DESCRIPTION

Title of Invention

TRANSMISSION DEVICE, RECEPTION DEVICE, TRANSMISSION METHOD, AND RECEPTION METHOD

Technical Field

[0001] The present disclosure relates to a transmission apparatus, a reception apparatus, a transmission method, and a reception method.

Background Art

[0002] With regard to the standardization of 5G Mobile Communication Systems (5G), new radio access technologies (e.g., called “New Radio (NR)”) that are not necessarily backward compatible with Long Term Evolution (LTE) or LTE-Advanced have been discussed in 3rd Generation Partnership Project (3GPP).

Citation List

Non-Patent Literature

[0003]

NPL 1

3GPP TS 38.214 V15.6.0, “NR; Physical layer procedures for data (Release 15),” 2019-06

Summary

[0004] However, there is scope for further study on a method for improving the reliability of a transmission channel in the new radio access technologies.

[0005] According to an aspect, there is a transmission apparatus, comprising:

control circuitry, which, in operation, determines a transmission size of a first channel

in one of a first time section and a second time section based on a time resource amount used for determination of the transmission size of the first channel for an other of the first time section and the second time section, the first time section being a time section in which the first channel and a second channel are arranged, the second time section being a time section in which the first channel is arranged; and

transmission circuitry, which, in operation, performs transmission processing on the first channel in the first time section and the second time section based on the transmission size determined, wherein the first channel is a Physical Sidelink Shared Channel (PSSCH), and the second channel is a Physical Sidelink Feedback Channel (PSFCH).

[0005a] According to an aspect, there is a reception apparatus, comprising:

control circuitry, which, in operation, determines a transmission size of a first channel in one of a first time section and a second time section based on a time resource amount used for determination of the transmission size of the first channel for an other of the first time section and the second time section, the first time section being a time section in which the first channel and a second channel are arranged, the second time section being a time section in which the first channel is arranged; and

reception circuitry, which, in operation, performs reception processing on the first channel in the first time section and the second time section based on the transmission size determined, wherein the first channel is a Physical Sidelink Shared Channel (PSSCH), and the second channel is a Physical Sidelink Feedback Channel (PSFCH).

[0005b] According to an aspect,there is a transmission method, comprising steps performed by a transmission apparatus of:

determining a transmission size of a first channel in one of a first time section and a second time section based on a time resource amount used for determination of the transmission size of the first channel for an other of the first time section and the second time

section, the first time section being a time section in which the first channel and a second channel are arranged, the second time section being a time section in which the first channel is arranged; and

performing transmission processing on the first channel in the first time section and the second time section based on the transmission size determined, wherein the first channel is a Physical Sidelink Shared Channel (PSSCH), and the second channel is a Physical Sidelink Feedback Channel (PSFCH).

[0005c] According to an aspect, there is a reception method, comprising steps performed by a reception apparatus of:

determining a transmission size of a first channel in one of a first time section and a second time section based on a time resource amount used for determination of the transmission size of the first channel for an other of the first time section and the second time section, the first time section being a time section in which the first channel and a second channel are arranged, the second time section being a time section in which the first channel is arranged; and

performing reception processing on the first channel in the first time section and the second time section based on the transmission size determined, wherein the first channel is a Physical Sidelink Shared Channel (PSSCH), and the second channel is a Physical Sidelink Feedback Channel (PSFCH).

[0005d] According to an aspect, there is an integrated circuit of a transmission apparatus comprising:

decision circuitry, which, in operation, controls determining a transmission size of a first channel in one of a first time section and a second time section based on a time resource amount used for determination of the transmission size of the first channel for an other of the first time section and the second time section, the first time section being a time section in which the first channel and a second channel are arranged, the second time section being a time section in which the first channel is arranged; and

transmission circuitry, which, in operation, controls performing transmission processing on the first channel in the first time section and the second time section based on the transmission size determined, wherein the first channel is a Physical Sidelink Shared Channel (PSSCH), and the second channel is a Physical Sidelink Feedback Channel (PSFCH).

