

WHAT IS CLAIMED IS:

1. A first device, comprising:
at least one processor; and
at least one memory including computer program code;
5 wherein the at least one memory and the computer program code are configured to, with the at least one processor, cause the first device to:
determine whether a contention-free random access resource is allocated from a second device for a first random access type,
in accordance with a determination that the contention-free random access
10 resource is allocated, compare a target transport block size corresponding to the contention-free random access resource with a first transport block size configured for a first group of preambles available for the first random access type, and
perform random access to the second device based on a result of the comparison.
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2. The device of claim 1, wherein the at least one memory and the computer program code are configured to, with the at least one processor, cause the first device to perform the random access by:
in accordance with a determination that the target transport block size matches with
20 the first transport block size, performing the random access based on the first group of preambles.
3. The device of claim 2, wherein the at least one memory and the computer program code are configured to, with the at least one processor, cause the first device to
25 perform the random access based on the first group of preambles by:
in accordance with a determination that the first random access type is used, performing a contention-based random access attempt with the first random access type by transmitting a preamble selected from the first group of preambles and payload of the first transport block size.
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4. The device of claim 2, wherein the at least one memory and the computer program code are configured to, with the at least one processor, cause the first device to perform the random access based on the first group of preambles by:

in accordance with a trigger of switching from the first random access type to a second random access type, selecting a second group of preambles for the second random access type corresponding to the first group of preambles; and

in accordance with a selection of the second group of preambles, performing a
5 further contention-based random access attempt with the second random access type by transmitting a preamble selected from the second group of preambles.

5. The device of claim 4, wherein the at least one memory and the computer program code are configured to, with the at least one processor, cause the first device to
10 select the second group of preambles by:

in accordance with a trigger of switching from the first random access type to a second random access type, determining whether the second group of preambles is available for the first device; and

in accordance with a determination that the second group of preambles is available,
15 selecting the second group of preambles, and

wherein the at least one memory and the computer program code are configured to, with the at least one processor, further cause the first device to:

in accordance with a determination that the second group of preambles is unavailable, determine that the random access fails, without performing a contention-based
20 random access attempt with the second random access type.

6. The device of claim 4 or 5, wherein the second random access type is a slow random access type.

25 7. The device of claim 6, wherein the second random access type is a four-step random access type.

8. The device of any of claims 1-7, wherein the at least one memory and the computer program code are configured to, with the at least one processor, cause the first
30 device to perform the random access by:

in accordance with a determination that the target transport block size mismatches with the first transport block size, performing the random access based on a third group of preambles available for the first random access type.

9. The device of claim 8, wherein the third group of preambles comprises one of Random Access Preambles group A and Random Access Preambles group B for the first random access type.

5 10. The device of claim 1, wherein the at least one memory and the computer program code are configured to, with the at least one processor, cause the first device to compare the target transport block size with the first transport block size by:

in accordance with a determination that a previous contention-based random access attempt using a preamble selected from the first group of preambles fails, determining
10 whether transmission on the contention-free random access resource is available, and

in accordance with the transmission on the contention-free random access resource is available, comparing the target transport block size with the first transport block size.

11. The device of claim 10, wherein the at least one memory and the computer
15 program code are configured to, with the at least one processor, cause the first device to perform the random access by:

in accordance with a determination that the target transport block size mismatches with the first transport block size, preventing a contention-free random access attempt from being performed.

20 12. The device of claim 10 or 11, wherein the at least one memory and the computer program code are configured to, with the at least one processor, cause the first device to perform the random access by:

in accordance with a determination that the target transport block size mismatches
25 with the first transport block size, performing a further contention-based random access attempt with the first random access type based on the first group of preambles and the first transport block size.

30 13. The device of any of claims 1-12, wherein the first group of preambles comprises one of Random Access Preambles group A and Random Access Preambles group B for the first random access type.

14. The device of any of claims 1-13, wherein the first random access type is a quick random access type.

15. The device of claim 14, wherein the first random access type is a two-step random access type.

5 16. A method comprising:

determining, at a first device, whether a contention-free random access resource is allocated from a second device for a first random access type;

in accordance with a determination that the contention-free random access resource is allocated, comparing a target transport block size corresponding to the contention-free random access resource with a first transport block size configured for a first group of
10 preambles available for the first random access type; and

performing random access to the second device based on a result of the comparison.

17. The method of claim 16, wherein performing the random access comprises:

15 in accordance with a determination that the target transport block size matches with the first transport block size, performing the random access attempt based on the first group of preambles.

18. The method of claim 17, wherein performing the random access based on the first group of preambles comprises:

in accordance with a determination that the first random access type is used, performing a contention-based random access attempt with the first random access type by transmitting a preamble selected from the first group of preambles and payload of the first transport block size.

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19. The method of claim 17, wherein performing the random access based on the first group of preambles comprises:

in accordance with a trigger of switching from the first random access type to a second random access type, selecting a second group of preambles for the second random access type corresponding to the first group of preambles; and
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in accordance with a selection of the second group of preambles, performing a further contention-based random access attempt with the second random access type by transmitting a preamble selected from the second group of preambles.

20. The method of claim 19, wherein selecting the second group of preambles comprises:

in accordance with a trigger of switching from the first random access type to a second random access type, determining whether the second group of preambles is available for the first device; and

in accordance with a determination that the second group of preambles is available, selecting the second group of preambles, and

wherein the method further comprises:

in accordance with a determination that the second group of preambles is unavailable, determine that the random access fails, without performing a contention-based random access attempt with the second random access type.

21. The method of claim 19 or 20, wherein the second random access type is a slow random access type.

22. The method of claim 21, wherein the second random access type is a four-step random access type.

23. The method of any of claims 16-21, wherein performing the random access comprises:

in accordance with a determination that the target transport block size mismatches with the first transport block size, performing the random access based on a third group of preambles available for the first random access type.

24. The method of claim 23, wherein the third group of preambles comprises one of Random Access Preambles group A and Random Access Preambles group B for the first random access type.

25. The method of claim 16, wherein comparing the target transport block size with the first transport block size comprises:

in accordance with a determination that a previous contention-based random access attempt using a preamble selected from the first group of preambles fails, determining whether transmission on the contention-free random access resource is available; and

in accordance with the transmission on the contention-free random access resource

is available, comparing the target transport block size with the first transport block size.

26. The method of claim 25, wherein performing the random access comprises:

5 in accordance with a determination that the target transport block size mismatches with the first transport block size, preventing a contention-free random access attempt from being performed.

27. The method of claim 25 or 26, wherein performing the random access comprises:

10 in accordance with a determination that the target transport block size mismatches with the first transport block size, performing a further contention-based random access attempt with the first random access type based on the first group of preambles and the first transport block size.

15 28. The method of any of claims 16-27, wherein the first group of preambles comprises one of Random Access Preambles group A and Random Access Preambles group B for the first random access type.

20 29. The method of any of claims 16-28, wherein the first random access type is a quick random access type.

30. The method of claim 29, wherein the first random access type is a two-step random access type.

25 31. A first apparatus comprising means for:

determining whether a contention-free random access resource is allocated from a second apparatus for a first random access type;

30 in accordance with a determination that the contention-free random access resource is allocated, comparing a target transport block size corresponding to the contention-free random access resource with a first transport block size configured for a first group of preambles available for the first random access type; and

performing random access to the second apparatus based on a result of the comparison.

32. A computer readable medium comprising program instructions for causing an apparatus to perform at least the method of claims 16-30.