CLAIMS

1. A transmission method, wherein the method comprises:

receiving an SSB and PRACH resource configuration information;

determining time-frequency positions of a plurality of ROs in an RO bundle based on the SSB and the PRACH resource configuration information, wherein the RO bundle comprises a plurality of ROs in time domain, the plurality of ROs in the RO bundle correspond to different time domain positions, and the plurality of ROs in the RO bundle correspond to a same frequency position; and

sending a preamble separately on the plurality of ROs in the RO bundle based on the time-frequency positions of the plurality of ROs in the RO bundle.

2. The method according to claim 1, wherein the RO bundle corresponds to a same slot or a plurality of adjacent slots in time domain.

3. The method according to claim 1 or 2, wherein a quantity of ROs comprised in the RO bundle in time domain comprises any one of 2, 3, 4, 5, 6, or 7.

4. A transmission method, wherein the method comprises:

sending an SSB and PRACH resource configuration information;

determining time-frequency positions of a plurality of ROs in an RO bundle, wherein the RO bundle comprises a plurality of ROs in time domain, the plurality of ROs in the RO bundle correspond to different time domain positions, and the plurality of ROs in the RO bundle correspond to a same frequency position; and

receiving, separately on the plurality of ROs comprised in the RO bundle based on the time-frequency positions of the plurality of ROs in the RO bundle, a preamble in response to the SSB and the PRACH resource configuration information.

5. The method according to claim 4, wherein the RO bundle corresponds to a same slot or a plurality of adjacent slots in time domain.

6. The method according to claim 4 or 5, wherein a quantity of ROs comprised in the RO bundle in time domain comprises any one of 2, 3, 4, 5, 6, or 7.

7. A transmission method, wherein the method comprises:

receiving an SSB and PRACH resource configuration information;

determining time-frequency positions of a plurality of ROs in an RO group based on the SSB, the PRACH resource configuration information, and an RO frequency hopping manner in the RO group, wherein the RO group comprises a plurality of ROs in time domain, the plurality of ROs in the RO group correspond to different time domain positions, and the RO frequency hopping manner in the RO group comprises performing frequency hopping with an RO bundle as a

frequency hopping granularity using a frequency hopping step, wherein the RO bundle comprises a plurality of ROs in time domain, and the plurality of ROs in the RO bundle correspond to a same frequency position; and

sending a preamble separately on the plurality of ROs in the RO group based on the time-frequency positions of the plurality of ROs in the RO group.

8. The method according to claim 7, wherein the RO bundle corresponds to a same slot or a plurality of adjacent slots in time domain.

9. The method according to claim 7 or 8, wherein a quantity of ROs comprised in the RO bundle in time domain comprises any one of 2, 3, 4, 5, 6, or 7.

10. The method according to any one of claims 7 to 9, wherein if a time domain resource occupied by an $(i+1)^{th}$ RO in the RO group and a time domain resource occupied by an i^{th} RO in the RO group belong to a same slot or adjacent slots, the i^{th} RO and the $(i+1)^{th}$ RO in the RO group correspond to a same frequency domain position, wherein a value of i is a positive integer; or

if a time domain resource occupied by an $(i+1)^{th}$ RO in the RO group and a time domain resource occupied by an i^{th} RO in the RO group do not belong to a same slot or do not belong to adjacent slots, frequency hopping is performed on the $(i+1)^{th}$ RO in the RO group relative to the i^{th} RO based on the frequency hopping step.

11. A transmission method, wherein the method comprises:

receiving an SSB and PRACH resource configuration information;

determining time-frequency positions of a plurality of ROs in an RO group based on the SSB, the PRACH resource configuration information, and an RO frequency hopping manner in the RO group, wherein the RO group comprises a plurality of ROs in time domain, and the plurality of ROs in the RO group correspond to different time domain positions; and

the RO frequency hopping manner in the RO group comprises: performing no frequency hopping on ROs belonging to a same slot in the RO group, or performing frequency hopping on ROs not belonging to a same slot using a frequency hopping step; or

performing no frequency hopping on ROs belonging to a plurality of adjacent slots in the RO group, or performing frequency hopping on ROs not belonging to a plurality of adjacent slots using a frequency hopping step; and

sending a preamble separately on the plurality of ROs comprised in the RO group based on the time-frequency positions of the plurality of ROs in the RO group.

