CLAIMS

1. A method for mapping a physical uplink shared channel PUSCH signal, applied to a terminal and comprising:

determining, according to a frequency domain resource allocation type for the terminal and frequency domain resource allocation information for the terminal, a target resource block allocated to a PUSCH, wherein the target resource block comprises a first target virtual resource block VRB or a first target physical resource block PRB;

determining, according to the frequency domain resource allocation type and/or a scheduling mode of the PUSCH, a mapping mode of mapping a PUSCH signal to a second target PRB, wherein the second target PRB is the first target PRB or a PRB corresponding to the first target VRB; and

mapping the PUSCH signal to the second target PRB by using the mapping mode.

2. The method according to claim 1, wherein the determining, according to a frequency domain resource allocation type for the terminal and frequency domain resource allocation information for the terminal, a target resource block allocated to a PUSCH comprises:

in a case that the frequency domain resource allocation type is UL resource allocation type 2, and that the PUSCH is scheduled by a random access response RAR uplink UL grant or the PUSCH is scheduled by a preset downlink control information format scrambled by a temporary cell radio network temporary identifier TC-RNTI, determining a common resource block CRB range of a target resource block RB set, wherein the target RB set is an RB set allocated to the PUSCH; and

determining, based on the CRB range and the frequency domain resource allocation information, the first target PRB allocated to the PUSCH.

3. The method according to claim 2, wherein the determining a common resource block CRB range of a target resource block RB set comprises:

determining the CRB range of the target RB set according to a first RB set planning scheme.

4. The method according to claim 3, wherein before the determining the CRB range of the target RB set according to a first RB set planning scheme, the method further comprises:

determining the first RB set planning scheme for a carrier according to a nominal intra-cell guard band and an RB set pattern of the carrier.

5. The method according to claim 2, wherein the determining a common resource block CRB range of a target resource block RB set comprises:

in a case that an active UL carrier bandwidth part BWP satisfies a first specified condition and a second specified condition, determining the CRB range of the target RB set according to a first RB set planning scheme, wherein the first specified condition is that the active UL BWP comprises all RBs in an initial UL BWP, and the second specified condition is that the active UL BWP has the same subcarrier spacing SCS and cyclic prefix CP as the initial UL BWP; or

in a case that the active UL BWP does not satisfy the first condition and/or does not satisfy the second condition, determining a CRB range of resource blocks in the target RB set according to a second RB set planning scheme.

6. The method according to claim 5, wherein before the determining a CRB range of resource blocks in the target RB set according to a second RB set planning scheme, the method further comprises:

determining the second RB set planning scheme for a carrier according to an intra-cell guard band configured for the terminal.

7. The method according to any one of claims 1 to 6, wherein the determining, according to the frequency domain resource allocation type and/or a scheduling mode of the PUSCH, a mapping mode of mapping a PUSCH signal to a second target PRB comprises:

determining, according to the frequency domain resource allocation type for the terminal, an index value of a second target VRB allocated to the PUSCH;

multiplying the PUSCH signal by an amplitude scaling factor, and mapping the resulting PUSCH signal to the second target VRB; and

in a case that the PUSCH is scheduled by the RAR UL grant or the PUSCH is scheduled by the preset downlink control information format scrambled by the TC-RNTI, determining, according to whether the terminal is configured to use interlaced PUSCH or whether the terminal is configured with UL resource allocation type 2, a mapping mode of mapping the PUSCH signal from the second target VRB to the second target PRB.

8. The method according to claim 7, wherein the determining, according to the frequency domain resource allocation type for the terminal, an index value of a second target VRB allocated to the PUSCH comprises:

in a case that the terminal is configured to use interlaced PUSCH or configured with UL resource allocation type 2, determining that the index value of the second target VRB is equal to an index value of the determined first target PRB; or

in a case that the terminal is not configured to use interlaced PUSCH or not configured with UL resource allocation type 2, determining that the second target VRB is the first target VRB.

