

CLAIMS

What is claimed is:

1.——_A method for wireless communications at a user equipment (UE), comprising:
 receiving a first downlink control information transmission from a base station that provides a first set of group-based acknowledgment feedback parameters associated with a first downlink transmission, wherein the first set of group-based acknowledgment feedback parameters includes a first new acknowledgment feedback indicator and a first feedback timing that indicates a first uplink transmission that is to include a first group-based acknowledgment feedback;
 receiving a second downlink control information transmission from the base station that provides a second set of group-based acknowledgment feedback parameters associated with a second downlink transmission, wherein the second set of group-based acknowledgment feedback parameters includes a second new acknowledgment feedback indicator that is different than the first new acknowledgment feedback indicator, and a second feedback timing that indicates the first uplink transmission is to include the first group-based acknowledgment feedback; and
 determining, based at least in part on which of the first new acknowledgment feedback indicator or the second new acknowledgment feedback indicator is received earliest or latest in time, the first group-based acknowledgment feedback.

2.——_The method of _claim 1, wherein the determining further comprises:
 identifying that the second new acknowledgment feedback indicator being different than the first new acknowledgment feedback indicator for the first group-based acknowledgment feedback is interpreted as the second new acknowledgment feedback indicator being toggled from the first new acknowledgment feedback indicator.

3.——_The method of _claim 2~~1~~, further comprising:
 ~~transmitting only~~transmitting the first group-based acknowledgement
feedback, wherein the first group-based acknowledgement feedback comprises a latest subset of feedback information associated with a latest received new acknowledgment feedback indicator.

- 4.——_The method of _claim 1, wherein the determining comprises:
identifying that the second new acknowledgment feedback indicator being different than the first new acknowledgment feedback indicator for the first group-based acknowledgment feedback corresponds to an error case; and
discontinuing generating the first group-based acknowledgment feedback to be transmitted in the first uplink transmission.
- 5.——_The method of _claim 4, wherein the determining further comprises:
determining that the second new acknowledgment feedback indicator resets the first group-based acknowledgment feedback for a subsequent second uplink transmission that is to include group-based acknowledgment feedback.
- 6.——_The method of _claim 1, wherein the first downlink control information and the second downlink control information each further include a group indicator that indicates that both the first downlink transmission and the second downlink transmission are in a same group of downlink transmissions.
- 7.——_The method of _claim 1, wherein the determining further comprises:
determining a first acknowledgment (ACK)/negative-acknowledgment (NACK) to be reported as feedback for the first downlink transmission and a second ACK/NACK to be reported as feedback for the second downlink transmission; and
formatting the first group-based acknowledgment feedback to include the first ACK/NACK and the second ACK/NACK based at least in part on the first new acknowledgment feedback indicator or the second new acknowledgment feedback indicator; and
transmitting a latest subset of feedback information associated with a latest received new acknowledgment feedback indicator.
- 8.——_The method of _claim 7, wherein the first group-based acknowledgment feedback is formatted based on which of the first new acknowledgment feedback indicator or the second new acknowledgment feedback indicator is received earliest or latest in time.

9.—The method of claim 7, wherein a downlink assignment indicator field is not reset within an acknowledgment/negative-acknowledgment opportunity.

10.—The method of claim 7, wherein:

the first group-based acknowledgment feedback is formatted relative to a prior group-based acknowledgment feedback based on whether the first new acknowledgment feedback indicator is different than a prior new acknowledgment feedback indicator associated with the prior group-based acknowledgment feedback; and
a subsequent group-based acknowledgment feedback is formatted relative to the first group-based acknowledgment feedback based on whether a subsequent new acknowledgment feedback indicator is different than the second new acknowledgment feedback indicator.

11.—The method of claim 7, wherein the first group-based acknowledgment feedback is formatted based on which of the first new acknowledgment feedback indicator or the second new acknowledgment feedback indicator is received in a majority of sets of group-based acknowledgment feedback parameters associated with the first group-based acknowledgment feedback.

12.—The method of claim 7, further comprising:

transmitting, to the base station, the first group-based acknowledgment feedback in the first uplink transmission.

