advantages, such as high-speed communication, backward compatibility, support for a centralized network architecture and beamforming.

[0006]

Common use of WiGig technology is to replace wired communication performed by using a cable in a wired digital interface with wireless communication. For example, by employing WiGig technology, a wireless USB (Universal Serial Bus) link for instant synchronization and a wireless HDMI (registered trademark) (High-Definition Multimedia Interface) link for video streaming can be provided between terminals, such as smartphones and tablets.

Citation List

Non Patent Literature

[0007]

NPL 1: IEEE 802.11ad-2012

Summary

[0008]

However, the most recent wired digital interfaces, such as USB 3.5 or HDMI (registered trademark) 1.3, enable data transmission of up to several tens of Gbps. Therefore, further evolution of WiGig technology is required so as to provide a data transmission rate comparable to the most recent wired digital interface in wireless communication.

[0009]

Therefore, various embodiments of the present disclosure provides a wireless communication device and a wireless communication method capable of further increasing the data transmission rate in WiGig technology while maintaining backward compatibility with the IEEE 802.11 WLAN standard.

[0010]

According to an aspect of the present disclosure, there is provided a wireless communication device, the wireless communication device including a physical layer protocol data unit, PPDU, generator adapted to generate a physical layer protocol data unit including a legacy preamble, a legacy header, a non-legacy header, a data field and; identification information indicating that the non-legacy header is included; transmitter adapted to transmit the generated physical layer protocol data unit, characterized in that the transmitter includes an encoder adapted to perform error correction

coding on the physical layer protocol data unit by encoding the legacy header and the non-legacy header into a first codeword, the non-legacy header in the first codeword including a field regarding a channel bandwidth used by the wireless communication device.

[0010a]

According to another aspect of the present disclosure a wireless communication method comprising:

generating a physical layer protocol data unit, PPDU, including a legacy preamble, a legacy header, a non-legacy header, a data field, and identification information indicating that the non-legacy header is included; and

transmitting the generated physical layer protocol data unit,

characterized by performing error correction coding on the physical layer protocol data unit by encoding the legacy header and the non-legacy header into a first codeword, the non-legacy header including a field regarding a channel bandwidth used for actual communication.

In an embodiment there is a wireless communication method, the wireless communication method comprising generating a physical layer protocol data unit including a legacy preamble, a legacy header, a non-legacy header and a data field; and transmitting the generated physical layer protocol data unit,

characterized by performing error correction coding on the physical layer protocol data unit by encoding the legacy header and the non-legacy header into a first codeword, the non-legacy header including a field regarding a channel bandwidth.

[0011]

It should be noted that general or specific exemplary embodiments may be

CLAIMS

[Claim 1]

A wireless communication device comprising:

a physical layer protocol data unit, PPDU, generator adapted to generate a physical layer protocol data unit including a legacy preamble, a legacy header, a non-legacy header, a data field, and identification information indicating that the non-legacy header is included; and

a transmitter adapted to transmit the generated physical layer protocol data unit, characterized in that the transmitter includes:

an encoder adapted to perform error correction coding on the physical layer protocol data unit by encoding the legacy header and the non-legacy header into a first codeword, the non-legacy header in the first codeword including a field regarding a channel bandwidth used by the wireless communication device.

[Claim 2]

The wireless communication device according to Claim 1, wherein the identification information is format identification information included in a top portion of the non-legacy header.

[Claim 3]

The wireless communication device according to Claim 1, wherein the non-legacy header is disposed immediately after the legacy header in the physical layer protocol data unit.

[Claim 4]

The wireless communication device according to Claim 2,

wherein the format identification information and the field regarding the channel bandwidth are individually described in the non-legacy header.

[Claim 5]

The wireless communication device according to Claim 2,

wherein the format identification information and the field regarding the channel bandwidth are jointly described in a single field in the non-legacy header.

[Claim 6]

The wireless communication device according to Claim 5,

wherein each of the format identification information and the field regarding the channel bandwidth is described in the non-legacy header by using a sequence, and the sequence is selected from among a plurality of sequences defined in accordance with the channel bandwidth.

[Claim 7]

The wireless communication device according to Claim 1,

wherein the transmitter includes

a modulator adapted to map the encoded legacy header and the encoded non-legacy header to the same constellation.

[Claim 8]

The wireless communication device according to Claim 2,

wherein the transmitter includes a scrambler adapted to perform scrambling on the physical layer protocol data unit generated by the PPDU generator,

wherein the encoder is adapted to perform error correction coding on the scrambled physical layer protocol data unit, and

wherein the scrambling is not performed on the identification information.

[Claim 9]

The wireless communication device according to Claim 2,

wherein the transmitter includes a modulator adapted to modulate the physical layer protocol data unit generated by the PPDU generator and

wherein the modulator is adapted to modulate the non-legacy header by using a first phase that differs from a second phase used to modulate one of the legacy preamble and the legacy header.

[Claim 10]

A wireless communication method comprising:

generating a physical layer protocol data unit, PPDU, including a legacy preamble, a legacy header, a non-legacy header, a data field, and identification information indicating that the non-legacy header is included; and

transmitting the generated physical layer protocol data unit,

characterized by

performing error correction coding on the physical layer protocol data unit by encoding the legacy header and the non-legacy header into a first codeword, the non-legacy header including a field regarding a channel bandwidth used for actual communication.