Claims:

1. A method for a base station to assign to an user equipment (UE) communicating with the base station a number of coded control information symbols being transmitted with coded data information symbols during a transmission time interval by the UE, the method comprising:

assigning at least one offset value to the UE;

assigning a size of data to the UE;

transmitting, by the base station, information regarding the at least one offset value to the UE; and

transmitting, by the base station, information regarding the size of data to the UE,

wherein the number of coded control information symbols assigned to the UE for transmission of control information is determined based on the size of data and the at least one offset value;

wherein the control information comprises at least one of channel quality information (CQI), Acknowledgement (ACK)/Non-Acknowledgement (NAK), Precoding Matrix Index (PMI), and Rank Indicator (RI).

2. The method of claim 1, wherein the number of coded control information symbols corresponds to the highest Modulation and Coding Scheme for data (data MCS) that achieves a signal quality that is equal to or higher than a target signal quality for the control information.

3. The method of claim 1, wherein the number of coded control information symbols corresponds to the smallest number of coding repetitions that achieves a signal quality that is equal to or higher than a target signal quality for the control information.

4. The method of claim 1, wherein the at least one offset value comprises a first offset value and a second offset value, a first number of coded control information symbols of a first

type assigned to the UE is determined based on the size of data and the first offset value, and a second number of coded control information symbols of a second type assigned to the UE is determined based on the size of data and the second offset value, and

wherein the coded control information symbols of the first type comprise channel quality information (CQI), and the coded control information symbols of the second type comprise Acknowledgement (ACK)/Non-Acknowledgement (NAK).

5. A method for determining, at an user equipment (UE) communicating with a base station, a number of coded control information symbols being transmitted with coded data information symbols during a transmission time interval by the UE, the method comprising:

receiving information regarding at least one offset value from the base station;

receiving information regarding a size of data from the base station;

determining the number of coded control information symbols based on the size of data and the at least one offset value for transmission of control information; and

transmitting the coded control information symbols with the coded data information symbols;

wherein the control information comprises at least one of channel quality information (CQI), Acknowledgement (ACK)/Non-Acknowledgement (NAK), Precoding Matrix Index(PMI), and Rank Indicator(RI).

6. The method of claim 5, wherein the number of coded control information symbols corresponds to the highest Modulation and Coding Scheme for data (data MCS) that achieves a signal quality that is equal to or higher than a target signal quality for the control information.

7. The method of claim 5, wherein the number of coded control information symbols corresponds to the smallest number of coding repetitions that achieves a signal quality that is equal to or higher than a target signal quality for the control information.

8. The method of claim 5, wherein the at least one offset value comprises a first offset value and a second offset value, a first number of coded control information symbols of a first type is determined based on the first offset value and the size of data, a second number of coded control information symbols of a second type is determined based on the second offset value and the size of data, and

wherein the coded control information symbols of the first type comprise channel quality information (CQI), and the coded control information symbols of the second type comprise Acknowledgement (ACK)/Non-Acknowledgement (NAK).

9. An apparatus to assign to an user equipment (UE) communicating with a base station a number of coded control information symbols being transmitted with coded data information symbols during the same transmission time interval by the UE, the apparatus comprising:

an assigning unit to assign a size of data and at least one offset value to the UE; and

a transmitting unit to transmit information regarding the size of data and information regarding the at least one offset value to the UE,

wherein the number of coded control information symbols assigned to the UE for transmission of control information is determined based on the size of data and the at least one offset value; and

wherein the control information comprises at least one of channel quality information (CQI), Acknowledgement (ACK)/Non-Acknowledgement (NAK), Precoding Matrix Index (PMI), and Rank Indicator (RI).

10. The apparatus of claim 9, wherein the number of coded control information symbols correspond to the highest Modulation and Coding Scheme for data (data MCS) that achieves a signal quality that is equal to or higher than a target signal quality for the control information.

11. The apparatus of claim 9, wherein the number of coded control information symbols corresponds to the smallest number of coding repetitions that achieves a signal quality that is equal to or higher than a target signal quality for the control information.

