

What is claimed is:

1. A data transmission method, comprising:

when the HARQ buffer is empty, according to a carrier access manner allowed by the user equipment, selecting, by the user equipment, one current grant of Semi-Persistent scheduling to transmit new data or multiple current grants of Semi-Persistent scheduling to transmit new data, or one current grant of dynamic scheduling to transmit new data;

wherein the according to the carrier access manner allowed by the user equipment, selecting, by the user equipment, one current grant of Semi-Persistent scheduling to transmit new data or multiple current grants of Semi-Persistent scheduling to transmit new data, or one current grant of dynamic scheduling to transmit new data, comprises:

when the HARQ buffer is empty, there are currently N grants of Semi-Persistent scheduling, and the user equipment is not allowed to use a non-single carrier access manner, selecting, by the user equipment, one of the N grants of Semi-Persistent scheduling to transmit new data, wherein the N is an integer greater than 1;

when the HARQ buffer is empty, there are currently N grants of Semi-Persistent scheduling, and the user equipment is allowed to use a non-single carrier access manner, selecting, by the user equipment, multiple grants among the N grants of Semi-Persistent scheduling to transmit new data.

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

when the HARQ buffer is empty and there is currently a grant of dynamic scheduling, selecting, by the user equipment, the current grant of dynamic scheduling to transmit new data.

3. The method according to claim 1 or 2, wherein the selecting, by the user equipment, one of the N grants of Semi-Persistent scheduling to transmit new data comprises:

selecting, by the user equipment, one grant with the largest transmission block size (TBS) among the N grants of Semi-Persistent scheduling to transmit new data;

or, wherein the selecting, by the user equipment, one of the N grants of Semi-Persistent scheduling to transmit new data, comprises:

selecting, by the user equipment, one grant with the largest or smallest index among the N grants of Semi-Persistent scheduling to transmit new data.

4. A data transmission method, comprising:

monitoring, by the network device, resources of one current grant of Semi-Persistent

scheduling or multiple current grants of Semi-Persistent scheduling to obtain new data transmitted by the user equipment through the one current grant of Semi-Persistent scheduling or the multiple current grants of Semi-Persistent scheduling when the HARQ buffer is empty;

5 wherein when there are currently N grants of Semi-Persistent scheduling, and the N is an integer greater than 1, the monitoring, by the network device, the resources of the one current grant of Semi-Persistent scheduling, comprises:

monitoring, by the network device, resources of a grant with the largest transmission block size, TBS, among the current N grants of Semi-Persistent scheduling; or,

10 monitoring, by the network device, resources of a grant with the largest index or the smallest index among the current N grants of Semi-Persistent scheduling.

5. The method according to claim 4, wherein the method further comprises:

15 monitoring, by the network device, resources of a current grant of dynamic scheduling to obtain new data transmitted by the user equipment through the current grant of dynamic scheduling when the HARQ buffer is empty and there is the current grant of dynamic scheduling.

6. A user equipment, comprising a processing unit and a communication unit; wherein,

20 the processing unit is used for, when the HARQ buffer is empty, according to a carrier access manner allowed by the user equipment, selecting, through the communication unit, one current grant of Semi-Persistent scheduling to transmit new data or multiple current grants of Semi-Persistent scheduling to transmit new data, or one current grant of dynamic scheduling to transmit new data, wherein

25 when the HARQ buffer is empty, there are currently N grants of Semi-Persistent scheduling, and the user equipment is not allowed to use a non-single carrier access manner, the user equipment selects one of the N grants of Semi-Persistent scheduling to transmit new data, wherein the N is an integer greater than 1;

when the HARQ buffer is empty, there are currently N grants of Semi-Persistent scheduling, and the user equipment is allowed to use a non-single carrier access manner, the user equipment selects multiple grants among the N grants of Semi-Persistent scheduling to transmit new data.

30 7. A network device, comprising: a processing unit and a communication unit; wherein:

the processing unit is used for monitoring, through the communication unit, resources of

one current grant of Semi-Persistent scheduling or multiple current grants of Semi-Persistent scheduling to obtain new data transmitted by the user equipment through the one current grant of Semi-Persistent scheduling or the multiple current grants of Semi-Persistent scheduling when the HARQ buffer is empty; wherein

5        when there are currently N grants of Semi-Persistent scheduling, and the N is an integer greater than 1, the network device monitors resources of a grant with the largest transmission block size, TBS, among the current N grants of Semi-Persistent scheduling, or the network device monitors resources of a grant with the largest index or the smallest index among the current N grants of Semi-Persistent scheduling.

10        8. A computer-readable storage medium, wherein the computer-readable storage medium stores a computer program for electronic data interchange, wherein the computer program enables a computer to perform the method according to any one of claims 1-3.

15        9. A computer-readable storage medium, wherein the computer-readable storage medium stores a computer program for electronic data interchange, wherein the computer program enables a computer to perform the method according to claim 4 or claim 5.