

CLAIMS

What is claimed is:

1. A method for determining an occupancy time of a channel state information CSI processing unit, applied to a terminal device and comprising:

~~determining an occupancy time of the CSI processing unit based on a CSI report type in a CSI report configuration, wherein the CSI report type comprises that CSI information to be reported by the terminal device to a network device is beam measurement information, or that the CSI information to be reported to the network device has no content and a channel state information reference signal CSI-RS resource is not used for tracking reference signal TRS measurement~~

for a CSI report with CSI report configuration with report Quantity set to 'none' and a CSI-RS resource is not used for TRS measurement, determining an occupancy time of the CSI processing unit based on a time-domain characteristic of the CSI report and a configuration status of a physical uplink resource.

2. The method according to claim 1, wherein the method further~~determining an occupancy time of the CSI processing unit based on a CSI report type in a CSI report configuration~~ comprises:

~~when the CSI report type is that~~for the CSI information to be reported to the network device is the beam measurement information, determining the occupancy time of the CSI processing unit based on a time-domain characteristic of a CSI report.

3. The method according to claim 2, wherein the determining the occupancy time of the CSI processing unit based on a time-domain characteristic of a CSI report comprises:

when the time-domain characteristic of the CSI report is periodic or semi-persistent, the occupancy time of the CSI processing unit starts from the 1st orthogonal frequency division multiplexing OFDM symbol of a CSI resource until the last OFDM symbol of a physical uplink shared channel PUSCH or physical uplink control channel PUCCH used for transmitting the CSI report, wherein

the CSI resource is a most-recently-transmitted CSI resource that is Z' OFDM symbols prior to the 1st OFDM symbol of the PUSCH or the PUCCH, and Z' is a quantity of OFDM symbols required for calculating the beam measurement information.

4. The method according to claim 2, wherein the determining the occupancy time of the CSI processing unit based on a time-domain characteristic of a CSI report comprises:

when the time-domain characteristic of the CSI report is aperiodic, the occupancy time of the CSI processing unit starts from the 1st OFDM symbol after a physical downlink control channel PDCCH triggering the CSI report until the last OFDM symbol of a PUSCH transmitting the CSI report.

~~5. The method according to claim 1, wherein the determining an occupancy time of the CSI processing unit based on a CSI report type in a CSI report configuration comprises:~~

~~when the CSI report type is that the CSI information to be reported to the network device has no content and the CSI-RS resource is not used for TRS measurement, determining the occupancy time of the CSI processing unit based on a time-domain characteristic of the CSI report and a configuration status of a physical uplink resource, wherein the physical uplink resource is a PUCCH resource or a PUSCH resource.~~

~~65.~~ The method according to claim ~~51~~, wherein the determining ~~the~~ an occupancy time of the CSI processing unit based on a time-domain characteristic of a CSI report and a configuration status of a physical uplink resource comprises:

when the time-domain characteristic of the CSI report is periodic or semi-persistent, and the network device has configured the physical uplink resource, the occupancy time of the CSI processing unit starts from the 1st OFDM symbol of a CSI resource until the (1+x)th OFDM symbol of a periodic or semi-persistent PUCCH or PUSCH configured for the CSI report, or until the last OFDM symbol of the periodic or semi-persistent PUCCH or PUSCH configured for the CSI report; wherein

the CSI resource is an earliest CSI resource in at least one most-recently-transmitted CSI resource that is Z' OFDM symbols prior to the 1st OFDM symbol of the PUSCH or the PUCCH, or the CSI resource is an earliest CSI resource in at least one most-recently-transmitted CSI resource that is not later than a CSI reference resource corresponding to the CSI report, wherein Z' is a quantity of OFDM symbols required for calculating the beam measurement information, and x is an integer;

or

6. The method according to claim 1, wherein the determining ~~the~~ an occupancy time of the CSI processing unit based on a time-domain characteristic of a CSI report and a configuration status of a physical uplink resource comprises:

when the time-domain characteristic of the CSI report is periodic or semi-persistent, and the network device has configured or has not configured the physical uplink resource, the occupancy time of the CSI processing unit starts from the 1st OFDM symbol of a CSI resource until $(Z'+y)$ OFDM symbols after the last OFDM symbol of the CSI resource, wherein Z' is a quantity of OFDM symbols required for calculating the beam measurement information, and y is an integer greater than or equal to 0; and

the CSI resource is an earliest CSI resource in at least one CSI resource transmitted each time, or the CSI resource is an earliest CSI resource in at least one most-recently-transmitted CSI resource that is not later than a CSI reference resource corresponding to the CSI report;

7. The method according to claim 5 or 6, wherein the CSI reference resource is related to a CSI-RS resource that is transmitted periodically or semi-persistently.

