CLAIMS

1. An information exchange method in an ultra-wideband system, comprising:

receiving sensing control information, wherein the sensing control information comprises a frequency stitching direction field, a base channel field, a carrier frequency grid field, and a number of transmissions field; and

determining a channel based on the sensing control information, wherein

the channel satisfies:

$f_i = f_{base} + 124.8 \times l_i \times (4 - OF) \times (2 \times D - 1)$, wherein

f_i represents a center frequency of a channel corresponding to an ith logical index l_i in a channel use order, a value of l_i ranges from 0 to (M – 1), M represents a total number of frequency bands for frequency stitching indicated by the number of transmissions field, a unit of f_i is megahertz, f_{base} represents a center frequency of a base channel indicated by the base channel field, the center frequency of the base channel corresponds to a channel number of the base channel, OF represents a value of the carrier frequency grid field, and D represents a value of the frequency stitching direction field.

2. The method according to claim 1, wherein the sensing control information further comprises a channel sequence order field, and the channel sequence order field indicates that an order for transmitting channels for frequency stitching is an out-of-sequence channel order; and

the channel use order satisfies:

$CH(l_i) = CH((p \times (OF + 1) \text{ MOD } (N)) + (p \times (OF + 1) \text{ DIV } (N)))$, wherein

l_i represents the ith logical index, i = (p + 1), and a value of p is 0, 1, 2, ..., (N – 1); if M is an integer multiple of (OF + 1), N is equal to M, or if M is not an integer multiple of (OF + 1), N is a smallest integer multiple of (OF + 1) in a positive integer greater than M; MOD represents a modulo operation; and DIV represents integer division.

3. The method according to claim 1 or 2, wherein the method further comprises:

sending a channel impulse response CIR report information element, wherein the CIR report information element comprises an antennas field, first indication information, and Q receive report fields; and

one receive report field indicates one CIR report, a value of the antennas field plus 1 represents a number of antennas corresponding to CIR reports that need to be fed back, the first indication information indicates a number of sensing segments in one sensing packet or indicates a number of sensing segments corresponding to the CIR reports that need to be fed back, and Q is

equal to a product of the number of antennas and the number of sensing segments indicated by the first indication information.

4. The method according to claim 3, wherein an arrangement order of CIR reports in the CIR report information element comprises:

first traversing a CIR report corresponding to an antenna and then traversing a CIR report corresponding to a sensing segment; or first traversing a CIR report corresponding to a sensing segment and then traversing a CIR report corresponding to an antenna.

5. The method according to claim 3 or 4, wherein the CIR report information element further comprises second indication information, and the second indication information indicates the arrangement order of the CIR reports in the CIR report information element.

6. The method according to claim 3 or 4, wherein before sending the channel impulse response CIR report information element, the method further comprises:

receiving or sending second indication information, wherein the second indication information indicates the arrangement order of the CIR reports in the CIR report information element.

7. An information exchange method in an ultra-wideband system, comprising:

sending sensing control information, wherein the sensing control information comprises a frequency stitching direction field, a base channel field, a carrier frequency grid field, and a number of transmissions field; and

determining a channel based on the sensing control information, wherein

the channel satisfies:

$f_i = f_{base} + 124.8 \times l_i \times (4 - OF) \times (2 \times D - 1)$, wherein

f_i represents a center frequency of a channel corresponding to an ith logical index l_i in a channel use order, a value of l_i ranges from 0 to (M – 1), M represents a total number of frequency bands for frequency stitching indicated by the number of transmissions field, a unit of f_i is megahertz, f_{base} represents a center frequency of a base channel indicated by the base channel field, the center frequency of the base channel corresponds to a channel number of the base channel, *OF* represents a value of the carrier frequency grid field, and *D* represents a value of the frequency stitching direction field.

8. The method according to claim 7, wherein the sensing control information further comprises a channel sequence order field, and the channel sequence order field indicates that an order for transmitting channels for frequency stitching is an out-of-sequence channel order; and

the channel use order satisfies:

$CH(l_i) = CH((p \times (OF + 1) \text{ MOD } (N)) + (p \times (OF + 1) \text{ DIV } (N)))$, wherein

l_i represents the ith logical index, i = (p + 1), and a value of p is 0, 1, 2, ..., (N – 1); if M is an integer multiple of (OF + 1), N is equal to M, or if M is not an integer multiple of (OF + 1), N is a smallest integer multiple of (OF + 1) in a positive integer greater than M; MOD represents a modulo operation; and DIV represents integer division.

