

CLAIMS

What is claimed is:

1. A communication method, comprising:

5 determining, by a terminal device, a first offset parameter, an uplink control channel resource index, a physical resource block offset parameter, and a number of initial cyclic shift indexes comprised in an initial cyclic shift index set;

determining, by the terminal device, a resource block index based on the first offset parameter, the uplink control channel resource index, the physical resource block offset parameter, and the
10 number of initial cyclic shift indexes comprised in the initial cyclic shift index set; and

sending, by the terminal device on a resource associated with the resource block index, uplink control information to a network device.

2. The method according to claim 1, wherein

the resource block index, the first offset parameter, the uplink control channel resource index, the physical resource block offset parameter, and the number of initial cyclic shift indexes
15 comprised in the initial cyclic shift index set satisfy the following correspondence:

$$X_1 = RB_{BWP}^{offset} + \lfloor r_{PUCCH} / N_{CS} \rfloor + D$$
, wherein X_1 is the resource block index, RB_{BWP}^{offset} is the physical resource block offset parameter, r_{PUCCH} is the uplink control channel resource index, N_{CS} is the number of initial cyclic shift indexes comprised in the initial cyclic shift index set, D
20 is the first offset parameter, and $\lfloor r_{PUCCH} / N_{CS} \rfloor$ indicates rounding down a result of r_{PUCCH} / N_{CS} .

3. The method according to claim 1, wherein

the resource block index, the first offset parameter, the uplink control channel resource index, the physical resource block offset parameter, and the number of initial cyclic shift indexes comprised in the initial cyclic shift index set satisfy the following correspondence:

25
$$X_2 = N_{BWP}^{size} - 1 - RB_{BWP}^{offset} - \lfloor r_{PUCCH} / N_{CS} \rfloor + D$$
, wherein

X_2 is the resource block index, N_{BWP}^{size} is a number of resource blocks comprised in a second frequency range, the second frequency range is less than or equal to a maximum channel

bandwidth supported by the terminal device, RB_{BWP}^{offset} is the physical resource block offset parameter, r_{PUCCH} is the uplink control channel resource index, N_{CS} is the number of initial cyclic shift indexes comprised in the initial cyclic shift index set, D is the first offset parameter, and a value of D is an integer less than 0, and $\lfloor r_{PUCCH} / N_{CS} \rfloor$ indicates rounding down a result of r_{PUCCH} / N_{CS} .

4. The method according to any one of claims 1 to 3, wherein the determining, by a terminal device, a first offset parameter comprises:

determining, by the terminal device, the first offset parameter based on first information, wherein the first information is received by the terminal device from the network device, or

the first offset parameter is a predefined parameter; or

determining, by the terminal device, the first offset parameter according to a predefined rule.

5. The method according to any one of claims 1 to 4, wherein

a value of the first offset parameter is an integer multiple of K, wherein $K = 2$ or 3 .

6. The method according to claim 1, wherein the sending, by the terminal device on a resource associated with the resource block index, uplink control information to a network device comprises:

sending, by the terminal device without frequency hopping, the uplink control information on the resource associated with the resource block index to the network device.

7. A communication method, comprising:

sending, by a network device, first information to a terminal device, wherein the first information is used to determine a resource block index, and the first information further indicates a first offset parameter, an uplink control channel resource index, a physical resource block offset parameter, and a number of initial cyclic shift indexes comprised in an initial cyclic shift index set; and

receiving, by the network device on a resource associated with the resource block index, uplink control information from the terminal device.

8. The method according to claim 7, wherein

the resource block index, the first offset parameter, the uplink control channel resource index, the physical resource block offset parameter, and the number of initial cyclic shift indexes comprised in the initial cyclic shift index set satisfy the following correspondence:

$X_1 = RB_{BWP}^{offset} + \lfloor r_{PUCCH} / N_{CS} \rfloor + D$, wherein X_1 is the resource block index, RB_{BWP}^{offset} is the physical resource block offset parameter, r_{PUCCH} is the uplink control channel resource index, N_{CS} is the number of initial cyclic shift indexes comprised in the initial cyclic shift index set, D is the first offset parameter, and $\lfloor r_{PUCCH} / N_{CS} \rfloor$ indicates rounding down a result of r_{PUCCH} / N_{CS} .

