

reserved bit is used, the reserved bit is no longer considered as a reserved bit.

[00105] In the process 700, the first device 701 determines 720 one or more distributed resource blocks based on the DRU indication information.

[00106] Optionally, the one or more distributed resource blocks may be determined from a predetermined quantity of distributed resource blocks, where the predetermined quantity of distributed resource blocks is predefined or preconfigured. A specific value of the predetermined quantity is related to a bandwidth and a size of the distributed resource block. The predetermined quantity of distributed resource blocks may also be referred to as predefined or preconfigured distributed resource blocks.

[00107] Specifically, the predetermined quantity of distributed resource blocks may be shown in the following embodiments with reference to Table 5 to Table 50. In other words, the predetermined quantity of distributed resource blocks may be considered as a pre-designed DRU tone plan (tone plan) in different bandwidths (for example, 40 MHz, 80 MHz, 160 MHz, or 320 MHz).

[00108] In this embodiment of this disclosure, the one or more distributed resource blocks may also be referred to as transmission resource blocks. In some embodiments, the first device 701 may determine the transmission resource block based on the bandwidth indication information and the DRU indication information. The transmission resource block may be a DRU. In the detailed descriptions of the following embodiments, as shown in Table 1, the first device 701 may determine a size of the DRU and an identifier of the DRU. Further, based on the following embodiments with reference to Table 3 to Table 50, the first device 701 may determine an index of each subcarrier included in the transmission resource block.

[00109] As described above, the transmission resource block may include N subcarriers, including N_1 data subcarriers and N_2 pilot subcarriers, where $N = N_1 + N_2$. In addition, an absolute value of an index difference between any two data subcarriers of N_3 data subcarriers is greater than or equal to 4, and $N_3 < N_1$. An absolute value of an index difference between any two pilot subcarriers of the N_2 pilot subcarriers included in the transmission resource block is greater than 1.

[00110] For example, for a distribution characteristic satisfied by the subcarriers included in the transmission resource block, refer to the following specific embodiments described with reference to Table 5 to Table 50. For brevity, details are not described herein again.

[00111] In the process 700, the first device 701 sends a response to the trigger-based frame to the second device 702 on the one or more distributed resource blocks.

[00112] Correspondingly, it may be understood that the second device 702 may receive the response from the first device 701.

between two most adjacent data subcarriers in two adjacent groups of $N_4/6$ groups are sequentially and alternately 33 and 43.

[00137] For a DRU whose size is 242, that is, a 242-tone DRU, indices of N_4 data subcarriers included in the DRU are all negative values, or indices of N_4 data subcarriers are all positive values.

5 **[00138]** Specifically, M_2 242-tone DRUs may be distributed on a bandwidth of 80 MHz, 160 MHz, or 320 MHz, where indices of N_4 ($N_4 = 24$) data subcarriers included in each of $M_2/2$ 242-tone DRUs are all negative values, and indices of N_4 ($N_4 = 24$) data subcarriers included in each of the other $M_2/2$ 242-tone DRUs are all positive values. It may be understood that when the bandwidth is 80 MHz, $M_2 = 4$. When the bandwidth is 160 MHz, $M_2 = 8$. When the bandwidth is
10 320 MHz, $M_2 = 16$.

[00139] For a DRU whose size is 484 or 996, that is, a 484-tone DRU or a 996-tone DRU, half ($N_4/2$) of indices of N_4 data subcarriers included in the DRU are positive values and half ($N_4/2$) are negative values.

[00140] Specifically, in a case of a 484-tone DRU on a bandwidth of 160 MHz or 320 MHz, or
15 a 996-tone DRU on a bandwidth of 320 MHz, N_4 data subcarriers in each N -tone DRU include $N_4/2$ data subcarriers whose indices are negative and the other $N_4/2$ data subcarriers whose indices are positive.

[00141] In some embodiments, a lowest-frequency index of a data subcarrier at a lowest frequency in the N_3 data subcarriers satisfies: (1) When the bandwidth is 40 MHz, the lowest-frequency index is $-a-128$; (2) when the bandwidth is 80 MHz, the lowest-frequency index is $-a-128-256$ (namely, $-a-384$); (3) when the bandwidth is 160 MHz, the lowest-frequency index is $-a-128-256-512$ (namely, $-a-896$); or (4) when the bandwidth is 320 MHz, the lowest-frequency index is $-a-128-256-512-1024$ (namely, $-a-1920$); and a is any positive integer from 110 to 122. For example, a may be 110, 113, 115, 117, or 122.

