CLAIMS

1. An apparatus for wireless communications, comprising:

a processing system configured to~~-~~:

perform a sector level sweep (SLS) procedure between the apparatus and at least one wireless device; and

generate a first frame having ~~one or more~~a plurality of beamforming training fields to be output for transmission to the at least one wireless device using a directional transmit antenna mode and an indication whether the at least one wireless device is to be in an ~~Omni~~omni-directional receive antenna mode to receive the ~~one or more~~plurality of beamforming training fields, wherein the indication is provided via one or more bits in a field of an enhanced directional multi-gigabit (EDMG) header of the first frame; and

a first interface configured to output the first frame for transmission after performing at least a portion of the SLS procedure.

2. The apparatus of claim 1, wherein~~ the indication is provided in a header of the first frame.~~:

~~3. The apparatus of claim 1, wherein:~~

the processing system is further configured to perform ~~a beamforming training~~the SLS procedure to establish a link between the apparatus and the at least one wireless device; and

the first frame is output for transmission after establishing the link between the apparatus and the at least one wireless device.

~~4. The apparatus of claim 3, wherein:~~

~~the beamforming training procedure comprises a sector level sweep (SLS) procedure; and~~

~~the one or more beamforming training fields are output for transmission in directions based on results of the SLS procedure.~~

~~5~~. The apparatus of claim 1, wherein:

the processing system is further configured to ~~at least begin performing a sector level sweep (SLS)~~perform the SLS procedure to establish a link between the apparatus and the at least one wireless device; and

the first frame is output for transmission ~~after performing at least a portion of the SLS~~

~~procedure~~ without establishing ~~a~~the link between the apparatus and the at least one wireless device.

~~6. The apparatus of claim 1, wherein:~~
~~the at least one wireless device comprises a first type of device having enhanced capability relative to a second type of device; and~~
~~the indication is provided in a header field of the first frame, wherein the indication is decodable by both the first type of device and the second type of device.~~

~~7~~4. The apparatus of claim 1, wherein:

the at least one wireless device comprises a first type of device having enhanced capability relative to a second type of device; and

the indication is ~~provided in a header field of~~ decodable by both the first ~~frame~~type of device and the second type of device.

5. The apparatus of claim 1, wherein~~-~~:

the at least one wireless device comprises a first type of device having enhanced capability relative to a second type of device; and

the indication is decodable by the first type of device but not by the second type of device.

~~8. The apparatus of claim 1, wherein:~~
~~the indication is provided via one or more bits in a scrambler initialization field of the first frame.~~

~~9~~6. An apparatus for wireless communications, comprising:

a first interface configured to~~-~~:

perform a sector level sweep (SLS) procedure to establish a link between the apparatus and a wireless device; and

obtain, from ~~a~~the wireless device, a first frame after performing at least a portion of the SLS procedure; and

a processing system configured, based on an indication ~~in a first portion of the~~ provided via one or more bits in a field of an enhanced directional multi-gigabit (EDMG) header of the first frame, to cause the apparatus to switch to or stay in an ~~Omni~~omni-directional receive

antenna mode to obtain ~~one or more~~a plurality of beamforming training fields in a second portion of the first frame.

~~10. The apparatus of claim 9, wherein the first portion of the first frame comprises a header.~~

~~11~~7. The apparatus of claim ~~9~~6, wherein:

the processing system is further configured to perform ~~a beamforming training~~the SLS procedure to establish ~~a~~the link between the apparatus and the wireless device; and

~~-~~the first frame is obtained after establishing the link between the apparatus and the wireless device.

~~12~~8. The apparatus of claim ~~9~~6, wherein:

the processing system is further configured to ~~at least begin performing a sector level sweep (~~perform the SLS~~)~~ procedure to establish ~~a~~the link between the apparatus and the wireless device; and

the first frame is obtained ~~after performing at least a portion of the SLS procedure~~ without establishing ~~a~~the link between the apparatus and the wireless device.

~~13~~9. The apparatus of claim ~~9~~6, wherein:

the apparatus comprises a first type of device having enhanced capability relative to a second type of device; and

the indication is ~~obtained in a header field of the first portion of the first frame, wherein the indication is~~ decodable by both the first type of device and the second type of device.

