

CLAIMS

What is claimed is:

- 1 1. A method for wireless communication at a user equipment (UE),
2 comprising:
3 identifying, for a control region of a control channel, one or more sets of
4 decoding candidates associated with one or more search space sets;
5 determining a total number of available control channel elements (CCEs) for
6 the one or more search space sets based at least in part on a CCE channel estimation
7 limitation;
8 determining respective numbers of available CCEs for the one or more search
9 space sets based at least in part on the total number of available CCEs;
10 determining an applied one or more sets of decoding candidates by hashing a
11 first subset of the one or more sets of decoding candidates to a first subset of CCEs of the
12 control region based at least in part on the respective numbers of available CCEs, and
13 admitting a second subset of the one or more sets of decoding candidates having hashed
14 locations overlapping with the first subset of CCEs; and
15 monitoring the control region for the applied one or more sets of decoding
16 candidates.
- 1 2. The method of claim 1, further comprising:
2 determining a total number of available blind decodes for the one or more
3 search space sets based at least in part on a blind decoding limitation of the UE;
4 determining respective numbers of available blind decodes for the one or more
5 search space sets based at least in part on the total number of available blind decodes; and
6 pruning the one or more sets of decoding candidates based at least in part on
7 the respective numbers of available blind decodes for the one or more search space sets.
- 1 3. The method of claim 2, wherein the determining the respective
2 numbers of available blind decodes comprises allocating the total number of available blind
3 decodes for the one or more search space sets to the one or more search space sets in
4 proportion to respective numbers of decoding candidates in the one or more search space sets.

1 4. The method of claim 2, wherein the determining the respective
2 numbers of available blind decodes comprises uniformly allocating the total number of
3 available blind decodes to the one or more search space sets.

1 5. The method of claim 2, wherein the determining the respective
2 numbers of available blind decodes comprises allocating a minimum number of blind
3 decodes to each of the one or more search space sets.

1 6. The method of claim 2, wherein the one or more sets of decoding
2 candidates comprise one or more sets of UE-specific decoding candidates of one or more UE-
3 specific search space sets, the method further comprising:
4 identifying, for the control region, a set of common decoding candidates
5 associated with a common search space set; and
6 hashing the set of common decoding candidates to a second subset of CCEs of
7 the control region, wherein the total number of available blind decodes is determined based at
8 least in part on a number of decoding candidates of the set of common decoding candidates
9 and the blind decoding limitation of the UE.

1 7. The method of claim 1, wherein the determining the respective
2 numbers of available CCEs for the one or more sets of decoding candidates comprises:
3 allocating the total number of available CCEs to the one or more search space
4 sets in proportion to respective numbers of CCEs spanned by respective sets of decoding
5 candidates in the one or more search space sets.

1 8. The method of claim 1, wherein the determining the respective
2 numbers of available CCEs for the one or more sets of decoding candidates comprises:
3 uniformly allocating the total number of available CCEs to the one or more
4 search space sets, allocating a minimum number of CCEs to each of the one or more search
5 space sets, or a combination therefore.

1 9. The method of claim 1, wherein the determining the respective
2 numbers of available CCEs for the one or more sets of decoding candidates comprises:

3 allocating the total number of available CCEs to the one or more search space
4 sets based at least in part on an aggregation level size of decoding candidates in the one or
5 more search space sets.

1 10. The method of claim 1, wherein, for each of the one or more search
2 space sets, the determining the applied one or more sets of decoding candidates comprises
3 performing, for each aggregation level from a highest aggregation level to a lowest
4 aggregation level of the each of the one or more search space sets:
5 identifying decoding candidates of the each aggregation level spanning a
6 number of CCEs less than or equal to a remaining number of the number of available CCEs;
7 hashing the identified decoding candidates to CCEs of the first subset of
8 CCEs; and
9 including decoding candidates of a next aggregation level lower than the each
10 aggregation level that hash to CCEs of the first subset of CCEs.

1 11. The method of claim 1, wherein, for each of the one or more search
2 space sets, the determining the applied one or more sets of decoding candidates comprises:
3 identifying, for each aggregation level from a highest aggregation level to a
4 lowest aggregation level of the each of the one or more search space sets, decoding
5 candidates of the each aggregation level spanning a number of CCEs less than or equal to a
6 remaining number of the number of available CCEs;
7 hashing the identified decoding candidates to CCEs of the first subset of
8 CCEs; and
9 including decoding candidates of aggregation levels lower than a lowest
10 aggregation level that hashed to CCEs of the first subset of CCEs.

