1802 The wireless device 250 may further include a memory module 1406 that includes one or more memory devices.

1804 The memory module 1406 may be arranged to be used to store data associated with an application performing the methods herein when executed in the wireless device 250.

1806 The memory module 1406 may communicate with the processing module 1405.

1807 Any other information processed by processing module 1405 may be stored in memory module 1406.

[0190]

1812 In some embodiments, information may be received from, for example, network node 210 through receive port 1407.

1814 In some embodiments, the receiving port 1407 may be connected to, for example, one or more antennas in the wireless device 250.

1816 In other embodiments, the wireless device 250 may receive information from another structure within the wireless communication network 200 through receive port 1407.

1818 Since the receiving port 1407 may communicate with the processing module 1405, the receiving port 1407 may then transmit the received information to the processing module 1405.

1821 The receiving port 1407 may be configured to receive other information as well.

[0191]

1825 Information processed by the processing module 1405 in connection with embodiments of the methods herein may be stored in the memory module 1406, which, as already described, has the processing module 1405 and the receive port 1407. May communicate with.

[0192]

1832 The processing module 1405 may be further configured to transmit or transmit information to the network node 210 through the transmission port 1408, and the transmission port 1408 may communicate with the processing module 1405 and the memory module 1406.

,,

[0193]

1839 The various modules 1401-1404 described above function as described above when executed by one or more processors, such as the processing module 1405, eg, a combination of analog and digital modules stored in memory, and / It will also be appreciated by those skilled in the art that it may refer to one or more processors

1849 One or more of these processors and other digital hardware may be included in a single application specific integrated circuit (ASIC), or some processors and various digital hardware may be individually implemented. It may be distributed across several separate components, regardless of whether they are integrated into a system-on-chip (SoC).

[0194]

1851 Therefore, the method for the wireless device 250 according to the embodiments described herein will perform such an action as performed by the wireless device 250 described herein when performed on at least one processor. Each is executed by a computer program product that includes an instruction that causes this at least one processor to execute, i.e., a software code portion.

1856 The computer program product may be stored on a computer-readable storage medium.

1857 The computer-readable storage medium on which the computer program is stored performs such actions as performed by the wireless device 250 described herein when executed on at least one processor. May include instructions to be executed by the computer.

1860 In some embodiments, the computer-readable storage medium may be a non-temporary computer-readable storage medium.

[0195]

1865 When the terms "comprising" or "comprising" are used, they are interpreted to mean non-limiting, that is, "consisting of at least". There must be.

[0196]

1870 The embodiments herein are not limited to the preferred embodiments described above.

1871 Various alternatives, variants, and equivalents may be employed.

1872 Therefore, the above embodiments should not be considered as limiting the scope of the invention.

Notice

CLAIMS JP2017503386A

1.

13 In the wireless communication network (200) in which the network node (210) and the wireless device (250) operate, the first synchronization signal and the related information message for synchronization between the wireless device (250) and the network node (210). A method performed by the network node (210) to transmit the first synchronization signal to the wireless device (250) with two or more OFDM symbols in a subframe. At least once at the time-frequency position in each of the N OFDM symbols (801), and for each transmission of the first synchronization signal, the first synchronization signal in the OFDM symbol. A method comprising transmitting a relevant information message associated with the first synchronization signal at a predefined time-frequency position relative to said time-frequency position (802).

2.

26 Claimed that the first synchronization signal is a primary synchronization signal (PSS), the related information message includes a second synchronization signal to which it is related, and the second synchronization signal is a secondary synchronization signal (SSS). Item 1. The method according to item 1.

3.

33 The method of claim 1 or 2, wherein the relevant information message comprises a related physical broadcast channel (PBCH), and the related PBCH further comprises related system information.

4.

39 According to claim 1, the first synchronization signal is transmitted in a beam state, and the related information message is transmitted using the same beam state as the first synchronization signal associated with the related information message. The method according to any one of 3.

5.

46 The related information message is different for each OFDM symbol to which the related information message is transmitted, and the related information message includes an index, and the subframe timing can be obtained by detecting the index by the wireless device (250). The method according to any one of claims 1 to 4.

6.

53 The related information message is the same for each OFDM symbol in which the related information message is transmitted within a subframe, and the related information message is for each subframe in which the related information message is transmitted within a transmission target frame. The method according to any one of claims 1 to 4, wherein the relevant information message comprises an index and the frame timing can be obtained by detecting the index by the wireless device (250).

7.

62 The related information message includes the related SSS, the index is a series index, and the subframe timing can be obtained by detecting the series index included in the related SSS by the wireless device (250). , The method of claim 2 or 5.

8.

68 The related information message includes the related SSS, the index is a series index, and the frame timing can be obtained by detecting the series index included in the related SSS by the wireless device (250). The method according to claim 2 or 6.

9.

74 In a wireless communication network (200) in which a network node (210) and a wireless device (250) operate, transmission is performed by the network node (210) for synchronization between the wireless device (250) and the network node (210). Also, a method performed by the wireless device (250) to detect a first sync signal and related information message, the network node (210), which is two or more in a subframe. To detect

of the N OFDM symbols (901) and the detected first synchronization. Detecting the relevant information message associated with the first synchronization signal at a predefined time-frequency position relative to the time-frequency position of the signal (903) and said association. A method comprising obtaining subframe timing and / or frame timing (904) by detecting an index contained in an informational message.

10.

88 Claimed that the first synchronization signal is a primary synchronization signal (PSS), the related information message includes a related second synchronization signal, and the second synchronization signal is a secondary synchronization signal (SSS). Item 9. The method according to item 9.

11.

95 10. The method of claim 10, wherein detecting the relevant information message comprises matching the sequence of the detected related information message with one of a set of possible information message sequences.

12.

101 The method of any one of claims 9-11, wherein the relevant information message comprises a related physical broadcast channel (PBCH), and the related PBCH further comprises related system information.

13.

107 The related information message is different for each OFDM symbol that the related information message is transmitted by the network node (210), the related information message includes an index, and the subframe timing is the index by the wireless device (250). The method according to any one of claims 9 to 12, which is obtained by detecting.

14.

114 The related information message is the same for each OFDM symbol in which the related information message is transmitted within a subframe by the network node (210), and the related information message is such that the related information message is the network node (210). 9. The related information message includes an index, and the frame timing is acquired by detecting the index by the wireless device (250), which differs for each subframe transmitted within the transmission target frame. The method according to any one of 12 to 12.

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