

CLAIMS

1. An uplink data transmission method, comprising:
 - determining, by a User Equipment, UE, an uplink Bandwidth Part (BWP) for transmitting a Physical Uplink Shared Channel (PUSCH);
 - determining, by the UE, at least one PUSCH transmission parameter corresponding to the uplink BWP; and
 - transmitting, by the UE, the PUSCH on the uplink BWP according to the at least one PUSCH transmission parameter.
2. The method of claim 1, wherein determining, by the UE, the uplink BWP for transmitting the PUSCH comprises:
 - determining, by the UE, the uplink BWP for transmitting the PUSCH according to BWP indication information, Downlink Control Information (DCI) used to schedule the PUSCH comprising the BWP indication information.
3. The method of claim 1 or 2, further comprising:
 - receiving, by the UE, high-layer signaling sent by a network device, the high-layer signaling being used to configure at least one corresponding PUSCH transmission parameter for each uplink BWP of the UE, wherein
 - determining, by the UE, the at least one PUSCH transmission parameter corresponding to the uplink BWP comprises:
 - determining, by the UE, the at least one PUSCH transmission parameter corresponding to the uplink BWP according to the high-layer signaling.
4. The method of any one of claims 1-3, wherein the at least one PUSCH transmission parameter comprises at least one of: an uplink transmission mode, a codebook subset restriction configuration, a maximum uplink transmission layer number, a frequency selective precoding configuration and a Demodulation Reference Signal (DMRS) configuration.
5. The method of claim 4, wherein the uplink transmission mode comprises codebook-based transmission and/or non-codebook-based transmission.
6. The method of claim 4 or 5, wherein the codebook subset restriction configuration is configured to indicate a codebook subset available for the PUSCH in a predetermined codebook.
7. The method of any one of claims 4-6, wherein the maximum uplink transmission layer number is configured to determine a rank and/or precoding matrix available for the PUSCH.
8. The method of any one of claims 4-7, wherein the DMRS configuration is configured to indicate a parameter configuration for a DMRS of the PUSCH, and the DMRS configuration comprises at least one of: a DMRS type configuration, a DMRS time-frequency resource configuration, a DMRS sequence configuration and a DMRS

frequency hopping configuration.

9. The method of any one of claims 2-8, wherein transmitting, by the UE, the PUSCH on the uplink BWP according to the at least one PUSCH transmission parameter comprises:

transmitting, by the UE, the PUSCH on the uplink BWP according to the at least one PUSCH transmission parameter and scheduling information in the DCI used to schedule the PUSCH.

10. The method of claim 9, wherein the at least one PUSCH transmission parameter comprises the uplink transmission mode, and transmitting, by the UE, the PUSCH on the uplink BWP according to the at least one PUSCH transmission parameter and the scheduling information in the DCI comprises:

determining, by the UE, whether the DCI comprises Transmitted Rank Indication (TRI) information and Transmitted Precoding Matrix Indicator (TPMI) information according to the uplink transmission mode; and

responsive to that the DCI comprises the TRI information and the TPMI information, transmitting, by the UE, the PUSCH on the uplink BWP according to the determined TRI and TPMI information.

11. The method of claim 9 or 10, wherein the at least one PUSCH transmission parameter comprises the codebook subset restriction configuration, and transmitting, by the UE, the PUSCH on the uplink BWP according to the at least one PUSCH transmission parameter and the scheduling information in the DCI comprises:

determining, by the UE, a target codebook subset in the predetermined codebook according to the codebook subset restriction configuration;

determining, by the UE, the precoding matrix for transmission of the PUSCH in the target codebook subset according to Precoding Matrix Indicator, PMI, information in the DCI; and

transmitting, by the UE, the PUSCH on the uplink BWP according to the determined precoding matrix.

