

blocks, so as to ensure that the transmission blocks are transmitted and received well. That is, no transmission is performed during the preset time interval.

[0179] FIG. 2B is a schematic diagram illustrating receiving transmission blocks according to an example of the present disclosure. As illustrated in FIG. 2B, for example, receiving the 4 transmission blocks from the base station is still taken as an example. Since in the plurality of transmission blocks, two adjacent transmission blocks are spaced by the preset time interval t_0 , a time period between receiving the PDSCH1 and receiving the PDSCH2, t_1+t_0 , is given to the user equipment to demodulate the first transmission block from the PDSCH1. Therefore, it can be guaranteed to a large extent that when receiving the PDSCH2, the user equipment has completed the demodulation of another PDSCH resource and thus can demodulate the PDSCH2. Accordingly, it can be guaranteed that the 4 transmission blocks are demodulated by the user equipment, so as to ensure that the transmission blocks are received well.

[0180] FIG. 3 is a schematic flowchart illustrating another method of processing transmission blocks according to an example of the present disclosure. As illustrated in FIG. 3, on the basis of the example illustrated in FIG. 1, the method further includes:

[0181] at step S3, the preset time interval is determined based on a communication protocol with the base station before the plurality of transmission blocks are transmitted to the base station or received from the base station.

[0182] In one embodiment, the preset time interval may be configured in the communication protocol between the base station and the user equipment in advance, so that the user equipment can directly determine the preset time interval based on the communication protocol when communicating with the base station. In some embodiments, the user equipment may determine the preset time interval before transmitting the plurality of transmission blocks to the base station, or the user equipment may determine the preset time interval before receiving the plurality of transmission blocks from the base station.

[0183] FIG. 4 is a schematic flowchart illustrating another method of processing transmission blocks according to an example of the present disclosure. As illustrated in FIG. 4, on the basis of the example illustrated in FIG. 1, the method further includes:

[0184] at step S4, the preset time interval is determined based on data processing capability information of the user equipment before transmitting the plurality of transmission blocks to the base station or receiving the plurality of transmission blocks from the base station; and

[0185] at step S5, the preset time interval is sent to the base station.

[0186] In one embodiment, the user equipment may determine the preset time interval based on its own data processing capability information. For example, the weaker the data processing

according to an example of the present disclosure. As illustrated in FIG. 37, on the basis of the example illustrated in FIG. 33, the interval sending module 5' includes:

[0318] a data size determining submodule 510', configured to determine a data size of transmission block;

[0319] a third interval determining submodule 511', configured to determine a plurality of time intervals based on the data size of transmission block;

[0320] a fourth interval determining submodule 512', configured to determine the preset time interval from the plurality of time intervals; and

[0321] an interval sending submodule 509', configured to send the preset time interval to the user equipment through a radio resource control signaling or a physical downlink control channel message.

[0322] Regarding the apparatus in the foregoing examples, the specific manner in which each module performs its operation has been described in detail in the examples of the corresponding method, and will not be repeated here.

[0323] Since the apparatus examples essentially correspond to the method examples, reference may be made to the description of related parts of the method examples. The apparatus examples described above are merely illustrative, where the units described as separate members may be or not be physically separated, and the members displayed as units may be or not be physical units, i.e., may be located in one place, or may be distributed to a plurality of network units. Some or all of the modules may be selected according to actual needs to achieve the objectives of the implementations of the examples. It can be understood and implemented by those of ordinary skill in the art without any creative effort.

[0324] FIG. 38 is a structural schematic diagram illustrating a device for processing transmission blocks according to an example of the present disclosure. The device 3800 may be provided as a base station. As illustrated in FIG. 38, the device 3800 includes a processing component 3822, a wireless transmission/reception component 3824, an antenna component 3826, and a signal processing part peculiar to the wireless interface. The processing component 3822 may further include one or more processors. One of the processors in the processing component 3822 may be configured to perform the method of processing transmission blocks described by any one of the foregoing examples illustrated in FIGs. 11-19.

[0325] FIG. 39 is a structural schematic diagram illustrating a device 3900 for processing transmission blocks according to an example of the present disclosure. For example, the device 3900 may be a mobile phone, a computer, a digital broadcasting terminal, a messaging device,

a game console, a tablet device, a medical device, a fitness device, a personal digital assistant, and the like.

[0326] As illustrated in FIG. 39, the device 3900 may include one or more of the following components: a processing component 3902, a memory 3904, a power supply component 3906, a multimedia component 3908, an audio component 3910, an input/output (I/O) interface 3912, a sensor component 3914, and a communication component 3916.

[0327] The processing component 3902 generally controls the overall operations of the device 3900, such as operations associated with display, phone calls, data communications, camera operations, and recording operations. The processing element 3902 may include one or more processors 3920 to execute instructions to complete all or part of the steps of the above method illustrated in FIGs. 1-10. In addition, the processing component 3902 may include one or more modules which facilitate the interaction between the processing component 3902 and other components. For example, the processing component 3902 may include a multimedia module to facilitate the interaction between the multimedia component 3908 and the processing component 3902.

