred in the Report	Publication Date	Patent Family	Publication Date
CN 104380140 A	25 February 2015	US 2016195603 A1	07 July 2016
		WO 2013185322 A1	19 December 2013
		EP 2748633 A1	02 July 2014
EP 2661033 A2	06 November 2013	US 2016191136 A1	30 June 2016
		US 2013343211 A1	26 December 2013
WO 2016066536 A1	06 May 2016	CN 107079454 A	18 August 2017
		US 2017303255 A1	19 October 2017
		JP 2017533671 A	09 November 2017
		EP 3213574 A1	06 September 2017

Form PCT/ISA/210 (patent family annex) (January 2015)

国际检索报告

国际申请号

PCT/CN2018/082472

A. 主题的分类

H04L 29/02 (2006.01) i

按照国际专利分类 (IPC) 或者同时按照国家分类和 IPC 两种分类

B. 检索领域

检索的最低限度文献 (标明分类系统和分类号)

H04L; H04W; H04Q

包含在检索领域中的除最低限度文献以外的检索文献

在国际检索时查阅的电子数据库 (数据库的名称, 和使用的检索词 (如使用))

CNPAT, CNKI, EPODOC, WPI, 3GPP: 解码, 盲检, 检测, 指示, 推荐, 通知, 接收器参数, 接收参数, 波束, decod???, indicat???, inform???, beam, receiv+, parameter

C. 相关文件

类 型*	引用文件, 必要时, 指明相关段落	相关的权利要求
X	CATT. "Beam management for control and data channel" 3GPP TSG RAN WG1 AH_NR Meeting R1-1700192, 2017年 1月 20日 (2017 - 01 - 20), 第2节	1-38
X	CATT. "Beamforming for data and control channel" 3GPP TSG RAN WG1 Meeting #87 R1-1611386, 2016年 11月 18日 (2016 - 11 - 18), 第2节	1-38
A	SONY. "RACH Procedure for Multi-beam Operation" 3GPP TSG RAN WG1 Meeting #88bis R1-1705212, 2017年 4月 7日 (2017 - 04 - 07), 全文	1-38
A	INTEL CORPORATION. "On beam indication on control and data channel" 3GPP TSG RAN WG1 #88 R1-1702200, 2017年 2月 17日 (2017 - 02 - 17), 全文	1-38
A	CN 104380140 A (爱立信中国通信有限公司) 2015年 2月 25日 (2015 - 02 - 25) 全文	1-38
A	EP 2661033 A2 (MEDIA TEK SINGAPORE PTE LTD.) 2013年 11月 6日 (2013 - 11 - 06) 全文	1-38

☒ 其余文件在C栏的续页中列出。☒ 见同族专利附件。

* 引用文件的具体类型:

“A” 认为不特别相关的表示了现有技术一般状态的文件

“E” 在国际申请日的当天或之后公布的在先申请或专利

“L” 可能对优先权要求构成怀疑的文件, 或为确定另一篇引用文件的公布日而引用的或者因其他特殊理由而引用的文件 (如具体说明的)

“O” 涉及口头公开、使用、展览或其他方式公开的文件

“P” 公布日先于国际申请日但迟于所要求的优先权日的文件

“T” 在申请日或优先权日之后公布, 与申请不相抵触, 但为了理解发明之理论或原理的在后文件

“X” 特别相关的文件, 单独考虑该文件, 认定要求保护的发明不是新颖的或不具有创造性

“Y” 特别相关的文件, 当该文件与另一篇或者多篇该类文件结合并且这种结合对于本领域技术人员为显而易见时, 要求保护的发明不具有创造性

“&” 同族专利的文件

国际检索实际完成的日期

2018年 6月 5日

国际检索报告邮寄日期

2018年 6月 27日

ISA/CN的名称和邮寄地址

中华人民共和国国家知识产权局 (ISA/CN)
中国北京市海淀区蓟门桥西土城路6号 100088

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刘寒艳

传真号 (86-10) 62019451

电话号码 86-010-53961659

表 PCT/ISA/210 (第2页) (2015年1月)

C. 相关文件

类 型*	引用文件，必要时，指明相关段落	相关的权利要求
A	WO 2016066536 A1 (SONY CORPORATION等) 2016年 5月 6日 (2016 - 05 - 06) 全文	1-38

国际检索报告
关于同族专利的信息

国际申请号

PCT/CN2018/082472

检索报告引用的专利文件			公布日 (年/月/日)	同族专利			公布日 (年/月/日)
CN	104380140	A	2015年 2月 25日	US	2016195603	A1	2016年 7月 7日
				WO	2013185322	A1	2013年 12月 19日
				EP	2748633	A1	2014年 7月 2日
EP	2661033	A2	2013年 11月 6日	US	2016191136	A1	2016年 6月 30日
				US	2013343211	A1	2013年 12月 26日
WO	2016066536	A1	2016年 5月 6日	CN	107079454	A	2017年 8月 18日
				US	2017303255	A1	2017年 10月 19日
				JP	2017533671	A	2017年 11月 9日
				EP	3213574	A1	2017年 9月 6日

表 PCT/ISA/210 (同族专利附件) (2015年1月)