12. The apparatus of claim 9, wherein the at least one offset value comprises a first offset value and a second offset value, a first number of coded control information symbols of a first type assigned to the UE is determined based on the size of data and the first offset value, and a second number of coded control information symbols of a second type transmitted from the UE is determined based on the size of data and the second offset value, and

wherein the coded control information symbols of the first type comprise channel quality information (CQI), and the coded control symbols of the second type comprise Acknowledgement (ACK)/Non-Acknowledgement (NAK).

13. An apparatus for transmitting coded control information symbols and coded data information symbols during a transmission time interval, the apparatus comprising:

a receiving unit to receive information regarding a size of data and information regarding at least one offset value from a base station;

a computing unit to determine the number of coded control information symbols based on the size of data and the at least one offset value for transmission of control information; and

a transmitter unit to transmit the coded control information symbols with the coded data information symbols;

wherein the control information comprises at least one of channel quality information (CQI), Acknowledgement (ACK)/Non-Acknowledgement (NAK), Precoding Matrix Index (PMI), and Rank Indicator (RI).

14. The apparatus of claim 13, wherein the number of coded control information symbols corresponds to the highest Modulation and Coding Scheme for data (data MCS) that achieves a signal quality that is equal to or higher than a target signal quality for the control information.

15. The apparatus of claim 13, wherein the number of coded control information symbols corresponds to the smallest number of coding repetitions that achieves a signal quality that is equal to or higher than a target signal quality for the control information.

16. The apparatus of claim 13, wherein the at least one offset value comprises a first offset value and a second offset value, the computing unit determines a first number of coded control information symbols of a first type based on the size of data and the first offset value and determines a second number of coded control information symbols of a second type based on the size of data and the second offset value

wherein the coded control information symbols of the first type comprise channel quality information (CQI), and the coded control symbols of the second type comprise Acknowledgement (ACK)/Non-Acknowledgement (NAK).

Claims

1. A method for a base station to assign to a user equipment (UE) communicating with the base station a number of coded control information symbols being transmitted with coded data information symbols during a transmission time interval by the UE, the method comprising:

assigning at least one offset value to the UE;

assigning a size of data to the UE;

transmitting, by the base station, information regarding the at least one offset value to the UE; and

transmitting, by the base station, information regarding the size of data to the UE,

wherein the number of coded control information symbols assigned to the UE for transmission of control information is determined based on the size of data and the at least one offset value;

wherein the control information comprises at least one of channel quality information (CQI), Acknowledgement (ACK)/Non-Acknowledgement (NAK), Precoding Matrix Index (PMI), and Rank Indicator (RI).

2. The method of claim 1, wherein the number of coded control information symbols corresponds to a highest Modulation and Coding Scheme for data (data MCS) that achieves a signal quality that is equal to or higher than a target signal quality for the control information.

3. The method of claim 1, wherein the number of coded control information symbols corresponds to a smallest number of coding repetitions that achieves a signal quality that is equal to or higher than a target signal quality for the control information.

4. The method of claim 1, wherein the at least one offset value comprises a first offset value and a second offset value, a first number of coded control information symbols of a first type assigned to the UE is determined based on the size of data and the first offset value, and a second number of coded control information symbols of a second type assigned to the UE is determined based on the size of data and the second offset value, and

wherein the coded control information symbols of the first type comprise channel quality information (CQI), and the coded control information symbols of the second type comprise Acknowledgement (ACK)/Non-Acknowledgement (NAK).

5. A method for determining, at a user equipment (UE) communicating with a base station, a number of coded control information symbols being transmitted with coded data information symbols during a transmission time interval by the UE, the method comprising:

receiving information regarding at least one offset value from the base station;

receiving information regarding a size of data from the base station;

determining the number of coded control information symbols based on the size of data and the at least one offset value for transmission of control information; and

transmitting the coded control information symbols with the coded data information symbols;

wherein the control information comprises at least one of channel quality information (CQI), Acknowledgement (ACK)/Non-Acknowledgement (NAK), Precoding Matrix Index (PMI), and Rank Indicator (RI).

