

CLAIMS

What is claimed is:

1. A method for reporting positioning measurement information, applied to a terminal and comprising:

5 receiving first configuration information from a network device;
 reporting a measurement result of a beam group based on the first configuration information, wherein

 the beam group is used to transmit a positioning reference signal PRS, and the beam group comprises N beams determined by the terminal based on reference signal
10 received power (RSRP) and time of arrival (TOA) or based on time of arrival (TOA), wherein N is a positive integer, the N beams are beams in a first cell, and the first cell is one of cells participating in positioning;

 wherein the N beams comprises any one of the following:

 top N beams in ascending order of TOA in the first cell;

15 top N beams selected from M beams in ascending order of TOA, wherein the M beams are beams whose RSRP is higher than a preset threshold in the first cell; and

 top L beams in ascending order of TOA and top K beams in descending order of RSRP in the first cell, wherein $N \leq L + K$.

2. The method according to claim 1, wherein the measurement result of the beam
20 group comprises a first measurement result and/or a second measurement result, wherein the first measurement result is a measurement result associated with a downlink time difference of arrival DL-TDOA, and the second measurement result is a measurement result associated with a downlink angle of departure DL-AoD.

3. The method according to claim 1, wherein the cells participating in positioning
25 comprise a reference cell and a neighboring cell; or the cells participating in positioning comprise a neighboring cell.

4. The method according to claim 3, wherein when N is equal to 1, a beam in a beam group of the reference cell is determined as a reference beam.

5. The method according to claim 3, wherein when N is greater than 1, the method further comprises:

receiving second configuration information from the network device, wherein the second configuration information is used to configure a reference beam, and the

5 reference beam is a beam in a beam group of the reference cell, wherein

the reference beam is used as a reference for calculating timing and/or RSRP of a first beam, the first beam is a beam in the beam group of the reference cell or a beam in a beam group of the neighboring cell, and the first beam is different from the reference beam.

10 6. The method according to claim 5, wherein the reporting a measurement result of a beam group comprises:

reporting a measurement result of each beam in the beam group; or

reporting a joint measurement result of the beam group, wherein the joint measurement result is a measurement result obtained after joint processing is performed on measurement results of beams in the beam group.

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7. The method according to claim 6, wherein the reporting a measurement result of each beam in the beam group comprises:

reporting measurement results of the reference beam and a third beam based on first preset content, wherein the third beam is a beam in the beam group of the neighboring cell; and

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reporting a measurement result of a fourth beam based on second preset content, wherein the fourth beam is a beam other than the reference beam in the beam group which contains the reference beam, wherein

the first preset content comprises at least one of a beam identifier beam ID, a cell identity cell ID, a positioning reference signal identifier PRS ID, reference quality, a reference signal time difference RSTD, reference signal time difference quality RSTD quality, RSRP, reference signal received power quality RSRP quality, and a port; and

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the second preset content comprises at least one of a reference time difference reference time difference, a beam ID, a cell ID, a PRS ID, reference quality, RSRP, RSRP quality, and a port.

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8. The method according to claim 6, wherein a manner of joint processing comprises any one of the following:

calculating an average value of the measurement results of the beams in the beam group;

5 calculating a weighted average value of the measurement results of the beams in the beam group;

selecting measurement results of top J beams from the beam group in descending order of measurement quality;

10 selecting measurement results of top J beams from the beam group in descending order of measurement result values; and

selecting measurement results of top J beams from the beam group in ascending order of measurement result values, wherein

J is a positive integer less than N.

15 9. A method for reporting positioning measurement information, applied to a communication system comprising a terminal and a network device, and comprising:

sending, by the network device, first configuration information to the terminal; and

receiving, by the network device, a measurement result of a beam group from the terminal, and

20 receiving, by the terminal, the first configuration information from the network device; and

reporting, by the terminal, a measurement result of a beam group based on the first configuration information;

25 the beam group is used to transmit a positioning reference signal, PRS, and the beam group comprises N beams determined by the terminal based on reference signal received power, RSRP, and time of arrival, TOA, or based on time of arrival, TOA, wherein N is a positive integer, the N beams are beams in a first cell, and the first cell is one of cells participating in positioning; wherein the N beams comprises any one of the following:

30 top N beams in ascending order of TOA in the first cell;

top N beams selected from M beams in ascending order of TOA, wherein the M beams are beams whose RSRP is higher than a preset threshold in the first cell; and

top L beams in ascending order of TOA and top K beams in descending order of RSRP in the first cell, wherein $N \leq L + K$.