12. The method according to any one of claims 7 to 11, wherein the frequency hopping step comprises an integer multiple of a frequency domain resource size occupied by one RO in frequency domain, and a value of the frequency hopping step comprises any one of 1, 2, 3, 4, 5, 6, or 7.

13. The method according to any one of claims 7 to 12, wherein if the time domain resource occupied by the $(i+1)^{th}$ RO in the RO group and the time domain resource occupied by the i^{th} RO in the RO group do not belong to a same slot or do not belong to adjacent slots, a frequency domain position S of the $(i+1)^{th}$ RO in the RO group after frequency hopping satisfies the following formula:

S = (the frequency domain position of the i^{th} RO in the RO group + a frequency domain resource length corresponding to the frequency hopping step) mod (a total frequency domain resource length for a plurality of frequency domain multiplexed ROs), wherein the value of i is a positive integer, and mod represents a modulo operation.

14. The method according to any one of claims 7 to 13, wherein the method further comprises:

receiving indication information, wherein the indication information indicates an identifier of the RO frequency hopping manner in the RO group; and

determining the RO frequency hopping manner in the RO group based on the identifier of the RO frequency hopping manner in the RO group.

15. The method according to any one of claims 7 to 13, wherein the method further comprises:

receiving indication information, wherein the indication information indicates at least one of the frequency hopping step or a time-frequency resource size corresponding to the RO bundle; and

determining the RO frequency hopping manner in the RO group based on the indication information.

16. The method according to claim 15, wherein the indication information indicates the frequency hopping step, and a length of the indication information is 1 bit, 2 bits, or 3 bits.

17. The method according to claim 15 or 16, wherein the length of the indication information is 1 bit, the indication information indicates performing frequency hopping using the frequency hopping step whose value is 1 or 7, or performing no frequency hopping, and the value of the frequency hopping step represents a multiple of the frequency domain resource size occupied by one RO in frequency domain.

18. A transmission method, wherein the method comprises:

sending an SSB and PRACH resource configuration information;

determining time-frequency positions of a plurality of ROs in an RO group using an RO frequency hopping manner in the RO group, wherein the RO group comprises a plurality of ROs in time domain, the plurality of ROs in the RO group correspond to different time domain positions, and the RO frequency hopping manner in the RO group comprises performing frequency hopping with an RO bundle as a frequency hopping granularity using a frequency hopping step, wherein the RO bundle comprises a plurality of ROs in time domain, and the plurality of ROs in the RO bundle correspond to a same frequency position; and

receiving, separately on the plurality of ROs comprised in the RO group based on the time-frequency positions of the plurality of ROs in the RO group, a preamble in response to the SSB and the PRACH resource configuration information.

19. The method according to claim 18, wherein the RO bundle corresponds to a same slot or a plurality of adjacent slots in time domain.

20. The method according to claim 18 or 19, wherein a quantity of ROs comprised in the RO bundle in time domain comprises any one of 2, 3, 4, 5, 6, or 7.

21. The method according to any one of claims 18 to 20, wherein if a time domain resource occupied by an $(i+1)^{th}$ RO in the RO group and a time domain resource occupied by an i^{th} RO in the RO group belong to a same slot or adjacent slots, the i^{th} RO and the $(i+1)^{th}$ RO in the RO group correspond to a same frequency domain position, wherein a value of i is a positive integer; or

if a time domain resource occupied by an $(i+1)^{th}$ RO in the RO group and a time domain resource occupied by an i^{th} RO in the RO group do not belong to a same slot or do not belong to adjacent slots, frequency hopping is performed on the $(i+1)^{th}$ RO in the RO group relative to the i^{th} RO based on the frequency hopping step.

