CLAIMS

What is claimed is:

1. A method of accessing a wireless communication network by a device of a first device type, the method comprising:

receiving, by the device from a base station of the wireless communication network targeted to operate with a second device type, an indication of whether the first device type is allowed to access the wireless communication network, the first device type having less capabilities than the second device type;

transmitting, by the device to the base station, signaling associated with connecting to the base station in response to the indication that the first device type is allowed to access the wireless communication network;

receiving, by the device, an inquiry from the base station about capabilities of the device; and

transmitting, by the device to the base station, capability information of the device;

wherein, while operating in a half-duplex frequency division duplex (HD-FDD) mode, the device prioritizes downlink synchronization signal block (SSB) reception among a plurality of types of uplink transmissions and downlink receptions.

2. The method of claim 1, wherein transmitting, by the device to the base station, signaling associated with connecting to the base station comprises transmitting the signaling using resources reserved for the first device type to enable the device to identify itself as belonging to the first device type to the base station.

3. The method of claim 1, wherein the capability information of the device transmitted to the base station comprises one or more of operating parameters, synchronization monitoring resources, processing latencies, supported modulation schemes, half-duplex frequency division duplex configurations of the device.

4. The method of claim 3, wherein the operating parameters comprise a maximum transport block size of one or more messages supported by the device to receive resource allocation information from the base station.

5. The method of claim 3, wherein the synchronization monitoring resources comprise information on resources used by the device to monitor a control message received from the base station.

6. The method of claim 3, wherein the processing latencies comprise one or more of a first processing time associated with decoding downlink data received from the base station or a second processing time associated with preparing uplink data for transmission to the base station.

7. The method of claim 3, wherein the half-duplex frequency division duplex configurations comprise a first guard period when the device switches from a downlink reception to an uplink transmission and a second guard period when the device switches from an uplink transmission to a downlink reception.

8. The method of claim 7, wherein the first guard period and the second guard period are configured based on a distance between the device and the base station.

9. The method of claim 1, further comprising the device prioritizing among a plurality of types of uplink transmissions and downlink receptions in response to a scheduling conflict between the uplink transmissions and downlink receptions.

10. A user equipment (UE) of a first device type, comprising:

at least one antenna;

at least one radio, wherein the at least one radio is configured to communicate with a base station using the at least one antenna; and

at least one processor coupled to the at least one radio, wherein the at least one processor is configured to perform operations comprising:

receive from the base station targeted to operate with a second device type an indication of whether the first device type is allowed to access the base station, the first device type having less capabilities than the second device type;

transmit signaling to the base station to connect to the base station in response to the indication that the first device type is allowed to access the base station;

receive an inquiry from the base station to provide information about capabilities of the UE; and

transmit to the base station capability information of the UE;

wherein, while operating in a half-duplex frequency division duplex (HD-FDD) mode, the device prioritizes downlink synchronization signal block (SSB) reception among a plurality of types of uplink transmissions and downlink receptions.

11. The UE of claim 10, wherein the at least one processor configured to transmit signaling to the base station to connect to the base station comprises the processor configured to transmit the signaling using resources reserved for the first device type to enable the UE to identify itself as belonging to the first device type to the base station.

12. The UE of claim 10, wherein the capability information of the UE transmitted to the base station comprises one or more of operating parameters, synchronization monitoring resources, processing latencies, supported modulation schemes, half-duplex frequency division duplex configurations of the UE.

13. The UE of claim 12, wherein the operating parameters comprise a maximum transport block size of one or more messages supported by the UE to receive resource allocation information from the base station.

14. The UE of claim 12, wherein the synchronization monitoring resources comprise information on resources used by the UE to monitor a control message received from the base station.

15. The UE of claim 12, wherein the processing latencies comprise one or more of a first processing time associated with decoding downlink data received from the base station or a second processing time associated with preparing uplink data for transmission to the base station.

