

CLAIMS

1. A communication method, comprising:

generating, by a first device, first information, wherein the first information comprises direction information and/or quantity information, the direction information indicates M directions
5 for sending second information, the quantity information indicates a quantity N of repeated transmissions in each of the M directions, the second information is for beam training in a first frequency band, and N and M are positive integers; and

10 sending, by the first device, the first information in a second frequency band, wherein a highest frequency in the second frequency band does not exceed a lowest frequency in the first frequency band.

2. The method according to claim 1, wherein the second information comprises N groups of elements, each of the N groups of elements is the same, and each of the N groups of elements comprises M elements; or

15 the second information comprises N groups of physical layer protocol data units (PPDUs), each of the N groups of PPDUs is the same, and each of the N groups of PPDUs comprises M PPDUs.

3. The method according to claim 2, wherein each of the M elements comprises at least one of a short training field, a channel estimation field, and a signaling field, the short training field is used to identify each of the M elements, the channel estimation field is used for channel estimation,
20 and the signaling field is used to verify each of the M elements; or

each of the M PPDUs comprises at least one of a short training field, a channel estimation field, and a signaling field, the short training field is used to identify each of the M PPDUs, the channel estimation field is used for channel estimation, and the signaling field is used to verify each of the M PPDUs.

25 4. The method according to claim 3, wherein the signaling field comprises at least one of the following:

beam information, wherein the beam information comprises at least one of a first identifier, a second identifier, and a third identifier, the first identifier is used to identify a sector for sending each element or each PPDU, the second identifier is used to identify an antenna for sending each
30 element or each PPDU, and the third identifier is used to identify a beam for sending each element or each PPDU;

a check bit, wherein the check bit is used to check the signaling field;

count information, wherein the count information indicates a location of each element or each PPDU in the second information; and

third information, wherein the third information is used to identify the second information.

5. The method according to any one of claims 2 to 4, wherein the method further comprises: sending or receiving, by the first device, the second information in the first frequency band.

6. The method according to claim 5, wherein the sending, by the first device, the second
5 information comprises:

sending, by the first device, the M elements in the M directions respectively, wherein each of the M elements is sent N times; or

sending, by the first device, the M PPDU's in the M directions respectively, wherein each of the M PPDU's is sent N times.

7. The method according to claim 5, wherein the receiving, by the first device, the second
10 information comprises:

receiving, by the first device, the M elements or the M PPDU's in a same receiving direction, and receiving, by the first device, the second information in N directions.

8. The method according to any one of claims 1 to 7, wherein the first information comprises
15 time information, and the time information indicates a start moment and/or duration for sending the second information.

9. A communication method, comprising:

receiving, by a second device, first information in a second frequency band, wherein the first
information comprises direction information and/or quantity information, the direction
20 information indicates M directions for sending second information, the quantity information indicates a quantity N of repeated transmissions in each of the M directions, the second information is for beam training in a first frequency band, and N and M are positive integers; and

sending or receiving, by the second device, the second information in the first frequency band,
wherein a highest frequency in the second frequency band does not exceed a lowest frequency in
25 the first frequency band.

10. The method according to claim 9, wherein the second information comprises N groups of
elements, each of the N groups of elements is the same, and each of the N groups of elements
comprises M elements; or

the second information comprises N groups of physical layer protocol data units PPDU's, each
30 of the N groups of PPDU's is the same, and each of the N groups of PPDU's comprises M PPDU's.

11. The method according to claim 10, wherein each of the M elements comprises at least one
of a short training field, a channel estimation field, and a signaling field, the short training field is
used to identify each of the M elements, the channel estimation field is used for channel estimation,
and the signaling field is used to verify each of the M elements; or

35 each of the M PPDU's comprises at least one of a short training field, a channel estimation

field, and a signaling field, the short training field is used to identify each of the M PPDU's, the channel estimation field is used for channel estimation, and the signaling field is used to verify each of the M PPDU's.

12. The method according to claim 11, wherein the signaling field comprises at least one of the following:

beam information, wherein the beam information comprises at least one of a first identifier, a second identifier, and a third identifier, the first identifier is used to identify a sector for sending each element or each PPDU, the second identifier is used to identify an antenna for sending each element or each PPDU, and the third identifier is used to identify a beam for sending each element or each PPDU;

a check bit, wherein the check bit is used to check the signaling field;

count information, wherein the count information indicates a location of each element or each PPDU in the second information; and

third information, wherein the third information is used to identify the second information.

13. The method according to any one of claims 10 to 12, wherein the receiving, by the second device, the second information comprises:

receiving, by the second device, the M elements or the M PPDU's in a same receiving direction, and receiving, by the second device, the second information in N directions.

14. The method according to any one of claims 10 to 12, wherein the sending, by the second device, the second information comprises:

sending, by the second device, the M elements in the M directions respectively, wherein each of the M elements is sent N times; or

sending, by the second device, the M PPDU's in the M directions respectively, wherein each of the M PPDU's is sent N times.

15. The method according to any one of claims 9 to 14, wherein the first information comprises time information, and the time information indicates a start moment and/or duration for sending the second information.

16. A communication apparatus, comprising:

a processing unit, configured to generate first information, wherein the first information comprises direction information and/or quantity information, the direction information indicates M directions for sending second information, the quantity information indicates a quantity N of repeated transmissions in each of the M directions, the second information is for beam training in a first frequency band, and N and M are positive integers; and

a transceiver unit, configured to send the first information in a second frequency band, wherein a highest frequency in the second frequency band does not exceed a lowest frequency in

the first frequency band.

17. A communication apparatus, comprising:

a transceiver unit, configured to receive first information in a second frequency band, wherein the first information comprises direction information and/or quantity information, the direction information indicates M directions for sending second information, the quantity information indicates a quantity N of repeated transmissions in each of the M directions, the second information is for beam training in a first frequency band, and N and M are positive integers, wherein

the transceiver unit is further configured to send or receive the second information in the first frequency band, wherein a highest frequency in the second frequency band does not exceed a lowest frequency in the first frequency band.

18. A communication apparatus, comprising:

a memory, configured to store computer instructions; and

a processor, configured to execute the computer instructions stored in the memory, to enable the communication apparatus to perform the method according to any one of claims 1 to 8, or perform the method according to any one of claims 9 to 15.

19. A chip, comprising a processor and an interface, and configured to: invoke a computer program from a memory and run the computer program stored in the memory, to perform the method according to any one of claims 1 to 8, or perform the method according to any one of claims 9 to 15.

20. A computer-readable storage medium, configured to store a computer program, wherein the computer program comprises instructions for implementing the method according to any one of claims 1 to 8, or comprises instructions for implementing the method according to any one of claims 9 to 15.

21. A computer program product, comprising computer program code, wherein when the computer program code is run on a computer, the computer is enabled to implement the method according to any one of claims 1 to 8 or implement the method according to any one of claims 9 to 15.