5 10. The method according to claim 9, wherein the measurement result of the beam group further comprises a first measurement result and/or a second measurement result, wherein the first measurement result is a measurement result associated with a downlink time difference of arrival DL-TDOA, and the second measurement result is a measurement result associated with a downlink angle of departure DL-AoD.

10 11. The method according to claim 9, wherein the cells participating in positioning comprise a reference cell and a neighboring cell; or the cells participating in positioning comprise a neighboring cell.

12. The method according to claim 11, wherein when N is greater than 1, the method further comprises:

15 sending second configuration information to the terminal, wherein the second configuration information is used to configure a reference beam, and the reference beam is a beam in a beam group of the reference cell, wherein

the reference beam is used as a reference for calculating timing and/or RSRP of a first beam, the first beam is a beam in the beam group of the reference cell or a beam
20 in a beam group of the neighboring cell, and the first beam is different from the reference beam.

13. The method according to claim 12, wherein the receiving a measurement result of a beam group from the terminal comprises:

receiving a measurement result of each beam in the beam group from the terminal;
25 or

receiving a joint measurement result of the beam group from the terminal, wherein the joint measurement result is a measurement result obtained after joint processing is performed on measurement results of beams in the beam group.

14. The method according to claim 13, wherein the terminal reports the
30 measurement result of each beam in the beam group in any one of the following manners:

reporting measurement results of the reference beam and a third beam based on first preset content, wherein the third beam is a beam in the beam group of the neighboring cell; and

reporting a measurement result of a fourth beam based on second preset content, wherein the fourth beam is a beam other than the reference beam in the beam group of the reference beam, wherein

the first preset content comprises at least one of a beam identifier beam ID, a cell identity cell ID, a positioning reference signal identifier PRS ID, reference quality, a reference signal time difference RSTD, reference signal time difference quality RSTD quality, RSRP, reference signal received power quality RSRP quality, and a port; and

the second preset content comprises at least one of a reference time difference reference time difference, a beam ID, a cell ID, a PRS ID, reference quality, RSRP, RSRP quality, and a port.

15. A terminal, comprising:

a first receiving module, configured to: receive first configuration information from a network device;

a first sending module, configured to report a measurement result of a beam group based on the first configuration information, wherein

the beam group is used to transmit a positioning reference signal PRS, and the beam group comprises N beams determined by the terminal based on reference signal received power (RSRP) and time of arrival (TOA) or based on time of arrival (TOA), wherein N is a positive integer, the N beams are beams in a first cell, and the first cell is one of cells participating in positioning;

wherein the N beams comprises any one of the following:

top N beams in ascending order of TOA in the first cell;

top N beams selected from M beams in ascending order of TOA, wherein the M beams are beams whose RSRP is higher than a preset threshold in the first cell; or,

top L beams in ascending order of TOA and top K beams in descending order of RSRP in the first cell, wherein $N \leq L + K$.

16. The terminal according to claim 15, wherein the measurement result of the beam group comprises a first measurement result and/or a second measurement result,

wherein the first measurement result is a measurement result associated with a downlink time difference of arrival DL-TDOA, and the second measurement result is a measurement result associated with a downlink angle of departure DL-AoD.

17. A communication system, comprising a terminal and network device,

5 wherein the network device comprises:

a second sending module, configured to: send first configuration information to the terminal;

a second receiving module, configured to receive a measurement result of a beam group from the terminal,

10 and

the terminal comprises:

a first receiving module, configured to receive the first configuration information from the network device; and

15 a first sending module, configured to report a measurement result of a beam group based on the first configuration information;

the beam group is used to transmit a positioning reference signal (PRS) and the beam group comprises N beams determined by the terminal based on reference signal received power (RSRP) and time of arrival (TOA) or based on time of arrival (TOA), wherein N is a positive integer, the N beams are beams in a first cell, and the first cell

20 is one of cells participating in positioning;

wherein the N beams comprises any one of the following:

top N beams in ascending order of TOA in the first cell;

top N beams selected from M beams in ascending order of TOA, wherein the M beams are beams whose RSRP is higher than a preset threshold in the first cell; and

25 top L beams in ascending order of TOA and top K beams in descending order of RSRP in the first cell, wherein $N \leq L + K$.