

CLAIMS

What is claimed is:

1. A non-Access Point (non-AP) multi-band device comprising:

a receiver which, in operation, receives a frame transmitted on a first band, the frame including a band bitmap subfield indicating existence or non-existence of buffered unit(s) for the non-AP multi-band device on each of a plurality of bands including the first band and a second band; and

circuitry, which, in operation, retrieves the buffered unit(s) based on the band bitmap subfield.
2. The non-AP multi-band device of claim 1, wherein if a power management mode of the non-AP multi-band device is a Power Save mode, a default power state of each of the plurality of bands is a doze state, and the circuitry changes a power state of a band on which the buffered unit(s) exist from the doze mode to an awake mode.
3. The non-AP multi-band device of claim 1, wherein at least a portion of the band bitmap subfield corresponds to a first station ID of the non-AP multi-band device.
4. The non-AP multi-band device of claim 3, wherein the frame includes another band bitmap subfield corresponding to a second station ID of another non-AP multi-band device.
5. The non-AP multi-band device of claim 1, wherein the frame is a beacon frame.

6. The non-AP multi-band device of claim 1, wherein the frame includes a direction subfield indicating a downlink/uplink direction of the frame.
7. The non-AP multi-band device of claim 1, wherein frame exchange during association with an AP multi-band device is performed only on the first band.
8. The non-AP multi-band device of claim 1, wherein Target Wake Time (TWT) agreements across the plurality of bands are negotiated with an AP multi-band device.
9. A communication method for a non-Access Point (non-AP) multi-band device, the communication method comprising:
 - receiving a frame transmitted on a first band, the frame including a band bitmap subfield indicating existence or non-existence of buffered unit(s) for the non-AP multi-band device on each of a plurality of bands including the first band and a second band; and
 - retrieving the buffered unit(s) based on the band bitmap subfield.
10. The communication method of claim 9, wherein if a power management mode of the non-AP multi-band device is a Power Save mode, a default power state of each of the plurality of bands is a doze state, and a power state of a band on which the buffered unit(s) exist is changed from the doze mode to an awake mode.
11. The communication method of claim 9, wherein at least a portion of the band bitmap subfield corresponds to a first station ID of the non-AP multi-band device.

12. The communication method of claim 11, wherein the frame includes another band bitmap subfield corresponding to a second station ID of another non-AP multi-band device.
13. The communication method of claim 9, wherein the frame is a beacon frame.
14. The communication method of claim 9, wherein the frame includes a direction subfield indicating a downlink/uplink direction of the frame.
15. The communication method of claim 9, wherein frame exchange during association with an AP multi-band device is performed only on the first band.
16. The communication method of claim 9, wherein Target Wake Time (TWT) agreements across the plurality of bands are negotiated with an AP multi-band device.