CLAIMS

1. A wireless transmit/receive unit (WTRU) comprising:

circuitry configured to transmit a request for uplink resources, wherein the request for uplink resources is a request to transmit data over an enhanced dedicated channel (E-DCH);

circuitry configured to receive an uplink scheduling grant in response to the request for uplink resources;

circuitry configured to multiplex data from medium access control for dedicated channel (MAC-d) flows into a medium access control for enhanced uplink (MAC-e) protocol data unit (PDU);

circuitry configured to select a transport format combination (TFC) for transmission of the MAC-e PDU;

circuitry configured to transmit the MAC-e PDU over the E-DCH using an identified hybrid automatic repeat request (H-ARQ) process;

circuitry configured to receive feedback information in response to the transmitted MAC-e PDU;

circuitry configured to retransmit the MAC-e PDU using the identified H-ARQ process on a condition that the feedback information indicates a negative acknowledgment (NACK) of the MAC-e PDU transmission; and

circuitry configured to transmit an updated request for uplink resources.

2. The WTRU of claim 1 wherein the request for uplink resources is transmitted via physical layer signaling or medium access control (MAC) layer signaling.

3. The WTRU of claim 1 wherein the uplink scheduling grant indicates an allowed uplink transmit power.

4. The WTRU of claim 1 wherein the feedback information received from a Node-B and the retransmission of the MAC-e PDU are synchronized between the WTRU and the Node-B.

5. The WTRU of claim 1 wherein the uplink scheduling grant is an absolute grant, which provides an absolute limitation of the maximum amount of uplink resources that the WTRU may use.

6. The WTRU of claim 1 wherein the uplink scheduling grant is a relative grant, which specifies an amount by which a current amount of uplink resources is increased or decreased.

7. The WTRU of claim 1 wherein a TFC is selected based at least on the uplink scheduling grant.

8. The WTRU of claim 1 further comprising circuitry configured to receive information from a radio access network indicating allowed combinations of MAC-d flows that are allowed to be multiplexed into a MAC-e PDU.

9. The WTRU of claim 8 wherein data from MAC-d flows is multiplexed into the MAC-e PDU based on the allowed combinations of MAC-d flows.

10. The WTRU of claim 8 wherein the radio access network includes a radio network controller (RNC).

11. The WTRU of claim 1 wherein the request for uplink resources includes a traffic volume indicator and a traffic volume measurement for an individual data flow.

12. The WTRU of claim 1 wherein the multiplexing of data from MAC-d flows is based on a priority associated with the MAC-d flows or logical channels.

13. The WTRU of claim 1 wherein the WTRU receives the uplink scheduling grant from a Node-B.

14. The WTRU of claim 1 wherein the WTRU receives an uplink scheduling grant from multiple Node-Bs.

15. A method for processing data in a wireless transmit/receive unit (WTRU) comprising:

transmitting a request for uplink resources, wherein the request for uplink resources is a request to transmit data over an enhanced dedicated channel (E-DCH);

receiving an uplink scheduling grant in response to the request for uplink resources;

multiplexing data from medium access control for dedicated channel (MAC-d) flows into a medium access control for enhanced uplink (MAC-e) protocol data unit (PDU);

selecting a transport format combination (TFC) for transmission of the MAC-e PDU;

transmitting the MAC-e PDU over the E-DCH using an identified hybrid automatic repeat request (H-ARQ) process;

receiving feedback information in response to the transmitted MAC-e PDU;

retransmitting the MAC-e PDU using the identified H-ARQ process on a condition that the feedback information indicates a negative acknowledgment (NACK) of the MAC-e PDU transmission; and

transmitting an updated request for uplink resources.

16. The method of claim 15 wherein the request for uplink resources is transmitted via physical layer signaling or medium access control (MAC) layer signaling.

17. The method of claim 15 wherein the uplink scheduling grant indicates an allowed uplink transmit power.

18. The method of claim 15 wherein the feedback information received from a Node-B and the retransmission of the MAC-e PDU are synchronized between the WTRU and the Node-B

19. The method of claim 15 wherein the uplink scheduling grant is an absolute grant, which provides an absolute limitation of the maximum amount of uplink resources that the WTRU may use.

20. The method of claim 15 wherein the uplink scheduling grant is a relative grant, which specifies an amount by which a current amount of uplink resources is increased or decreased.

21. The method of claim 15 wherein a TFC is selected based at least on the uplink scheduling grant.

22. The method of claim 15 further comprising receiving information from a radio access network indicating allowed combinations of MAC-d flows that are allowed to be multiplexed into a MAC-e PDU.

23. The method of claim 22 further comprising multiplexing data from MAC-d flows into the MAC-e PDU based on the allowed combinations of MAC-d flows.

24. The method of claim 22 wherein the radio access network includes a radio network controller (RNC).

25. The method of claim 15 wherein the request for uplink resources includes a traffic volume indicator and a traffic volume measurement for an individual data flow.

26. The method of claim 15 wherein the multiplexing data from MAC-d flows is based on a priority associated with the MAC-d flows or logical channels.

