

CLAIMS

What is claimed is:

1. A resource indication method, comprising:

generating a physical layer protocol data unit, PPDU, wherein the PPDU comprises a
5 universal signal (U-SIG) field, and the U-SIG field comprises a bandwidth field and a preamble
puncturing information field, wherein the bandwidth field indicates a full bandwidth, and the full
bandwidth is 80MHz or 160MHz or 320MHz; wherein:

when the PPDU is in non-orthogonal frequency division multiple access, non-OFDMA,
transmission mode, the preamble puncturing information field is used to indicate a puncturing
10 status of the full bandwidth;

when the PPDU is in an orthogonal frequency division multiple access, OFDMA,
transmission mode, the preamble puncturing information field is used to indicate a puncturing
status of an 80 MHz corresponding to a frequency domain segment; and

sending the PPDU.

15 2. The method according to claim 1, wherein

when the PPDU is in non-OFDMA transmission mode and the bandwidth field indicates that
the full bandwidth corresponding to the PPDU is an 80 MHz bandwidth, the preamble puncturing
information field indicates that no puncturing is performed or that only one 20 MHz bandwidth of
the 80 MHz bandwidth is punctured.

20 3. The method according to claim 2, wherein the 80 MHz bandwidth sequentially comprises
a first 20 MHz bandwidth, a second 20 MHz bandwidth, a third 20 MHz bandwidth, and a fourth
20 MHz bandwidth, and a puncturing status corresponding to the 80 MHz bandwidth is one of the
following puncturing statuses: [1 1 1 1], [x 1 1 1], [1 x 1 1], [1 1 x 1], [1 1 x 1], and [1 1 1 x],
wherein 1 indicates a non-punctured state, x indicates a punctured state, each value corresponds to
25 a respective 20 MHz bandwidth, and the second PPDU is not transmitted on a channel.

4. The method according to claim 1, wherein when the PPDU is in non-OFDMA transmission
mode and the bandwidth field indicates that the full bandwidth is a 160 MHz bandwidth; and

the preamble puncturing information field indicates that no puncturing is performed or that
20 MHz or 40MHz bandwidth of the 160 MHz bandwidth is punctured.

30 5. The method according to claim 4, wherein the 160 MHz bandwidth sequentially comprises

a first 20 MHz bandwidth, a second 20 MHz bandwidth, a third 20 MHz bandwidth, a fourth 20 MHz bandwidth, a fifth 20 MHz bandwidth, a sixth 20 MHz bandwidth, a seventh 20 MHz bandwidth, and an eighth 20 MHz bandwidth, wherein

when no puncturing is performed, the puncturing status of the 160 MHz bandwidth is [1 1 1

5 1 1 1 1 1 1 1]; or

when a 20MHz bandwidth is punctured, the puncturing status of the 160 MHz bandwidth is one of the following puncturing status: [x 1 1 1 1 1 1 1], [1 x 1 1 1 1 1 1], [1 1 x 1 1 1 1 1], [1 1 1 x 1 1 1 1], [1 1 1 1 x 1 1 1], [1 1 1 1 1 x 1 1], [1 1 1 1 1 1 x 1] and [1 1 1 1 1 1 1 x]; or

when a 40 MHz bandwidth is punctured, the puncturing status of the 160 MHz bandwidth is

10 one of the following puncturing status: [x x 1 1 1 1 1 1], [1 1 x x 1 1 1 1], [1 1 1 1 x x 1 1] and [1 1 1 1 1 1 x x];

wherein 1 indicates a non-punctured state, x indicates a punctured state, each value corresponds to a respective 20 MHz bandwidth, and the second PPDU is not transmitted on a channel corresponding to a punctured state.

15 6. The method according to claim 1, wherein when the PPDU is in non-OFDMA transmission mode and the bandwidth field indicates that the full bandwidth is a 320 MHz bandwidth, and the preamble puncturing information field indicates that no puncturing is performed or that 80 MHz or 120MHz bandwidth of the 320 MHz bandwidth is punctured.

