Claims

1. A method for generating semi-static Hybrid Automatic Repeat reQuest (HARQ) codebook, comprising determining a set of occasions for candidate Physical Downlink Shared Channel (PDSCH) receptions and/or a bit length of an HARQ Acknowledgement (HARQ-ACK) codebook based on first configuration information,

wherein the first configuration information comprises:

at least one of a first time domain resource allocation table and a first set of HARQ feedback timing values K1; and

at least one of a second time domain resource allocation table and a second set of HARQ feedback timing values K1,

wherein the first time domain resource allocation table is a time domain resource allocation table for unicast PDSCH or User Equipment (UE)-specific PDSCH;

the second time domain resource allocation table is a time domain resource allocation table for multicast PDSCH and/or broadcast PDSCH, or PDSCH common to UEs;

the first set of HARQ feedback timing values K1 is the set of HARQ feedback timing values associated with unicast PDSCH, the UE-specific PDSCH, UE-specific Downlink Control Information (DCI), or DCI for scheduling the unicast PDSCH; and

the second set of HARQ feedback timing values K1 is the set of HARQ feedback timing values associated with the multicast PDSCH and/or broadcast PDSCH, the PDSCH common to the UEs, DCI common to the UEs, or DCI for scheduling the multicast PDSCH and/or broadcast PDSCH.

2. The method according to claim 1, wherein the UE-specific PDSCH is a PDSCH scheduled by DCI where Cyclic Redundancy Check (CRC) is scrambled with a UE-specific Radio Network Temporary Identity (RNTI), the UE-specific DCI is DCI where the CRC is scrambled with the UE-specific RNTI, the PDSCH common to the UEs is a PDSCH scheduled by the DCI where the CRC is scrambled with a common RNTI to UEs, and the DCI common to the UEs is DCI where the CRC is scrambled with the common RNTI to UEs.

3. The method according to claim 1, wherein the determining the set of occasions for candidate PDSCH receptions based on the first configuration information comprises one of:

a first mode in which, in the case that the first time domain resource allocation table and the second time domain resource allocation table are activated or available, determining the set of occasions for candidate PDSCH receptions based on the union of row indexes of the first time domain resource allocation table and the second time domain resource allocation table, or in the case that a specific K1 is included in both the first set of HARQ feedback timing values K1 and the second set of HARQ feedback timing values K1, determining the set of occasions for candidate PDSCH receptions based on the union of row indexes of the first time domain resource allocation table and the second time domain resource allocation table;

a second mode in which, in the case that the first time domain resource allocation table and the second time domain resource allocation table are activated or available, determining the set of occasions for candidate PDSCH receptions based on the union of row indexes of a time domain resource allocation table, where the time domain resource allocation table is the first time-domain resource allocation table or the second time-domain resource allocation table which is determined by the type of the received PDSCH or the type of the DCI for scheduling the PDSCH, or in the case that the specific K1 is included in both the first set of HARQ feedback timing values K1 and the second set of HARQ feedback timing values K1, determining the set of occasions for candidate PDSCH receptions based on the union of row indexes of a time domain resource allocation table, where the time domain resource allocation table is the first time-domain resource allocation table or the second time-domain resource allocation table which is determined by the type of the received PDSCH or the type of the DCI for scheduling the PDSCH; or

a third mode in which, in the case that only one of the first time domain resource allocation table and the second time domain resource allocation table is activated or available, determining the set of occasions for candidate PDSCH receptions based on the union of row indexes of the activated or available time domain resource allocation table, or in the case that the specific K1 is only included in the first set of HARQ feedback timing values K1 or the second set of HARQ feedback timing values K1, determining the set of occasions for candidate PDSCH receptions based on the union of row indexes of the first time domain resource allocation table or the second time domain resource allocation table associated with the specific K1.

