

[0003A] In accordance with an embodiment of the disclosure, a wireless transmit/receive unit (WTRU) can be provided. The WTRU can include a processor configured to determine one or more configured physical uplink control channel (PUCCH) resources on which to transmit uplink control information (UCI). The determination can be made based on a number of hybrid automatic repeat request acknowledgement (HARQ-ACK) bits and based on a threshold value. The processor can be further configured to determine a format of the PUCCH based on a number of symbols utilized for the UCI and the number of HARQ-ACK bits. The WTRU can further include a transceiver configured to transmit the UCI on the one or more PUCCH resources.

[0003B] In accordance with an embodiment of the disclosure, a method performed by a wireless transmit/receive unit (WTRU) can be provided. The method can include determining one or more configured physical uplink control channel (PUCCH) resources on which to transmit uplink control information (UCI), wherein the determination is made based on a number of hybrid automatic repeat request acknowledgement (HARQ-ACK) bits and based on a threshold value. The method can further include determining a format of the PUCCH based on a number of symbols utilized for the UCI and the number of HARQ-ACK bits. The method can yet further include transmitting the UCI on the one or more PUCCH resources.

CLAIMS

1. A wireless transmit/receive unit (WTRU) comprising:
 - a processor configured to determine one or more configured physical uplink control channel (PUCCH) resources on which to transmit uplink control information (UCI), wherein the determination is made based on a number of hybrid automatic repeat request acknowledgement (HARQ-ACK) bits and based on a threshold value, wherein
 - the processor is further configured to determine a format of the PUCCH based on a number of symbols utilized for the UCI and the number of HARQ-ACK bits; and
 - a transceiver configured to transmit the UCI on the one or more PUCCH resources.
2. The WTRU of claim 1, wherein the transceiver is further configured to receive a short transmission time interval (STTI) physical downlink control channel (sPDCCH) transmission, wherein a downlink sTTI gap is configured between an sPDCCH region and an uplink sTTI for the PUCCH.
3. The WTRU of claim 2, wherein a set of candidate sPDCCH regions includes a plurality of sTTIs.

4. The WTRU of claim 2, wherein a downlink sTTI length is shorter than an uplink sTTI length.

5. The WTRU of claim 1, wherein a downlink short transmission time interval (sTTI) is further configured to overlap with a downlink transmission time interval (TTI).

6. The WTRU of claim 1, wherein
the transceiver is further configured to transmit, on the PUCCH, first information on an uplink short transmission time interval (sTTI) concurrently with second information on an uplink TTI.

7. The WTRU of claim 6, wherein the uplink sTTI is one of a plurality of uplink sTTIs that overlaps with the uplink TTI.

8. A method performed by a wireless transmit/receive unit (WTRU), the method comprising:

determining one or more configured physical uplink control channel (PUCCH) resources on which to transmit uplink control information (UCI), wherein the determination is made based on a number of hybrid automatic repeat request acknowledgement (HARQ-ACK) bits and based on a threshold value;

determining a format of the PUCCH based on a number of symbols utilized for the UCI and the number of HARQ-ACK bits; and
transmitting the UCI on the one or more PUCCH resources.

9. The method of claim 8, further comprising receiving a short transmission time interval physical downlink control channel (sPDCCH) transmission, wherein a downlink short transmission time interval (sTTI) gap is configured between an sPDCCH region and an uplink sTTI for the PUCCH.

10. The method of claim 9, wherein a set of candidate sPDCCH regions includes a plurality of sTTIs.

11. The method of claim 9, wherein a downlink sTTI length is shorter than an uplink sTTI length.

12. The method of claim 8, wherein a downlink short transmission time interval (sTTI) partially overlaps with a downlink transmission time interval (TTI).

13. The method of claim 8, further comprising:

transmitting, on the PUCCH, first information on an uplink short transmission time interval (sTTI) concurrently with second information on an uplink TTI.

14. The method of claim 13, wherein the uplink sTTI is one of a plurality of uplink sTTIs that overlaps with the uplink TTI.