[0005e] According to an aspect, there is an integrated circuit of a reception apparatus comprising:

decision circuitry, which, in operation, controls determining a transmission size of a

first channel in one of a first time section and a second time section based on a time resource amount used for determination of the transmission size of the first channel for an other of the first time section and the second time section, the first time section being a time section in which the first channel and a second channel are arranged, the second time section being a time section in which the first channel is arranged; and

reception circuitry, which, in operation, controls performing reception processing on the first channel in the first time section and the second time section based on the transmission size determined,

wherein the first channel is a Physical Sidelink Shared Channel (PSSCH), and the second channel is a Physical Sidelink Feedback Channel (PSFCH).

One non-limiting example facilitates providing a transmission apparatus, a reception apparatus, a transmission method, and a reception method capable of

CLAIMS

Claim 1 A transmission apparatus, comprising:

control circuitry, which, in operation, determines a transmission size of a first channel in one of a first time section and a second time section based on a time resource amount used for determination of the transmission size of the first channel for an other of the first time section and the second time section, the first time section being a time section in which the first channel and a second channel are arranged, the second time section being a time section in which the first channel is arranged; and

transmission circuitry, which, in operation, performs transmission processing on the first channel in the first time section and the second time section based on the transmission size determined,

wherein the first channel is a Physical Sidelink Shared Channel (PSSCH), and the second channel is a Physical Sidelink Feedback Channel (PSFCH).

Claim 2 The transmission apparatus according to claim 1, wherein

the time resource amount is a number of symbols at which the first channel is arranged in the first time section.

Claim 3 The transmission apparatus according to claim 1, wherein

the time resource amount is a number of symbols at which the first channel is arranged in the second time section.

Claim 4 The transmission apparatus according to claim 1, wherein

the time resource amount is a number of symbols at which the first channel is arranged in one of the first time section and the second time section, and

which one of the first time section or the second time section is used, for a determination of the transmission size of the first channel in the one of the first time section and the second time section, is indicated to the transmission apparatus or configured for the transmission apparatus.

Claim 5 The transmission apparatus according to claim 1, wherein

the control circuitry determines a buffer size of a buffer corresponding to the first channel based on the transmission size.

Claim 6 The transmission apparatus according to claim 1, wherein

the first channel is a data channel to be repeatedly transmitted in the first time section and the second time section, or a data channel to be retransmitted in one of the first time section and the second time section with respect to transmission in an other of the first time section and the second time section.

Claim 7 The transmission apparatus according to claim 1, wherein whether the transmission size of the first channel in the one of the first time section and the second time section is determined based on the time resource amount used for determination of that for the other of the first time section and the second time section is indicated to the transmission apparatus,

wherein the first channel is a Physical Sidelink Shared Channel (PSSCH), and the second channel is a Physical Sidelink Feedback Channel (PSFCH).

Claim 8 The transmission apparatus according to claim 1, wherein in a case where the first channel is assigned to resources, which are smaller than a resource amount corresponding to the determined transmission size, a part of data of the first channel is not transmitted.

Claim 9 The transmission apparatus according to claim 1, wherein in a case where the first channel is assigned to resources, which is larger than a resource amount corresponding to the determined transmission size, a coding rate of data of the first channel is adjusted.

Claim 10 A reception apparatus, comprising:

control circuitry, which, in operation, determines a transmission size of a first channel in one of a first time section and a second time section based on a time resource amount used for determination of the transmission size of the first channel for an other of the first time section and the second time section, the first time section being a time section in which the first channel and a second channel are arranged, the second time section being a time section in which the first channel is arranged; and

reception circuitry, which, in operation, performs reception processing on the first channel in the first time section and the second time section based on the transmission size determined,

wherein the first channel is a Physical Sidelink Shared Channel (PSSCH), and the second channel is a Physical Sidelink Feedback Channel (PSFCH).

Claim 11 The reception apparatus according to claim 10, wherein

the time resource amount is a number of symbols at which the first channel is arranged in the first time section.