9. The method according to claim 7, wherein the determining, according to whether the terminal is configured to use interlaced PUSCH or whether the terminal is configured with UL resource allocation type 2, a mapping mode of mapping the PUSCH signal from the second target VRB to the second target PRB comprises:

in a case that a first target condition, a second target condition, and a third target condition are all satisfied, mapping the n^{th} second target VRB to the $(n + N_{\mathrm{BWP},0}^{\mathrm{start}} - N_{\mathrm{BWP},i}^{\mathrm{start}})^{th}$ second target PRB, wherein $N_{\mathrm{BWP},0}^{\mathrm{start}}$ is a start CRB index of the initial UL BWP, $N_{\mathrm{BWP},i}^{\mathrm{start}}$ is a start CRB index of the active UL BWP, and n is an integer greater than or equal to 0; and

in a case that one or more of the first target condition, the second target condition, and the third target condition are not satisfied, mapping the n^{th} second target VRB to the n^{th} second target PRB; wherein

the first target condition is that the terminal is not configured to use interlaced PUSCH or not configured with UL resource allocation type 2;

the second target condition is that the active UL BWP comprises all RBs in the initial UL BWP; and

the third target condition is that the active UL BWP has the same subcarrier spacing SCS and cyclic prefix CP as the initial UL BWP.

10. The method according to any one of claims 1 to 6, wherein the determining a mapping mode of mapping a PUSCH signal to a second target PRB comprises:

in a case that the terminal is configured to use interlaced PUSCH or configured with UL resource allocation type 2, determining the mapping mode to be a second mapping mode, and in other cases, determining the mapping mode to be a first mapping mode, wherein the first mapping mode is mapping a PUSCH signal to a virtual resource block VRB first and then mapping the PUSCH signal from the VRB to a PRB, and the second mapping mode is directly mapping a PUSCH signal to a PRB.

11. The method according to claim 10, wherein the mapping the PUSCH signal to the second target PRB by using the mapping mode comprises:

in a case that the mapping mode is the second mapping mode, multiplying the PUSCH signal by an amplitude scaling factor, and then mapping the resulting PUSCH signal to the determined first target PRB.

12. A method for receiving a PUSCH signal, applied to a network-side device, wherein the method comprises:

determining, according to a frequency domain resource allocation type configured for a terminal and frequency domain resource allocation information indicated to the terminal, a PRB allocated to a PUSCH of the terminal; and

receiving, on the PRB, a PUSCH signal transmitted by the terminal.

13. The method according to claim 12, wherein the determining, according to a frequency domain resource allocation type configured for a terminal and frequency domain resource allocation information indicated to the terminal, a PRB allocated to a PUSCH of the terminal comprises:

in a case that the frequency domain resource allocation type is UL resource allocation type 2, and that the PUSCH is scheduled by an RAR uplink UL grant or the PUSCH is scheduled by a preset downlink control information format scrambled by a TC-RNTI, determining a common resource block CRB range of a target resource block RB set, wherein the target RB set is an RB set allocated to the PUSCH; and

determining, based on the CRB range and the frequency domain resource allocation information, the PRB allocated to the PUSCH.

14. The method according to claim 13, wherein the determining a common resource block CRB range of a target resource block RB set comprises:

determining a CRB range of resource blocks in the target RB set according to a first RB set planning scheme.

15. The method according to claim 14, wherein before the determining the CRB range of the target RB set according to a first RB set planning scheme, the method further comprises:

determining the first RB set planning scheme for a carrier according to a nominal intra-cell guard band and an RB set pattern of the carrier.

16. The method according to claim 13, wherein the determining a common resource block CRB range of resource blocks in the target resource block RB set comprises:

in a case that an active UL carrier bandwidth part BWP satisfies a first condition and a second condition, determining the CRB range of the resource blocks in the target RB set according to a first RB set planning scheme, wherein the first condition is that the active UL BWP comprises all RBs in an initial UL BWP, and the second condition is that the active UL BWP has the same subcarrier spacing SCS and cyclic prefix CP as the initial UL BWP; and

in a case that the active UL BWP does not satisfy the first condition and/or does not satisfy the second condition, determining a CRB range of resource blocks in the target RB set according to a second RB set planning scheme.

17. The method according to claim 16, wherein before the determining a CRB range of resource blocks in the target RB set according to a second RB set planning scheme, the method further comprises:

determining the second RB set planning scheme according to an intra-cell guard band configured for the terminal.

~~18. An apparatus for mapping a PUSCH signal, comprising:~~

~~a first determining module, configured to determine, according to a frequency domain resource allocation type of a terminal and frequency domain resource allocation information for the terminal, a target resource block allocated to a PUSCH, wherein the target resource block comprises a first target virtual resource block VRB or a first target physical resource block PRB;~~

~~a second determining module, configured to determine, according to the frequency domain resource allocation type and/or a scheduling mode of the PUSCH, a mapping mode of mapping a PUSCH signal to a second target PRB, wherein the second target PRB is the first target PRB or a PRB corresponding to the first target VRB; and~~

~~a mapping module, configured to map the PUSCH signal to the second target PRB by using the mapping mode.~~

