

[0020]

Embodiments of the present disclosure make it possible to perform communication with a higher efficiency.

[Solution to Problems]

[0021]

According to a first aspect of the present disclosure, there is provided a wireless communication apparatus, including: a wireless reception processing section configured to detect reception power of a received reception frame; a preamble generation section configured to generate a preamble that is to be deployed at a top of a transmission frame and includes header information; a midamble generation section configured to generate a midamble that is to be deployed in a middle of the transmission frame and includes information of at least part of the header information; a transmission power controlling section coupled to the wireless reception processing section and configured to control transmission power of the transmission frame based on the reception power; and a wireless transmission processing section coupled to the preamble generation section, the midamble generation section, and the transmission power controlling section, the wireless transmission processing section configured to transmit the transmission frame including the preamble and the midamble, and in a case where the reception frame is a signal of a wireless network different from a wireless network to which the wireless communication apparatus belongs and the reception power is equal to or lower than a given value, the wireless transmission processing section transmits the transmission frame with the transmission power determined by the transmission power controlling section.

[0022]

According to a second aspect of the present disclosure, there is provided a wireless communication method, including the steps of: detecting reception power of a received reception frame; generating a preamble that is to be deployed at a top of a transmission frame and includes header information; generating a midamble that is to be deployed in a middle of the transmission frame and includes information of at least part of the header information; and transmitting the transmission frame including the preamble and the midamble, and in a case where the reception frame is a signal of a wireless network different from a wireless network to which the wireless communication

apparatus belongs and the reception power is equal to or lower than a given value, transmitting the transmission frame with a transmission power based on the reception power.

[0023]

In the above aspects of the present disclosure, a preamble that is to be deployed at the top of a transmission frame and includes header information is generated, and a midamble that is to be deployed in the middle of the transmission frame and includes information of at least part of the header information is generated. Then, the transmission frame including the preamble and the midamble is transmitted.

[0024]

According to a third aspect of the present disclosure, there is provided a wireless communication apparatus, including: a wireless reception processing section configured to receive a reception frame that includes a preamble deployed at a top of the reception frame and including header information and a midamble deployed in a middle of the frame and including information of at least part of the header information, the wireless reception processing section further configured to detect reception power of the reception frame; a midamble detection section coupled to the wireless reception processing section and configured to detect the midamble from the reception frame and extract the information of the at least part of the header information included in the midamble; a wireless communication controlling section coupled to the midamble detection section configured to individually manage, based on information that specifies a wireless network to which a transmission source of the reception frame belongs and information indicative of a duration of the reception frame, both included in the midamble of the reception frame, a communication situation of a wireless network to which the wireless communication apparatus belongs and a communication situation of a wireless network different from the wireless network to which the wireless communication apparatus belongs; and a transmission power controlling section coupled to the wireless communication controlling section and configured to control transmission power of a transmission frame to be transmitted later based on the reception power when the communication situation of a wireless network is different from the wireless network to which the wireless communication apparatus belongs and the reception power is equal to or lower than a given value.

[0025]

According to a fourth aspect of the present disclosure, there is provided a wireless communication method, including the steps of: receiving a reception frame that includes a preamble deployed at a top of the reception frame and including header information and a midamble deployed in a middle of the frame and including information of at least part of the header information; detecting reception power of the received reception frame; detecting the midamble from the reception frame and extracting the information of the at least part of the header information included in the midamble; individually managing, based on information that specifies a wireless network to which a transmission source of the received reception frame belongs and information indicative of a duration of the received reception frame, both included in the midamble of the reception frame, a communication situation of a wireless network to which the wireless communication apparatus belongs and a communication situation of a wireless network different from the wireless network to which the wireless communication apparatus belongs; and controlling transmission power of a transmission frame to be transmitted later based on the reception power when the communication situation of a wireless network is different from the wireless network to which the wireless communication apparatus belongs and the reception power is equal to or lower than a given value.

[0026]

In the above aspects of the present disclosure, a reception frame that includes a preamble deployed at the top of the reception frame and including header information and a midamble deployed in the middle of the frame and including information of at least part of the header information is received, and the midamble is detected from the reception frame. Then, the information of the at least part of the header information included in the midamble is extracted.

[Advantageous Effect of Invention]

[0027]

According to the above aspects of the present disclosure, communication can be performed with a high efficiency.

[0028]

CLAIMS

1. A wireless communication apparatus, comprising:
 - a wireless reception processing section configured to detect reception power of a received reception frame;
 - a preamble generation section configured to generate a preamble that is to be deployed at a top of a transmission frame and includes header information;
 - a midamble generation section configured to generate a midamble that is to be deployed in a middle of the transmission frame and includes information of at least part of the header information;
 - a transmission power controlling section coupled to the wireless reception processing section and configured to control transmission power of the transmission frame based on the reception power; and
 - a wireless transmission processing section coupled to the preamble generation section, the midamble generation section, and the transmission power controlling section, the wireless transmission processing section configured to transmit the transmission frame including the preamble and the midamble, and in a case where the reception frame is a signal of a wireless network different from a wireless network to which the wireless communication apparatus belongs and the reception power is equal to or lower than a given value, the wireless transmission processing section transmits the

transmission frame with the transmission power determined by the transmission power controlling section.