5 9. The method according to claim 7, wherein

the resource block index, the first offset parameter, the uplink control channel resource index, the physical resource block offset parameter, and the number of initial cyclic shift indexes comprised in the initial cyclic shift index set satisfy the following correspondence:

$$X_2 = N_{BWP}^{size} - 1 - RB_{BWP}^{offset} - \lfloor r_{PUCCH} / N_{CS} \rfloor + D, \text{ wherein}$$

10 X_2 is the resource block index, the resource associated with the resource block index falls within a first frequency range, N_{BWP}^{size} is a number of resource blocks comprised in a second frequency range, the second frequency range is less than or equal to a maximum channel bandwidth supported by the terminal device, RB_{BWP}^{offset} is the physical resource block offset parameter, r_{PUCCH} is the uplink control channel resource index, N_{CS} is the number of initial
15 cyclic shift indexes comprised in the initial cyclic shift index set, D is the first offset parameter, and a value of D is an integer less than 0, and $\lfloor r_{PUCCH} / N_{CS} \rfloor$ indicates rounding down a result of r_{PUCCH} / N_{CS} .

10. The method according to any one of claims 7 to 9, wherein

the first information comprises the first offset parameter; or

20 the first information comprises a predefined parameter, and the predefined parameter is used to determine the first offset parameter; or

the first information comprises a predefined rule, and the predefined rule is used to determine the first offset parameter.

11. The method according to any one of claims 7 to 10, wherein

25 a value of the first offset parameter is an integer multiple of K, wherein $K = 2$ or 3 .

12. The method according to claim 7, wherein the receiving, by the network device on a resource associated with the resource block index, uplink control information from the terminal

device comprises:

receiving, by the network device without frequency hopping on the resource associated with the resource block index, the uplink control information from the terminal device.

13. A communication apparatus, comprising:

5 a processing unit, configured to determine, a first offset parameter, an uplink control channel resource index, a physical resource block offset parameter, and a number of initial cyclic shift indexes comprised in an initial cyclic shift index set, wherein

the processing unit is further configured to determine, a resource block index based on the first offset parameter, the uplink control channel resource index, the physical resource block offset parameter, and the number of initial cyclic shift indexes comprised in the initial cyclic shift index set; and

a transceiver unit, configured to send, on a resource associated with the resource block index, uplink control information to a network device.

14. The apparatus according to claim 13, wherein

15 the processing unit is further configured to determine the resource block index based on the following correspondence among the first offset parameter, the uplink control channel resource index, the physical resource block offset parameter, and the number of initial cyclic shift indexes comprised in the initial cyclic shift index set:

$$X_1 = RB_{BWP}^{offset} + \lfloor r_{PUCCH} / N_{CS} \rfloor + D, \text{ wherein}$$

20 X_1 is the resource block index, RB_{BWP}^{offset} is the physical resource block offset parameter, r_{PUCCH} is the uplink control channel resource index, N_{CS} is the number of initial cyclic shift indexes comprised in the initial cyclic shift index set, D is the first offset parameter, and $\lfloor r_{PUCCH} / N_{CS} \rfloor$ indicates rounding down a result of r_{PUCCH} / N_{CS} .

15. The apparatus according to claim 13, wherein

25 the processing unit is further configured to determine the resource block index based on the following correspondence among the first offset parameter, the uplink control channel resource index, the physical resource block offset parameter, and the number of initial cyclic shift indexes comprised in the initial cyclic shift index set:

$$X_2 = N_{BWP}^{size} - 1 - RB_{BWP}^{offset} - \lfloor r_{PUCCH} / N_{CS} \rfloor + D, \text{ wherein}$$

X_2 is the resource block index, N_{BWP}^{size} is a number of resource blocks comprised in a second frequency range, the second frequency range is less than or equal to a maximum channel bandwidth supported by the terminal device, RB_{BWP}^{offset} is the physical resource block offset parameter, r_{PUCCH} is the uplink control channel resource index, N_{CS} is the number of initial cyclic shift indexes comprised in the initial cyclic shift index set, D is the first offset parameter, and a value of D is an integer less than 0, and $\lfloor r_{PUCCH} / N_{CS} \rfloor$ indicates rounding down a result of r_{PUCCH} / N_{CS} .