22. A transmission method, wherein the method comprises:

sending an SSB and PRACH resource configuration information;

determining time-frequency positions of a plurality of ROs in an RO group using an RO frequency hopping manner in the RO group, wherein the RO group comprises a plurality of ROs in time domain, the plurality of ROs in the RO group correspond to different time domain positions, the RO group comprises a plurality of ROs in time domain, and the plurality of ROs in the RO group correspond to different time domain positions; and

the RO frequency hopping manner in the RO group comprises: performing no frequency hopping on ROs belonging to a same slot in the RO group, or performing frequency hopping on ROs not belonging to a same slot using a frequency hopping step; or

performing no frequency hopping on ROs belonging to a plurality of adjacent slots in the RO group, or performing frequency hopping on ROs not belonging to a plurality of adjacent slots using a frequency hopping step; and

receiving, separately on the plurality of ROs comprised in the RO group based on the time-frequency positions of the plurality of ROs in the RO group, a preamble in response to the SSB and the PRACH resource configuration information.

23. The method according to any one of claims 18 to 22, wherein the frequency hopping step comprises an integer multiple of a frequency domain resource size occupied by one RO in frequency domain, or a quantity of ROs, and a value of the frequency hopping step comprises any one of 1, 2, 3, 4, 5, 6, or 7.

24. The method according to any one of claims 18 to 23, wherein if the time domain resource occupied by the $(i+1)^{th}$ RO in the RO group and the time domain resource occupied by the i^{th} RO in the RO group do not belong to a same slot or do not belong to adjacent slots, a frequency domain position S of the $(i+1)^{th}$ RO in the RO group after frequency hopping satisfies the following formula:

S = (the frequency domain position of the i^{th} RO in the RO group + a frequency domain resource length corresponding to the frequency hopping step) mod (a total frequency domain resource length for a plurality of frequency domain multiplexed ROs), wherein the value of i is a positive integer, and mod represents a modulo operation.

25. The method according to any one of claims 18 to 24, wherein the method further comprises: sending indication information, wherein the indication information indicates an identifier of the RO frequency hopping manner in the RO group.

26. The method according to any one of claims 18 to 24, wherein the method further comprises: sending indication information, wherein the indication information indicates at least one of the frequency hopping step or a time-frequency resource size corresponding to the RO bundle.

27. The method according to claim 26, wherein the indication information indicates the frequency hopping step, and a length of the indication information is 1 bit, 2 bits, or 3 bits.

28. The method according to claim 26 or 27, wherein the length of the indication information is 1 bit, the indication information indicates performing frequency hopping using the frequency hopping step whose value is 1 or 7, or performing no frequency hopping, and the value of the frequency hopping step represents a multiple of the frequency domain resource size occupied by one RO in frequency domain.

29. A communication apparatus, comprising a unit configured to perform each step of the method according to any one of claims 1 to 3 or 7 to 17, or a unit configured to perform each step of the method according to any one of claims 4 to 6 or 18 to 28.

30. A communication apparatus, comprising at least one processor and an interface circuit, wherein the at least one processor is configured to perform the method according to any one of claims 1 to 3 or 7 to 17, or the method according to any one of claims 4 to 6 or 18 to 28.

31. A terminal device, comprising the communication apparatus according to claim 29 or 30.

32. A network device, comprising the communication apparatus according to claim 29 or 30.

33. A computer-readable storage medium, wherein the computer-readable storage medium stores a computer program or instructions, and when a computer reads and executes the computer program or the instructions, the computer is enabled to perform the method according to any one of claims 1 to 3 or 7 to 17, or the method according to any one of claims 4 to 6 or 18 to 28.

34. A chip, comprising a processor, configured to invoke a computer program from a memory and run the computer program, so that a communication device on which the chip is installed performs the method according to any one of claims 1 to 3 or 7 to 17, or the method according to any one of claims 4 to 6 or 18 to 28.