~~7~~8. The method according to claim ~~5~~1, wherein

when the time-domain characteristic of the CSI report is periodic or semi-persistent, a measurement period and slot offset of a CSI resource are consistent with a transmission period and slot offset of the CSI resource.

~~8~~9. The method according to claim ~~5~~1, wherein the determining ~~the~~ an occupancy time of the CSI processing unit based on a time-domain characteristic of a CSI report and a configuration status of a physical uplink resource comprises:

when the time-domain characteristic of the CSI report is aperiodic and the network device has configured the physical uplink resource, the occupancy time of the CSI processing unit starts from the 1st OFDM symbol after a PDCCH triggering the CSI report until the last symbol of a PUSCH configured for the CSI report;

or

10. The method according to claim 1, wherein the determining an ~~the~~ occupancy time of the CSI processing unit based on a time-domain characteristic of a CSI report and a configuration status of a physical uplink resource comprises:

when the time-domain characteristic of the CSI report is aperiodic and the network device has configured or has not configured the physical uplink resource, the occupancy time of the CSI

processing unit starts from the 1st OFDM symbol after a PDCCH triggering the CSI report until one of a first OFDM symbol and a second OFDM symbol, or until a later one between the first OFDM symbol and the second OFDM symbol plus n OFDM symbols; wherein

the first OFDM symbol is Z OFDM symbols after the 1st OFDM symbol that is after the PDCCH triggering the CSI report, and the second OFDM symbol is Z' OFDM symbols after the last OFDM symbol of a CSI resource, wherein Z' is a quantity of OFDM symbols required for calculating the beam measurement information, Z is related to Z', and n is an integer greater than or equal to 0.

911. The method according to claim 3, 5, 6, ~~7-8~~ or 810, wherein

the CSI resource comprises at least one SSB resource or at least one CSI-RS resource in a CSI resource configuration associated with the CSI report configuration; or

the CSI resource comprises at least one SSB resource or at least one CSI-RS resource in a CSI resource configuration associated with the CSI report configuration, and at least one interference measurement resource or at least one received signal strength indicator RSSI measurement resource.

~~10. The method according to claim 1, wherein the determining an occupancy time of the CSI processing unit based on a CSI report type in a CSI report configuration comprises:~~

~~when the CSI report type is that the CSI information to be reported to the network device has no content and the CSI-RS resource is not used for TRS measurement, determining that the CSI processing unit is not occupied.~~

~~112. A method for determining an occupancy time of a channel state information CSI processing unit, applied to a terminal device and comprising:~~

~~when a CSI report configuration is not configured by a network device and a CSI-RS resource configuration is configured by the network device, determining an occupancy time of the CSI processing unit based on a CSI-RS resource transmitted by the network device each time;~~

~~12. The method according to claim 11, wherein the determining an occupancy time of the CSI processing unit based on a CSI-RS resource transmitted by the network device each time comprises:~~

the occupancy time of the CSI processing unit starts from the 1st OFDM symbol of a CSI-RS resource until $(Z'+y)$ OFDM symbols after the last OFDM symbol of the CSI-RS resource; wherein

Z' is a quantity of OFDM symbols required for calculating beam measurement information, and y is an integer greater than or equal to 0; and the CSI-RS resource is an earliest CSI-RS resource in at least one CSI-RS resource transmitted each time, or the CSI resource is an earliest CSI-RS resource in at least one most-recently-transmitted CSI-RS resources that are not later than a CSI reference resource corresponding to a CSI report;

13. The method according to claim 12, the CSI reference resource is related to a CSI-RS resource that is transmitted periodically or semi-persistently.

~~13~~14. The method according to claim ~~11~~12, wherein

repetition in the CSI-RS resource configuration is set to on;

a time-domain characteristic of a CSI-RS configured in the CSI-RS resource configuration is a periodic CSI-RS; or

the CSI-RS resource configuration is a time-domain characteristic of a semi-persistent CSI-RS and is activated.

~~14~~15. The method according to claim ~~11~~12, wherein

a beam measurement period and slot offset of a CSI report are consistent with a transmission period and slot offset of a periodic or semi-persistent CSI-RS resource.

