

[DESCRIPTION]

[Title]

COMMUNICATION APPARATUS AND COMMUNICATION METHOD

[Technical Field]

[0001]

The technique disclosed in the present specification relates to a communication apparatus and a communication method for performing wireless data transmission in a multichannel wireless environment.

[Background Art]

[0002]

As examples of a technique realizing speed enhancing in a wireless LAN (Local Area Network) system typified by wireless LAN system under IEEE802.11, channel bonding and MIMO (Multiple Input Multiple Output) can be cited. Out of these two techniques, the channel bonding is a technique for combining adjacent channels for making communication in use frequency bands (refer to, for example, PTL 1). While a band available to one channel is 20 MHz in IEEE802.11a/g, a transmission speed can be made two or more times as high as that in a case of one channel by making communication at, for example, 40 MHz corresponding to the bands for two channels.

[0003]

Furthermore, a task group of next-generation LAN

standards IEEE802.11ax takes into account improvement of throughput by introduction of new interference avoidance and frequency selection technique (refer to, for example, PTL 2).

[Citation List]

[Patent Literature]

[0004]

[PTL 1]

Japanese Patent Laid-open No. 2011-82993

[PTL 2]

Japanese Patent Laid-open No. 2017-55398

[Summary]

[Technical Problem]

[0005]

Embodiments of the present invention provide a communication apparatus and a communication method for performing wireless data transmission in a multichannel wireless environment.

[Solution to Problem]

[0006]

According to a first aspect of the present invention, there is provided a communication apparatus, including circuitry configured to designate a first transmission scheme

to a first wireless terminal, wherein the communication apparatus is a base station, and the first wireless terminal is associated with a specific primary channel, and designate a second transmission scheme, different from the first transmission scheme, to a second wireless terminal, wherein the second wireless terminal is associated with a non-primary channel, and the second transmission scheme includes one of: a data rate lower than a data rate of the first transmission scheme, or a transmission power higher than a transmission power of the first transmission scheme.

[0007]

The communication apparatus as the base station designates the second transmission scheme different from the first transmission scheme to the second wireless terminal using, for example, a frame for inducing the subordinate wireless terminal to transmit a signal. In addition, the control section designates the second transmission scheme having a lower data rate or higher transmission power than a data rate or transmission power of the first transmission scheme to the second wireless terminal.

[0008]

Furthermore, the control section may control the channel used by the wireless terminal on the basis of notification of a detected interference amount per channel received from the wireless terminal.

[0009]

According to a second aspect of the present invention, there is provided a communication method, including in a communication apparatus that is a base station designating a first transmission scheme to a first wireless terminal, wherein the first wireless terminal is associated with a specific primary channel; and designating a second transmission scheme, different from the first transmission scheme, to a second wireless terminal, wherein the second wireless terminal is associated with a non-primary channel, and the second transmission scheme includes one of: a data rate lower than a data rate of the first transmission scheme, or a transmission power higher than a transmission power of the first transmission scheme.

[0010]

According to a third aspect of the present invention, there is provided a communication apparatus, including circuitry configured to execute signal transmission based on a first transmission scheme associated with a specific primary channel, or a second transmission scheme, different from the first transmission scheme, associated with a non-primary channel, wherein, the communication apparatus is subordinate to a base station, and the second transmission scheme includes one of a data rate lower than a data rate of the first transmission scheme, or a transmission power higher than a

transmission power of the first transmission scheme.

[0011]

The communication apparatus receives a frame inducing the communication apparatus to transmit a signal from the base station, and the control section exercises control over a channel and a transmission scheme used in signal transmission on the basis of the received frame. In addition, the control section exercises control in such a manner as to execute signal transmission by the second transmission scheme having a lower data rate or higher transmission power than a data rate or transmission power of the first transmission scheme when the non-primary channel is solely used.

[0012]

Furthermore, the communication apparatus may further include a detection section that detects an interference amount of each available channel, and the control section exercises control to transmit notification of the detected interference amount per channel to the base station.

[0013]

According to a fourth aspect of the present invention, there is provided a communication method, including in a communication apparatus that is subordinate to a base station executing a first signal transmission by a first transmission scheme, wherein the first transmission scheme is associated with a specific primary channel; and executing a second signal

transmission by a second transmission scheme different from the first transmission scheme, wherein the second transmission scheme is associated with a non-primary channel, and the second transmission scheme includes one of a data rate lower than a data rate of the first transmission scheme, or a transmission power higher than a transmission power of the first transmission scheme.