~~14~~10. The apparatus of claim ~~9~~6, wherein:

the apparatus comprises a first type of device having enhanced capability relative to a second type of device; and

the indication is ~~obtained in a header field of the first portion of the first frame, wherein the indication is~~ decodable by the first type of device but not by the second type of device.

~~15. The apparatus of claim 9, wherein:~~

~~the indication is obtained via one or more bits in a scrambler initialization field of the first portion of the first frame.~~

~~16~~11. A ~~method for~~ wireless ~~communications by an apparatus~~station, comprising:

~~generating~~ a processing system configured to:

perform a sector level sweep (SLS) procedure between the wireless station and at least one wireless device; and

generate a first frame having ~~one or more~~a plurality of beamforming training fields to be output for transmission to the at least one wireless device using a directional transmit antenna mode and an indication whether the at least one wireless device is to be in an ~~Omni~~omni-directional receive antenna mode to receive the ~~one or more~~plurality of beamforming training fields, wherein the indication is provided via one or more bits in a field of an enhanced directional multi-gigabit (EDMG) header of the first frame; and

~~outputting~~a transmitter configured to transmit the first frame for transmission~~.~~

~~17. The method of claim 16, wherein the indication is provided in a header of the first frame.~~

~~18. The method of claim 16, further comprising:~~

~~performing a beamforming training procedure to establish a link between the apparatus and the at least one wireless device; and~~

~~wherein the first frame is output for transmission after establishing the link between the apparatus and the at least one wireless device.~~

~~19. The method of claim 18, wherein:~~

~~the beamforming training procedure comprises a sector level sweep (SLS) procedure; and~~

~~the one or more beamforming training fields are output for transmission in directions based on results of the SLS procedure.~~

~~20. The method of claim 16, further comprising:~~

~~at least beginning performing a sector level sweep (SLS) procedure to establish a link between the apparatus and the at least one wireless device; and~~

~~wherein the first frame is output for transmission~~ after performing at least a portion of the SLS procedure ~~without establishing a link between the apparatus and the at least one wireless device~~.

~~21~~12. The ~~method~~apparatus of claim ~~16, wherein:~~

~~the~~6, further comprising at least one ~~wireless device comprises a first type of device having enhanced capability relative to a second type of device; and~~

the indication is provided in a header field of the first frame, wherein the indication is decodable by both the first type of device and the second type of device.

22. The method of claim 16, wherein:
the at least one wireless device comprises a first type of device having enhanced capability relative to a second type of device; and
the indication is provided in a header field of the first frame, wherein the indication is decodable by the first type of device but not by the second type of device.

23. The method of claim 16, wherein:
the indication is provided via one or more bits in a scrambler initialization field of the first frame.

24. A method for wireless communications by an apparatus, comprising:
obtaining, from a wireless device, a first frame; and
causing, based on an indication in a first portion of the first frame, the apparatus to switch to or stay in an Omni-directional receive antenna mode to obtain one or more beamforming training fields in a second portion of the first frame.

25. The method of claim 24, wherein the first portion of the first frame comprises a header.

26. The method of claim 24, further comprising:
performing a beamforming training procedure to establish a link between the apparatus and the wireless device; and
wherein via which the first frame is obtained after establishing the link between the apparatus and the wireless device.

27. The method of claim 24, further comprising:
at least beginning performing a sector level sweep (SLS) procedure to establish a link between the apparatus and the wireless device; and
wherein the first frame is obtained after performing at least a portion of the SLS procedure without establishing a link between the apparatus and the wireless device.

28. The method of claim 24, wherein:
the apparatus comprises a first type of device having enhanced capability relative to a second type of device; and
the indication is obtained in a header field of the first portion of the first frame, wherein the indication is decodable by both the first type of device and the second type of device.

29. The method of claim 24, wherein:
the apparatus comprises a first type of device having enhanced capability relative to a second type of device; and
the indication is obtained in a header field of the first portion of the first frame, wherein the indication is decodable by the first type of device but not by the second type of device.

30. The method of claim 24, wherein:
the indication is obtained via one or more bits in a scrambler initialization field of the first portion of the first frame.

31. An apparatus for wireless communications, comprising:
means for generating a first frame having one or more beamforming training fields to be output for transmission to at least one wireless device using a directional transmit antenna mode and an indication whether the at least one wireless device is to be in an Omni-directional receive antenna mode to receive the one or more beamforming training fields; and
means for outputting the first frame for transmission.