7. The method according to claim 1, wherein when the PPDU is in OFDMA transmission
20 mode and the bandwidth indication field indicates that the bandwidth of the PPDU is 80 MHz or 160 MHz or 320 MHz, one preamble puncturing information field indicates a puncturing status of the 80 MHz corresponding to a frequency domain segment includes one of the following puncturing status: [1 1 1 1], [x 1 1 1], [1 x 1 1], [1 1 x 1], [1 1 1 x], [x x 1 1], and [1 1 x x], wherein 1 indicates a non-punctured state, x indicates a punctured state, each value corresponds to a
25 respective 20 MHz bandwidth in the 80 MHz frequency domain segment, and the first PPDU is not transmitted on the channel corresponding to a punctured state.

8. The method according to any one of claims 1 to 7, wherein the U-SIG field further comprises a first field indicating that the PPDU is in the non-OFDMA transmission mode or the OFDMA transmission mode.

30 9. A resource indication method, comprising:

receiving a physical layer protocol data unit (PPDU), wherein the PPDU comprises a

universal signal (U-SIG) field, and the U-SIG field comprises a bandwidth field and a preamble puncturing information field, wherein the bandwidth field indicates a full bandwidth, and the full bandwidth is 80MHz or 160MHz or 320MHz; wherein:

when the PPDU is in non-orthogonal frequency division multiple access (non-OFDMA) transmission mode, the preamble puncturing information field is used to indicate a puncturing status of the full entire bandwidth;

when the PPDU is in an orthogonal frequency division multiple access (OFDMA) transmission mode, the preamble puncturing information field is used to indicate a puncturing status of an 80 MHz corresponding to a frequency domain segment.

10. The method according to claim 9, wherein

when the PPDU is in non-OFDMA transmission mode and the bandwidth field indicates that the full bandwidth corresponding to the PPDU is an 80 MHz bandwidth, the preamble puncturing information field indicates that no puncturing is performed or that only one 20 MHz bandwidth of the 80 MHz bandwidth is punctured.

11. The method according to claim 10, wherein the 80 MHz bandwidth sequentially comprises a first 20 MHz bandwidth, a second 20 MHz bandwidth, a third 20 MHz bandwidth, and a fourth 20 MHz bandwidth, and a puncturing status corresponding to the 80 MHz bandwidth is one of the following puncturing statuses: [1 1 1 1], [x 1 1 1], [1 x 1 1], [1 1 x 1], [1 1 x 1], and [1 1 1 x], wherein 1 indicates a non-punctured state, x indicates a punctured state, each value corresponds to a respective 20 MHz bandwidth, and the second PPDU is not transmitted on a channel.

12. The method according to claim 9, wherein when the PPDU is in non-OFDMA transmission mode and the bandwidth field indicates that the full bandwidth is a 160 MHz bandwidth; and

the preamble puncturing information field indicates that no puncturing is performed or that 20 MHz or 40MHz bandwidth of the 160 MHz bandwidth is punctured.

13. The method according to claim 12, wherein the 160 MHz bandwidth sequentially comprises a first 20 MHz bandwidth, a second 20 MHz bandwidth, a third 20 MHz bandwidth, a fourth 20 MHz bandwidth, a fifth 20 MHz bandwidth, a sixth 20 MHz bandwidth, a seventh 20 MHz bandwidth, and an eighth 20 MHz bandwidth, wherein

when no puncturing is performed, the puncturing status of the 160 MHz bandwidth is [1 1 1

1 1 1 1 1 1 1]; or

when a 20MHz bandwidth is punctured, the puncturing status of the 160 MHz bandwidth is one of the following puncturing status: [x 1 1 1 1 1 1], [1 x 1 1 1 1 1], [1 1 x 1 1 1 1], [1 1 1 x 1 1 1], [1 1 1 1 x 1 1], [1 1 1 1 1 x 1], [1 1 1 1 1 1 x] and [1 1 1 1 1 1 x]; or

5 when a 40 MHz bandwidth is punctured, the puncturing status of the 160 MHz bandwidth is one of the following puncturing status: [x x 1 1 1 1 1], [1 1 x x 1 1 1], [1 1 1 x x 1 1] and [1 1 1 1 1 1 x x];

10 wherein 1 indicates a non-punctured state, x indicates a punctured state, each value corresponds to a respective 20 MHz bandwidth, and the second PPDU is not transmitted on a channel corresponding to a punctured state.

