

CLAIMS

What is claimed is:

1. A transmit power configuration method, applied to an integrated access and backhaul IAB node, wherein the IAB node comprises a distributed unit DU and a mobile termination MT unit, and the method comprises:

determining a first transmit power configuration for the DU and/or a second transmit power configuration for the MT unit; and

controlling the DU to transmit information at a transmit power indicated by the first transmit power configuration, and/or the MT unit to transmit information at a transmit power indicated by the second transmit power configuration, wherein

a sum of the transmit power of the DU and the transmit power of the MT unit is less than or equal to a maximum transmit power of the IAB node.

2. The method according to claim 1, wherein the determining a first transmit power configuration for the DU and/or a second transmit power configuration for the MT unit comprises:

determining the first transmit power configuration and/or the second transmit power configuration based on configuration information transmitted by an upstream node or configuration information obtained by the IAB node, wherein

the upstream node comprises a parent IAB node or a centralized unit CU.

3. The method according to claim 2, further comprising:

reporting the configuration information obtained by the IAB node to the upstream node.

4. The method according to claim 2 or 3, wherein the configuration information comprises one or more of the following:

a maximum transmit power of the DU, a maximum transmit power of the MT unit, a ratio of the maximum transmit power of the DU to the maximum transmit power of the MT unit, a difference between the maximum transmit power of the DU

and the maximum transmit power of the MT unit, a maximum energy per resource element of the DU, a maximum energy per resource element of the MT unit, a ratio of the maximum energy per resource element of the DU to the maximum energy per resource element of the MT unit, a difference between the maximum energy per resource element of the DU and the maximum energy per resource element of the MT unit, a maximum power spectral density of the DU, a maximum power spectral density of the MT unit, a ratio of the maximum power spectral density of the DU to the maximum power spectral density of the MT unit, a difference between the maximum power spectral density of the DU and the maximum power spectral density of the MT unit, a minimum transmit power of the DU, a minimum transmit power of the MT unit, a ratio of the minimum transmit power of the DU to the minimum transmit power of the MT unit, a difference between the minimum transmit power of the DU and the minimum transmit power of the MT unit, a minimum energy per resource element of the DU, a minimum energy per resource element of the MT unit, a ratio of the minimum energy per resource element of the DU to the minimum energy per resource element of the MT unit, a difference between the minimum energy per resource element of the DU and the minimum energy per resource element of the MT unit, a minimum power spectral density of the DU, a minimum power spectral density of the MT unit, a ratio of the minimum power spectral density of the DU to the minimum power spectral density of the MT unit, a difference between the minimum power spectral density of the DU and the minimum power spectral density of the MT unit, a configured transmit power of the DU, a configured transmit power of the MT unit, a ratio of the configured transmit power of the DU to the configured transmit power of the MT unit, or a difference between the configured transmit power of the DU and the configured transmit power of the MT unit.

5. The method according to claim 2, wherein the configuration information determined by the IAB node comprises a power reference parameter of the parent IAB node, a target receive power of the parent IAB node, and a total transmit power of the IAB node, wherein

the power reference parameter comprises a reference signal received power or a path loss.

6. The method according to claim 1, further comprising:

controlling the MT unit to report a power headroom PHR to an upstream node, wherein the upstream node comprises a parent IAB node or a CU; and

the PHR reported to the upstream node is obtained based on the second transmit power configuration for the MT unit.

7. The method according to claim 1, further comprising:

reporting transmit power reference information to an upstream node, wherein the upstream node comprises a parent IAB node or a CU; and

the transmit power reference information comprises one or more of the following:

a maximum expected transmit power of the DU, a minimum expected transmit power of the DU, a maximum expected transmit power of the MT unit, a minimum expected transmit power of the MT unit, an expected ratio of the maximum transmit power of the DU to the maximum transmit power of the MT unit, an expected difference between the maximum transmit power of the DU and the maximum transmit power of the MT unit, or a maximum transmit power of the IAB node.

