CLAIMS

1. A method for signal transmission, comprising:

determining a time-frequency resource location of a downlink signal, wherein the downlink signal comprises at least one of a Synchronization Signal, SS, a broadcast signal, a common control channel signal, a common reference signal or a Measurement Reference Signal, MRS, the time-frequency resource location of the downlink signal is on multiple frequency points of a carrier within a predetermined time and the multiple frequency points are part of frequency points within a bandwidth of the carrier; and

transmitting the downlink signal according to the time-frequency resource location of the downlink signal.

2. The method according to claim 1, wherein the downlink signal comprises the SS; and

transmitting the downlink signal according to the time-frequency resource location of the downlink signal comprises:

transmitting the SS on the multiple frequency points according to periodicity.

3. The method according to claim 2, wherein periodicities for transmitting the SS on different frequency points in the multiple frequency points are the same as each other or different from each other.

4. The method according to claim 2 or 3, wherein sequences used by transmitting the SS on different frequency points in the multiple frequency points are the same as each other or different from each other.

5. The method according to any one of claims 1-4, wherein the downlink signal comprises the broadcast signal; and

transmitting the downlink signal according to the time-frequency resource location of the downlink signal comprises:

transmitting the broadcast signal on the multiple frequency points according to periodicity.

6. The method according to any one of claims 1-5, wherein the downlink signal comprises the common control channel signal or the common reference signal, a time-frequency resource location of the common control channel signal or the common reference signal is within a downlink control region, the downlink control region is located on the multiple frequency points in a radio frame, and a time-domain length of the downlink control region in the radio frame is smaller than a length of the radio frame.

7. The method according to claim 6, further comprising:

explicitly or implicitly indicating information of the downlink control region to terminal equipment;

wherein explicitly or implicitly indicating the information of the downlink control region to the terminal equipment comprises:

explicitly or implicitly indicating the information of the downlink control region to the terminal equipment through at least one of:

starting and ending location information of each of the multiple frequency points;

information of the radio frame and a subframe in the radio frame where the downlink control region is located;

information of a sequence for the SS, the information of the sequence for the SS being configured to indicate whether the downlink control region is located on the frequency points where the SS is transmitted or not;

relative time-frequency location information between the SS and the broadcast signal, the relative time-frequency location information being configured to indicate whether the downlink control region is located on the frequency points where the SS and the broadcast signal are transmitted or not;

a content of the broadcast signal; or

a content of basic system information indicated by the broadcast signal.

8. The method according to any one of claims 1-7, wherein the downlink signal comprises the MRS; and

transmitting the downlink signal according to the time-frequency resource

location of the downlink signal comprises:

transmitting the MRS in a location, not used for downlink control region, of the multiple frequency points, according to periodicity;

wherein the method further comprises:

if a time-frequency resource location of the MRS conflicts with a time-frequency resource location of downlink data, transmitting the MRS or the downlink data in a punched manner.

9. A method for signal transmission, comprising:

determining a time-frequency resource location of a downlink signal, wherein the downlink signal comprises at least one of a Synchronization Signal, SS, a broadcast signal, a common control channel signal, a common reference signal or a Measurement Reference Signal, MRS, the time-frequency resource location of the downlink signal is on multiple frequency points of a carrier within a predetermined time and the multiple frequency points are part of frequency points within a bandwidth of the carrier; and

receiving the downlink signal transmitted by network equipment according to the time-frequency resource location of the downlink signal.

10. The method according to claim 9, wherein the downlink signal comprises the SS; and

receiving the downlink signal transmitted by the network equipment according to the time-frequency resource location of the downlink signal comprises:

receiving the SS transmitted by the network equipment according to periodicity on the multiple frequency points.

11. The method according to claim 10, wherein periodicities for transmitting the SS on different frequency points in the multiple frequency points are the same as each other or different from each other.

12. The method according to claim 10 or 11, wherein sequences used by transmitting the SS on different frequency points in the multiple frequency points are the same as each other or different from each other.

13. The method according to any one of claims 9-12, wherein the downlink signal comprises the broadcast signal; and

receiving the downlink signal transmitted by the network equipment according to the time-frequency resource location of the downlink signal comprises:

receiving the broadcast signal transmitted by the network equipment according to periodicity on the multiple frequency points.

14. The method according to any one of claims 9-13, wherein the downlink signal comprises the common control channel signal or the common reference signal, a time-frequency resource location of the common control channel signal or the common reference signal is within a downlink control region, the downlink control region is located on the multiple frequency points in a radio frame, and a time-domain length of the downlink control region in the radio frame is smaller than a length of the radio frame.

15. The method according to claim 14, further comprising:

acquiring information, explicitly or implicitly indicated by the network equipment, of the downlink control region, wherein

determining the time-frequency resource location of the downlink signal comprises:

determining the downlink control region according to the information of the downlink control region.

16. The method according to claim 15, wherein determining the downlink control region according to the information of the downlink control region comprises:

determining the downlink control region according to at least one of:

starting and ending location information of each of the multiple frequency points;

information of the radio frame and a subframe in the radio frame where the downlink control region is located;

information of a sequence for the SS, the information of the sequence for the SS being configured to indicate whether the downlink control region is located on the

frequency points where the SS is transmitted or not;

relative time-frequency location information between the SS and the broadcast signal, the relative time-frequency location information being configured to indicate whether the downlink control region is located on the frequency points where the SS and the broadcast signal are transmitted or not;

a content of the broadcast signal; or

a content of basic system information indicated by the broadcast signal.

17. The method according to any one of claims 9-16, wherein the downlink signal comprises the MRS; and

receiving the downlink signal transmitted by the network equipment according to the time-frequency resource location of the downlink signal comprises:

receiving the MRS transmitted by the network equipment according to periodicity in a location, not used for downlink control region, of the multiple frequency points.