Claim 12 The reception apparatus according to claim 10, wherein

the time resource amount is a number of symbols at which the first channel is arranged in the second time section.

Claim 13 The reception apparatus according to claim 10, wherein

the time resource amount is a number of symbols at which the first channel is arranged in one of the first time section and the second time section, and

which one of the first time section or the second time section is used, for a determination of the transmission size of the first channel in the one of the first time section and the second time section, is indicated to a transmission apparatus or configured for the transmission apparatus.

Claim 14 The reception apparatus according to claim 10, wherein

the control circuitry determines a buffer size of a buffer corresponding to the first channel based on the transmission size.

Claim 15 The reception apparatus according to claim 10, wherein

the first channel is a data channel to be repeatedly transmitted in the first time section and the second time section, or a data channel to be retransmitted in one of the first time section and the second time section with respect to transmission in an other of

the first time section and the second time section.

Claim 16 The reception apparatus according to claim 10, wherein whether the transmission size of the first channel in the one of the first time section and the second time section is determined based on the time resource amount used for determination of that for the other of the first time section and the second time section is indicated to a transmission apparatus.

Claim 17 The reception apparatus according to claim 10, wherein in a case where the first channel is assigned to resources, which are smaller than a resource amount corresponding to the determined transmission size, a part of data of the first channel is not transmitted.

Claim 18 The reception apparatus according to claim 10, wherein in a case where the first channel is assigned to resources, which are larger than a resource amount corresponding to the determined transmission size, a coding rate of data of the first channel is adjusted.

Claim 19 A transmission method, comprising steps performed by a transmission apparatus of:

determining a transmission size of a first channel in one of a first time section and a second time section based on a time resource amount used for determination of the transmission size of the first channel for an other of the first time section and the second time section, the first time section being a time section in which the first channel

and a second channel are arranged, the second time section being a time section in which the first channel is arranged; and

performing transmission processing on the first channel in the first time section and the second time section based on the transmission size determined,

wherein the first channel is a Physical Sidelink Shared Channel (PSSCH), and the second channel is a Physical Sidelink Feedback Channel (PSFCH).

Claim 20 A reception method, comprising steps performed by a reception apparatus of:

determining a transmission size of a first channel in one of a first time section and a second time section based on a time resource amount used for determination of the transmission size of the first channel for an other of the first time section and the second time section, the first time section being a time section in which the first channel and a second channel are arranged, the second time section being a time section in which the first channel is arranged; and

performing reception processing on the first channel in the first time section and the second time section based on the transmission size determined,

wherein the first channel is a Physical Sidelink Shared Channel (PSSCH), and the second channel is a Physical Sidelink Feedback Channel (PSFCH).

Claim 21 An integrated circuit of a transmission apparatus comprising:

decision circuitry, which, in operation, controls determining a transmission size of a first channel in one of a first time section and a second time section based on a time resource amount used for determination of the transmission size of the first channel for an other of the first time section and the second time section, the first time section being

a time section in which the first channel and a second channel are arranged, the second time section being a time section in which the first channel is arranged; and

transmission circuitry, which, in operation, controls performing transmission processing on the first channel in the first time section and the second time section based on the transmission size determined,

wherein the first channel is a Physical Sidelink Shared Channel (PSSCH), and the second channel is a Physical Sidelink Feedback Channel (PSFCH).

Claim 22 An integrated circuit of a reception apparatus comprising:

decision circuitry, which, in operation, controls determining a transmission size of a first channel in one of a first time section and a second time section based on a time resource amount used for determination of the transmission size of the first channel for an other of the first time section and the second time section, the first time section being a time section in which the first channel and a second channel are arranged, the second time section being a time section in which the first channel is arranged; and

reception circuitry, which, in operation, controls performing reception processing on the first channel in the first time section and the second time section based on the transmission size determined,

wherein the first channel is a Physical Sidelink Shared Channel (PSSCH), and the second channel is a Physical Sidelink Feedback Channel (PSFCH).