~~19. The apparatus according to claim 18, wherein that the first determining module determines, according to a frequency domain resource allocation type for the terminal and frequency domain resource allocation information for the terminal, a target resource block allocated to a PUSCH comprises:~~

~~in a case that the frequency domain resource allocation type is UL resource allocation type 2, and that the PUSCH is scheduled by a random access response RAR uplink UL grant or the PUSCH is scheduled by a preset downlink control information format scrambled by a temporary cell radio network temporary identifier TC-RNTI, determining a common resource block CRB range of a target resource block RB set, wherein the target RB set is an RB set allocated to the PUSCH; and~~

~~determining, based on the CRB range and the frequency domain resource allocation information, the first target PRB allocated to the PUSCH.~~

~~20. The apparatus according to claim 19, wherein that the first determining module determines a common resource block CRB range of a target resource block RB set comprises:~~

~~determining the CRB range of the target RB set according to a first RB set planning scheme.~~

~~21. The apparatus according to claim 20, wherein the first determining module is further configured to, before determining the CRB range of the target RB set according to the first RB set planning scheme, determine the first RB set planning scheme for a carrier according to a nominal intra-cell guard band and an RB set pattern of the carrier.~~

~~22. The apparatus according to claim 19, wherein that the determining module determines a common resource block CRB range of a target resource block RB set comprises:~~

~~in a case that an active UL carrier bandwidth part BWP satisfies a first condition and a second condition, determining the CRB range of the target RB set according to a first RB set planning scheme, wherein the first condition is that the active UL BWP comprises all RBs in an initial UL BWP, and the second condition is that the active UL BWP has the same subcarrier spacing SCS and cyclic prefix CP as the initial UL BWP; and~~

~~in a case that the active UL BWP does not satisfy the first condition and/or does not satisfy the second condition, determining a CRB range of resource blocks in the target RB set according to a second RB set planning scheme.~~

~~23. The apparatus according to claim 22, wherein the first determining module is further configured to: before determining the CRB range of resource blocks in the target RB set according to the second RB set planning scheme, determine the second RB set planning scheme for a carrier according to an intra-cell guard band configured for the terminal.~~

~~24. The apparatus according to any one of claims 18 to 23, wherein that the second determining module determines, according to the frequency domain resource~~

~~allocation type and/or a scheduling mode of the PUSCH, a mapping mode of mapping a PUSCH signal to a second target PRB comprises:~~

~~determining, according to the frequency domain resource allocation type for the terminal, an index value of a second target VRB allocated to the PUSCH;~~

~~multiplying the PUSCH signal by an amplitude scaling factor, and mapping the resulting PUSCH signal to the second target VRB; and~~

~~in a case that the PUSCH is scheduled by the RAR UL grant or the PUSCH is scheduled by the preset downlink control information format scrambled by the TC-RNTI, determining, according to whether the terminal is configured to use interlaced PUSCH or whether the terminal is configured with UL resource allocation type 2, a mapping mode of mapping the PUSCH signal from the second target VRB to the second target PRB.~~

~~25. The apparatus according to claim 24, wherein that the second determining module determines, according to the frequency domain resource allocation type for the terminal, an index value of a second target VRB allocated to the PUSCH comprises:~~

~~in a case that the terminal is configured to use interlaced PUSCH or configured with UL resource allocation type 2, determining that the index value of the second target VRB is equal to an index value of the determined first target PRB; or~~

~~in a case that the terminal is not configured to use interlaced PUSCH or not configured with UL resource allocation type 2, determining that the second target VRB is the first target VRB.~~

~~26. The apparatus according to claim 24, wherein that the second determining module determines, according to whether the terminal is configured to use interlaced PUSCH or the terminal is configured with UL resource allocation type 2, a mapping mode of mapping the PUSCH signal from the second target VRB to the second target PRB comprises:~~

~~in a case that a first target condition, a second target condition, and a third target condition are all satisfied, mapping the nth second target VRB to the $(n + N_{BWP,0}^{start} -$~~

~~$N_{BWP,i}^{start}$)th second target PRB, wherein $N_{BWP,0}^{start}$ is a start CRB index of the initial UL BWP, $N_{BWP,i}^{start}$ is a start CRB index of the active UL BWP, and n is an integer greater than or equal to 0; and~~

~~in a case that one or more of the first target condition, the second target condition, and the third target condition are not satisfied, mapping the nth second target VRB to the nth second target PRB; wherein~~

~~the first target condition is that the terminal is not configured to use interlaced PUSCH or not configured with UL resource allocation type 2;~~

~~the second target condition is that the active UL BWP comprises all RBs in the initial UL BWP; and~~

