

Summary of Invention

Technical Problem

[0005]

However, for example, even when a frequency band to be used in wireless communication of a wireless local area network (LAN) is also used in wireless communication of a cellular system, the above-mentioned frequency band is not likely to be appropriately used in wireless communication of the above-mentioned cellular system.

[0006]

An example in which the cellular system uses the above-mentioned frequency band on the basis of carrier sense multiple access with collision avoidance (CSMA/CA) is considered. However, because the CSMA/CA is a mechanism for simultaneously enabling only one-to-one communication, undesirable results can be caused when the CSMA/CA is applied as is to a cellular system in which a frequency band is used simultaneously by one base station and a plurality of terminal devices. For example, the wireless communication of the cellular system is performed in a state in which no hidden terminal problem is solved.

[0007]

Therefore, it is desirable to provide a mechanism which enables a frequency band shared between wireless communication of a cellular system and wireless communication conforming to a wireless LAN standard to be more appropriately used in the cellular system.

Solution to Problem

[0008]

According to a first aspect of the present invention, there is provided a device including: an acquisition unit configured to acquire information indicating a terminal device which is a device candidate for performing wireless communication of a cellular system using a shared frequency band shared between the wireless communication of the cellular system and wireless communication conforming to a wireless local area network (LAN) standard; and a control unit configured to notify the terminal device of a measurement duration using a frequency of the cellular system, and control initializing the wireless communication using the shared frequency band based on a measurement result received from the terminal device using a frequency of the cellular system, the measurement result being generated by a measurement during the measurement duration.

[0009]

According to a second aspect of the present invention, there is provided a device including: a recognition unit configured to recognize that a terminal device is a device candidate for performing wireless communication of a cellular system using a shared frequency band shared between the wireless communication of the cellular system and wireless communication conforming to a wireless local area network (LAN) standard through a notification by a base station of the cellular system; and a control unit configured to notify the terminal device of a measurement duration using a frequency of the cellular system, and control initializing the wireless communication using the shared frequency band based on a measurement result received from the terminal device using a frequency of the cellular system, the measurement result being generated by a measurement during the measurement duration.

Advantageous Effects of Invention

[0010]

According to embodiments of the present invention, a frequency band shared between wireless communication of a cellular system and wireless communication conforming to a wireless LAN standard can be more appropriately used in the cellular system. Note that the effects described above are not necessarily limited, and along with or instead of the effects, any effect that is desired to be introduced in the present specification or other effects that can be expected from the present specification may be exhibited.

Brief Description of Drawings

[0011]

[FIG. 1] FIG. 1 is an explanatory diagram illustrating a frame format of Institute of Electrical and Electronics Engineers (IEEE) 802.11.

[FIG. 2] FIG. 2 is an explanatory diagram illustrating a frame format of long-term evolution (LTE).

[FIG. 3] FIG. 3 is an explanatory diagram illustrating an example of a schematic configuration of a cellular system according to an embodiment of the present disclosure.

[FIG. 4] FIG. 4 is an explanatory diagram illustrating an example of a communication

CLAIMS

1. A device comprising:

an acquisition unit configured to acquire information indicating a terminal device which is a device candidate for performing wireless communication of a cellular system using a shared frequency band shared between the wireless communication of the cellular system and wireless communication conforming to a wireless local area network (LAN) standard; and

a control unit configured to

notify the terminal device of a measurement duration using a frequency of the cellular system, and

control initializing the wireless communication using the shared frequency band based on a measurement result received from the terminal device using a frequency of the cellular system, the measurement result being generated by a measurement during the measurement duration.

2. The device according to claim 1, wherein the control unit notifies the terminal device that the terminal device is the device candidate before the frequency band is used in the wireless communication of the cellular system.

3. The device according to claim 1, wherein the control unit notifies the terminal device that the terminal device is the device candidate using another frequency band for the cellular system.

4. The device according to claim 1, wherein the control unit notifies the terminal device that the terminal device is the device candidate in a system information block (SIB) or by individual signaling for the terminal device.

5. The device according to claim 1, wherein the control unit instructs the terminal device to transmit a frame including duration information for setting a network allocation vector (NAV) using the frequency band before the frequency band is used in the wireless communication of the cellular system.

6. The device according to claim 5, wherein the control unit uses another frequency band for the cellular system to instruct the terminal device to transmit the frame using the frequency band.
7. The device according to claim 6, wherein the control unit provides the terminal device with information which specifies a timing at which the frame is transmitted.
8. The device according to claim 6, wherein the control unit provides the terminal device with the duration information or information which specifies the duration information.
9. The device according to claim 5, wherein the control unit instructs the terminal device to transmit the frame using the frequency band by another frame for triggering the transmission of the frame by the terminal device.
10. The device according to claim 1, wherein the control unit determines whether to use the frequency band in the wireless communication of the cellular system on the basis of a result of carrier sensing for the frequency band by the terminal device.
11. The device according to claim 1, wherein the control unit synchronizes wireless communication using another frequency band for the cellular system with wireless communication using the frequency band.
12. The device according to claim 1, wherein the control unit notifies one or more terminal devices for performing wireless communication of the cellular system of a period in which the wireless communication of the cellular system is performed using the frequency band.
13. The device according to claim 12, wherein the control unit determines the device candidate on the basis of a result of performing measurement for the frequency band by at least some of the one or more terminal devices.
14. The device according to claim 1, wherein the device is a base station of the cellular system, a base station device of the base station, or a module of the base station device.

15. A device comprising:

a recognition unit configured to recognize that a terminal device is a device candidate for performing wireless communication of a cellular system using a shared frequency band shared between the wireless communication of the cellular system and wireless communication conforming to a wireless local area network (LAN) standard through a notification by a base station of the cellular system; and

a control unit configured to

notify the terminal device of a measurement duration using a frequency of the cellular system, and

control initializing the wireless communication using the shared frequency band based on a measurement result received from the terminal device using a frequency of the cellular system, the measurement result being generated by a measurement during the measurement duration .

16. The device according to claim 15, wherein the control includes controlling transmission of a frame by the terminal device so that the frame including duration information for setting a NAV is transmitted using the frequency band.

17. The device according to claim 15, wherein the control includes notifying the base station of a result of carrier sensing by the terminal device.

18. The device according to claim 15, wherein the control unit achieves synchronization for the frequency band on the basis of a result of achieving synchronization for another frequency band for the cellular system.

19. The device according to claim 15,

wherein the recognition unit recognizes a period in which the wireless communication of the cellular system is performed using the frequency band through a notification by the base station, and

wherein the control unit performs measurement for the frequency band in the period.

20. The device according to claim 15, wherein the device is the terminal device or a module of the terminal device.

21. The device according to claim 1,
wherein a duplex operation of the cellular system is frequency division duplex (FDD), and
wherein the frequency band is used as a downlink band in the cellular system.