2. The wireless communication apparatus according to claim 1, wherein

the midamble further includes a training field of at least part of fields included in the preamble other than the header information.

3. The wireless communication apparatus according to claim 2, wherein

the deployment in the midamble and the deployment in the preamble of the training field that is included in common in the midamble and the preamble are same as each other.

4. The wireless communication apparatus according to claim 2, wherein

the deployment in the midamble and the deployment in the preamble of the training field that is included in common in the midamble and the preamble are different from each other.

5. The wireless communication apparatus according to claim 1, wherein

the midamble is deployed at intervals corresponding to intervals of data units included in the transmission frame.

6. The wireless communication apparatus according to claim 5, wherein,

in a case where the data unit has a variable length, delimiter information indicative of an information length of the data unit is deployed immediately preceding to the data unit in the data unit in the transmission.

7. The wireless communication apparatus according to claim 1, wherein

the midamble includes at least any one of information indicative of transmission power of the transmission frame, information for advanced space reuse, information for specifying a wireless network to which the wireless communication apparatus belongs, encoding scheme information of the transmission frame, or information indicative of a duration of the transmission frame.

8. A wireless communication method, comprising the steps of:

detecting reception power of a received reception frame;

generating a preamble that is to be deployed at a top of a transmission frame and includes header information;

generating a midamble that is to be deployed in a middle of the transmission frame and includes information of at least part of the header information; and

transmitting the transmission frame including the

preamble and the midamble, and in a case where the reception frame is a signal of a wireless network different from a wireless network to which the wireless communication apparatus belongs and the reception power is equal to or lower than a given value, transmitting the transmission frame with a transmission power based on the reception power.

9. A wireless communication apparatus, comprising:

a wireless reception processing section configured to receive a reception frame that includes a preamble deployed at a top of the reception frame and including header information and a midamble deployed in a middle of the frame and including information of at least part of the header information, the wireless reception processing section further configured to detect reception power of the reception frame;

a midamble detection section coupled to the wireless reception processing section and configured to detect the midamble from the reception frame and extract the information of the at least part of the header information included in the midamble;

a wireless communication controlling section coupled to the midamble detection section configured to individually manage, based on information that specifies a wireless network to which a transmission source of the reception frame belongs and information indicative of a duration of the reception frame, both included in the midamble of the reception frame, a

communication situation of a wireless network to which the wireless communication apparatus belongs and a communication situation of a wireless network different from the wireless network to which the wireless communication apparatus belongs; and

a transmission power controlling section coupled to the wireless communication controlling section and configured to control transmission power of a transmission frame to be transmitted later based on the reception power when the communication situation of a wireless network is different from the wireless network to which the wireless communication apparatus belongs and the reception power is equal to or lower than a given value.

10. The wireless communication apparatus according to claim 9, wherein

the midamble further includes a training field of at least part of fields included in the preamble other than the header information.

11. The wireless communication apparatus according to claim 10, wherein

the deployment in the midamble and the deployment in the preamble of the training field that is included in common in the midamble and the preamble are same as each other.

12. The wireless communication apparatus according to claim 10, wherein

the deployment in the midamble and the deployment in the preamble of the training field that is included in common in the midamble and the preamble are different from each other.

13. The wireless communication apparatus according to claim 9, wherein

the midamble is deployed at intervals corresponding to intervals of data units included in the reception frame.

14. The wireless communication apparatus according to claim 13, wherein,

in a case where the data unit has a variable length, delimiter information indicative of an information length of the data unit is deployed immediately preceding to the data unit in the reception frame.

15. The wireless communication apparatus according to claim 9, wherein

the midamble includes at least any one of information indicative of transmission power of the reception frame, information for advanced space reuse, information for specifying a wireless network to which a transmission source of the reception frame belongs, encoding scheme information of the reception frame, or information indicative of a duration

of the reception frame.

16. A wireless communication method, comprising the steps of:

receiving a reception frame that includes a preamble deployed at a top of the reception frame and including header information and a midamble deployed in a middle of the frame and including information of at least part of the header information;

detecting reception power of the received reception frame;

detecting the midamble from the reception frame and extracting the information of the at least part of the header information included in the midamble;

individually managing, based on information that specifies a wireless network to which a transmission source of the received reception frame belongs and information indicative of a duration of the received reception frame, both included in the midamble of the reception frame, a communication situation of a wireless network to which the wireless communication apparatus belongs and a communication situation of a wireless network different from the wireless network to which the wireless communication apparatus belongs; and

controlling transmission power of a transmission frame to be transmitted later based on the reception power when the

communication situation of a wireless network is different from the wireless network to which the wireless communication apparatus belongs and the reception power is equal to or lower than a given value.