14. The method according to claim 9, wherein when the PPDU is in non-OFDMA transmission mode and the bandwidth field indicates that the full bandwidth is a 320 MHz bandwidth, and the preamble puncturing information field indicates that no puncturing is performed or that 80 MHz or 120MHz bandwidth of the 320 MHz bandwidth is punctured.

15 15. The method according to claim 9, wherein

when the PPDU is in OFDMA transmission mode and the bandwidth indication field indicates that the bandwidth of the PPDU is 80 MHz or 160 MHz or 320 MHz, one preamble puncturing information field indicates a puncturing status of the 80 MHz corresponding to a frequency domain segment includes one of the following puncturing status: [1 1 1 1], [x 1 1 1], [1 x 1 1], [1 1 x 1], [1 1 1 x], [x x 1 1], and [1 1 x x], wherein 1 indicates a non-punctured state, x indicates a punctured state, each value corresponds to a respective 20 MHz bandwidth in the 80 MHz frequency domain segment, and the first PPDU is not transmitted on the channel corresponding to a punctured state.

25 16. The method according to any one of claims 9 to 15, wherein the U-SIG field further comprises a first field indicating that the PPDU is in the non-OFDMA transmission mode or the OFDMA transmission mode.

17. A communication apparatus, wherein the apparatus comprises:

30 a processing module, configured to generate a physical layer protocol data unit (PPDU), wherein the PPDU comprises a universal signal (U-SIG) field, and the U-SIG field comprises a bandwidth field and a preamble puncturing information field, wherein the bandwidth field indicates a full bandwidth, and the full bandwidth is 80MHz or 160MHz or 320MHz; wherein:

when the PPDU is in non-orthogonal frequency division multiple access (non-OFDMA)

transmission mode, the preamble puncturing information field is used to indicate a puncturing status of the full bandwidth;

when the PPDU is in an orthogonal frequency division multiple access (OFDMA) transmission mode, the preamble puncturing information field is used to indicate a puncturing status of an 80 MHz corresponding to a frequency domain segment; and

a transceiver module, configured to send the PPDU.

18. The apparatus according to claim 17, wherein

when the PPDU is in non-OFDMA transmission mode and the bandwidth field indicates that the entire bandwidth corresponding to the PPDU is an 80 MHz bandwidth, the preamble puncturing information field indicates that no puncturing is performed or that only one 20 MHz bandwidth of the 80 MHz bandwidth is punctured.

19. The apparatus according to claim 18, wherein the 80 MHz bandwidth sequentially comprises a first 20 MHz bandwidth, a second 20 MHz bandwidth, a third 20 MHz bandwidth, and a fourth 20 MHz bandwidth, and a puncturing status corresponding to the 80 MHz bandwidth is one of the following puncturing status: [1 1 1 1], [x 1 1 1], [1 x 1 1], [1 1 x 1], [1 1 x 1], and [1 1 1 x], wherein 1 indicates a non-punctured state, and x indicates a punctured state, and the PPDU is not transmitted on the channel.

20. The apparatus according to claim 19, wherein when the PPDU is in non-OFDMA transmission mode and the bandwidth field indicates that the full bandwidth is a 160 MHz bandwidth, and the preamble puncturing information field indicates that no puncturing is performed or that 20 MHz or 40MHz bandwidth of the 160 MHz bandwidth is punctured.