25 **[00142]** In this embodiment of this disclosure, an absolute value of an index difference between every two pilot subcarriers of N_2 pilot subcarriers in a same DRU is greater than 1. Specifically, for a DRU of a specific size, N_2 pilot subcarriers included in each of the DRU of the specific size are determined from remaining subcarriers of all subcarriers in the entire bandwidth other than guard subcarriers, direct current subcarriers, N_3 data subcarriers in each DRU, N_4 data subcarriers
30 (if any) in each DRU. In addition, in this determining manner, N_2 pilot subcarriers in a same DRU are fully discrete, thereby implementing maximum frequency domain diversity. In addition, it may be understood that, for a case in which $N_3 + N_4 < N_1$, $N_1 - N_3 - N_4$ data subcarriers are determined from remaining subcarriers other than the determined pilot subcarriers, so that the $N_1 - N_3 - N_4$ data subcarriers included in each of the DRU of the specific size are fully discrete.

35 **[00143]** The following separately describes DRUs of different sizes in the 40 MHz bandwidth,

CLAIMS

We claim:

1. An information transmission method, comprising:

receiving, by a first device, a trigger-based frame from a second device, wherein the trigger-based frame comprises distributed resource unit indication information, and the distributed resource unit indication information indicates information about a distributed resource unit allocated to the first device;

determining, by the first device, one or more distributed resource blocks based on the distributed resource unit indication information, wherein each of the one or more distributed resource blocks comprises $N1$ data subcarriers and $N2$ pilot subcarriers, an absolute value of an index difference between every two data subcarriers of $N3$ data subcarriers in the $N1$ data subcarriers is greater than or equal to 4, $N1$, $N2$, and $N3$ are all positive integers, and $N2 < N3 \leq N1$; and

sending, by the first device, a response to the trigger-based frame to the second device on the one or more distributed resource blocks.

2. An information transmission method, comprising:

sending, by a second device, a trigger-based frame to a first device, wherein the trigger-based frame comprises distributed resource unit indication information, and the distributed resource unit indication information indicates information about a distributed resource unit allocated to the first device; and

receiving, by the second device, a response to the trigger-based frame from the first device on one or more distributed resource blocks, wherein the one or more distributed resource blocks are determined based on the distributed resource unit indication information, each of the one or more distributed resource blocks comprises $N1$ data subcarriers and $N2$ pilot subcarriers, an absolute value of an index difference between every two data subcarriers of $N3$ data subcarriers in the $N1$ data subcarriers is greater than or equal to 4, $N1$, $N2$, and $N3$ are all positive integers, and $N2 < N3 \leq N1$.

3. The method according to claim 1 or 2, wherein when a bandwidth is 40 MHz, 80 MHz, 160 MHz, or 320 MHz, $N1 = 24$, $N2 = 2$, and $N3 = 24$, or when a bandwidth is 80 MHz, 160 MHz, or 320 MHz, $N1 = 48$, $N2 = 4$, and $N3 = 48$, or when a bandwidth is 160 MHz or 320 MHz, $N1 = 102$, $N2 = 4$, and $N3 = 96$, or when a bandwidth is 320 MHz, $N1 = 234$, $N2 = 8$, and $N3 = 192$, the $N3$ data subcarriers satisfy: if the $N3$ data subcarriers are divided into $N3/6$ groups in ascending order of indices, every six data subcarriers form one group, and an absolute value of an index difference between two adjacent data subcarriers in a same group is 18.

4. The method according to claim 1 or 2, wherein when a bandwidth is 40 MHz, $N_1 = 48$, $N_2 = 4$, and $N_3 = 48$, or when a bandwidth is 80 MHz, $N_1 = 102$, $N_2 = 4$, and $N_3 = 96$, or when a bandwidth is 160 MHz, $N_1 = 234$, $N_2 = 8$, and $N_3 = 192$, or when a bandwidth is 320 MHz, $N_1 = 468$, $N_2 = 16$, and $N_3 = 384$, the N_3 data subcarriers satisfy: if the N_3 data subcarriers are divided into $N_3/12$ groups in ascending order of indices, every 12 data subcarriers form one group, an absolute value of an index difference between two adjacent data subcarriers in a same group is 9, and absolute values of index differences between two most adjacent data subcarriers in two adjacent groups are alternately 24 and 34.