[0328] The memory 3904 is configured to store various types of data to support the operation of the device 3900. Examples of such data include instructions for any application or method operated on the device 3900, contact data, phonebook data, messages, pictures, videos, and the like. The memory 3904 may be implemented by any type of volatile or non-volatile storage device or a combination thereof, such as static random access memory (SRAM), electrically erasable programmable read only memory (EEPROM), erasable programmable Read Only Memory (EPROM), programmable Read Only Memory (PROM), Read Only Memory (ROM), Magnetic Memory, Flash Memory, Disk or Optical Disk.

[0329] The power supply component 3906 provides power to different components of the device 3900. The power supply component 3906 may include a power management system, one or more power supplies, and other components associated with generating, managing, and distributing power for the device 3900.

[0330] The multimedia component 3908 includes a screen providing an output interface between the device 3900 and a user. In some embodiments, the screen may include a liquid crystal display (LCD) and a touch panel (TP). If the screen includes the TP, the screen may be implemented as a touch screen to receive input signals from the user. The TP may include one or more touch sensors to sense touches, swipes, and gestures on the TP. The touch sensors may not only sense a boundary of a touch or swipe, but also sense a lasting time and a pressure associated with the touch or swipe. In some embodiments, the multimedia component 3908

includes a near field communication (NFC) module to facilitate short-range communication. For example, the NFC module may be implemented based on a radio frequency identification (RFID) technology, an infrared data association (IrDA) technology, an ultra-wideband (UWB) technology, a Bluetooth® (BT) technology and other technologies.

[0335] In some exemplary embodiments, the device 3900 may be implemented by one or more Application Specific Integrated Circuits (ASICs), Digital Signal Processors (DSPs), Digital Signal Processing Devices (DSPDs), Programmable Logic Devices (PLDs), Field Programmable Gate Arrays (FPGAs), controllers, microcontrollers, microprocessors, or other electronic components for performing the method of processing transmission blocks described in any of the above examples.

[0336] In some exemplary embodiments, there is also provided a non-transitory computer-readable storage medium including instructions, such as the memory 3904 including instructions executable by the processor 3920 of the device 3900 to implement the above methods illustrated in FIGs. 1-10. For example, the non-transitory computer-readable storage medium may be a Read-Only Memory (ROM), a Random Access Memory (RAM), a CD-ROM, a magnetic tape, a floppy disk, an optical data storage device, and the like.

[0337] Other implementations of the present disclosure will be readily apparent to those skilled in the art after implementing the disclosure by referring to the specification. The present disclosure is intended to cover any variations, uses, or adaptations of the present disclosure that are in accordance with the general principles thereof and include common general knowledge or conventional technical means in the art that are not disclosed in the present disclosure. The specification and examples therein are only illustrative, and the scope and spirit of the present disclosure are to be indicated by appended claims.

[0338] It should be understood that the present disclosure is not limited to the above described accurate structures illustrated in the drawings, and various modifications and changes can be made to the present disclosure without departing from the scope thereof. The scope of the present disclosure is to be limited only by the appended claims.

[0339] It should be noted that the relational terms such as “first” and “second” used herein are merely intended to distinguish one entity or operation from another entity or operation rather than to require or imply any such actual relationship or order existing between these entities or operations. Also, the term “including”, “containing”, or any variation thereof is intended to encompass non-exclusive inclusion, so that a process, method, article, or device including a series of elements includes not only those elements but also other elements not listed explicitly

CLAIMS

1. A method of processing transmission blocks, applied to user equipment, wherein the user equipment is a Narrow Band Internet of Things (NB-IoT) type device, or a Machine Type Communication (MTC) type device, and the method comprising:

5 receiving a scheduling signaling from a base station, wherein the scheduling signaling is configured to schedule a plurality of transmission blocks; and
transmitting the plurality of transmission blocks to the base station and/or receiving the plurality of transmission blocks from the base station,
wherein two adjacent transmission blocks of the plurality of transmission blocks are spaced
10 by a preset time interval; and
no transmission is performed during the preset time interval.

2. The method according to claim 1, further comprising:

before transmitting the plurality of transmission blocks to the base station and/or receiving
15 the plurality of transmission blocks from the base station, determining the preset time interval based on a communication protocol with the base station.

3. The method according to claim 1, further comprising:

before transmitting the plurality of transmission blocks to the base station and/or receiving
20 the plurality of transmission blocks from the base station, determining the preset time interval based on data processing capability information of the user equipment; and
sending the preset time interval to the base station.