[Advantageous Effects of Invention]

[0014]

According to embodiments of the present invention, it is possible to provide a communication apparatus and a communication method for performing wireless data transmission in a multichannel wireless environment.

[0015]

It is noted that advantages described in the present specification are given as an example only, and the advantages of the present invention are not limited to these. Furthermore, the present invention may exhibit additional advantages other than the above advantages.

[0016]

Still other aspects, features, and advantages of the technique disclosed in the present specification will be readily apparent from more detailed description based on an embodiment to be described later and accompanying drawings.

CLAIMS

1. A communication apparatus, comprising:
circuitry configured to:
designate a first transmission scheme to a first wireless terminal, wherein
the communication apparatus is a base station, and
the first wireless terminal is associated with
a specific primary channel, and
designate a second transmission scheme, different from
the first transmission scheme, to a second wireless terminal,
wherein
the second wireless terminal is associated with a
non-primary channel, and
the second transmission scheme includes one of:
a data rate lower than a data rate of the
first transmission scheme, or
a transmission power higher than a
transmission power of the first transmission scheme.
2. The communication apparatus according to claim 1, wherein
the circuitry is further configured to designate the
second transmission scheme to the second wireless terminal
based on a specific frame, and
the second wireless terminal is induced based on the
specific frame, to transmit a signal.
3. The communication apparatus according to claim 1, wherein
the circuitry is further configured to transmit, to the
second wireless terminal, a specific frame that includes
information associated with the transmission power of the
second wireless terminal, and
the second wireless terminal is induced to transmit a
signal.
4. The communication apparatus according to any one of
claims 1 to 3, wherein
the circuitry is further configured to control a specific

channel associated with the second wireless terminal,
the specific channel is one of the specific primary
channel or the non-primary channel,
the specific channel is controlled based on a
notification of a detected interference amount per channel,
and
the notification of the detected interference amount per
channel is received from the second wireless terminal.

5. A communication method, comprising:
in a communication apparatus that is a base station:
designating a first transmission scheme to a first
wireless terminal, wherein the first wireless terminal is
associated with a specific primary channel; and
designating a second transmission scheme, different from
the first transmission scheme, to a second wireless terminal,
wherein
the second wireless terminal is associated with a non-
primary channel, and
the second transmission scheme includes one of:
a data rate lower than a data rate of the
first transmission scheme, or
a transmission power higher than a
transmission power of the first transmission scheme.

6. A communication apparatus, comprising:
circuitry configured to:
execute signal transmission based on:
a first transmission scheme associated with a specific
primary channel, or
a second transmission scheme, different from the first
transmission scheme, associated with a non-primary channel,
wherein,
the communication apparatus is subordinate to a
base station, and the second transmission scheme includes
one of:
a data rate lower than a data rate of the
first transmission scheme, or

a transmission power higher than a
transmission power of the first transmission scheme.

7. The communication apparatus according to claim 6, wherein the circuitry is further configured to:
receive a specific frame from the base station, and
control, based on the received specific frame, a specific channel and a specific transmission scheme to execute the signal transmission, wherein
the specific channel corresponds to one of the specific primary channel or the non-primary channel, and
the specific transmission scheme corresponds to one of the transmission scheme associated with the specific primary channel or the transmission scheme associated with the non-primary channel.
8. The communication apparatus according to claim 6, wherein the circuitry is configured to:
receive a specific frame from the base station, wherein the specific frame includes information associated with one of the transmission power of the first transmission scheme or the transmission power of the second transmission scheme; and
transmit a signal based on the received specific scheme.
9. The communication apparatus according to claim 6, wherein the circuitry is further configured to:
detect an interference amount of at least one of the specific primary channel and the non-primary channel; and
transmit notification of the detected interference amount to the base station.
10. A communication method, comprising:
in a communication apparatus that is subordinate to a base station:
executing a first signal transmission by a first transmission scheme, wherein the first transmission scheme is associated with a specific primary channel; and
executing a second signal transmission by a second

transmission scheme different from the first transmission scheme, wherein

the second transmission scheme is associated with a non-primary channel, and

the second transmission scheme includes one of:

a data rate lower than a data rate of the first transmission scheme, or

a transmission power higher than a transmission power of the first transmission scheme.