6. The method of claim 5, wherein the number of coded control information symbols corresponds to a highest Modulation and Coding Scheme for data (data MCS) that achieves a signal quality that is equal to or higher than a target signal quality for the control information.

7. The method of claim 5, wherein the number of coded control information symbols corresponds to a smallest number of coding repetitions that achieves a signal quality that is equal to or higher than a target signal quality for the control information.

8. The method of claim 5, wherein the at least one offset value comprises a first offset value and a second offset value, a first number of coded control information symbols of a first type is determined based on the first offset value and the size of data, a second number of coded control information symbols of a second type is determined based on the second offset value and the size of data, and

wherein the coded control information symbols of the first type comprise channel quality information (CQI), and the coded control information symbols of the second type comprise Acknowledgement (ACK)/Non-Acknowledgement (NAK).

9. An apparatus in a base station to assign to a user equipment (UE) communicating with the base station a number of coded control information symbols being transmitted with coded data information symbols during the same transmission time interval by the UE, the apparatus comprising:

an assigning logic to assign a size of data and at least one offset value to the UE; and

a transmitter to transmit information regarding the size of data and information regarding the at least one offset value from the base station to the UE,

wherein the number of coded control information symbols assigned to the UE for transmission of control information is determined based on the size of data and the at least one offset value; and

wherein the control information comprises at least one of channel quality information (CQI), Acknowledgement (ACK)/Non-Acknowledgement (NAK), Precoding Matrix Index (PMI), and Rank Indicator (RI).

10. The apparatus of claim 9, wherein the number of coded control information symbols correspond to a highest Modulation and Coding Scheme for data (data MCS) that

achieves a signal quality that is equal to or higher than a target signal quality for the control information.

11. The apparatus of claim 9, wherein the number of coded control information symbols corresponds to a smallest number of coding repetitions that achieves a signal quality that is equal to or higher than a target signal quality for the control information.

12. The apparatus of claim 9, wherein the at least one offset value comprises a first offset value and a second offset value, a first number of coded control information symbols of a first type assigned to the UE is determined based on the size of data and the first offset value, and a second number of coded control information symbols of a second type transmitted from the UE is determined based on the size of data and the second offset value, and

wherein the coded control information symbols of the first type comprise channel quality information (CQI), and the coded control symbols of the second type comprise Acknowledgement (ACK)/Non-Acknowledgement (NAK).

13. An apparatus in a user equipment (UE) for transmitting coded control information symbols and coded data information symbols during a transmission time interval, the apparatus comprising:

a receiver to receive information regarding a size of data and information regarding at least one offset value from a base station;

a computing logic to determine the number of coded control information symbols based on the size of data and the at least one offset value for transmission of control information; and

a transmitter to transmit the coded control information symbols with the coded data information symbols;

wherein the control information comprises at least one of channel quality information (CQI), Acknowledgement (ACK)/Non-Acknowledgement (NAK), Precoding Matrix Index (PMI), and Rank Indicator (RI).

14. The apparatus of claim 13, wherein the number of coded control information symbols corresponds to a highest Modulation and Coding Scheme for data (data MCS) that achieves a signal quality that is equal to or higher than a target signal quality for the control information.

15. The apparatus of claim 13, wherein the number of coded control information symbols corresponds to a smallest number of coding repetitions that achieves a signal quality that is equal to or higher than a target signal quality for the control information.

16. The apparatus of claim 13, wherein the at least one offset value comprises a first offset value and a second offset value, the computing unit determines a first number of coded control information symbols of a first type based on the size of data and the first offset

value and determines a second number of coded control information symbols of a second type based on the size of data and the second offset value,

wherein the coded control information symbols of the first type comprise channel quality information (CQI), and the coded control symbols of the second type comprise Acknowledgement (ACK)/Non-Acknowledgement (NAK).