CLAIMS

1. A user equipment (UE) comprising:

a measurement unit to monitor at least one high speed downlink packet access (HSDPA) channel, wherein the HSDPA channel includes at least one of a high speed shared control channel (HS-SCCH), a high speed physical downlink shared channel (HS-PDSCH) or a high speed dedicated physical control channel (HS-DPCCH), and to determine a channel quality of at least one HSDPA channel; and

a controller coupled with the measurement unit, the controller to declare a radio link failure if a channel quality of a monitored HSDPA channel remains below a predetermined threshold over a predetermined period of time, and to invoke a procedure to recover the radio link.

2. A user equipment as claimed in claim 1, wherein the channel quality is determined based at least in part on a signal-to-interference ratio (SIR), received energy per chip (E_b)/power density (N_o), or a block error ratio (BLER).

3. A user equipment as claimed in claim 1, further comprising a transceiver to transmit hybrid automatic repeat request (H-ARQ) feedback on the HS-DPCCH in response to receiving a successful transmission on the HS-SCCH or the HS-PDSCH.

4. A user equipment as claimed in claim 1, wherein a radio link failure further may be declared if an acknowledgement (ACK) to negative acknowledgment

(NACK) ratio falls below a predetermined threshold.

5. A user equipment as claimed in claim 1, wherein the channel quality is determined based at least in part on a common pilot channel (CPICH) reception.

6. A user equipment as claims in claim 1, further comprising a transceiver to transmit a channel quality indicator (CQI) in response to the determined channel quality.

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

a measurement unit to determine a channel quality of a physical control channel; and

a controller coupled with the measurement unit, the controller to determine a radio link failure if the channel quality of the physical control channel remains below a predetermined threshold over a predetermined period of time, and to invoke a procedure to recover the radio link.

8. A wireless transmit/receive unit (WTRU) as claimed in claim 7, wherein the channel quality is determined based at least in part on a signal-to-interference ratio (SIR), received energy per chip (E_b)/power density (N_o), or a block error ratio (BLER).

9. A wireless transmit/receive unit (WTRU) as claimed in claim 7, further comprising a transceiver to transmit hybrid automatic repeat request (H-ARQ)

feedback in response to receiving a transmission.

10. A wireless transmit/receive unit (WTRU) as claimed in claim 7, wherein a radio link failure further may be determined if an acknowledgement (ACK) to negative acknowledgment (NACK) ratio falls below a predetermined threshold.

11. A wireless transmit/receive unit (WTRU) as claimed in claim 7, wherein the channel quality is determined based at least in part on a common pilot channel (CPICH) reception.

12. A wireless transmit/receive unit (WTRU) as claims in claim 7, further comprising a transceiver to transmit a channel quality indicator (CQI) in response to the determined channel quality.

13. A Node-B, comprising:

a measurement unit to monitor a channel quality of at least one high speed downlink packet access (HSDPA) channel, wherein the HSDPA channel includes a high speed dedicated physical control channel (HS-DPCCH), and to determine a channel quality of the HS-DPCCH; and

a controller coupled with the measurement unit, the controller to declare a radio link failure if a channel quality of the HS-DPCCH remains below a predetermined threshold over a predetermined period of time, and to invoke a procedure to recover the radio link.

14. A Node-B as claimed in claim 13, wherein the channel quality is determined based at least in part on a signal-to-interference ratio (SIR), received energy per chip (E_b)/power density (N_o), or a block error ratio (BLER).

15. A Node-B as claimed in claim 13, further comprising a transceiver and a hybrid automatic repeat request (H-ARQ) processing unit coupled to the transceiver to receive H-ARQ feedback on the HS-DPCCH in response to a transmission on an HSDPA channel.

16. A Node-B as claimed in claim 13, wherein a radio link failure further may be declared if an acknowledgement (ACK) to negative acknowledgment (NACK) ratio falls below a predetermined threshold.

17. A Node-B as claimed in claim 13, wherein a radio link failure further may be declared based at least in part on a received channel quality indicator (CQI).

18. A Node-B as claimed in claim 13, the controller to report information to a radio network controller (RNC) to declare a radio link failure.

CLAIMS

1. A user equipment (UE) comprising:

a measurement unit to monitor at least one high speed downlink packet access (HSDPA) channel, wherein the HSDPA channel includes at least one of a high speed shared control channel (HS-SCCH), a high speed physical downlink shared channel (HS-PDSCH) or a high speed dedicated physical control channel (HS-DPCCH), and to determine a channel quality of at least one HSDPA channel; and

a controller coupled with the measurement unit, the controller to declare a radio link failure if a channel quality of a monitored HSDPA channel remains below a predetermined threshold over a predetermined period of time, and to invoke a procedure to recover the radio link.