8. The method according to claim 1, wherein the controlling the DU to transmit information at a transmit power indicated by the first transmit power configuration, and/or the MT unit to transmit information at a transmit power indicated by the second transmit power configuration comprises:

controlling the DU to transmit, in a target time period, information at the transmit power indicated by the first transmit power configuration, and/or the MT unit to transmit, in the target time period, information at the transmit power indicated by the second transmit power configuration, wherein

the target time period comprises at least one of the following:

a time period during which both the DU and the MT unit transmit information;

a symbol or a symbol set occupied by a downlink resource configured for the DU and an uplink resource configured for the MT unit in time domain;

a slot or a sub-slot containing in time domain the symbol occupied by the downlink resource configured for the DU and the uplink resource configured for the MT unit; or

a slot set or a sub-slot set containing in time domain the symbol occupied by the downlink resource configured for the DU and the uplink resource configured for the MT unit.

9. The method according to claim 8, wherein if a signal to be transmitted by the DU is a target signal, the target signal comprises one or more of a synchronization signal and PBCH block SSB signal, a common physical downlink control channel Common PDCCH signal, a user equipment specific physical downlink control channel UE specific PDCCH signal, a channel state information reference signal CSI-RS, or a tracking reference signal TRS;

the DU discards the target signal during the target time period; or

a transmit power of the target signal is the transmit power indicated by the first transmit power configuration, wherein the first transmit power configuration comprises a power configuration of the target signal and a power configuration of a non-target signal.

10. The method according to claim 9, further comprising:

reporting a resource position of the target signal to an upstream node, wherein the upstream node comprises a parent IAB node or a CU.

11. The method according to claim 1, further comprising:

determining transmission priorities of the DU and the MT unit, wherein

if a transmission priority of the DU is higher than that of the MT unit, the DU is controlled to transmit information at the transmit power indicated by the first transmit power configuration; and

if a transmission priority of the MT unit is higher than that of the DU, the MT unit is controlled to transmit information at the transmit power indicated by the second transmit power configuration.

12. The method according to claim 11, wherein

if the transmission priority of the DU is higher than that of the MT unit, the MT unit is controlled to perform power scaling or to discard the information; and

if the transmission priority of the MT unit is higher than that of the DU, the DU is controlled to perform power scaling or to discard the information.

13. The method according to claim 11 or 12, wherein the transmission priority comprises a priority of a unit and/or a priority of to-be-transmitted information.

14. The method according to claim 1, further comprising:

transmitting power indication information to a terminal device, wherein

the power indication information is used to indicate one or more of the following:

whether the DU and the MT unit share a total transmit power of the IAB node, the transmit power of the DU and/or the MT unit, a difference between the transmit power of the DU and/or the MT unit and a reference power, a ratio of the transmit power of the DU and/or the MT unit to the reference power, a difference between the transmit power of the DU and the transmit power of the MT unit, or a ratio of the transmit power of the DU to the transmit power of the unit.

15. The method according to claim 1, further comprising:

when a first scenario is switched to a second scenario, setting a transitional time period, wherein the transitional time period is used for automatic gain control adjustment by a terminal device communicating with the IAB node; wherein

the first scenario comprises one of the following: the DU transmits information and the MT unit performs no information transmission, the DU transmits information and the MT unit transmits information, the DU transmits information and the MT unit receives information, or the DU receives information and the MT unit transmits information;

the second scenario comprises one of the following: the DU transmits information and the MT unit performs no information transmission, the DU transmits information and the MT unit transmits information, the DU transmits information and the MT unit receives information, or the DU receives information and the MT unit transmits information; and

the first scenario is different from the second scenario.

16. The method according to claim 15, further comprising:

transmitting specified information or stopping information transmission during the transitional time period.

17. An integrated access and backhaul IAB node, wherein the IAB node has a distributed unit DU and a mobile termination MT unit, and the IAB node further comprises:

a power configuration determining module, configured to determine a first transmit power configuration for the DU and/or a second transmit power configuration for the MT unit; and

a transmission control module, configured to control the DU to transmit information at a transmit power indicated by the first transmit power configuration, and/or the MT unit to transmit information at a transmit power indicated by the second transmit power configuration, wherein

a sum of the transmit power of the DU and the transmit power of the MT unit is less than or equal to a maximum transmit power of the IAB node.