~~the third target condition is that the active UL BWP has the same subcarrier spacing SCS and cyclic prefix CP as the initial UL BWP.~~

~~27. The apparatus according to any one of claims 18 to 23, wherein that the second determining module determines, according to the frequency domain resource allocation type and/or a scheduling mode of the PUSCH, a mapping mode of mapping a PUSCH signal to a second target PRB comprises:~~

~~in a case that the terminal is configured to use interlaced PUSCH or configured with UL resource allocation type 2, determining the mapping mode to be a second mapping mode, and in other cases, determining the mapping mode to be a first mapping mode, wherein the first mapping mode is mapping a PUSCH signal to a virtual resource block VRB first and then mapping the PUSCH signal from the VRB to a PRB, and the second mapping mode is directly mapping a PUSCH signal to a PRB.~~

~~28. The apparatus according to claim 27, wherein that the mapping module maps the PUSCH signal to the second target PRB by using the mapping mode comprises:~~

~~in a case that the mapping mode is the second mapping mode, multiplying the PUSCH signal by an amplitude scaling factor, and then mapping the resulting PUSCH signal to the determined first target PRB.~~

~~29. An apparatus for receiving a PUSCH signal, comprising:~~

~~a third determining module, configured to determine, according to a frequency domain resource allocation type configured for a terminal and frequency domain resource allocation information indicated to the terminal, a PRB allocated to a PUSCH of the terminal; and~~

~~a receiving module, configured to receive, on the PRB, a PUSCH signal transmitted by the terminal.~~

~~30. The apparatus according to claim 29, wherein that the third determining module determines, according to a frequency domain resource allocation type configured for a terminal and frequency domain resource allocation information indicated to the terminal, a PRB allocated to a PUSCH of the terminal comprises:~~

~~in a case that the frequency domain resource allocation type is UL resource allocation type 2, and that the PUSCH is scheduled by an RAR uplink UL grant or the PUSCH is scheduled by a preset downlink control information format scrambled by a TC-RNTI, determining a common resource block CRB range of a target resource block RB set, wherein the target RB set is an RB set allocated to the PUSCH; and~~

~~determining, based on the CRB range and the frequency domain resource allocation information, the PRB allocated to the PUSCH.~~

~~31. The apparatus according to claim 30, wherein that the third determining module determines a common resource block CRB range of a target resource block RB set comprises:~~

~~determining a CRB range of resource blocks in the target RB set according to a first RB set planning scheme.~~

~~32. The apparatus according to claim 31, wherein the third determining module is further configured to, before determining the CRB range of the target RB set according to the first RB set planning scheme, determine the first RB set planning scheme for a carrier according to a nominal intra-cell guard band and an RB set pattern of the carrier.~~

~~33. The apparatus according to claim 31, wherein that the third determining module determines a common resource block CRB range of resource blocks in the target resource block RB set comprises:~~

~~in a case that an active UL carrier bandwidth part BWP satisfies a first specified condition and a second specified condition, determining the CRB range of the resource blocks in the target RB set according to the first RB set planning scheme, wherein the first specified condition is that the active UL BWP comprises all RBs in an initial UL BWP, and the second specified condition is that the active UL BWP has the same subcarrier spacing SCS and cyclic prefix CP as the initial UL BWP; or~~

~~in a case that the active UL BWP does not satisfy the first condition and/or does not satisfy the second condition, determining a CRB range of resource blocks in the target RB set according to a second RB set planning scheme.~~

~~34. The apparatus according to claim 33, wherein the third determining module is further configured to: before determining the CRB range of resource blocks in the target RB set according to the second RB set planning scheme, determine the second RB set planning scheme according to an intra-cell guard band configured for the terminal.~~

~~35~~18. A terminal, comprising a processor, a memory, and a program or instructions stored in the memory and capable of running on the processor, wherein when the program or instructions are executed by the processor, the steps of the method for mapping a PUSCH signal according to any one of claims 1 to 11 are implemented.

~~36~~19. A network-side device, comprising a processor, a memory, and a program or instructions stored in the memory and capable of running on the processor, wherein when the program or instructions are executed by the processor, the steps of the method for receiving a PUSCH signal according to any one of claims 12 to 17 are implemented.

~~37~~20. A readable storage medium, wherein the readable storage medium stores a program or instructions, and when the program or instructions are executed by a processor, the steps of the method for mapping a PUSCH signal according to any

one of claims 1 to 11 or the steps of the method for receiving a PUSCH signal according to any one of claims 12 to 17 are implemented.