12. The method of any one of claims 9-11, wherein the at least one PUSCH transmission parameter comprises the maximum uplink transmission layer number, and transmitting, by the UE, the PUSCH on the uplink BWP according to the at least one PUSCH transmission parameter and the scheduling information in the DCI comprises:

determining, by the UE, a transmission layer number for transmission of the PUSCH according to the maximum uplink transmission layer number and the TRI information in the DCI; or, determining, by the UE, the transmission layer number for transmission of the PUSCH according to the maximum uplink transmission layer number and Sounding Reference Signal (SRS) Resource Indication (SRI) information in the DCI; and

transmitting, by the UE, the PUSCH on the uplink BWP according to the determined transmission layer number.

13. The method of any one of claims 9-12, wherein the at least one PUSCH transmission parameter comprises the DMRS configuration, and transmitting, by the

UE, the PUSCH on the uplink BWP according to the at least one PUSCH transmission parameter and the scheduling information in the DCI comprises:

determining, by the UE, a physical resource for the DMRS according to the DMRS configuration and DMRS port indication information in the DCI; and transmitting the DMRS of the PUSCH on the uplink WP according to the determined physical resource.

14. The method of any one of claims 9-12, wherein the at least one PUSCH transmission parameter comprises the DMRS sequence configuration, and transmitting, by the UE, the PUSCH on the uplink BWP according to the at least one PUSCH transmission parameter and the scheduling information in the DCI comprises:

determining, by the UE, a sequence for the DMRS according to the DMRS sequence configuration and DMRS scrambling sequence Identifier (ID) indication information in the DCI; and transmitting the DMRS of the PUSCH on the uplink WP according to the determined sequence.

15. The method of any one of claims 9-14, wherein the at least one PUSCH transmission parameter comprises the uplink transmission mode, and transmitting, by the UE, the PUSCH on the uplink BWP according to the at least one PUSCH transmission parameter and the scheduling information in the DCI comprises:

determining, by the UE, an SRS resource indicated by the SRI information in the DCI according to the uplink transmission mode;

determining, by the UE, a beam or precoding matrix for transmission of the PUSCH according to a beam or precoding matrix for the determined SRS resource; and

transmitting, by the UE, the PUSCH on the uplink BWP according to the determined beam or precoding matrix.

16. The method of any one of claims 4-15, wherein the at least one PUSCH transmission parameter comprises the frequency selective precoding configuration, and transmitting, by the UE, the PUSCH on the uplink BWP according to the at least one PUSCH transmission parameter comprises:

determining, by the UE, whether frequency selective precoding is required to be performed on data in the PUSCH according to the frequency selective precoding configuration; and transmitting the PUSCH on the uplink BWP according to a result of the determination.

17. The method of any one of claims 4-16, wherein the at least one PUSCH transmission parameter comprises the DMRS configuration, and transmitting, by the UE, the PUSCH on the uplink BWP according to the at least one PUSCH transmission parameter comprises:

determining, by the UE, the physical resource for the DMRS and/or the sequence for the DMRS according to the DMRS configuration; and transmitting the DMRS of the PUSCH on the uplink BWP according to the determined physical resource and/or sequence for the DMRS.

18. A user equipment (UE), comprising a processing unit and a communication unit, wherein

the processing unit is configured to determine an uplink Bandwidth Part (BWP) for transmitting a Physical Uplink Shared Channel (PUSCH);

the processing unit is further configured to determine at least one PUSCH transmission parameter corresponding to the uplink BWP; and

the processing unit is further configured to transmit the PUSCH on the uplink BWP through the communication unit according to the at least one PUSCH transmission parameter.

19. A user equipment (UE), comprising one or more processors, one or more memories, one or more transceivers and one or more programs, the one or more programs being stored in the memory and configured to be executed by the one or more processors and the programs comprising instructions for executing the steps in the method of any one of claims 1-17.

20. A computer-readable storage medium, storing a computer program configured for electronic data exchange, the computer program enabling a computer to execute instructions for the steps in the method of any one of claims 1-17.