CLAIMS

What is claimed is:

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

a transceiver; and

a processor;

the transceiver and the processor configured to receive a first grant for a first uplink transmission;

the transceiver and the processor configured to receive a downlink control information (DCI) which includes a second grant for a second uplink transmission, the DCI including a priority value associated with the second grant;

the processor configured to determine whether the first uplink transmission and the second uplink transmission would overlap in time and on a condition that the first and second uplink transmission would overlap in time, to determine whether the first grant or the second grant has a higher priority based on at least the priority value; and

the processor and the transceiver configured to transmit one of the first uplink transmission or the second uplink transmission based on which of the first grant or the second grant is determined to have the higher priority.

2. The WTRU of claim 1, wherein the priority value is indicated by one bit.

3. The WTRU of claim 1, wherein the first uplink transmission is a first uplink physical uplink shared channel (PUSCH) transmission and the second uplink transmission is a second PUSCH transmission.

4. The WTRU of claim 1, wherein the first grant is received in a DCI including a priority value associated with the first uplink transmission.

5. The WTRU of claim 1, wherein the DCI includes the priority value

in an overloaded field.

6. The WTRU of claim 1, wherein the processor and the transceiver are configured to, on the condition that the first and second uplink transmission would overlap in time, to determine whether the first grant and the second grant are associated with a same priority value.

7. The WTRU of claim 1, wherein the processor and the transceiver are further configured to, on a condition that a priority value associated with the first grant is equal to the priority value associated with the second grant, to determine whether the first grant or the second grant has a higher priority based on a pre-defined priority rule.

8. The WTRU of claim 1, wherein the processor and the transceiver are further configured to, on a condition that the priority value associated with the first grant is equal to the priority value associated with the second grant, to determine whether the first grant or the second grant has a higher priority as a function of a MAC entity associated with the first grant or the second grant.

9. The WTRU of claim 1, wherein the processor and the transceiver are further configured to, on a condition that the priority value associated with the first grant is equal to the priority value associated with the second grant, to determine whether the first grant or the second grant has a higher priority as a function of a type of the first grant or the second grant.

10. The WTRU of claim 1, wherein the processor and the transceiver are further configured to, on a condition that the priority value associated with the first grant is equal to the priority value associated with the second grant, to determine whether the first grant or the second grant has a higher priority as a function of whether the first grant is a dynamic grant, a semi-persistent grant, or an alternative grant.

11. A method implemented in a wireless transmit/receive unit (WTRU), the method comprising:

receiving a first grant for a first uplink transmission;

receiving a downlink control information (DCI) which includes a second grant for a second uplink transmission, the DCI including a priority value associated with the second grant;

determining whether the first uplink transmission and the second uplink transmission would overlap in time and on a condition that the first and second uplink transmission would overlap in time, to determine whether the first grant or the second grant has a higher priority based on at least the priority value; and

transmitting one of the first uplink transmission or the second uplink transmission based on which of the first grant or the second grant is determined to have the higher priority.

12. The method of claim 11, wherein the priority value is indicated by one bit.

13. The method of claim 11, wherein the first uplink transmission is a first uplink physical uplink shared channel (PUSCH) transmission and the second uplink transmission is a second PUSCH transmission.

14. The method of claim 11, wherein the first grant is received in a DCI including a priority value associated with the first uplink transmission.

15. The method of claim 11, wherein the DCI includes the priority value in an overloaded field.

16. The method of claim 11, further comprising, on the condition that the first and second uplink transmission would overlap in time, determining whether the first grant and the second grant are associated with a same priority value.

17. The method of claim 11, further comprising, on a condition that a priority value associated with the first grant is equal to the priority value associated with the second grant, determining whether the first grant or the second grant has a higher priority based on a pre-defined priority rule.

18. The method of claim 11, further comprising, on a condition that the a priority value associated with the first grant is equal to the priority value associated with the second grant, determining whether the first grant or the second grant has a higher priority as a function of a MAC entity associated with the first grant or the second grant.

19. The method of claim 11, further comprising, on a condition that the priority value associated with the first grant is equal to the priority value associated with the second grant, determining whether the first grant or the second grant has a higher priority as a function of a type of the first grant or the second grant.

20. The method of claim 11, further comprising, on a condition that the priority value associated with the first grant is equal to the priority value associated with the second grant, determining whether the first grant or the second grant has a higher priority as a function of whether the first grant is a dynamic grant, a semi-persistent grant, or an alternative grant.