

CLAIMS

What is claimed is:

1. A data processing method, comprising:

5 dividing a total bandwidth of a first user into N sub-bandwidths, wherein at least one of the N sub-bandwidths comprises a plurality of RUs;

allocating a coded bitstream of the first user to the N sub-bandwidths;

10 allocating a coded bitstream on a first sub-bandwidth to M RUs or a first RU obtained by combining the M RUs, wherein the first sub-bandwidth is any one of the at least one sub-bandwidth that comprises a plurality of RUs, and M is a positive integer greater than 1; and

reordering all bits in the coded bitstream on the first sub-bandwidth by using a first interleaver or a first tone mapper;

wherein a value of a number of data subcarriers of the first interleaver or the first tone mapper is any positive integer in $[N_{SD_min}/Q, N_{SD_max}/Q]$, wherein

15 N_{SD_min} is a sum of data subcarriers comprised in the M RUs, N_{SD_max} is a sum of subcarriers comprised in the M RUs, and Q is a number of data subcarriers to which one data bit is mapped.

2. The method according to claim 1, wherein a number N_{COL} of columns and a number N_{ROW} of rows of the first interleaver meet the following relationship:

20 $(N_{COL} \times N_{ROW}) / N_{BPSCS} = N_{SD}$, wherein

N_{BPSCS} is a number of coded bits carried on each subcarrier of each spatial data stream.

3. The method according to claim 2, wherein if the coded bit stream comprises a plurality of spatial data streams, the method further comprises: determining a frequency rotation parameter N_{ROT} of the first interleaver in any one of the following manners:

25 manner 1: N_{ROT} is determined based on a formula $N_{ROT} = \text{floor}(\frac{N_{SD}}{4})$; and

manner 2: a positive integer that enables a packet error rate (packet error rate, PER) of a receive end to be minimum or a positive integer that enables a signal-to-noise ratio (signal-to-noise ratio, SNR) required when a PER of a receive end is a preset value to be minimum is selected from

[N_{ROT_min} , N_{ROT_max}] as N_{ROT} , wherein N_{ROT_min} is a frequency rotation parameter of a second interleaver corresponding to an RU in which a number of comprised data subcarriers is less than N_{SD} and is the closest to N_{SD} , and N_{ROT_max} is a frequency rotation parameter of a third interleaver corresponding to an RU in which a number of comprised data subcarriers is greater than N_{SD} and is the closest to N_{SD} .

4. The method according to claim 3, wherein the M RUs comprise one 26-tone resource unit (26-tone resource unit, 26-tone RU) and one 52-tone RU; and

when a dual-carrier modulation mode is not used, $N_{SD} = 72$, $N_{COL} = 18$, $N_{ROW} = 4 \times N_{BPSCS}$, and $N_{ROT} = 18$.

5. The method according to claim 3, wherein the M RUs comprise one 26-tone RU and one 106-tone RU; and

when a dual-carrier modulation mode is not used, N_{SD} is 126 or 128; or

when the dual-carrier modulation mode is used, N_{SD} is 63 or 64.

6. The method according to claim 5, wherein the M RUs comprise one 26-tone RU and one 106-tone RU; and

a value of N_{ROW} when the dual-carrier modulation mode is not used is twice a value of N_{ROW} when the dual-carrier modulation mode is used.

7. The method according to claim 5, wherein when the dual-carrier modulation mode is not used, $N_{ROT} = 31$.

8. The method according to claim 1, wherein a tone mapping distance parameter D_{TM} of the first tone mapper is a divisor of N_{SD} , and N_{SD} is a number of data subcarriers of the first tone mapper.

9. The method according to claim 8, wherein the method further comprises: determining D_{TM} in any one of the following manners:

manner 1: a positive integer is selected from [D_{TM_min} , D_{TM_max}] as D_{TM} , wherein D_{TM_min} is a tone mapping distance parameter corresponding to a second tone mapper corresponding to an

RU in which a number of comprised data subcarriers is less than N_{SD} and is the closest to N_{SD} , and D_{TM_max} is a tone mapping distance parameter corresponding to a third tone mapper corresponding to an RU in which a number of comprised data subcarriers is greater than N_{SD} and is the closest to N_{SD} ;

5 manner 2: a positive integer that enables a PER of the receive end to be minimum or a positive integer that enables an SNR required when a PER of the receive end is a preset value to be minimum is selected from $[D_{TM_min}, D_{TM_max}]$ as D_{TM} ; and

manner 3: a ratio N_{SD}/N_{COL} of N_{SD} to N_{COL} of a first interleaver with a same RU size as the first tone mapper is used as D_{TM} .

10 10. The method according to claim 8, wherein the M RUs comprise one 26-tone RU and one 52-tone RU; and

when a dual-carrier modulation mode is not used, $N_{SD} = 72$, and D_{TM} is 4 or 6; or

when the dual-carrier modulation mode is used, $N_{SD} = 36$, and D_{TM} is 2 or 3.

15 11. The method according to claim 8, wherein the M RUs comprise one 26-tone RU and one 106-tone RU; and

when a dual-carrier modulation mode is not used, N_{SD} is 126 or 128; or

when the dual-carrier modulation mode is used, N_{SD} is 63 or 64.

12. The method according to claim 8, wherein the M RUs are M 242-tone RUs; and

20 when M=2, N_{SD} is 468 and D_{TM} is 12 when a dual-carrier modulation mode is not used, and N_{SD} is 234 and D_{TM} is 9 when the dual-carrier modulation mode is used;

when M=3, N_{SD} is 702 and D_{TM} is 13 or 18 when a dual-carrier modulation mode is not used, and N_{SD} is 351 and D_{TM} is 9 or 13 when the dual-carrier modulation mode is used; or

when M=4, N_{SD} is 980 and D_{TM} is 20 when a dual-carrier modulation mode is not used, and N_{SD} is 490 and D_{TM} is 14 when the dual-carrier modulation mode is used.

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13. A data processing apparatus, configured to perform a method as claimed in any one of claims 1 to 12.

14. A program which makes a computer to perform a method as claimed in any one of claims 1 to 12.

5 15. A computer-readable recording medium on which a program is recorded, wherein the program, when executed, enables a computer to perform a method as claimed in any one of claims 1 to 12.

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