4. The method according to claim 3, wherein sending the preset time interval to the base
25 station comprises:

determining indication information corresponding to the preset time interval based on a pre-stored first association relationship between preset time intervals and indication information; and

sending the indication information to the base station;
30 wherein the first association relationship is pre-stored in the user equipment and the base station.

5. The method according to claim 1, further comprising:

before transmitting the plurality of transmission blocks to the base station and/or receiving the plurality of transmission blocks from the base station, receiving the preset time interval from the base station.

5 6. The method according to claim 5, wherein receiving the preset time interval from the base station comprises:

receiving a data size of transmission block from the base station; and

determining the preset time interval corresponding to the data size based on a pre-stored second association relationship between data sizes and preset time intervals;

10 wherein the second association relationship is pre-stored in the user equipment and the base station.

7. The method according to claim 5, wherein receiving the preset time interval from the base station comprises:

15 determining a plurality of time intervals by receiving a radio resource control signaling; and

determining the preset time interval from the plurality of time intervals by receiving a physical downlink control channel message.

20 8. The method according to claim 5, wherein receiving the preset time interval from the base station comprises:

determining a plurality of time intervals based on data processing capability information of the user equipment; and

25 determining the preset time interval from the plurality of time intervals by receiving a radio resource control signaling or a physical downlink control channel message.

9. The method according to claim 5, wherein receiving the preset time interval from the base station comprises:

receiving a data size of transmission block from the base station;

30 determining a plurality of time intervals based on the data size; and

determining the preset time interval from the plurality of time intervals by receiving a radio resource control signaling or a physical downlink control channel message.

10. The method according to claim 1, wherein the preset time interval is configured to demodulate the previous transmission block.

5 11. The method according to claim 1, wherein two adjacent transmission blocks of the plurality of transmission blocks are spaced by the preset time interval with a same length.

12. The method according to claim 1, wherein the plurality of transmission blocks are with the same size.

10 13. A method of processing transmission blocks, applied to a base station and comprising: sending a scheduling signaling to user equipment, wherein the user equipment is a Narrow Band Internet of Things (NB-IoT) type device, or a Machine Type Communication (MTC) type device, and the scheduling signaling is configured to schedule a plurality of transmission blocks; and

15 transmitting the plurality of transmission blocks to the user equipment and/or receiving the plurality of transmission blocks from the user equipment,

wherein two adjacent transmission blocks of the plurality of transmission blocks are spaced by a preset time interval; and

no transmission is performed during the preset time interval.

20

14. The method according to claim 13, further comprising:

before transmitting the plurality of transmission blocks to the user equipment and/or receiving the plurality of transmission blocks from the user equipment, determining the preset time interval based on a communication protocol with the user equipment.

25

15. The method according to claim 13, further comprising:

before transmitting the plurality of transmission blocks to the user equipment and/or receiving the plurality of transmission blocks from the user equipment, receiving the preset time interval from the user equipment.

30

16. The method according to claim 15, wherein receiving the preset time interval from the user equipment comprises:

receiving indication information corresponding to the preset time interval from the user equipment; and

determining the preset time interval corresponding to the indication information based on a pre-stored first association relationship between preset time intervals and indication information.

17. The method according to claim 13, further comprising:

before transmitting the plurality of transmission blocks to the user equipment and/or receiving the plurality of transmission blocks from the user equipment, sending the preset time interval to the user equipment.

18. The method according to claim 17, wherein sending the preset time interval to the user equipment comprises:

determining a data size of transmission block;

sending the data size to the user equipment; and

determining the preset time interval corresponding to the data size based on a pre-stored second association relationship between data sizes and preset time intervals;

wherein the second association relationship is pre-stored in the user equipment and the base station.

19. The method according to claim 17, wherein sending the preset time interval to the user equipment comprises:

sending a plurality of time intervals to the user equipment through a radio resource control signaling; and

indicating the preset time interval among the plurality of time intervals to the user equipment through a physical downlink control channel message.

20. The method according to claim 17, wherein sending the preset time interval to the user equipment comprises:

receiving data processing capability information from the user equipment;

determining a plurality of time intervals based on the data processing capability information;

determining the preset time interval from the plurality of time intervals; and

sending the preset time interval to the user equipment through a radio resource control signaling or a physical downlink control channel message.

5 21. The method according to claim 17, wherein sending the preset time interval to the user equipment comprises:
 determining a data size of transmission block;
 determining a plurality of time intervals based on the data size of transmission block;
 determining the preset time interval from the plurality of time intervals; and
10 sending the preset time interval to the user equipment through a radio resource control signaling or a physical downlink control channel message.

22. The method according to claim 13, wherein the preset time interval is configured to demodulate the previous transmission block.

15 23. The method according to claim 13, wherein two adjacent transmission blocks of the plurality of transmission blocks are spaced by the preset time interval with a same length.

24. The method according to claim 13, wherein the plurality of transmission blocks are with the same size.
20