

CLAIMS

1. A method for transmitting a signal, comprising:

sending, by a network device, a first synchronization signal of a first cell through a first beam, the first synchronization signal carrying identity information of the first beam; and

sending, by the network device through the first beam, a first broadcast message scrambled with the identity information of the first beam, the first broadcast message carrying at least one of a location of a time domain resource or a location of a frequency domain resource occupied by a second synchronization signal sent through at least one second beam in the first cell.

2. The method of claim 1, wherein the first broadcast message further carries at least one of: relationship information between a radio resource occupied by the first synchronization signal and a radio resource occupied by the first broadcast message, identity information of the at least one second beam in the first cell, or a total number of beams in the first cell.

3. The method of claim 1, wherein the first broadcast message further carries information of a radio resource occupied by a second broadcast message sent through the at least one second beam in the first cell.

4. The method of any one of claims 1 to 3, wherein the first broadcast message further carries identity information of the first cell.

5. A method for transmitting a signal, comprising:

detecting, by a terminal device, a first synchronization signal in a first cell, the first synchronization signal carrying identity information of a first beam for sending the first synchronization signal; and

detecting, by the terminal device, a first broadcast message sent through the first beam, according to the identity information of the first beam, the first broadcast message carrying at least one of a location of a time domain resource or a location of a frequency domain resource occupied by a second synchronization signal sent through at least one second beam in the first cell.

6. The method of claim 5, wherein the first broadcast message further carries at least one piece of information of: first relationship information between a radio resource occupied by the first synchronization signal and a radio resource occupied by the first broadcast message, identity information of the at least one second beam in the first cell, or a total number of beams in the first cell.

7. The method of claim 5, wherein the first broadcast message further carries information of a radio resource occupied by a second broadcast message sent through the at least one second beam in the first cell.

8. The method of claim 6 or 7, further comprising:

determining, by the terminal device, the identity information of the at least one second beam according to the information carried in the first broadcast message.

9. The method of any one of claims 5 to 8, wherein the first broadcast message further carries identity information of the first cell.

10. The method of any one of claims 5 to 9, wherein detecting, by the terminal device, the first broadcast message according to the identity information of the first beam comprises:

determining, by the terminal device, M radio resources to be detected according to a radio resource occupied by the first synchronization signal and a first relationship information set, the first relationship information set comprising M pieces of relationship information, i^{th} relationship information in the first relationship information set being used to indicate a relationship between a radio resource occupied by a synchronization signal sent through the first beam and a radio resource occupied by a broadcast message sent through the first beam, in an i^{th} cell of M cells, a relationship between an i^{th} radio resource to be detected of the M radio resources to be detected and the radio resource occupied by the first synchronization signal being the relationship indicated by the i^{th} relationship information in the first relationship information set, M being a positive integer, i being a positive integer less than or equal to M, and the M cells comprising the first cell;

descrambling, by the terminal device, N broadcast messages on the M radio resources to be detected with the identity information of the first beam, N being a positive integer less than or equal to M; and

detecting, by the terminal device, the first broadcast message from K broadcast messages descrambled successfully, K being a positive integer less than or equal to N.

11. The method of claim 10, wherein $K=1$, and

detecting, by the terminal device, the first broadcast message from K broadcast messages descrambled successfully comprises:

determining, by the terminal device, a broadcast message descrambled successfully as the first broadcast message.

12. The method of claim 10, wherein $K>1$, and

a j^{th} broadcast message of the K broadcast messages carries relationship information between a radio resource occupied by the j^{th} broadcast message and a radio resource occupied by a synchronization signal sent through the first beam in a cell where the j^{th} broadcast message is located, j being a positive integer less than or equal to K;

wherein detecting, by the terminal device, the first broadcast message from K broadcast messages descrambled successfully comprises:

determining, by the terminal device, a third broadcast message of the K broadcast messages as the first broadcast message, a relationship between a radio resource occupied by the third broadcast message and the radio resource occupied by the first synchronization signal being the relationship information carried in the third broadcast message.