9. The method according to claim 7 or 8, wherein the method further comprises:

receiving a channel impulse response CIR report information element, wherein the CIR report information element comprises an antennas field, first indication information, and Q receive report fields, one receive report field indicates one CIR report, a value of the antennas field plus 1 represents a number of antennas corresponding to CIR reports that need to be fed back, the first indication information indicates a number of sensing segments in one sensing packet or indicates a number of sensing segments corresponding to the CIR reports that need to be fed back, and Q is equal to a product of the number of antennas and the number of sensing segments indicated by the first indication information; and

processing the CIR report information element to obtain Q CIR reports.

10. The method according to claim 9, wherein an arrangement order of CIR reports in the CIR report information element comprises:

first traversing a CIR report corresponding to an antenna and then traversing a CIR report corresponding to a sensing segment; or first traversing a CIR report corresponding to a sensing segment and then traversing a CIR report corresponding to an antenna.

11. The method according to claim 9 or 10, wherein the CIR report information element further comprises second indication information, and the second indication information indicates the arrangement order of the CIR reports in the CIR report information element.

12. The method according to claim 9 or 10, wherein before receiving the channel impulse response CIR report information element, the method further comprises:

sending or receiving second indication information, wherein the second indication information indicates the arrangement order of the CIR reports in the CIR report information element.

13. An information exchange method in an ultra-wideband system, comprising:

generating a channel impulse response CIR report information element, wherein the CIR report information element comprises an antennas field, first indication information, and Q receive report fields, one receive report field indicates one CIR report, a value of the antennas field plus 1 represents a number of antennas corresponding to CIR reports that need to be fed back, the first indication information indicates a number of sensing segments in one sensing packet or indicates a number of sensing segments corresponding to the CIR reports that need to be fed back, and Q is equal to a product of the number of antennas and the number of sensing segments indicated by the

first indication information; and

sending the CIR report information element.

14. The method according to claim 13, wherein an arrangement order of CIR reports in the CIR report information element comprises:

first traversing a CIR report corresponding to an antenna and then traversing a CIR report corresponding to a sensing segment or a sensing packet; or first traversing a CIR report corresponding to a sensing segment or a sensing packet and then traversing a CIR report corresponding to an antenna.

15. The method according to claim 13 or 14, wherein the CIR report information element further comprises second indication information, and the second indication information indicates the arrangement order of the CIR reports in the CIR report information element.

16. An information exchange method in an ultra-wideband system, comprising:

receiving a channel impulse response CIR report information element, wherein the CIR report information element comprises an antennas field, first indication information, and Q receive report fields, one receive report field indicates one CIR report, a value of the antennas field plus 1 represents a number of antennas corresponding to CIR reports that need to be fed back, the first indication information indicates a number of sensing segments in one sensing packet or indicates a number of sensing segments corresponding to the CIR reports that need to be fed back, and Q is equal to a product of the number of antennas and the number of sensing segments indicated by the first indication information; and

processing the CIR report information element to obtain Q CIR reports.

17. The method according to claim 16, wherein an arrangement order of the CIR reports in the CIR report information element comprises:

first traversing a CIR report corresponding to an antenna and then traversing a CIR report corresponding to a sensing segment or a sensing packet; or first traversing a CIR report corresponding to a sensing segment or a sensing packet and then traversing a CIR report corresponding to an antenna.

18. The method according to claim 16 or 17, wherein the CIR report information element further comprises second indication information, and the second indication information indicates the arrangement order of the CIR reports in the CIR report information element.

19. A communication apparatus, comprising a unit or a module configured to perform the method according to any one of claims 1 to 18.

20. A communication apparatus, comprising a processor and an interface circuit, wherein the interface circuit is configured to: receive a signal from another communication apparatus and transmit the signal to the processor, or send a signal from the processor to another communication

apparatus, and the processor is configured to implement the method according to any one of claims 1 to 18 through a logic circuit or by executing code instructions.

21. A readable storage medium, configured to store a program, wherein the program is executed by one or more processors, to enable an apparatus comprising the one or more processors to perform the method according to any one of claims 1 to 18.

22. A communication system, comprising: a communication apparatus configured to perform the method according to any one of claims 1 to 6, and a communication apparatus configured to perform the method according to any one of claims 7 to 12; or

a communication apparatus configured to perform the method according to any one of claims 13 to 15, and a communication apparatus configured to perform the method according to any one of claims 16 to 18.