5. The method according to claim 1 or 2, wherein when a bandwidth is 40 MHz, $N_1 = 102$, $N_2 = 4$, and $N_3 = 96$, or when a bandwidth is 80 MHz, $N_1 = 234$, $N_2 = 8$, and $N_3 = 192$, or when a bandwidth is 160 MHz, $N_1 = 468$, $N_2 = 16$, and $N_3 = 384$, or when a bandwidth is 320 MHz, $N_1 = 980$, $N_2 = 16$, and $N_3 = 768$, the N_3 data subcarriers satisfy: if the N_3 data subcarriers are divided into $N_3/24$ groups in ascending order of indices, every 24 data subcarriers form one group, absolute values of index differences between two adjacent data subcarriers in a same group are alternately 5 and 4, and absolute values of index differences between two most adjacent data subcarriers in two adjacent groups are alternately 19 and 29.

6. The method according to any one of claims 1 to 5, wherein when the bandwidth is 80 MHz, 160 MHz, or 320 MHz, $N_1 = 234$, $N_2 = 8$, $N_3 = 192$, and $N_4 = 24$, or when the bandwidth is 160 MHz or 320 MHz, $N_1 = 468$, $N_2 = 16$, $N_3 = 384$, and $N_4 = 48$, or when the bandwidth is 320 MHz, $N_1 = 980$, $N_2 = 16$, $N_3 = 768$, and $N_4 = 96$, N_4 data subcarriers of remaining data subcarriers other than the N_3 data subcarriers in the N_1 data subcarriers satisfy: if the N_4 data subcarriers are divided into $N_4/6$ groups in ascending order of indices, every six data subcarriers form one group, an absolute value of an index difference between two adjacent data subcarriers in a same group is 18, N_4 is a positive integer, $N_4 < N_3$, and $N_3 + N_4 < N_1$.

7. The method according to any one of claims 1 to 6, wherein a lowest-frequency index of a data subcarrier at a lowest frequency in the N_3 data subcarriers satisfies:

when the bandwidth is 40 MHz, the lowest-frequency index is $-a-128$;

when the bandwidth is 80 MHz, the lowest-frequency index is $-a-128-256$;

when the bandwidth is 160 MHz, the lowest-frequency index is $-a-128-256-512$; or

when the bandwidth is 320 MHz, the lowest-frequency index is $-a-128-256-512-1024$; and a is any positive integer from 110 to 122.

8. The method according to any one of claims 1 to 7, wherein an absolute value of an index difference between every two pilot subcarriers of the N_2 pilot subcarriers is greater than 1.

9. A communication apparatus, comprising:

a receiving unit, configured to receive a trigger-based frame from a second device, wherein

the trigger-based frame comprises distributed resource unit indication information, and the distributed resource unit indication information indicates information about a distributed resource unit allocated to the communication apparatus;

a determining unit, configured to determine one or more distributed resource blocks based on the distributed resource unit indication information, wherein each of the one or more distributed resource blocks comprises N_1 data subcarriers and N_2 pilot subcarriers, an absolute value of an index difference between every two data subcarriers of N_3 data subcarriers in the N_1 data subcarriers is greater than or equal to 4, N_1 , N_2 , and N_3 are all positive integers, and $N_2 < N_3 \leq N_1$; and

a sending unit, configured to send a response to the trigger-based frame to the second device on the one or more distributed resource blocks.

10. A communication apparatus, comprising:

a sending unit, configured to send a trigger-based frame to a first device, wherein the trigger-based frame comprises distributed resource unit indication information, and the distributed resource unit indication information indicates information about a distributed resource unit allocated to the first device; and

a receiving unit, configured to receive a response to the trigger-based frame from the first device on one or more distributed resource blocks, wherein the one or more distributed resource blocks are determined based on the distributed resource unit indication information, each of the one or more distributed resource blocks comprises N_1 data subcarriers and N_2 pilot subcarriers, an absolute value of an index difference between every two data subcarriers of N_3 data subcarriers in the N_1 data subcarriers is greater than or equal to 4, N_1 , N_2 , and N_3 are all positive integers, and $N_2 < N_3 \leq N_1$.

