CLAIMS

1. A method performed by an access point in a cell-free wireless communication network comprising a plurality of access points and at least one central processing unit controlling the access points, comprising:

obtaining an access assisting signal in an access assisting signal set, wherein the access assisting signal set comprises a plurality of access assisting signals that enable a user equipment to initially access to the cell-free wireless communication network; and

coordinating with another access point in the plurality of access points to broadcast the access assisting signal obtained by the access point and an access assisting signal obtained by another access point at a same time.

2. The method of claim 1, wherein the obtaining the access assisting signal comprises:

obtaining the access assisting signal in the access assisting signal set based on at least one of:

an identifier of the access point,

a number of times that the access point has broadcast access assisting signals, and

a base number generated by the access point.

3. The method of claim 1, wherein the obtaining the access assisting signal comprises:

receiving an identification information identifying the access assisting signal in the access assisting signal set from a central processing unit controlling the access point or a base station of a cellular system;

obtaining the access assisting signal in the access assisting signal set based on the identification information.

4. The method of claim 3, wherein the obtaining the access assisting signal comprises:

obtaining the access assisting signal in the access assisting signal set based on the identification information and at least one of:

an identifier of the access point,

a number of times that the access point has broadcast access assisting signals, and

a base number generated by the access point.

5. The method of claim 1, wherein the obtaining the access assisting signal comprises:

obtaining the access assisting signal through a sequence generator that is capable of generating each of the access assisting signals in the access assisting signal set.

6. The method of claim 5, wherein the obtaining the access assisting signal comprises:

obtaining the access assisting signal through a sequence generator based on at least one of:

an identifier of the access point,

a number of times that the access point has broadcast access assisting signals,

a base number generated by the access point,

an identification information identifying the access assisting signal received from a central processing unit controlling the access point, and

an identification information identifying the access assisting signal received from a base station of a cellular system.

7. The method of claim 5, wherein the obtaining the access assisting signal comprises:

obtaining an initial state for the sequence generator based on at least one of:

an identifier of the access point,

a number of times that the access point has broadcast access assisting signals,

a base number generated by the access point,

an identification information identifying the access assisting signal received from a central processing unit controlling the access point, and

an identification information identifying the access assisting signal received from a base station of a cellular system; and

obtain the access assisting signal from the sequence generator which generates the access assisting signal based on the initial state.

8. The method of claim 1, wherein the access assisting signal set is stored in the access point and the obtaining the access assisting signal comprises:

obtaining the access assisting signal from the stored access assisting signal set based on at least one of:

an identifier of the access point,

a number of times that the access point has broadcast access assisting signals,

a base number generated by the access point,

an identification information identifying the access assisting signal received from a central processing unit controlling the access point, and

an identification information identifying the access assisting signal received from a base station of a cellular system.

9. The method of claim 1, wherein the obtaining the access assisting signal comprises:

obtaining multiple access assisting signals in the access assisting signal set; and

the broadcasting the access assisting signal comprises:

broadcasting the multiple access assisting signals at a same time.

10. The method of claim 9, further comprising:

determining a number of multiple access assisting signals based on at least one of:

an identifier of the access point,

a number of times that the access point has broadcast access assisting signals,

a base number generated by the access point,

an information received from a central processing unit, and

an information received from a base station of a cellular system.

11. The method of claim 10, wherein each of the multiple access assisting signals is determined by the access point independently from the access assisting signal set.

12. The method of claim 10, wherein the identifier of the access point comprises:

a device identifier of the access point,

a physical identifier of the access point, or

a network temporary identifier of the access point.

13. The method of claim 1, wherein the access assisting signal set is preconfigured in the cell-free wireless communication network, and the access assisting signals in the access assisting signal set occupy a predetermined time frequency resource.

14. The method of claim 13, wherein the access assisting signals in the access assisting signal set are multiplexed in the predetermined time frequency resource by at least one of:

frequency division multiplexing method,

time division multiplexing method, and

code division multiplexing method.

15. The method of claim 1, wherein each of the access assisting signals in the access assisting signal set occupies a subcarrier of a frequency resource.

16. The method of claim 1, wherein the plurality of access assisting signals comprise at least one of Zadoff-Chu sequences, Walsh-Hadamard sequences, Discrete Fourier Transform sequences, m sequences, pseudo-noise sequences, Maximum Length Shift Register sequence, and Gold sequences.

17. The method of claim 1, wherein the plurality of access assisting signals are orthogonal to each other.

18. The method of claim 1, wherein at least a portion of the plurality of access assisting signals are non-orthogonal to each other.

19. The method of claim 1, wherein at least a portion of the plurality of access points broadcast different number of access assisting signals at the same time.

20. An access point in a cell-free wireless communication network comprising a plurality of access points and at least one central processing unit controlling the access points, the access point comprising:

a memory operable to store computer-readable instructions; and

a processor circuitry operable to read the computer-readable instructions, the processor circuitry when executing the computer-readable instructions is configured to:

obtain an access assisting signal in an access assisting signal set, wherein the access assisting signal set comprises a plurality of access assisting signals that enable a user equipment to initially access to the cell-free wireless communication network; and

coordinate with another access point in the plurality of access points to broadcast the access assisting signal obtained by the access point and an access assisting signal obtained by another access point at a same time.