~~15. A method for determining a target received power of a PUCCH, comprising:~~

~~during link recovery, within a time after a terminal device successfully receives a link recovery response from a network device and before the terminal device successfully receives MAC CE activation or radio resource control RRC reconfiguration signaling that is related to PUCCH space-related information, when a spatial filtering parameter used for PUCCH transmission is the same as a spatial filtering parameter of a physical random access channel PRACH and the PRACH is a contention-based PRACH, determining a target received power of a PUCCH based on a target received power configured for a cell and a target received power specific to the terminal device.~~

~~16. The method according to claim 15, wherein the determining a target received power of a PUCCH based on a target received power configured for a cell and a target received power specific to the terminal device comprises:~~

~~using a sum of the target received power configured for the cell and the target received power specific to the terminal device as the target received power of the PUCCH.~~

~~17. The method according to claim 15, wherein~~

~~a value of the target received power specific to the terminal device is 0;~~

~~or~~

~~if the target received power configured for the cell is not configured by the network device, a value of the target received power configured for the cell is 0, or is a sum of a preamble target received power and an offset between a message 3 and the preamble target received power.~~

~~18~~16. A terminal device, comprising:

~~a determining module, configured to: determine an occupancy time of a CSI processing unit based on a CSI report type in a CSI report configuration, wherein the CSI report type comprises that CSI information to be reported by the terminal device to a network device is beam measurement information, or that the CSI information to be reported to the network device has no content and a channel state information reference signal CSI-RS resource is not used for tracking reference signal TRS measurement~~for a CSI report with CSI report configuration with report Quantity set to 'none' and a CSI-RS resource is not used for TRS measurement, determine an occupancy time of the CSI processing unit based on a time-domain characteristic of the CSI report and a configuration status of a physical uplink resource.

17. The terminal device according to claim 16, wherein that the determining module determines an occupancy time of the CSI processing unit based on the time-domain characteristic of the CSI report and the configuration status of the physical uplink resource comprises:

when the time-domain characteristic of the CSI report is periodic or semi-persistent, and the network device has configured the physical uplink resource, the occupancy time of the CSI processing unit starts from the 1st OFDM symbol of a CSI resource until the (1+x)th OFDM symbol of a periodic or semi-persistent PUCCH or PUSCH configured for the CSI report, or until the last OFDM symbol of the periodic or semi-persistent PUCCH or PUSCH configured for the CSI report; wherein

the CSI resource is an earliest CSI resource in at least one most-recently-transmitted CSI resource that is Z' OFDM symbols prior to the 1st OFDM symbol of the PUSCH or the PUCCH, or the CSI resource is an earliest CSI resource in at least one most-recently-transmitted CSI

resource that is not later than a CSI reference resource corresponding to the CSI report, wherein Z' is a quantity of OFDM symbols required for calculating the beam measurement information, and x is an integer.

18. The terminal device according to claim 16, wherein that the determining module determines an occupancy time of the CSI processing unit based on the time-domain characteristic of the CSI report and the configuration status of the physical uplink resource comprises:

when the time-domain characteristic of the CSI report is periodic or semi-persistent, and the network device has configured or has not configured the physical uplink resource, the occupancy time of the CSI processing unit starts from the 1st OFDM symbol of a CSI resource until $(Z'+y)$ OFDM symbols after the last OFDM symbol of the CSI resource, wherein Z' is a quantity of OFDM symbols required for calculating the beam measurement information, and y is an integer greater than or equal to 0; and

the CSI resource is an earliest CSI resource in at least one CSI resource transmitted each time, or the CSI resource is an earliest CSI resource in at least one most-recently-transmitted CSI resource that is not later than a CSI reference resource corresponding to the CSI report.

19. The terminal device according to claim 17 or 18, wherein

the CSI reference resource is related to a CSI-RS resource that is transmitted periodically or semi-persistently.

20. A terminal device, comprising:

a determining module, configured to: when a CSI report configuration is not configured by a network device and a CSI-RS resource configuration is configured by the network device, determine an occupancy time of the CSI processing unit based on a CSI-RS resource transmitted by the network device each time;

wherein that the determining module determines an occupancy time of the CSI processing unit based on the CSI-RS resource transmitted by the network device each time comprises:

the occupancy time of the CSI processing unit starts from the 1st OFDM symbol of a CSI resource until $(Z'+y)$ OFDM symbols after the last OFDM symbol of the CSI resource; wherein

Z' is a quantity of OFDM symbols required for calculating beam measurement information, and y is an integer greater than or equal to 0; and the CSI-RS resource is an earliest CSI-RS resource in at least one CSI-RS resource transmitted each time, or the CSI resource is an earliest

CSI-RS resource in at least one most-recently-transmitted CSI-RS resources that are not later than a CSI reference resource corresponding to a CSI report.

~~20. A terminal device, comprising:~~

~~a power determining module, configured to: during link recovery, within a time after a terminal device successfully receives a link recovery response from a network device and before the terminal device successfully receives MAC CE activation or radio resource control RRC reconfiguration signaling that is related to PUCCH space related information, when a spatial filtering parameter used for PUCCH transmission is the same as a spatial filtering parameter of a physical random access channel PRACH and the PRACH is a contention based PRACH, determine a target received power of a PUCCH based on a target received power configured for a cell and a target received power specific to the terminal device.~~