11. The apparatus according to claim 9 or 10, wherein when a bandwidth is 40 MHz, 80 MHz, 160 MHz, or 320 MHz, $N_1 = 24$, $N_2 = 2$, and $N_3 = 24$, or when a bandwidth is 80 MHz, 160 MHz, or 320 MHz, $N_1 = 48$, $N_2 = 4$, and $N_3 = 48$, or when a bandwidth is 160 MHz or 320 MHz, $N_1 = 102$, $N_2 = 4$, and $N_3 = 96$, or when a bandwidth is 320 MHz, $N_1 = 234$, $N_2 = 8$, and $N_3 = 192$, the N_3 data subcarriers satisfy: if the N_3 data subcarriers are divided into $N_3/6$ groups in ascending order of indices, every six data subcarriers form one group, and an absolute value of an index difference between two adjacent data subcarriers in a same group is 18.

12. The apparatus according to claim 9 or 10, wherein when a bandwidth is 40 MHz, $N_1 = 48$, $N_2 = 4$, and $N_3 = 48$, or when a bandwidth is 80 MHz, $N_1 = 102$, $N_2 = 4$, and $N_3 = 96$, or when a bandwidth is 160 MHz, $N_1 = 234$, $N_2 = 8$, and $N_3 = 192$, or when a bandwidth is 320 MHz, $N_1 = 468$, $N_2 = 16$, and $N_3 = 384$, the N_3 data subcarriers satisfy: if the N_3 data subcarriers are divided into $N_3/12$ groups in ascending order of indices, every 12 data subcarriers form one

group, an absolute value of an index difference between two adjacent data subcarriers in a same group is 9, and absolute values of index differences between two most adjacent data subcarriers in two adjacent groups are alternately 24 and 34.

13. The apparatus according to claim 9 or 10, wherein when a bandwidth is 40 MHz, $N_1 = 102$, $N_2 = 4$, and $N_3 = 96$, or when a bandwidth is 80 MHz, $N_1 = 234$, $N_2 = 8$, and $N_3 = 192$, or when a bandwidth is 160 MHz, $N_1 = 468$, $N_2 = 16$, and $N_3 = 384$, or when a bandwidth is 320 MHz, $N_1 = 980$, $N_2 = 16$, and $N_3 = 768$, the N_3 data subcarriers satisfy: if the N_3 data subcarriers are divided into $N_3/24$ groups in ascending order of indices, every 24 data subcarriers form one group, absolute values of index differences between two adjacent data subcarriers in a same group are alternately 5 and 4, and absolute values of index differences between two most adjacent data subcarriers in two adjacent groups are alternately 19 and 29.

14. The apparatus according to any one of claims 9 to 13, wherein when the bandwidth is 80 MHz, 160 MHz, or 320 MHz, $N_1 = 234$, $N_2 = 8$, $N_3 = 192$, and $N_4 = 24$, or when the bandwidth is 160 MHz or 320 MHz, $N_1 = 468$, $N_2 = 16$, $N_3 = 384$, and $N_4 = 48$, or when the bandwidth is 320 MHz, $N_1 = 980$, $N_2 = 16$, $N_3 = 768$, and $N_4 = 96$, N_4 data subcarriers of remaining data subcarriers other than the N_3 data subcarriers in the N_1 data subcarriers satisfy: if the N_4 data subcarriers are divided into $N_4/6$ groups in ascending order of indices, every six data subcarriers form one group, an absolute value of an index difference between two adjacent data subcarriers in a same group is 18, N_4 is a positive integer, $N_4 < N_3$, and $N_3 + N_4 < N_1$.

15. The apparatus according to any one of claims 9 to 14, wherein a lowest-frequency index of a data subcarrier at a lowest frequency in the N_3 data subcarriers satisfies:

when the bandwidth is 40 MHz, the lowest-frequency index is $-a-128$;
when the bandwidth is 80 MHz, the lowest-frequency index is $-a-128-256$;
when the bandwidth is 160 MHz, the lowest-frequency index is $-a-128-256-512$; or
when the bandwidth is 320 MHz, the lowest-frequency index is $-a-128-256-512-1024$; and
 a is any positive integer from 110 to 122.

16. The method according to any one of claims 9 to 15, wherein an absolute value of an index difference between every two pilot subcarriers of the N_2 pilot subcarriers is greater than 1.

17. A computer-readable storage medium, wherein the computer-readable storage medium stores a computer program, and when the computer program is executed by a processor, the method according to any one of claims 1 to 8 is implemented.

18. A chip, comprising a processing circuit and a communication interface, wherein the processing circuit is configured to perform the method according to any one of claims 1 to 8.

19. A computer program product, comprising a computer program, wherein when the computer program is executed by a processor, the method according to any one of claims 1 to 8 is

implemented.