

Claims:

1. A terminal apparatus comprising:
 - a receiver which, in operation, receives first and second downlink data in first and second component carriers, respectively, wherein a first configuration pattern of UL (uplink) and DL (downlink) subframes is set for the first component carrier and a second configuration pattern of UL and DL subframes is set for the second component carrier; and
 - a memory which, in operation, stores retransmission data of the first and second downlink data in a soft buffer, wherein the soft buffer for the second downlink data is sized according to a maximum number of downlink HARQ (hybrid automatic repeat request) retransmission processes executable in a reference configuration pattern of UL and DL subframes, the maximum number of downlink HARQ retransmission processes is determined according to the reference configuration pattern, and the reference configuration pattern is determined according to the first and second configuration patterns.
2. The terminal apparatus according to claim 1, further comprising:
 - a controller which, in operation, performs error detection of the first and second downlink data; and
 - a transmitter which, in operation, transmits in the first component carrier ACK/NACK (acknowledgement/negative acknowledgement) corresponding to a result of the error detection of the first and the second downlink data.
3. The terminal apparatus according to claim 2, wherein the transmitter transmits the ACK/NACK at a timing of an UL subframe of the reference configuration pattern.
4. The terminal apparatus according to claim 2, wherein, when the first configuration pattern and the second configuration pattern are different, the transmitter transmits the ACK/NACK at a timing of an UL subframe of the reference configuration pattern.
5. The terminal apparatus according to claim 1, wherein the first component carrier is a primary cell (PCell) and the second component carrier is a secondary cell (SCell).

6. The terminal apparatus according to claim 5, wherein when a set of DL subframes of PCell included in one frame includes a set of DL subframes of SCell, the reference configuration pattern is the same as the first configuration pattern.
7. The terminal apparatus according to claim 5, wherein when a set of DL subframes of SCell included in one frame includes a set of DL subframes of PCell, the reference configuration pattern is the same as the second configuration pattern.
8. The terminal apparatus according to claim 5, wherein when a set of DL subframes of SCell is not included in a set of DL subframes of PCell included in one frame and the set of DL subframes of PCell is not included in the set of DL subframes of SCell, the reference configuration pattern is a UL-DL configuration pattern which is DL heavy with respect to both PCell and SCell.
9. The terminal apparatus according to claim 1, wherein the memory further stores:
 - a first table which defines multiple reference configuration patterns respectively corresponding to multiple combinations of the first and second configuration patterns, wherein each of the first and second configuration patterns is selected from a set of configuration patterns, and
 - a second table which defines multiple maximum numbers of downlink HARQ retransmission processes respectively corresponding to the multiple reference configuration patterns.
10. The terminal apparatus according to claim 1, wherein the soft buffer stores an LLR (Log Likelihood Ratio) of the second downlink data when error is detected, to be combined with an LLR of the second downlink data that is retransmitted.
11. A method implemented in a terminal apparatus configured to communicate with a base station apparatus, the method comprising steps of:
 - receiving first and second downlink data in first and second component carriers, respectively, wherein a first configuration pattern of UL (uplink) and DL (downlink) subframes

is set for the first component carrier and a second configuration pattern of UL and DL subframes is set for the second component carrier; and

storing retransmission data of the first and second downlink data in a soft buffer, wherein the soft buffer for the second downlink data is sized according to a maximum number of downlink HARQ (hybrid automatic repeat request) retransmission processes executable in a reference configuration pattern of UL and DL subframes, the maximum number of downlink HARQ retransmission processes is determined according to the reference configuration pattern, and the reference configuration pattern is determined according to the first and second configuration patterns.

12. The method according to claim 11, further comprising:

performing error detection of the first and second downlink data; and
transmitting in the first component carrier ACK/NACK (acknowledgement/negative acknowledgement) corresponding to a result of the error detection of the first and the second downlink data.

13. The method according to claim 12, wherein the transmitting step includes transmitting the ACK/NACK at a timing of an UL subframe of the reference configuration pattern.

14. The method according to claim 12, wherein, when the first configuration pattern and the second configuration pattern are different, the transmitting step includes transmitting the ACK/NACK at a timing of an UL subframe of the reference configuration pattern.

15. The method according to claim 11, wherein the first component carrier is a primary cell (PCell) and the second component carrier is a secondary cell (SCell).

16. The method according to claim 15, wherein when a set of DL subframes of PCell included in one frame includes a set of DL subframes of SCell, the reference configuration pattern is the same as the first configuration pattern.

17. The method according to claim 15, wherein when a set of DL subframes of SCell included in one frame includes a set of DL subframes of PCell, the reference configuration pattern is the same as the second configuration pattern.

18. The method according to claim 15, wherein when a set of DL subframes of SCell is not included in a set of DL subframes of PCell included in one frame and the set of DL subframes of Pcell is not included in the set of DL subframes of SCell, the reference configuration pattern is a UL-DL configuration pattern which is DL heavy with respect to both PCell and SCell.

19. The method according to claim 11, further comprising:

storing a first table which defines multiple reference configuration patterns respectively corresponding to multiple combinations of the first and second configuration patterns, wherein each of the first and second configuration patterns is selected from a set of configuration patterns, and

storing a second table which defines multiple maximum numbers of downlink HARQ retransmission processes respectively corresponding to the multiple reference configuration patterns.

20. The method according to claim 11, further comprising:

storing in the soft buffer an LLR (Log Likelihood Ratio) of the second downlink data when error is detected, to be combined with an LLR of the second downlink data that is retransmitted.