13. The method of any one of claims 5 to 12, wherein a time domain resource for the first synchronization signal sent through the first beam in the first cell is different from a time domain resource for the first broadcast message sent through the first beam in the first cell;

a frequency domain resource for the first synchronization signal sent through the first beam in the first cell is different from a frequency domain resource for the first broadcast message sent through the first beam in the first cell; or

a time domain resource for the first synchronization signal sent through the first beam in the first cell is different from a time domain resource for the first broadcast message sent through the first beam in the first cell and a frequency domain resource for the first synchronization signal sent through the first beam in the first cell is different from a frequency domain resource for the first broadcast message sent through the first beam in the first cell.

14. The method of any one of claims 5 to 13, wherein relationship information between a time domain resource for the first synchronization signal and a time domain resource for the first broadcast message is preset;

relationship information between a frequency domain resource for the first synchronization signal and a frequency domain resource for the first broadcast message is preset; or

relationship information between a time domain resource for the first synchronization signal and a time domain resource for the first broadcast message is preset and relationship information between a frequency domain resource for the first synchronization signal and a frequency domain resource for the first broadcast message is preset.

15. The method of claim 14, wherein the relationship information between the time domain resource for the first synchronization signal and the time domain resource for the first broadcast message comprises: an offset between a location of the time domain resource for the first synchronization signal and a location of the time domain resource for the first broadcast message;

the relationship information between the frequency domain resource for the first synchronization signal and the frequency domain resource for the first broadcast message comprises: an offset between a location of the frequency domain resource for the first synchronization signal and a location of the frequency domain resource for the first broadcast message; or

the relationship information between the time domain resource for the first synchronization signal and the time domain resource for the first broadcast message comprises: an offset between a location of the time domain resource for the first synchronization signal and a location of the time domain resource for the first broadcast message; and the relationship information between the frequency domain resource for

the first synchronization signal and the frequency domain resource for the first broadcast message comprises: an offset between a location of the frequency domain resource for the first synchronization signal and a location of the frequency domain resource for the first broadcast message.

16. A network device, comprising:

- a first sending module, configured to send a first synchronization signal of a first cell through a first beam, the first synchronization signal carrying identity information of the first beam; and

- a second sending module, configured to send a first broadcast message scrambled with the identity information of the first beam, through the first beam, the first broadcast message carrying at least one of a location of a time domain resource or a location of a frequency domain resource occupied by a second synchronization signal sent through at least one second beam in the first cell.

17. The network device of claim 16, wherein the first broadcast message further carries at least one of: relationship information between a first radio resource occupied by the first synchronization signal and a second radio resource occupied by the first broadcast message, identity information of the at least one second beam in the first cell, or a total number of beams in the first cell.

18. The network device of claim 16, wherein the first broadcast message further carries information of a radio resource occupied by a second broadcast message sent through the at least one second beam in the first cell.

19. The network device of any one of claims 16 to 18, wherein the first broadcast message further carries identity information of the first cell.

20. A terminal device, comprising:

- a first detection module, configured to detect a first synchronization signal in a first cell, the first synchronization signal carrying identity information of a first beam for sending the first synchronization signal; and

- a second detection module, configured to detect a first broadcast message sent through the first beam, according to the identity information of the first beam, the first

broadcast message carrying at least one of a location of a time domain resource or a location of a frequency domain resource occupied by a second synchronization signal sent through at least one second beam in the first cell.

21. The terminal device of claim 20, wherein the first broadcast message further carries at least one piece of information of: first relationship information between a first radio resource occupied by the first synchronization signal and a second radio resource occupied by the first broadcast message, identity information of the at least one second beam in the first cell, or a total number of beams in the first cell.

22. The terminal device of claim 20, wherein the first broadcast message further carries information of a radio resource occupied by a second broadcast message sent through the at least one second beam in the first cell.