18. Network equipment, comprising:

a determination module, configured to determine a time-frequency resource location of a downlink signal, wherein the downlink signal comprises at least one of a Synchronization Signal, SS, a broadcast signal, a common control channel signal, a common reference signal or a Measurement Reference Signal, MRS, the time-frequency resource location of the downlink signal is on multiple frequency points of a carrier within a predetermined time and the multiple frequency points are part of frequency points within a bandwidth of the carrier; and

a transmission module, configured to transmit the downlink signal according to the time-frequency resource location of the downlink signal.

19. The network equipment according to claim 18, wherein the downlink signal comprises the SS; and

the transmission module is specifically configured to transmit the SS on the multiple frequency points according to periodicity.

20. The network equipment according to claim 19, wherein periodicities for

transmitting the SS on different frequency points in the multiple frequency points are the same as each other or different from each other.

21. The network equipment according to claim 19 or 20, wherein sequences used by transmitting the SS on different frequency points in the multiple frequency points are the same as each other or different from each other.

22. The network equipment according to any one of claims 18-21, wherein the downlink signal comprises the broadcast signal; and

the transmission module is specifically configured to transmit the broadcast signal on the multiple frequency points according to periodicity.

23. The network equipment according to any one of claims 18-22, wherein the downlink signal comprises the common control channel signal or the common reference signal, a time-frequency resource location of the common control channel signal or the common reference signal is within a downlink control region, the downlink control region is located on the multiple frequency points in a radio frame, and a time-domain length of the downlink control region in the radio frame is smaller than a length of the radio frame.

24. The network equipment according to claim 23, wherein the transmission module is further configured to explicitly or implicitly indicate information of the downlink control region to terminal equipment;

wherein the transmission module is specifically configured to explicitly or implicitly indicate the information of the downlink control region to the terminal equipment through at least one of:

starting and ending location information of each of the multiple frequency points;

information of the radio frame and a subframe in the radio frame where the downlink control region is located;

information of a sequence for the SS, the information of the sequence for the SS being configured to indicate whether the downlink control region is located on the frequency points where the SS is transmitted or not;

relative time-frequency location information between the SS and the broadcast signal, the relative time-frequency location information being configured to indicate whether the downlink control region is located on the frequency points where the SS and the broadcast signal are transmitted or not;

a content of the broadcast signal; or

a content of basic system information indicated by the broadcast signal.

25. The network equipment according to any one of claims 18-24, wherein the downlink signal comprises the MRS; and

the transmission module is specifically configured to transmit the MRS in a location, not used for downlink control region, of the multiple frequency points, according to periodicity;

wherein the transmission module is further configured to, if a time-frequency resource location of the MRS conflicts with a time-frequency resource location of downlink data, transmit the MRS or the downlink data in a punched manner.

26. Terminal equipment, comprising:

a determination module, configured to determine a time-frequency resource location of a downlink signal, wherein the downlink signal comprises at least one of a Synchronization Signal, SS, a broadcast signal, a common control channel signal, a common reference signal or a Measurement Reference Signal, MRS, the time-frequency resource location of the downlink signal is on multiple frequency points of a carrier within a predetermined time and the multiple frequency points are part of frequency points within a bandwidth of the carrier; and

a receiving module, configured to receive the downlink signal transmitted by network equipment according to the time-frequency resource location of the downlink signal.

27. The terminal equipment according to claim 26, wherein the downlink signal comprises the SS; and

the receiving module is specifically configured to receive the SS transmitted by the network equipment according to periodicity on the multiple frequency points.

28. The terminal equipment according to claim 27, wherein periodicities for transmitting the SS on different frequency points in the multiple frequency points are the same as each other or different from each other.

29. The terminal equipment according to claim 27 or 28, wherein sequences used by transmitting the SS on different frequency points in the multiple frequency points are the same as each other or different from each other.

30. The terminal equipment according to any one of claims 26-29, wherein the downlink signal comprises the broadcast signal; and

the receiving module is specifically configured to receive the broadcast signal transmitted by the network equipment according to periodicity on the multiple frequency points.

31. The terminal equipment according to any one of claims 26-30, wherein the downlink signal comprises the common control channel signal or the common reference signal, a time-frequency resource location of the common control channel signal or the common reference signal is within a downlink control region, the downlink control region is located on the multiple frequency points in a radio frame, and a time-domain length of the downlink control region in the radio frame is smaller than a length of the radio frame.

32. The terminal equipment according to claim 31, wherein the receiving module is further configured to acquire information, explicitly or implicitly indicated by the network equipment, of the downlink control region; and

the determination module is specifically configured to determine the downlink control region according to the information of the downlink control region.

33. The terminal equipment according to claim 32, wherein the determination module is specifically configured to determine the downlink control region according to at least one of:

starting and ending location information of each of the multiple frequency points;

information of the radio frame and a subframe in the radio frame where the downlink control region is located;

information of a sequence for the SS, the information of the sequence for the SS being configured to indicate whether the downlink control region is located on the frequency points where the SS is transmitted or not;

relative time-frequency location information between the SS and the broadcast signal, the relative time-frequency location information being configured to indicate whether the downlink control region is located on the frequency points where the SS and the broadcast signal are transmitted or not;

a content of the broadcast signal; or

a content of basic system information indicated by the broadcast signal.

34. The terminal equipment according to any one of claims 26-33, wherein the downlink signal comprises the MRS; and

the receiving module is specifically configured to receive the MRS transmitted by the network equipment according to periodicity in a location, not used for downlink control region, of the multiple frequency points.