

[0082] WHAT IS CLAIMED IS:

CLAIMS

1. A method of wireless communication, comprising:
receiving, at a user equipment (UE), a first minimum processing time signal from a serving base station, wherein the first minimum processing time signal identifies a minimum processing time for the serving base station to process autonomous uplink (AUL) transmissions from the UE;
receiving, at the UE, a downlink feedback information (DFI) message from the serving base station, wherein the DFI message includes acknowledgment information for a plurality of outstanding AUL transmissions from the UE; and
identifying, by the UE, one or more acknowledged AUL transmissions of the plurality of outstanding AUL transmissions having a pending time in excess of the minimum processing time and one or more pending AUL transmissions of the plurality of outstanding AUL transmissions having the pending time within the minimum processing time.
2. The method of claim 1, wherein the receiving the first minimum processing time signal includes receiving the first minimum processing time signal via one of:
a semi-static AUL configuration message;
an activation/deactivation downlink control information (DCI) signal;
the DFI message; or
a system information broadcast signal from the serving base station.
3. The method of claim 1, further including:
identifying, by the UE, uplink data for retransmission based on the acknowledgement information associated with the one or more acknowledged AUL transmissions; and
monitoring, by the UE, a subsequent DFI message for the acknowledgement information associated with the one or more pending AUL transmissions.
4. The method of claim 1, wherein the DFI feedback message further includes updated transmission parameters for the UE.

5. The method of claim 4, wherein the updated transmission parameters include one or more of:

- a modulation and coding scheme (MCS);
- a resource allocation;
- a delta change MCS;
- a delta change resource allocation;
- a precoding matrix indicator (PMI);
- a transmit power control (TPC) message; and
- a rank indicator.

6. The method of claim 4, further including:

receiving, by the UE, a second minimum processing time signal, wherein the second minimum processing time message identifies an update time for the UE to apply the updated transmission parameters; and

updating, by the UE, transmission operations according to the updated transmission parameters, wherein the UE updates the transmission operations at the update time after the receiving the DFI with the updated transmission parameters.

7. The method of claim 6, further including:

identifying, by the UE, a reference slot for a contention window update according to a first available uplink slot satisfying one or both of: the minimum processing time, and the update time.

8. The method of claim 6, wherein the receiving the second minimum processing time signal includes receiving the second minimum processing time signal via one of:

- a semi-static AUL configuration message;
- an activation/deactivation downlink control information (DCI) signal;
- the DFI message; or
- a system information broadcast signal from the serving base station.

9. The method of claim 6, wherein the first minimum processing time signal includes the second minimum processing time signal.

10. An apparatus configured for wireless communication, comprising:
- means for receiving, at a user equipment (UE), a first minimum processing time signal from a serving base station, wherein the first minimum processing time signal identifies a minimum processing time for the serving base station to process autonomous uplink (AUL) transmissions from the UE;
 - means for receiving, at the UE, a downlink feedback information (DFI) message from the serving base station, wherein the DFI message includes acknowledgment information for a plurality of outstanding AUL transmissions from the UE; and
 - means for identifying, by the UE, one or more acknowledged AUL transmissions of the plurality of outstanding AUL transmissions having a pending time in excess of the minimum processing time and one or more pending AUL transmissions of the plurality of outstanding AUL transmissions having the pending time within the minimum processing time.
11. The apparatus of claim 10, wherein the means for receiving the first minimum processing time signal includes means for receiving the first minimum processing time signal via one of:
- a semi-static AUL configuration message;
 - an activation/deactivation downlink control information (DCI) signal;
 - the DFI message; or
 - a system information broadcast signal from the serving base station.
12. The apparatus of claim 10, further including:
- means for identifying, by the UE, uplink data for retransmission based on the acknowledgement information associated with the one or more acknowledged AUL transmissions; and
 - means for monitoring, by the UE, a subsequent DFI message for the acknowledgement information associated with the one or more pending AUL transmissions.
13. The apparatus of claim 10, wherein the DFI feedback message further includes updated transmission parameters for the UE.

14. The apparatus of claim 13, wherein the updated transmission parameters include one or more of:

- a modulation and coding scheme (MCS);
- a resource allocation;
- a delta change MCS;
- a delta change resource allocation;
- a precoding matrix indicator (PMI);
- a transmit power control (TPC) message; and
- a rank indicator.

15. The apparatus of claim 13, further including:

means for receiving, by the UE, a second minimum processing time signal, wherein the second minimum processing time message identifies an update time for the UE to apply the updated transmission parameters; and

means for updating, by the UE, transmission operations according to the updated transmission parameters, wherein the UE updates the transmission operations at the update time after the means for receiving the DFI with the updated transmission parameters.

16. The apparatus of claim 15, further including:

means for identifying, by the UE, a reference slot for a contention window update according to a first available uplink slot satisfying one or both of: the minimum processing time, and the update time.