21. The apparatus according to claim 20, wherein the 160 MHz sequentially comprises a first 20 MHz bandwidth, a second 20 MHz bandwidth, a third 20 MHz bandwidth, and a fourth 20 MHz bandwidth; and a fifth 20 MHz bandwidth, a sixth 20 MHz bandwidth, a seventh 20 MHz bandwidth, and an eighth 20 MHz bandwidth, wherein

when no puncturing is performed, the puncturing status of the 160 MHz bandwidth is [1 1 1 1 1 1 1 1 1 1]; or

when 20MHz bandwidth is punctured, the puncturing status of the 160 MHz bandwidth is one of the following puncturing status: [x 1 1 1 1 1 1 1], [1 x 1 1 1 1 1 1], [1 1 x 1 1 1 1 1], [1 1 1 x 1 1 1 1], [1 1 1 1 x 1 1 1], [1 1 1 1 1 x 1 1], [1 1 1 1 1 1 x 1] and [1 1 1 1 1 1 1 x]; or

when 40 MHz is punctured, the puncturing status of the 160 MHz bandwidth is one of the

following puncturing status: [x x 1 1 1 1 1 1], [1 1 x x 1 1 1 1], [1 1 1 1 x x 1 1] and [1 1 1 1 1 1 x x];

wherein 1 indicates a non-punctured state, and x indicates a punctured state, and the PPDU is not transmitted on the channel corresponding to a punctured state.

5 22. The apparatus according to claim 17, wherein when the PPDU is in non-OFDMA transmission mode and the bandwidth field indicates that the full bandwidth is a 320 MHz bandwidth, the preamble puncturing information field indicates that no puncturing is performed or that 80 MHz or 120MHz bandwidth of the 320 MHz bandwidth is punctured.

23. The apparatus according to claim 17, wherein

10 when the PPDU is in OFDMA transmission mode and the bandwidth indication field indicates that the bandwidth of the PPDU is 80 MHz or 160 MHz or 320 MHz, one preamble puncturing information field indicates a puncturing status of the 80 MHz corresponding to a frequency domain segment includes one of the following puncturing status: [1 1 1 1], [x 1 1 1], [1 x 1 1], [1 1 x 1], [1 1 1 x], [x x 1 1], and [1 1 x x], wherein 1 indicates a non-punctured state, x indicates a punctured
15 state, each value corresponds to a respective 20 MHz bandwidth in the 80 MHz frequency domain segment, and the first PPDU is not transmitted on the channel corresponding to a punctured state.

24. The apparatus according to any one of claims 17 to 23, wherein the U-SIG field further comprises a first field indicating that the PPDU is in the non-OFDMA transmission mode or the OFDMA transmission mode.

20 25. A communication apparatus, wherein the apparatus comprises:

a transceiver module, configured to receive a physical layer protocol data unit (PPDU); and

a processing module, configured to parse the PPDU, wherein the PPDU comprises a universal signal (U-SIG) field, and the U-SIG field comprises a bandwidth field and a preamble puncturing information field, wherein the bandwidth field indicates a full bandwidth, and the full bandwidth
25 is 80MHz or 160MHz or 320MHz; wherein:

when the PPDU is in non-orthogonal frequency division multiple access (non-OFDMA) transmission mode, the preamble puncturing information field is used to indicate a puncturing status of the full bandwidth;

when the PPDU is in an orthogonal frequency division multiple access (OFDMA)
30 transmission mode, the preamble puncturing information field is used to indicate a puncturing status of an 80 MHz corresponding to a frequency domain segment.

26. The apparatus according to claim 25, wherein when the PPDU is in non-OFDMA transmission mode and the bandwidth field indicates that the full bandwidth corresponding to the PPDU is an 80 MHz bandwidth, the preamble puncturing information field indicates that no puncturing is performed or that only one 20 MHz bandwidth of the 80 MHz bandwidth is punctured.

27. The apparatus according to claim 26, wherein the 80 MHz bandwidth sequentially comprises a first 20 MHz bandwidth, a second 20 MHz bandwidth, a third 20 MHz bandwidth, and a fourth 20 MHz bandwidth, and a puncturing status corresponding to the 80 MHz bandwidth is one of the following puncturing status: [1 1 1 1], [x 1 1 1], [1 x 1 1], [1 1 x 1], [1 1 x 1], and [1 1 1 x], wherein 1 indicates a non-punctured state, and x indicates a punctured state, and the PPDU is not transmitted on the channel.