4. The method according to claim 1, wherein the determining the bit length of the HARQ-ACK codebook based on the first configuration information comprises determining the bit length of the HARQ-ACK codebook based on a maximum value of first element quantity and second element quantity, the first element quantity is the quantity of elements in the first set of occasions for candidate PDSCH receptions determined based on the first time domain resource allocation table, and the second element quantity is the quantity of elements in the second set of occasions for candidate PDSCH receptions determined based on the second time domain resource allocation table.

5. The method according to claim 1 or 3, wherein subsequent to the determining the set of occasions for candidate PDSCH receptions based on the first configuration information, the method further comprises determining the bit length of the HARQ-ACK codebook based on the quantity of occasions for candidate PDSCH receptions in the set of occasions for candidate PDSCH receptions.

6. The method according to any one of claims 3 to 5, further comprising determining HARQ-ACK information bits based on a decoding result of the PDSCH at each occasion for candidate PDSCH reception in the set of occasions for candidate PDSCH receptions and/or a length of the HARQ-ACK codebook.

7. The method according to claim 6, wherein the determining the HARQ-ACK information bits based on the decoding result of the PDSCH at each occasion for candidate PDSCH reception in the set of occasions for candidate PDSCH receptions and/or the length of the HARQ-ACK codebook comprises:

in the case that the quantity of elements in the determined set of occasions for candidate PDSCH receptions is smaller than the maximum value of the first element quantity and the second element quantity, determining the corresponding HARQ-ACK information bits based on the decoding result of the PDSCH at each occasion for candidate PDSCH reception in the set of

occasions for candidate PDSCH receptions, and adding Negative ACK (NACK) bits until a bit length is equal to the bit length of the HARQ-ACK codebook; or

in the case that the quantity of elements in the determined set of occasions for candidate PDSCH receptions is equal to the maximum value of the first element quantity and the second element quantity, determining the corresponding HARQ-ACK information bits based on the decoding result of the PDSCH at each occasion for candidate PDSCH reception in the set of occasions for candidate PDSCH receptions.

8. A device for generating a semi-static HARQ codebook, comprising a first determination module configured to determine a set of candidate PDSCH reception occasions and/or a bit length of an HARQ-ACK codebook based on first configuration information,

wherein the first configuration information comprises:

at least one of a first time domain resource allocation table and a first set of HARQ feedback timing values K1; and

at least one of a second time domain resource allocation table and a second set of HARQ feedback timing values K1,

wherein the first time domain resource allocation table is a time domain resource allocation unicast service table for unicast PDSCH or User Equipment (UE)-specific PDSCH;

the second time domain resource allocation table is a time domain resource allocation table for multicast PDSCH and/or broadcast PDSCH, or PDSCH common to UEs;

the first set of HARQ feedback timing values K1 is the set of HARQ feedback timing values associated with unicast PDSCH, the UE-specific PDSCH, UE-specific Downlink Control Information (DCI), or DCI for scheduling the unicast PDSCH; and

the second set of HARQ feedback timing values K1 is the set of HARQ feedback timing values associated with the multicast and/or broadcast PDSCH, the PDSCH common to the UEs, DCI common to the UEs, or DCI for scheduling the multicast PDSCH and/or broadcast PDSCH.

9. The device according to claim 8, wherein the UE-specific PDSCH is a PDSCH scheduled by DCI where Cyclic Redundancy Check (CRC) is scrambled with a UE-specific Radio Network Temporary Identity (RNTI), the UE-specific DCI is DCI where the CRC is scrambled

with the UE-specific RNTI, the PDSCH common to the UEs is a PDSCH scheduled by the DCI where the CRC is scrambled with a common RNTI to UEs, and the DCI common to the UEs is DCI where the CRC is scrambled with the common RNTI to UEs.