2. A user equipment as claimed in claim 1, wherein the channel quality is determined based at least in part on a signal-to-interference ratio (SIR), received energy per chip (E_b)/power density (N_o), or a block error ratio (BLER).

3. A user equipment as claimed in claim 1, further comprising a transceiver to transmit hybrid automatic repeat request (H-ARQ) feedback on the HS-DPCCH in response to receiving a successful transmission on the HS-SCCH or the HS-PDSCH.

4. A user equipment as claimed in claim 1, wherein a radio link failure further may be declared if an acknowledgement (ACK) to negative acknowledgment (NACK) ratio falls below a predetermined threshold.

5. A user equipment as claimed in claim 1, wherein the channel quality is determined based at least in part on a common pilot channel (CPICH) reception.

6. A user equipment as claims in claim 1, further comprising a transceiver to transmit a channel quality indicator (CQI) in response to the determined channel quality.

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

a measurement unit to determine a channel quality of a physical control channel; and

a controller coupled with the measurement unit, the controller to determine a radio link failure if the channel quality of the physical control channel remains below a predetermined threshold over a predetermined period of time, and to invoke a procedure to recover the radio link.

8. A wireless transmit/receive unit (WTRU) as claimed in claim 7, wherein the channel quality is determined based at least in part on a signal-to-interference ratio (SIR), received energy per chip (E_b)/power density (N_o), or a block error ratio (BLER).

9. A wireless transmit/receive unit (WTRU) as claimed in claim 7, further comprising a transceiver to transmit hybrid automatic repeat request (H-ARQ) feedback in response to receiving a transmission.

10. A wireless transmit/receive unit (WTRU) as claimed in claim 7, wherein a radio link failure further may be determined if an acknowledgement (ACK) to negative acknowledgment (NACK) ratio falls below a predetermined threshold.

11. A wireless transmit/receive unit (WTRU) as claimed in claim 7, wherein the channel quality is determined based at least in part on a common pilot channel (CPICH) reception.

12. A wireless transmit/receive unit (WTRU) as claims in claim 7, further comprising a transceiver to transmit a channel quality indicator (CQI) in response to the determined channel quality.

13. A Node-B, comprising:

a measurement unit to monitor a channel quality of at least one high speed downlink packet access (HSDPA) channel, wherein the HSDPA channel includes a high speed dedicated physical control channel (HS-DPCCH), and to determine a channel quality of the HS-DPCCH; and

a controller coupled with the measurement unit, the controller to declare a radio link failure if a channel quality of the HS-DPCCH remains below a predetermined threshold over a predetermined period of time, and to invoke a procedure to recover the radio link.

14. A Node-B as claimed in claim 13, wherein the channel quality is determined based at least in part on a signal-to-interference ratio (SIR), received energy per chip (E_b)/power density (N_o), or a block error ratio (BLER).

15. A Node-B as claimed in claim 13, further comprising a transceiver and a hybrid automatic repeat request (H-ARQ) processing unit coupled to the transceiver to receive H-ARQ feedback on the HS-DPCCH in response to a transmission on an HSDPA channel.

16. A Node-B as claimed in claim 13, wherein a radio link failure further may be declared if an acknowledgement (ACK) to negative acknowledgment (NACK) ratio falls below a predetermined threshold.

17. A Node-B as claimed in claim 13, wherein a radio link failure further may be declared based at least in part on a received channel quality indicator (CQI).

18. A Node-B as claimed in claim 13, the controller to report information to a radio network controller (RNC) to declare a radio link failure.

19. A Node-B, comprising:

a measurement unit to determine a channel quality of a physical control channel; and

a controller coupled with the measurement unit, the controller to determine a radio link failure if the channel quality of the physical control channel remains below a predetermined threshold over a predetermined period of time, and to invoke a procedure to recover the radio link.

20. A Node-B as claimed in claim 19, wherein the channel quality is determined based at least in part on a signal-to-interference ratio (SIR), received energy per chip (E_b)/power density (N_o), or a block error ratio (BLER).

21. A Node-B as claimed in claim 19, further comprising a transceiver and a hybrid automatic repeat request (H-ARQ) processing unit coupled to the transceiver to receive H-ARQ feedback in response to a transmission on a downlink channel.

22. A Node-B as claimed in claim 19, wherein a radio link failure further may be determined if an acknowledgement (ACK) to negative acknowledgment (NACK) ratio falls below a predetermined threshold.

23. A Node-B as claimed in claim 19, wherein a radio link failure further may be determined based at least in part on a received channel quality indicator (CQI).

24. A Node-B as claimed in claim 19, the controller to report information to a radio network controller (RNC) to determine a radio link failure.