13.—The method of claim 1, wherein the determining further comprises:

determining a first acknowledgment (ACK)/negative-acknowledgment (NACK) to be reported as feedback for the first downlink transmission and a second ACK/NACK to be reported as feedback for the second downlink transmission;
identifying that the second new acknowledgment feedback indicator ~~being~~is different than the first new acknowledgment feedback indicator for the first group-based acknowledgment feedback ~~is interpreted as the second new acknowledgment feedback indicator being untoggled from the first new acknowledgment feedback indicator~~; and
determining that the second new acknowledgment feedback indicator is untoggled from the first new acknowledgment feedback indicator, based at least in part on identifying that the

second new acknowledgment feedback indicator is different than the first new acknowledgment feedback indicator for the first group-based acknowledgment feedback; and

formatting the first group-based acknowledgment feedback to include the first ACK/NACK and the second ACK/NACK based at least in part on the first new acknowledgment feedback indicator or the second new acknowledgment feedback indicator.

14.—The method of claim 1, wherein the determining further comprises:
identifying that the second new acknowledgment feedback indicator being different than the first new acknowledgment feedback indicator for the first group-based acknowledgment feedback is interpreted as the second new acknowledgment feedback indicator being toggled from the first new acknowledgment feedback indicator; and
formatting a first subset of feedback information associated with the first new acknowledgment feedback indicator in the first group-based acknowledgment feedback and a second subset of feedback information associated with the second new acknowledgment feedback indicator in the first group-based acknowledgment feedback.

15.—The method of claim 14, further comprising:
concatenating the first subset of feedback information and the second subset of feedback information in the first group-based acknowledgment feedback.

16.—The method of claim 14, wherein a downlink assignment indicator field is reset upon receipt of a changed new acknowledgment feedback indicator value, and wherein different subsets of feedback information are determined for each reset of the downlink assignment indicator field.

17.—The method of claim 14, further comprising:
identifying a first codebook entry associated with the first subset of feedback information;
identifying a second codebook entry associated with the second subset of feedback information; and
transmitting, to the base station, the first group-based acknowledgment feedback in the first uplink transmission based at least in part on the first codebook entry and the second codebook entry.

18.—An apparatus for wireless communications at a user equipment (UE), comprising:
~~means for receiving a processor,~~

memory in electronic communication with the processor; and

instructions stored in the memory, wherein the instructions are executable by the processor
to:

receive a first downlink control information transmission from a base station that provides a first set of group-based acknowledgment feedback parameters associated with a first downlink transmission, wherein the first set of group-based acknowledgment feedback parameters includes a first new acknowledgment feedback indicator and a first feedback timing that indicates a first uplink transmission that is to include a first group-based acknowledgment feedback;

~~means for receiving~~receive a second downlink control information transmission from the base station that provides a second set of group-based acknowledgment feedback parameters associated with a second downlink transmission, wherein the second set of group-based acknowledgment feedback parameters includes a second new acknowledgment feedback indicator that is different than the first new acknowledgment feedback indicator, and a second feedback timing that indicates the first uplink transmission is to include the first group-based acknowledgment feedback; and

~~means for determining~~determine, based at least in part on which of the first new acknowledgment feedback indicator or the second new acknowledgment feedback indicator is received earliest or latest in time, the first group-based acknowledgment feedback.

19.—The apparatus of claim 18, wherein the instructions are further comprising executable by the processor to:

~~means for identifying~~identify that the second new acknowledgment feedback indicator being different than the first new acknowledgment feedback indicator for the first group-based acknowledgment feedback corresponds to an error case; and

~~means for discontinuing~~discontinue generating the first group-based acknowledgment feedback to be transmitted in the first uplink transmission.

20.—The apparatus of claim 19, wherein the instructions are further comprising executable by the processor:

~~means for determining~~determine that the second new acknowledgment feedback indicator resets the first group-based acknowledgment feedback for a subsequent second uplink transmission that is to include group-based acknowledgment feedback.

21.—The apparatus of claim 18, wherein the first downlink control information and the second downlink control information each further include a group indicator that indicates that both the first downlink transmission and the second downlink transmission are in a same group of downlink transmissions.

22.—The apparatus of claim 18, wherein the instructions are further comprising executable by the processor to:

~~means for determining~~determine a first acknowledgment (ACK)/negative-acknowledgment (NACK) to be reported as feedback for the first downlink transmission and a second ACK/NACK to be reported as feedback for the second downlink transmission;

~~means for formatting~~format the first group-based acknowledgment feedback to include the first ACK/NACK and the second ACK/NACK based at least in part on the first new acknowledgment feedback indicator or the second new acknowledgment feedback indicator; and

~~means for transmitting~~transmit a latest subset of feedback information associated with a latest received new acknowledgment feedback indicator.