18. The IAB node according to claim 17, wherein the power configuration determining module is specifically configured to:

determine the first transmit power configuration and/or the second transmit power configuration based on configuration information transmitted by an upstream node or configuration information obtained by the IAB node, wherein

the upstream node comprises a parent IAB node or a centralized unit CU.

~~19. The IAB node according to claim 18, further comprising:~~

~~a first transmitting module, configured to report the configuration information obtained by the IAB node to the upstream node.~~

~~20. The IAB node according to claim 18 or 19, wherein the configuration information comprises one or more of the following:~~

~~a maximum transmit power of the DU, a maximum transmit power of the MT unit, a ratio of the maximum transmit power of the DU to the maximum transmit power of the MT unit, a difference between the maximum transmit power of the DU~~

~~and the maximum transmit power of the MT unit, a maximum energy per resource element of the DU, a maximum energy per resource element of the MT unit, a ratio of the maximum energy per resource element of the DU to the maximum energy per resource element of the MT unit, a difference between the maximum energy per resource element of the DU and the maximum energy per resource element of the MT unit, a maximum power spectral density of the DU, a maximum power spectral density of the MT unit, a ratio of the maximum power spectral density of the DU to the maximum power spectral density of the MT unit, a difference between the maximum power spectral density of the DU and the maximum power spectral density of the MT unit, a minimum transmit power of the DU, a minimum transmit power of the MT unit, a ratio of the minimum transmit power of the DU to the minimum transmit power of the MT unit, a difference between the minimum transmit power of the DU and the minimum transmit power of the MT unit, a minimum energy per resource element of the DU, a minimum energy per resource element of the MT unit, a ratio of the minimum energy per resource element of the DU to the minimum energy per resource element of the MT unit, a difference between the minimum energy per resource element of the DU and the minimum energy per resource element of the MT unit, a minimum power spectral density of the DU, a minimum power spectral density of the MT unit, a ratio of the minimum power spectral density of the DU to the minimum power spectral density of the MT unit, a difference between the minimum power spectral density of the DU and the minimum power spectral density of the MT unit, a configured transmit power of the DU, a configured transmit power of the MT unit, a ratio of the configured transmit power of the DU to the configured transmit power of the MT unit, or a difference between the configured transmit power of the DU and the configured transmit power of the MT unit.~~

~~21. The IAB node according to claim 18, wherein the configuration information determined by the IAB node comprises a power reference parameter of the parent IAB node, a target receive power of the parent IAB node, and a total transmit power of the IAB node, wherein~~

~~the power reference parameter comprises a reference signal received power or a path loss.~~

~~22. The IAB node according to claim 17, wherein the transmission control module is further configured to:~~

~~control the MT unit to report a power headroom PHR to an upstream node, wherein the upstream node comprises a parent IAB node or a CU; and~~

~~the PHR reported to the upstream node is obtained based on the second transmit power configuration for the MT unit.~~

~~23. The IAB node according to claim 17, further comprising:~~

~~a second transmitting module, configured to report transmit power reference information to an upstream node, wherein the upstream node comprises a parent IAB node or a CU; and~~

~~the transmit power reference information comprises one or more of the following:~~

~~a maximum expected transmit power of the DU, a minimum expected transmit power of the DU, a maximum expected transmit power of the MT unit, a minimum expected transmit power of the MT unit, an expected ratio of the maximum transmit power of the DU to the maximum transmit power of the MT unit, an expected difference between the maximum transmit power of the DU and the maximum transmit power of the MT unit, or a maximum transmit power of the IAB node.~~

~~24. The IAB node according to claim 17, wherein the transmission control module is specifically configured to:~~

~~control the DU to transmit, in a target time period, information at the transmit power indicated by the first transmit power configuration, and/or the MT unit to transmit, in the target time period, information at the transmit power indicated by the second transmit power configuration, wherein~~

~~the target time period comprises at least one of the following:~~

~~a time period during which both the DU and the MT unit transmit information;~~

~~a symbol or a symbol set occupied by a downlink resource configured for the DU and an uplink resource configured for the MT unit in time domain;~~

~~a slot or a sub-slot containing in time domain the symbol occupied by the downlink resource configured for the DU and the uplink resource configured for the MT unit; or~~

