CLAIMS

1. A method for wireless communication by a user equipment (UE), comprising:

sending, to a base station, a first indication of power headroom (PH);

receiving, from the base station, resource allocation for an uplink (UL) transmission;

determining actual transmission power to be used in the UL transmission, wherein the determining actual transmission power is at least based on variation of a maximum permissible exposure (MPE) condition after sending the first indication of PH until the UL transmission is scheduled;

sending, to the base station, the UL transmission based on the determined actual transmission power; and

sending, to the base station, an indication of the actual transmission power.

2. The method of claim 1, wherein the indication of the actual transmission power is an additional power backoff from the first indication of PH.

3. The method of claim 2, further comprising:

comparing the additional power backoff with a threshold; and

basing the sending of the indication of the actual transmission power on at least on the comparison.

4. The method of claim 1, wherein the UL transmission is data transmission in physical uplink shared channel (PUSCH).

5. The method of claim 4, wherein the sending the indication of the actual transmission power piggybacked is piggybacked on the data transmission in PUSCH.

6. The method of claim 1, wherein the indication of the actual transmission power is sent in a control channel.

7. The method of claim 1, further comprising:

basing the determining of the actual transmission power on maximum permissible

exposure (MPE) condition, serving beam, the UL transmission, or combination thereof.

8. The method of claim 1, wherein the indication of the actual transmission power is sent prior to a second PH indication.

9. A wireless communication device, comprising:

at least one radio frequency RF resource;

a processor; and

a memory storing instructions that, when instructed by the processor, causes the wireless communication device to:

send, to a base station, a first indication of power headroom (PH);

receive, from the base station, resource allocation for an uplink (UL) transmission;

determine actual transmission power to be used in the UL transmission, wherein the determining actual transmission power is at least based on variation of a maximum permissible exposure (MPE) condition after sending the first indication of PH until the UL transmission is scheduled;

send, to the base station, the UL transmission based on the determined actual transmission power; and

send, to the base station, an indication of the actual transmission power.

10. The wireless communication device of claim 9, wherein the indication of the actual transmission power is an additional power backoff from the first indication of PH.

11. The wireless communication device of claim 10, wherein the memory storing instructions that, when instructed by the processor, causes the wireless communication device to further:

compare the additional power backoff with a threshold; and

base the sending of the indication of the actual transmission power at least on the comparison.

12. The wireless communication device of claim 9, wherein the UL transmission is data transmission in physical uplink shared channel (PUSCH).

13. The wireless communication device of claim 12, wherein the sending the indication of the actual transmission power is piggybacked on the data transmission in PUSCH.

14. The wireless communication device of claim 9, wherein the indication of the actual transmission power is sent in a control channel.

15. The wireless communication device of claim 9, further comprising:

base the determining of the actual transmission power on maximum permissible exposure (MPE) condition, serving beam, scheduled UL transmission, or combination thereof.

16. The wireless communication device of claim 9, wherein the indication of the actual transmission power is sent prior to a second PH indication.

17. A wireless communication device, comprising:

means for sending, to a base station, a first indication of power headroom (PH);

means for receiving, from the base station, resource allocation for an uplink (UL) transmission;

means for determining actual transmission power to be used in the UL transmission, wherein the determining actual transmission power is at least based on variation of a maximum permissible exposure (MPE) condition after sending the first indication of PH until the UL transmission is scheduled;

means for sending, to the base station, the UL transmission based on the determined actual transmission power; and

means for sending, to the base station, an indication of the actual transmission power.

18. The wireless communication device of claim 17, wherein the indication of the actual transmission power is an additional power backoff from the first indication of PH.

19. The wireless communication device of claim 18, further comprising:

means for comparing the additional power backoff with a threshold; and

basing the sending of the indication of the actual transmission power at least on the comparison.

20. The wireless communication device of claim 17, wherein the UL transmission is data transmission in physical uplink shared channel (PUSCH).

21. The wireless communication device of claim 20, wherein sending the indication of the actual transmission power piggybacked on the data transmission in PUSCH.

22. The wireless communication device of claim 17, wherein the indication of the actual transmission power is sent in a control channel.

23. The wireless communication device of claim 17, further comprising:

basing the determining of the actual transmission power on maximum permissible exposure (MPE) condition, serving beam, scheduled UL transmission, or combination thereof.

24. The wireless communication device of claim 17, wherein the indication of the actual transmission power is sent prior to a second PH indication.

25. A method for wireless communication by a base station, comprising:

receiving, from a user equipment (UE), an indication of power headroom (PH);

sending, to the UE, resource allocation for a first uplink (UL) transmission based at least on the indication of PH;

receiving, from the UE, the first UL transmission;

receiving, from the UE, an indication of actual transmission power of the first UL transmission, wherein the indication of actual transmission power is at least based on variation of a maximum permissible exposure (MPE) condition after the UE sending the first indication of PH until the UE schedules the first UL transmission; and

adjusting an estimate of the link quality based on the indication of actual transmission power.

26. The method of claim 25, further comprising:

sending, to the UE, resource allocation for a second UL transmission based on the indication of PH and the adjusted estimate of the link quality.

27. A wireless communication device, comprising:

at least one radio frequency RF resource;

a processor; and

a memory storing instructions that, when instructed by the processor, causes the wireless communication device to:

receive, from a user equipment (UE), an indication of power headroom (PH);

send, to the UE, resource allocation for a first uplink (UL) transmission based at least on the indication of PH;

receive, from the UE, the first UL transmission;

receive, from the UE, an indication of actual transmission power of the first UL transmission, wherein the indication of actual transmission power is at least based on variation of a maximum permissible exposure (MPE) condition after the UE sending the first indication of PH until the UE schedules the first UL transmission; and

adjust an estimate of the link quality based on the indication of actual transmission power.

28. The wireless communication device of claim 27, wherein the memory storing instructions that, when instructed by the processor, causes the wireless communication device to further:

send, to the UE, resource allocation for a second UL transmission based on the indication of PH and the adjusted estimate of the link quality.

29. A wireless communication device, comprising:

means for receiving, from a user equipment (UE), an indication of power headroom (PH);

means for sending, to the UE, resource allocation for a first uplink (UL) transmission based at least on the indication of PH;

means for receiving, from the UE, the first UL transmission;

means for receiving, from the UE, an indication of actual transmission power of the first UL transmission, wherein the indication of actual transmission power is at least based on variation of a maximum permissible exposure (MPE) condition after the UE sending the first indication of PH until the UE schedules the first UL transmission; and

means for adjusting an estimate of the link quality based on the indication of actual transmission power.

30. The wireless communication device of claim 29, further comprising:

means for sending, to the UE, resource allocation for a second UL transmission based on the indication of PH and the adjusted estimate of the link quality.