16. The UE of claim 12, wherein the half-duplex frequency division duplex configurations comprise a first guard period when the UE switches from a downlink reception to an uplink transmission and a second guard period when the UE switches from an uplink transmission to a downlink reception.

17. The UE of claim 16, wherein the first guard period and the second guard period are configured based on a distance between the UE and the base station.

18. The UE of claim 10, wherein the operations further comprise prioritize among a plurality of types of uplink transmissions and downlink receptions in response to a scheduling conflict between the uplink transmissions and downlink receptions.

19. An apparatus of a first apparatus type, comprising:

a memory configured to store instructions; and

at least one processor configured to execute the instructions stored in the memory to perform operations that comprise:

receive from a base station targeted to operate with a second apparatus type an indication of whether the first apparatus type is allowed to access the base station, the first apparatus type having less capabilities than the second apparatus type;

transmit signaling to the base station to connect to the base station in response to the indication that the first apparatus type is allowed to access the base station;

receive an inquiry from the base station to provide information about capabilities of the apparatus; and

transmit to the base station capability information of the apparatus;

wherein, while operating in a half-duplex frequency division duplex (HD-FDD) mode, the device prioritizes downlink synchronization signal block (SSB) reception among a plurality of types of uplink transmissions and downlink receptions.

20. The apparatus of claim 19, wherein the at least one processor configured to transmit signaling to the base station to connect to the base station comprises the processor configured to transmit the signaling using resources reserved for the first apparatus type to enable the apparatus to identify itself as belonging to the first apparatus type to the base station.

21. The apparatus of claim 19, wherein the capability information of the apparatus transmitted to the base station comprises one or more of operating parameters, synchronization monitoring resources, processing latencies, supported modulation schemes, half-duplex frequency division duplex configurations of the apparatus.

22. The apparatus of claim 21, wherein the operating parameters comprise a maximum transport block size of one or more messages supported by the apparatus to receive resource allocation information from the base station.

23. The apparatus of claim 21, wherein the synchronization monitoring resources comprise information on resources used by the apparatus to monitor a control message received from the base station.

24. The apparatus of claim 21, wherein the processing latencies comprise one or more of a first processing time associated with decoding downlink data received from the base station or a second processing time associated with preparing uplink data for transmission to the base station.

25. The apparatus of claim 21, wherein the half-duplex frequency division duplex configurations comprise a first guard period when the apparatus switches from a downlink reception to an uplink transmission and a second guard period when the apparatus switches from an uplink transmission to a downlink reception.

26. The apparatus of claim 25, wherein the first guard period and the second guard period are configured based on a distance between the apparatus and the base station.

27. The apparatus of claim 19, wherein the operations further comprise prioritize among a plurality of types of uplink transmissions and downlink receptions in response to a scheduling conflict between the uplink transmissions and downlink receptions.

28. A method of communication by a base station of a wireless communication network, the method comprising:

broadcasting, by the base station, an indication of whether a first device type is allowed to access the wireless communication network, wherein the wireless communication network is targeted to operate with a second device type, the first device type having less capabilities than the second device type;

receiving, by the base station from a device of the first device type, signaling to connect to the base station in response to the indication that the first device type is allowed to access the wireless communication network;

transmitting, by the base station to the device, an inquiry about capabilities of the device; and

receiving, by the base station from the device, capability information of the device;

wherein, while operating in a half-duplex frequency division duplex (HD-FDD) mode, the device prioritizes downlink synchronization signal block (SSB) reception among a plurality of types of uplink transmissions and downlink receptions.

29. The method of claim 28, wherein receiving, by the base station from the device, signaling to connect to the base station comprises receiving the signaling using resources reserved for the first device type to enable the device to identify itself as belonging to the first device type to the base station.

30. The method of claim 28, wherein the capability information of the device received by the base station comprises one or more of operating parameters, synchronization monitoring resources, processing latencies, supported modulation schemes, half-duplex frequency division duplex configurations of the device.