CLAIMS

What is claimed is:

1. A multi-band transmitter device comprising:

a transmitter which, in operation, transmits to a multi-band recipient device a plurality of MAC layer Protocol Data Units (MPDUs) over a plurality of frequency bands to which a Traffic Identifier (TID) is mapped; and

a receiver which, in operation, receives on a first frequency band a multi-band block ack frame indicating reception statuses of the plurality of MPDUs.

2. The multi-band transmitter device of claim 1, wherein a single multi-band block ack agreement is established for the TID by exchanging an Add Block Ack (ADDBA) Request frame and an Add Block Ack (ADDBA) Response frame on an enabled frequency band.

3. The multi-band transmitter device of claim 1, wherein the receiver, in operation, receives a per-band Block Ack frame that indicates a reception status of a subset of the plurality of MPDUs received on a different frequency band.

4. The multi-band transmitter device of claim 1, wherein the plurality of MPDUs are transmitted on any of the plurality of frequency bands to which the TID is mapped.

5. The multi-band transmitter device of claim 1, wherein, in response to receiving the multi-band block ack frame that indicates failure of reception of a first

MPDU transmitted on the first frequency band, the transmitter retransmits the first MPDU on a second frequency band different from the first frequency band.

6. The multi-band transmitter device of claim 1, wherein the transmitter transmits a multi-band block ack request frame that includes one or more per-band information fields, each of the one or more per-band information fields comprising a TID field for indicating the TID for which the multi-band block ack response is requested.

7. The multi-band transmitter device of claim 1, wherein a single reordering buffer is maintained for each set of a MAC address of the multi-band recipient device and the TID.

8. A communication method for a multi-band transmitter device, the communication method comprising:

transmitting to a multi-band recipient device a plurality of MAC layer Protocol Data Units (MPDUs) over a plurality of frequency bands to which a Traffic Identifier (TID) is mapped; and

receiving on a first frequency band a multi-band block ack frame indicating reception statuses of the plurality of MPDUs.

9. The communication method of claim 8, wherein a single multi-band block ack agreement is established for the TID by exchanging an Add Block Ack (ADDBA) Request frame and an Add Block Ack (ADDBA) Response frame on an enabled frequency band.

10. The communication method of claim 8, comprising:

receiving a per-band Block Ack frame that indicates a reception status of a subset of the plurality of MPDUs received on a different frequency band.

11. The communication method of claim 8, wherein the plurality of MPDUs are transmitted on any of the plurality of frequency bands to which the TID is mapped.

12. The communication method of claim 8, comprising:

in response to receiving the multi-band block ack frame that indicates failure of reception of a first MPDU transmitted on the first frequency band, retransmitting the first MPDU on a second frequency band different from the first frequency band.

13. The multi-band communication method of claim 8, comprising:

transmitting a multi-band block ack request frame that includes one or more per-band information fields, each of the one or more per-band information fields comprising a TID field for indicating the TID for which the multi-band block ack response is requested.

14. The multi-band communication method of claim 8, wherein a single reordering buffer is maintained for each set of a MAC address of the multi-band recipient device and the TID.