1 12. The method of claim 1, wherein the one or more sets of decoding
2 candidates comprise one or more sets of UE-specific decoding candidates of one or more UE-
3 specific search space sets, the method further comprising:
4 identifying, for the control region, a set of common decoding candidates
5 associated with a common search space set; and
6 hashing the set of common decoding candidates to a second subset of CCEs of
7 the control region, wherein the total number of available CCEs is determined based at least in

8 part on the CCE channel estimation limitation and a number of CCEs of the second subset of
9 CCEs.

1 13. The method of claim 12, wherein the determining the applied one or
2 more sets of decoding candidates comprises:

3 admitting, prior to the admitting the second subset of the one or more sets of
4 decoding candidates, a third subset of the one or more sets of decoding candidates having
5 hashed locations overlapping with the second subset of CCEs.

1 14. A method for wireless communication at a base station, comprising:
2 identifying, for a control region of a control channel, one or more sets of
3 decoding candidates associated with one or more search space sets;

4 determining a total number of available control channel elements (CCEs) for
5 the one or more search space sets based at least in part on a CCE channel estimation
6 limitation;

7 determining respective numbers of available CCEs for the one or more search
8 space sets based at least in part on the total number of available CCEs;

9 determining an applied one or more sets of decoding candidates by hashing a
10 first subset of the one or more sets of decoding candidates to a first subset of CCEs of the
11 control region based at least in part on the number of available CCEs, and admitting a second
12 subset of the one or more sets of decoding candidates having hashed locations overlapping
13 with the first subset of CCEs; and

14 transmitting control information to the UE via the control channel.

1 15. The method of claim 14, further comprising:

2 determining a total number of available blind decodes for the one or more
3 search space sets based at least in part on a blind decoding limitation of the UE;

4 determining respective numbers of available blind decodes for the one or more
5 search space sets based at least in part on the total number of available blind decodes; and

6 pruning the one or more sets of decoding candidates based at least in part on
7 the respective numbers of available blind decodes for the one or more search space sets.

1 16. The method of claim 15, wherein the determining the respective
2 numbers of available blind decodes comprises allocating the total number of available blind

3 decodes for the one or more search space sets to the one or more search space sets in
4 proportion to respective numbers of decoding candidates in the one or more search space sets.

1 17. The method of claim 15, wherein the determining the respective
2 numbers of available blind decodes comprises uniformly allocating the total number of
3 available blind decodes to the one or more search space sets.

1 18. The method of claim 15, wherein the determining the respective
2 numbers of available blind decodes comprises allocating a minimum number of blind
3 decodes to each of the one or more search space sets.

1 19. The method of claim 15, wherein the one or more sets of decoding
2 candidates comprise one or more sets of UE-specific decoding candidates of one or more UE-
3 specific search space sets, the method further comprising:

4 identifying, for the control region, a set of common decoding candidates
5 associated with a common search space set; and

6 hashing the set of common decoding candidates to a second subset of CCEs of
7 the control region, wherein the total number of available blind decodes is determined based at
8 least in part on a number decoding candidates of the set of common decoding candidates and
9 the blind decoding limitation of the UE.

1 20. The method of claim 14, wherein the determining the respective
2 numbers of available CCEs for the one or more sets of decoding candidates comprises:
3 allocating the total number of available CCEs to the one or more search space
4 sets in proportion to respective numbers of CCEs spanned by respective sets of decoding
5 candidates in the one or more search space sets.

1 21. The method of claim 14, wherein the determining the respective
2 numbers of available CCEs for the one or more sets of decoding candidates comprises:
3 uniformly allocating the total number of available CCEs to the one or more
4 search space sets, allocating a minimum number of CCEs to each of the one or more search
5 space sets, or a combination thereof.

1 22. The method of claim 14, wherein the determining the respective
2 numbers of available CCEs for the one or more sets of decoding candidates comprises:

3 allocating the total number of available CCEs to the one or more search space
4 sets based at least in part on an aggregation level size of decoding candidates in the one or
5 more search space sets.