~~a slot set or a sub-slot set containing in time domain the symbol occupied by the downlink resource configured for the DU and the uplink resource configured for the MT unit.~~

~~25. The IAB node according to claim 24, wherein if a signal to be transmitted by the DU is a target signal, the target signal comprises one or more of a synchronization signal and PBCH block SSB signal, a common physical downlink control channel Common PDCCH signal, a user equipment specific physical downlink control channel UE specific PDCCH signal, a channel state information reference signal CSI-RS, or a tracking reference signal TRS;~~

~~the DU discards the target signal during the target time period; or~~

~~a transmit power of the target signal is the transmit power indicated by the first transmit power configuration, wherein the first transmit power configuration comprises a power configuration of the target signal and a power configuration of a non-target signal.~~

~~26. The IAB node according to claim 25, further comprising:~~

~~a third transmitting module, configured to report a resource position of the target signal to an upstream node, wherein the upstream node comprises a parent IAB node or a CU.~~

~~27. The IAB node according to claim 17, further comprising:~~

~~a priority determining module, configured to determine transmission priorities of the DU and the MT unit, wherein~~

~~if a transmission priority of the DU is higher than that of the MT unit, the transmission control module is specifically configured to control the DU to transmit information at the transmit power indicated by the first transmit power configuration; and~~

~~if a transmission priority of the MT unit is higher than that of the DU, the transmission control module is specifically configured to control the MT unit to~~

~~transmit information at the transmit power indicated by the second transmit power configuration.~~

~~28. The IAB node according to claim 27, wherein~~

~~if the transmission priority of the DU is higher than that of the MT unit, the transmission control module is further configured to control the MT unit to perform power scaling or to discard the information; and~~

~~if the transmission priority of the MT unit is higher than that of the DU, the transmission control module is further configured to control the DU to perform power scaling or to discard the information.~~

~~29. The IAB node according to claim 27 or 28, wherein the transmission priority comprises a priority of a unit and/or a priority of to be transmitted information.~~

~~30. The IAB node according to claim 17, further comprising:~~

~~a fourth transmitting module, configured to transmit power indication information to a terminal device, wherein~~

~~the power indication information is used to indicate one or more of the following:~~

~~whether the DU and the MT unit share a total transmit power of the IAB node, the transmit power of the DU and/or the MT unit, a difference between the transmit power of the DU and/or the MT unit and a reference power, a ratio of the transmit power of the DU and/or the MT unit to the reference power, a difference between the transmit power of the DU and the transmit power of the MT unit, or a ratio of the transmit power of the DU to the transmit power of the unit.~~

~~31. The IAB node according to claim 17, further comprising:~~

~~a time period setting module, configured to: when a first scenario is switched to a second scenario, set a transitional time period, wherein the transitional time period is used for automatic gain control adjustment by a terminal device communicating with the IAB node; wherein~~

~~the first scenario comprises one of the following: the DU transmits information and the MT unit performs no information transmission, the DU transmits~~

~~information and the MT unit transmits information, the DU transmits information and the MT unit receives information, or the DU receives information and the MT unit transmits information;~~

~~the second scenario comprises one of the following: the DU transmits information and the MT unit performs no information transmission, the DU transmits information and the MT unit transmits information, the DU transmits information and the MT unit receives information, or the DU receives information and the MT unit transmits information; and~~

~~the first scenario is different from the second scenario.~~

~~32. The IAB node according to claim 31, further comprising:~~

~~a fifth transmitting module, configured to transmit specified information or stop information transmission during the transitional time period.~~

3319. A base station, comprising a processor, a memory, and a computer program stored on the memory and executable on the processor, wherein when the computer program is executed by the processor, the transmit power configuration method according to any one of claims 1 to 16 is implemented.

3420. A computer-readable storage medium, wherein the computer-readable storage medium stores a computer program, and when the computer program is executed by a processor, the transmit power configuration method according to any one of claims 1 to 16 is implemented.

~~35. A computer program product, wherein the program product is executed by at least one processor to implement the transmit power configuration method according to any one of claims 1 to 16.~~

~~36. A communications device, wherein the communications device is configured to perform the transmit power configuration method according to any one of claims 1 to 16.~~