16. The apparatus according to any one of claims 13 to 15, wherein that the processing unit is configured to determine, the first offset parameter comprises:

the transceiver unit is further configured to receive, first information from the network device; and

the processing unit is configured to determine, the first offset parameter based on the first information; or

the processing unit is configured to determine, the first offset parameter based on a predefined parameter; or

the processing unit is configured to determine, the first offset parameter according to a predefined rule.

17. The apparatus according to any one of claims 13 to 16, wherein

a value of the first offset parameter is an integer multiple of K, wherein $K = 2$ or 3 .

18. The apparatus according to any one of claims 13 to 17, wherein

the processing unit is further configured to send, without frequency hopping, the uplink control information on the resource associated with the resource block index.

19. A communication apparatus, comprising:

a transceiver unit, configured to send, first information to a terminal device, wherein the first information is used to determine a resource block index, and the first information further indicates a first offset parameter, an uplink control channel resource index, a physical resource block offset parameter, and a number of initial cyclic shift indexes comprised in an initial cyclic shift index set; and

the transceiver unit is further configured to receive, on a resource associated with the resource

block index, uplink control information from the terminal device.

20. The apparatus according to claim 19, wherein

the resource block index, the first offset parameter, the uplink control channel resource index, the physical resource block offset parameter, and the number of initial cyclic shift indexes
5 comprised in the initial cyclic shift index set satisfy the following correspondence:

$$X_1 = RB_{BWP}^{offset} + \lfloor r_{PUCCH} / N_{CS} \rfloor + D$$
, wherein X_1 is the resource block index, RB_{BWP}^{offset} is the physical resource block offset parameter, r_{PUCCH} is the uplink control channel resource index, N_{CS} is the number of initial cyclic shift indexes comprised in the initial cyclic shift index set, D is the first offset parameter, and $\lfloor r_{PUCCH} / N_{CS} \rfloor$ indicates rounding down a result of r_{PUCCH} / N_{CS} .

10 21. The apparatus according to claim 19, wherein

the resource block index, the first offset parameter, the uplink control channel resource index, the physical resource block offset parameter, and the number of initial cyclic shift indexes comprised in the initial cyclic shift index set satisfy the following correspondence:

$$X_2 = N_{BWP}^{size} - 1 - RB_{BWP}^{offset} - \lfloor r_{PUCCH} / N_{CS} \rfloor + D$$
, wherein X_2 is the resource block index, the resource associated with the resource block index falls within a first frequency range, N_{BWP}^{size} is a number of resource blocks comprised in a second frequency range, the second frequency range is less than or equal to a maximum channel bandwidth supported by the terminal device, RB_{BWP}^{offset} is the physical resource block offset parameter, r_{PUCCH} is the uplink control channel resource index, N_{CS} is the number of initial cyclic shift indexes comprised in the initial cyclic shift index set, D
15 is the first offset parameter, and a value of D is an integer less than 0, and $\lfloor r_{PUCCH} / N_{CS} \rfloor$ indicates rounding down a result of r_{PUCCH} / N_{CS} .

22. The apparatus according to any one of claims 19 to 21, wherein

the first information comprises the first offset parameter; or

the first information comprises a predefined parameter, and the predefined parameter is used
25 to determine the first offset parameter; or

the first information comprises a predefined rule, and the predefined rule is used to determine the first offset parameter.

23. The apparatus according to any one of claims 19 to 22, wherein
a value of the first offset parameter is an integer multiple of K, wherein $K = 2$ or 3 .

24. The apparatus according to any one of claims 19 to 23, wherein

the transceiver unit is further configured to receive, without frequency hopping on the
5 resource associated with the resource block index, the uplink control information from the terminal
device.

25. A computer-readable storage medium, wherein the computer-readable storage medium
stores a computer program, and when the computer program is run, an apparatus is enabled to
perform the method according to any one of claims 1 to 6, or

10 an apparatus is enabled to perform the method according to any one of claims 7 to 12.

26. A computer program product, comprising a computer program, wherein when the
computer program is run on a computer, the method according to any one of claims 1 to 6 is
performed, or the method according to any one of claims 7 to 12 is performed.

27. A communication apparatus, comprising:

15 a memory, configured to store a computer program; and

a processor, configured to execute the computer program stored in the memory, so that the
communication apparatus performs the method according to any one of claims 1 to 6, or

the communication apparatus performs the method according to any one of claims 7 to 12.