23.—The apparatus of claim 22, wherein the first group-based acknowledgment feedback is formatted based on which of the first new acknowledgment feedback indicator or the second new acknowledgment feedback indicator is received earliest or latest in time.

24.—The apparatus of claim 22, wherein:

the first group-based acknowledgment feedback is formatted relative to a prior group-based acknowledgment feedback based on whether the first new acknowledgment feedback indicator is different than a prior new acknowledgment feedback indicator associated with the prior group-based acknowledgment feedback; and

a subsequent group-based acknowledgment feedback is formatted relative to the first group-based acknowledgment feedback based on whether a subsequent new acknowledgment feedback indicator is different than the second new acknowledgment feedback indicator.

25.—The apparatus of claim 22, wherein the first group-based acknowledgment feedback is formatted based on which of the first new acknowledgment feedback indicator or the second new acknowledgment feedback indicator is received in a majority of sets of group-based acknowledgment feedback parameters associated with the first group-based acknowledgment feedback.

26.—The apparatus of claim 18, wherein the instructions are further comprising executable by the processor to:

~~means for identifying~~identify that the second new acknowledgment feedback indicator being different than the first new acknowledgment feedback indicator for the first group-based acknowledgment feedback is interpreted as the second new acknowledgment feedback indicator being toggled from the first new acknowledgment feedback indicator.

27.—The apparatus of claim ~~26~~,18, wherein the instructions are further comprising executable by the processor to:

~~means for transmitting only~~transmit the first group-based acknowledgement feedback,
wherein the first group-based acknowledgement feedback comprises a latest subset of feedback information associated with a latest received new acknowledgment feedback indicator.

28.—The apparatus of claim 26, wherein the instructions are further comprising executable by the processor to:

~~means for identifying~~identify a first codebook entry associated with a first subset of feedback information;

~~means for identifying~~identify a second codebook entry associated with a second subset of feedback information; and

~~means for transmitting~~transmit, to the base station, the first group-based acknowledgment feedback in the first uplink transmission based at least in part on the first codebook entry and the second codebook entry.

29.—A method for wireless communications at a base station, comprising:

transmitting a first downlink control information to a user equipment (UE) that provides a first set of group-based acknowledgment feedback parameters associated with a first downlink transmission, wherein the first set of group-based acknowledgment feedback parameters includes a first new acknowledgment feedback indicator and a first feedback timing that indicates a first uplink transmission that is to include a first group-based acknowledgment feedback;

transmitting a second downlink control information to the UE that provides a second set of group-based acknowledgment feedback parameters associated with a second downlink transmission, wherein the second set of group-based acknowledgment feedback parameters includes a second new acknowledgment feedback indicator that is different than the first new acknowledgment feedback indicator, and a second feedback timing that indicates the first uplink transmission is to include the first group-based acknowledgment feedback;

transmitting the first downlink transmission and the second downlink transmission to the UE; and

receiving at least the first group-based acknowledgment feedback from the UE in the first uplink transmission.

30.—An apparatus for wireless communications at a base station, comprising: a processor, memory in electronic communication with the processor; and instructions stored in the memory, wherein the instructions are executable by the processor to:

~~means for transmitting~~transmit a first downlink control information to a user equipment (UE) that provides a first set of group-based acknowledgment feedback parameters associated with a first downlink transmission, wherein the first set of group-based acknowledgment feedback parameters includes a first new acknowledgment feedback indicator and a first feedback timing that indicates a first uplink transmission that is to include a first group-based acknowledgment feedback;

~~means for transmitting~~transmit a second downlink control information to the UE that provides a second set of group-based acknowledgment feedback parameters associated with a second downlink transmission, wherein the second set of group-based acknowledgment feedback parameters includes a second new acknowledgment feedback indicator that is different than the first new acknowledgment feedback indicator, and a second feedback timing that indicates the first uplink transmission is to include the first group-based acknowledgment feedback;

~~means for transmitting~~transmit the first downlink transmission and the second downlink transmission to the UE; and

~~means for receiving~~receive at least the first group-based acknowledgment feedback from the UE in the first uplink transmission.