17. The apparatus of claim 15, wherein the means for receiving the second minimum processing time signal includes receiving the second minimum processing time signal via one of:

- a semi-static AUL configuration message;
- an activation/deactivation downlink control information (DCI) signal;
- the DFI message; or
- a system information broadcast signal from the serving base station.

18. The apparatus of claim 15, wherein the first minimum processing time signal includes the second minimum processing time signal.

19. A non-transitory computer-readable medium having program code recorded thereon, the program code comprising:

program code executable by a computer for causing the computer to receive, at a user equipment (UE), a first minimum processing time signal from a serving base station, wherein the first minimum processing time signal identifies a minimum processing time for the serving base station to process autonomous uplink (AUL) transmissions from the UE;

program code executable by the computer for causing the computer to receive, at the UE, a downlink feedback information (DFI) message from the serving base station, wherein the DFI message includes acknowledgment information for a plurality of outstanding AUL transmissions from the UE; and

program code executable by the computer for causing the computer to identify, by the UE, one or more acknowledged AUL transmissions of the plurality of outstanding AUL transmissions having a pending time in excess of the minimum processing time and one or more pending AUL transmissions of the plurality of outstanding AUL transmissions having the pending time within the minimum processing time.

20. The non-transitory computer-readable medium of claim 19, further including:

program code executable by the computer for causing the computer to identify, by the UE, uplink data for retransmission based on the acknowledgement information associated with the one or more acknowledged AUL transmissions; and

program code executable by the computer for causing the computer to monitor, by the UE, a subsequent DFI message for the acknowledgement information associated with the one or more pending AUL transmissions.

21. The non-transitory computer-readable medium of claim 19, further including:

program code executable by the computer for causing the computer to receive, by the UE, a second minimum processing time signal, wherein the second minimum processing time message identifies an update time for the UE to apply the updated transmission parameters; and

program code executable by the computer for causing the computer to update, by the UE, transmission operations according to the updated transmission parameters, wherein the UE updates the transmission operations at the update time after the program code executable by the computer for causing the computer to receive the DFI with the updated transmission parameters, and

wherein the DFI feedback message further includes updated transmission parameters for the UE.

22. The non-transitory computer-readable medium of claim 21, further including: program code executable by the computer for causing the computer to identify, by the UE, a reference slot for a contention window update according to a first available uplink slot satisfying one or both of: the minimum processing time, and the update time.

23. The non-transitory computer-readable medium of claim 21, wherein the first minimum processing time signal includes the second minimum processing time signal.

24. An apparatus configured for wireless communication, the apparatus comprising:

at least one processor; and

a memory coupled to the at least one processor,

wherein the at least one processor is configured:

to receive, at a user equipment (UE), a first minimum processing time signal from a serving base station, wherein the first minimum processing time signal identifies a minimum processing time for the serving base station to process autonomous uplink (AUL) transmissions from the UE;

to receive, at the UE, a downlink feedback information (DFI) message from the serving base station, wherein the DFI message includes acknowledgment information for a plurality of outstanding AUL transmissions from the UE; and

to identify, by the UE, one or more acknowledged AUL transmissions of the plurality of outstanding AUL transmissions having a pending time in excess of the minimum processing time and one or more pending AUL transmissions of the plurality of outstanding AUL transmissions having the pending time within the minimum processing time.

25. The apparatus of claim 24, wherein the configuration of the at least one processor to receive the first minimum processing time signal includes configuration to receive the first minimum processing time signal via one of:

a semi-static AUL configuration message;

an activation/deactivation downlink control information (DCI) signal;

the DFI message; or

a system information broadcast signal from the serving base station.

26. The apparatus of claim 24, further including configuration of the at least one processor:

to identify, by the UE, uplink data for retransmission based on the acknowledgement information associated with the one or more acknowledged AUL transmissions; and

to monitor, by the UE, a subsequent DFI message for the acknowledgement information associated with the one or more pending AUL transmissions.

27. The apparatus of claim 25, further including configuration of the at least one processor:

to receive, by the UE, a second minimum processing time signal, wherein the second minimum processing time message identifies an update time for the UE to apply the updated transmission parameters; and

to update, by the UE, transmission operations according to the updated transmission parameters, wherein the UE updates the transmission operations at the update time after the configuration of the at least one processor to receive the DFI with the updated transmission parameters, and

wherein the DFI feedback message further includes updated transmission parameters for the UE.

28. The apparatus of claim 27, further including configuration of the at least one processor to identify, by the UE, a reference slot for a contention window update according to a first available uplink slot satisfying one or both of: the minimum processing time, and the update time.

29. The apparatus of claim 27, wherein the configuration of the at least one processor to receive the second minimum processing time signal includes configuration of the at least one processor to receive the second minimum processing time signal via one of:

a semi-static AUL configuration message;

an activation/deactivation downlink control information (DCI) signal;

the DFI message; or

a system information broadcast signal from the serving base station.

30. The apparatus of claim 27, wherein the first minimum processing time signal includes the second minimum processing time signal.