32. The apparatus of claim 31, wherein the indication is provided in a header of the first frame.

33. The apparatus of claim 31, further comprising:
means performing a beamforming training procedure to establish a link between the apparatus and the at least one wireless device; and
wherein the first frame is output for transmission after establishing the link between the apparatus and the at least one wireless device.

34. The apparatus of claim 33, wherein:
the beamforming training procedure comprises a sector level sweep (SLS) procedure; and
the one or more beamforming training fields are output for transmission in directions based on results of the SLS procedure.

35. The apparatus of claim 31, further comprising:
means for at least begin performing a sector level sweep (SLS) procedure to establish a link between the apparatus and the at least one wireless device; and
wherein the first frame is output for transmission after performing at least a portion of the SLS procedure without establishing a link between the apparatus and the at least one wireless device.

36. The apparatus of claim 31, wherein:
the at least one wireless device comprises a first type of device having enhanced capability relative to a second type of device; and

the indication is provided in a header field of the first frame, wherein the indication is decodable by both the first type of device and the second type of device.

37. The apparatus of claim 31, wherein:
the at least one wireless device comprises a first type of device having enhanced capability relative to a second type of device; and
the indication is provided in a header field of the first frame, wherein the indication is decodable by the first type of device but not by the second type of device.

38. The apparatus of claim 31, wherein:
the indication is provided via one or more bits in a scrambler initialization field of the first frame.

39. An apparatus for wireless communications, comprising:
means for obtaining, from a wireless device, a first frame; and
means for causing, based on an indication in a first portion of the first frame, the apparatus to switch to or stay in an Omni-directional receive antenna mode to obtain one or more beamforming training fields in a second portion of the first frame.

40. The apparatus of claim 39, wherein the first portion of the first frame comprises a header.

41. The apparatus of claim 39, further comprising:
means for performing a beamforming training procedure to establish a link between the apparatus and the wireless device; and
wherein the first frame is obtained after establishing the link between the apparatus and the wireless device.

42. The apparatus of claim 39, further comprising:
means for at least beginning performing a sector level sweep (SLS) procedure to establish a link between the apparatus and the wireless device; and
wherein the first frame is obtained after performing at least a portion of the SLS procedure without establishing a link between the apparatus and the wireless device.

43. The apparatus of claim 39, further comprising:
the apparatus comprises a first type of device having enhanced capability relative to a second type of device; and
the indication is obtained in a header field of the first portion of the first frame, wherein the indication is decodable by both the first type of device and the second type of device.

44. The apparatus of claim 39, wherein:

the apparatus comprises a first type of device having enhanced capability relative to a second type of device; and

the indication is obtained in a header field of the first portion of the first frame, wherein the indication is decodable by the first type of device but not by the second type of device.

45. The apparatus of claim 39, wherein:

the indication is obtained via one or more bits in a scrambler initialization field of the first portion of the first frame.

46. A , wherein the apparatus is configured as a wireless station, comprising:

a processing system configured to generate a first frame having one or more beamforming training fields to be output for transmission to at least one wireless device using a directional transmit antenna mode and an indication whether the at least one wireless device is to be in an Omni-directional receive antenna mode to receive the one or more beamforming training fields; and

a transmitter configured to transmit the first frame for transmission.

47. A wireless station, comprising:

a receiver configured to receive, from a wireless device, a first frame; and

a processing system configured, based on an indication in a first portion of the first frame, to cause the wireless device to switch to or stay in an Omni-directional receive antenna mode to obtain one or more beamforming training fields in a second portion of the first frame.

48. A computer readable medium having instructions stored thereon for:

generating a first frame having one or more beamforming training fields to be output for transmission to at least one wireless device using a directional transmit antenna mode and an indication whether the at least one wireless device is to be in an Omni-directional receive antenna mode to receive the one or more beamforming training fields; and

outputting the first frame for transmission.

49. A computer readable medium having instructions stored thereon for:

obtaining, from a wireless device, a first frame; and

causing, based on an indication in a first portion of the first frame, the wireless device to switch to or stay in an Omni-directional receive antenna mode to obtain one or more beamforming training fields in a second portion of the first frame.