23. The terminal device of claim 21 or 22, further comprising a processing module, configured to determine the identity information of the at least one second beam according to the information carried in the first broadcast message.

24. The terminal device of any one of claims 20 to 23, wherein the first broadcast message further carries identity information of the first cell.

25. The terminal device of any one of claims 20 to 24, wherein the second detection module is specifically configured to:

determine M second radio resources according to a first radio resource and a first relationship information set, the first relationship information set comprising M pieces of relationship information, i^{th} relationship information in the first relationship information set being used to indicate a relationship between a radio resource occupied by a synchronization signal sent through the first beam and a radio resource occupied by a broadcast message sent through the first beam, in an i^{th} cell of M cells, a relationship between an i^{th} second radio resource of the M second radio resources and the first radio resource being the relationship indicated by the i^{th} relationship information in the first relationship information set, M being a positive integer, i being a positive integer less than or equal to M, and the M cells comprising the first cell;

descramble N broadcast messages on the M second radio resources with the identity information of the first beam, N being a positive integer less than or equal to M; and

detect the first broadcast message from K broadcast messages descrambled successfully, K being a positive integer less than or equal to N.

26. The terminal device of claim 25, wherein $K=1$, and

the second detection module is specifically configured to determine a broadcast message descrambled successfully as the first broadcast message.

27. The terminal device of claim 25, wherein $K>1$, and

a j^{th} broadcast message of the K broadcast messages carries relationship information between a radio resource occupied by the j^{th} broadcast message and a radio resource occupied by a synchronization signal sent through the first beam in a cell where the j^{th} broadcast message is located, j being a positive integer less than or equal to K;

wherein the second detection module is specifically configured to determine a third broadcast message of the K broadcast messages as the first broadcast message, a relationship between a radio resource occupied by the third broadcast message and the first radio resource being the relationship information carried in the third broadcast message.

28. The terminal device of any one of claims 25 to 27, wherein the first relationship information set is a pre-configured relationship information set.

29. The terminal device of any one of claims 20 to 28, a time domain resource for the first synchronization signal sent through the first beam in the first cell is different from a time domain resource for the first broadcast message sent through the first beam in the first cell;

a frequency domain resource for the first synchronization signal sent through the first beam in the first cell is different from a frequency domain resource for the first broadcast message sent through the first beam in the first cell; or

a time domain resource for the first synchronization signal sent through the first beam in the first cell is different from a time domain resource for the first broadcast

message sent through the first beam in the first cell and a frequency domain resource for the first synchronization signal sent through the first beam in the first cell is different from a frequency domain resource for the first broadcast message sent through the first beam in the first cell.

30. The terminal device of any one of claims 20 to 29, wherein relationship information between a time domain resource for the first synchronization signal and a time domain resource for the first broadcast message is preset;

relationship information between a frequency domain resource for the first synchronization signal and a frequency domain resource for the first broadcast message is preset; or

relationship information between a time domain resource for the first synchronization signal and a time domain resource for the first broadcast message is preset and relationship information between a frequency domain resource for the first synchronization signal and a frequency domain resource for the first broadcast message is preset.

31. The terminal device of claim 30, wherein the relationship information between the time domain resource for the first synchronization signal and the time domain resource for the first broadcast message comprises: an offset between a location of the time domain resource for the first synchronization signal and a location of the time domain resource for the first broadcast message;

the relationship information between the frequency domain resource for the first synchronization signal and the frequency domain resource for the first broadcast message comprises: an offset between a location of the frequency domain resource for the first synchronization signal and a location of the frequency domain resource for the first broadcast message; or

the relationship information between the time domain resource for the first synchronization signal and the time domain resource for the first broadcast message comprises: an offset between a location of the time domain resource for the first synchronization signal and a location of the time domain resource for the first broadcast message; and the relationship information between the frequency domain resource for the first synchronization signal and the frequency domain resource for the first

broadcast message comprises: an offset between a location of the frequency domain resource for the first synchronization signal and a location of the frequency domain resource for the first broadcast message.