10. The device according to claim 8, wherein the first determination module is further configured to perform one of:

a first mode in which, in the case that the first time domain resource allocation table and the second time domain resource allocation table are activated or available, determining the set of occasions for candidate PDSCH receptions based on the union of row indexes of the first time domain resource allocation table and the second time domain resource allocation table, or in the case that a specific K1 is included in both the first set of HARQ feedback timing values K1 and the second set of HARQ feedback timing values K1, determining the set of occasions for candidate PDSCH receptions based on the union of row indexes of the first time domain resource allocation table and the second time domain resource allocation table;

a second mode in which, in the case that the first time domain resource allocation table and the second time domain resource allocation table are activated or available, determining the set of occasions for candidate PDSCH receptions based on the union of row indexes of a time domain resource allocation table, where the time domain resource allocation table is the first time-domain resource allocation table or the second time-domain resource allocation table which is determined by the type of the received PDSCH or the type of the DCI for scheduling the PDSCH, or in the case that the specific K1 is included in both the first set of HARQ feedback timing values K1 and the second set of HARQ feedback timing values K1, determining the set of occasions for candidate PDSCH receptions based on the union of row indexes of a time domain resource allocation table, where the time domain resource allocation table is the first time-domain resource allocation table or the second time-domain resource allocation table which is determined by the type of the received PDSCH or the type of the DCI for scheduling the PDSCH; or

a third mode in which, in the case that only one of the first time domain resource allocation table and the second time domain resource allocation table is activated or available, determining the set of occasions for candidate PDSCH receptions based on the union of row indexes of the activated or available time domain resource allocation table, or in the case that the specific K1 is

only included in the first set of HARQ feedback timing values K1 or the second set of HARQ feedback timing values K1, determining the set of occasions for candidate PDSCH receptions based on the union of row indexes of the first time domain resource allocation table or the second time domain resource allocation table associated with the specific K1.

11. The device according to claim 8, wherein the first determination module is further configured to determine the bit length of the HARQ-ACK codebook based on a maximum value of first element quantity and second element quantity, the first element quantity is the quantity of elements in the first set of occasions for candidate PDSCH receptions determined based on the first time domain resource allocation table, and the second element quantity is the quantity of elements in the second set of occasions for candidate PDSCH receptions determined based on the second time domain resource allocation table.

12. The device according to claim 8 or 11, further comprising a second determination module configured to determine the bit length of the HARQ-ACK codebook based on the quantity of occasions for candidate PDSCH receptions in the set of occasions for candidate PDSCH receptions.

13. The device according to any one of claims 10 to 12, further comprising a third determination module configured to determine HARQ-ACK information bits based on a decoding result of the PDSCH at each occasion for candidate PDSCH reception in the set of occasions for candidate PDSCH receptions and/or a length of the HARQ-ACK codebook.

14. The device according to claim 13, wherein the third determination module is further configured to:

in the case that the quantity of elements in the determined set of occasions for candidate PDSCH receptions is smaller than the maximum value of the first element quantity and the second element quantity, determine the corresponding HARQ-ACK information bits based on the decoding result of the PDSCH at each occasion for candidate PDSCH reception in the set of

occasions for candidate PDSCH receptions, and add Negative ACK (NACK) bits until a bit length is equal to the bit length of the HARQ-ACK codebook; or

in the case that the quantity of elements in the determined set of occasions for candidate PDSCH receptions is equal to the maximum value of the first element quantity and the second element quantity, determine the corresponding HARQ-ACK information bits based on the decoding result of the PDSCH at each occasion for candidate PDSCH reception in the set of occasions for candidate PDSCH receptions.

15. A User Equipment (UE), comprising a processor, a memory, and a program stored in the memory and executed by the processor, wherein the program is executed by the processor so as to implement the steps of the method according to any one of claims 1 to 7.

16. A network side device, comprising a processor, a memory, and a program stored in the memory and executed by the processor, wherein the program is executed by the processor so as to implement the steps of the method according to any one of claims 1 to 7.

17. A computer-readable storage medium storing therein a program, wherein the program is executed by a processor so as to implement the steps of the method according to any one of claims 1 to 7.