1 23. The method of claim 14, wherein, for each of the one or more search
2 space sets, the determining the applied one or more sets of decoding candidates comprises
3 performing, for each aggregation level from a highest aggregation level to a lowest
4 aggregation level of the each of the one or more search space sets:
5 identifying decoding candidates of the each aggregation level spanning a
6 number of CCEs less than or equal to a remaining number of the number of available CCEs;
7 hashing the identified decoding candidates to CCEs of the first subset of
8 CCEs; and
9 including decoding candidates of a next aggregation level lower than the each
10 aggregation level that hash to CCEs of the first subset of CCEs.

1 24. The method of claim 14, wherein, for each of the one or more search
2 space sets, the determining the applied one or more sets of decoding candidates comprises:
3 identifying, for each aggregation level from a highest aggregation level to a
4 lowest aggregation level of the each of the one or more search space sets, decoding
5 candidates of the each aggregation level spanning a number of CCEs less than or equal to a
6 remaining number of the number of available CCEs;
7 hashing the identified decoding candidates to CCEs of the first subset of
8 CCEs; and
9 including decoding candidates of aggregation levels lower than a lowest
10 aggregation level that hashed to CCEs of the first subset of CCEs.

1 25. The method of claim 14, wherein the one or more sets of decoding
2 candidates comprise one or more sets of UE-specific decoding candidates of one or more UE-
3 specific search space sets, the method further comprising:
4 identifying, for the control region, a set of common decoding candidates
5 associated with a common search space set; and
6 hashing the set of common decoding candidates to a second subset of CCEs of
7 the control region, wherein the total number of available CCEs is determined based at least in

8 part on the CCE channel estimation limitation and a number of CCEs of the second subset of
9 CCEs.

1 26. The method of claim 25, wherein the determining the applied one or
2 more sets of decoding candidates comprises:

3 admitting, prior to the admitting the second subset of the one or more sets of
4 decoding candidates, a third subset of the one or more sets of decoding candidates having
5 hashed locations overlapping with the second subset of CCEs.

1 27. An apparatus for wireless communication at a user equipment (UE),
2 comprising:

3 means for identifying, for a control region of a control channel, one or
4 more sets of decoding candidates associated with one or more search space sets;

5 means for determining a total number of available control channel
6 elements (CCEs) for the one or more search space sets based at least in part on a CCE
7 channel estimation limitation;

8 means for determining respective numbers of available CCEs for the
9 one or more search space sets based at least in part on the total number of available
10 CCEs;

11 means for determining an applied one or more sets of decoding
12 candidates by hashing a first subset of the one or more sets of decoding candidates to
13 a first subset of CCEs of the control region based at least in part on the respective
14 numbers of available CCEs, and admitting a second subset of the one or more sets of
15 decoding candidates having hashed locations overlapping with the first subset of
16 CCEs; and

17 means for monitoring the control region for the applied one or more
18 sets of decoding candidates.

1 28. The apparatus of claim 27, further comprising:

2 means for determining a total number of available blind decodes for the one or
3 more search space sets based at least in part on a blind decoding limitation of the UE;

4 means for determining respective numbers of available blind decodes for the
5 one or more search space sets based at least in part on the total number of available blind
6 decodes; and

7 means for pruning the one or more sets of decoding candidates based at least
8 in part on the respective numbers of available blind decodes for the one or more search space
9 sets.

1 29. An apparatus for wireless communication at a base station, comprising:
2 means for identifying, for a control region of a control channel, one or
3 more sets of decoding candidates associated with one or more search space sets;
4 means for determining a total number of available control channel
5 elements (CCEs) for the one or more search space sets based at least in part on a CCE
6 channel estimation limitation;
7 means for determining respective numbers of available CCEs for the
8 one or more search space sets based at least in part on the total number of available
9 CCEs;
10 means for determining an applied one or more sets of decoding
11 candidates by hashing a first subset of the one or more sets of decoding candidates to
12 a first subset of CCEs of the control region based at least in part on the number of
13 available CCEs, and admitting a second subset of the one or more sets of decoding
14 candidates having hashed locations overlapping with the first subset of CCEs; and
15 means for transmitting control information to the UE via the control
16 channel.

1 30. The apparatus of claim 29, further comprising:
2 means for determining a total number of available blind decodes for the one or
3 more search space sets based at least in part on a blind decoding limitation of the UE;
4 means for determining respective numbers of available blind decodes for the
5 one or more search space sets based at least in part on the total number of available blind
6 decodes; and
7 means for pruning the one or more sets of decoding candidates based at least
8 in part on the respective numbers of available blind decodes for the one or more search space
9 sets.