27. The method of claim 15 wherein the WTRU receives the uplink scheduling grant from a Node-B.

28. The method of claim 15 wherein the WTRU receives an uplink scheduling grant from multiple Node-Bs.

CLAIMS

1. A wireless transmit/receive unit (WTRU) comprising:

circuitry configured to transmit a request for uplink resources, wherein the request for uplink resources is a request to transmit data over an enhanced dedicated channel (E-DCH);

circuitry configured to receive an uplink scheduling grant in response to the request for uplink resources;

circuitry configured to multiplex data from medium access control for dedicated channel (MAC-d) flows into a medium access control for enhanced uplink (MAC-e) protocol data unit (PDU);

circuitry configured to select a transport format combination (TFC) for transmission of the MAC-e PDU, wherein the TFC selection is at least based on the uplink scheduling grant, a maximum allowed transmit power, and logical channel priority; and

circuitry configured to transmit the MAC-e PDU over the E-DCH using a hybrid automatic repeat request (H-ARQ) process.

2. The WTRU of claim 1 wherein the WTRU is configured to transmit the request for uplink resources via medium access control (MAC) layer signaling.

3. The WTRU of claim 1 wherein the uplink scheduling grant indicates an allowed uplink transmit power.

4. The WTRU of claim 1 wherein feedback information received from a Node-B and retransmission of the MAC-e PDU are synchronized between the WTRU and the Node-B.

5. The WTRU of claim 1 wherein the uplink scheduling grant is an absolute grant, which provides an absolute limitation of the maximum amount of uplink resources that the WTRU may use.

6. The WTRU of claim 1 wherein the uplink scheduling grant is a relative grant, which specifies an amount by which a current amount of uplink resources is increased or decreased.

7. The WTRU of claim 1 further comprising circuitry configured to receive information from a radio access network indicating allowed combinations of MAC-d flows that are allowed to be multiplexed into a MAC-e PDU.

8. The WTRU of claim 7 further comprising circuitry configured to multiplex data from MAC-d flows into the MAC-e PDU based on the allowed combinations of MAC-d flows.

9. The WTRU of claim 7 wherein the radio access network includes a radio network controller (RNC).

10. The WTRU of claim 1 wherein the request for uplink resources includes a traffic volume indicator and a traffic volume measurement for an individual data flow.

11. The WTRU of claim 1 wherein the multiplexing of data from MAC-d flows is based on a priority associated with the MAC-d flows or logical channels.

12. The WTRU of claim 1 wherein the WTRU is configured to receive the uplink scheduling grant from a Node-B.

13. The WTRU of claim 1 wherein the WTRU is configured to receive an uplink scheduling grant from multiple Node-Bs.

14. A method for processing data in a wireless transmit/receive unit (WTRU) comprising:

transmitting a request for uplink resources, wherein the request for uplink resources is a request to transmit data over an enhanced dedicated channel (E-DCH);

receiving an uplink scheduling grant in response to the request for uplink resources;

multiplexing data from medium access control for dedicated channel (MAC-d) flows into a medium access control for enhanced uplink (MAC-e) protocol data unit (PDU);

selecting a transport format combination (TFC) for transmission of the MAC-e PDU, wherein the TFC selection is at least based on the uplink scheduling grant, a maximum allowed transmit power, and logical channel priority; and

transmitting the MAC-e PDU over the E-DCH using a hybrid automatic repeat request (H-ARQ) process.

15. The method of claim 14 wherein the request for uplink resources is transmitted via medium access control (MAC) layer signaling.

16. The method of claim 14 wherein the uplink scheduling grant indicates an allowed uplink transmit power.

17. The method of claim 14 wherein feedback information received from a Node-B and retransmission of the MAC-e PDU are synchronized between the WTRU and the Node-B.

18. The method of claim 14 wherein the uplink scheduling grant is an absolute grant, which provides an absolute limitation of the maximum amount of uplink resources that the WTRU may use.

19. The method of claim 14 wherein the uplink scheduling grant is a relative grant, which specifies an amount by which a current amount of uplink resources is increased or decreased.

20. The method of claim 14 further comprising receiving information from a radio access network indicating allowed combinations of MAC-d flows that are allowed to be multiplexed into a MAC-e PDU.

21. The method of claim 20 further comprising multiplexing data from MAC-d flows into the MAC-e PDU based on the allowed combinations of MAC-d flows.

22. The method of claim 20 wherein the radio access network includes a radio network controller (RNC).

23. The method of claim 14 wherein the request for uplink resources includes a traffic volume indicator and a traffic volume measurement for an individual data flow.

24. The method of claim 14 wherein the multiplexing data from MAC-d flows is based on a priority associated with the MAC-d flows or logical channels.

25. The method of claim 14 wherein the WTRU receives the uplink scheduling grant from a Node-B.

26. The method of claim 14 wherein the WTRU receives an uplink scheduling grant from multiple Node-Bs.

27. The WTRU of claim 1 further comprising:

circuitry configured to receive feedback information in response to the transmitted MAC-e PDU; and

circuitry configured to retransmit the MAC-e PDU using the H-ARQ process on a condition that the feedback information indicates a negative acknowledgment (NACK) of the MAC-e PDU transmission.

28. The method of claim 14, further comprising:

receiving feedback information in response to the transmitted MAC-e PDU; and

retransmitting the MAC-e PDU using the H-ARQ process on a condition that the feedback information indicates a negative acknowledgment (NACK) of the MAC-e PDU transmission.