28. The apparatus according to claim 25, wherein when the PPDU is in non-OFDMA transmission mode and the bandwidth field indicates that the full bandwidth is a 160 MHz bandwidth, the preamble puncturing information field indicates that no puncturing is performed or that 20 MHz or 40MHz bandwidth of the 160 MHz bandwidth is punctured.

29. The apparatus according to claim 28, wherein the 160 MHz sequentially comprises a first 20 MHz bandwidth, a second 20 MHz bandwidth, a third 20 MHz bandwidth, and a fourth 20 MHz bandwidth; and a fifth 20 MHz bandwidth, a sixth 20 MHz bandwidth, a seventh 20 MHz bandwidth, and an eighth 20 MHz bandwidth, wherein

when no puncturing is performed, the puncturing status of the 160 MHz bandwidth is [1 1 1 1 1 1 1 1 1 1]; or

when 20MHz bandwidth is punctured, the puncturing status of the 160 MHz bandwidth is one of the following puncturing status: [x 1 1 1 1 1 1 1], [1 x 1 1 1 1 1 1], [1 1 x 1 1 1 1 1], [1 1 1 x 1 1 1 1], [1 1 1 1 x 1 1 1], [1 1 1 1 1 x 1 1], [1 1 1 1 1 1 x 1] and [1 1 1 1 1 1 1 x]; or

when 40 MHz is punctured, the puncturing status of the 160 MHz bandwidth is one of the following puncturing status: [x x 1 1 1 1 1 1], [1 1 x x 1 1 1 1], [1 1 1 1 x x 1 1] and [1 1 1 1 1 1 x x];

wherein 1 indicates a non-punctured state, and x indicates a punctured state, and the PPDU is not transmitted on the channel corresponding to a punctured state.

30. The apparatus according to claim 25, wherein when the PPDU is in non-OFDMA transmission mode and the bandwidth field indicates that the full bandwidth is a 320 MHz

bandwidth, the preamble puncturing information field indicates that no puncturing is performed or that 80 MHz or 120MHz bandwidth of the 320 MHz bandwidth is punctured.

31. The apparatus according to claim 25, wherein

when the PPDU is in OFDMA transmission mode and the bandwidth indication field indicates
5 that the bandwidth of the PPDU is 80 MHz or 160 MHz or 320 MHz, one preamble puncturing
information field indicates a puncturing status of the 80 MHz corresponding to a frequency domain
segment includes one of the following puncturing status: [1 1 1 1], [x 1 1 1], [1 x 1 1], [1 1 x 1],
[1 1 1 x], [x x 1 1], and [1 1 x x], wherein 1 indicates a non-punctured state, x indicates a punctured
state, each value corresponds to a respective 20 MHz bandwidth in the 80 MHz frequency domain
10 segment, and the first PPDU is not transmitted on the channel corresponding to a punctured state.

32. The apparatus according to any one of claims 25 to 31, wherein the U-SIG field further
comprises a first field indicating that the PPDU is in the non-OFDMA transmission mode or the
OFDMA transmission mode.

33. A computer-readable storage medium, wherein the computer-readable storage medium
15 stores a computer program, the computer program comprises program instructions; and when the
program instructions are executed by a computer, the computer is enabled to perform the method
according to any one of claims 1 to 16.

34. A chip, wherein the chip comprises at least one processor and an interface, the processor
is configured to read and execute instructions stored in a memory; and when the instructions are
20 run, the chip is enabled to perform the method according to any one of claims 1 to 16.

35. A computer program product, wherein the computer program product stores instructions.
When the instructions are run on a computer, the computer is enabled to perform the method
performed the method according to any one of claims 1 to 16.

36. A computer-readable storage medium, wherein the computer-readable storage medium
25 stores a computer program, the computer program comprises program instructions; and when the
program instructions are executed by a computer, the computer is enabled to perform the method
according to any one of claims 1 to 16.