resources independently from a pre-configured or network-configured resource pool, and may select resources randomly or by sensing.

2. Mode 2b: a terminal assists other terminals in selecting resources; for example, a first terminal sends auxiliary information to a second terminal, and a terminal device receiving the auxiliary information may determine transmission resources according to the auxiliary information, wherein the auxiliary information may include one or more of the following information: available time-frequency resource information, available transmission resource set information, channel measurement information and channel quality information, such as Channel State Information (CSI), Channel Quality Indicator (CQI), Precoding Matrix Indicator (PMI), rank indication (RI), Reference Signal Receiving Power (RSRP), Reference Signal Receiving Quality (RSRQ), Received Signal Strength Indicator (RSSI), interference information and path loss information.

3. Mode 2c: a terminal device selects resources from transmission resources configured for it. For example, a network device may configure transmission resources for each terminal in a group of terminal devices, wherein the transmission resource for each terminal device may be same or different. When any terminal has a sidelink data transmission, the transmission resource configured by a network device may be used for data transmission. For example, when the network device configures the same resources for each terminal device in a group of terminal devices, the terminal device that needs to perform the sidelink data transmission may select available resources from the configured resources by manners such as sensing; or, the network device may configure different transmission resources for each terminal device in a group of terminal devices, and the terminal device that needs to perform the sidelink data transmission may select available resources from the resources configured therefor.

Mode 2d: a first terminal device allocates transmission resources for a second terminal device. For example, for multiple terminal devices in a multicast link, if the first terminal device is a group head in the multicast link and the second terminal device is a group member of the group, the first terminal device may directly allocate time-frequency resources for the second terminal device for a downlink transmission.

For multiple transmission modes in the NR V2X, how one terminal determines its own transmission mode is a problem that needs to be solved.

device, wherein the fourth configuration information is used for indicating the first transmission mode, and the first transmission mode may be configured for the first terminal device by the network device, and the first terminal is notified by the fourth configuration information sent by the fourth terminal device; or, the first transmission mode is configured by the fourth terminal device for the first terminal device, and is notified to the first terminal device through the fourth configuration information. The first terminal device determines the first transmission mode in the multiple transmission modes according to the fourth configuration information, and adopts the first transmission mode to perform the sidelink communication with another terminal device.

Combining the above embodiments 1 and 2, the first terminal device may be any terminal device in the terminal device group where it is located. For example, the first terminal device may be a terminal device in the terminal device group except a group head, that is, a group member in the terminal device group, wherein the group head is a terminal device with resource coordination, management, control or allocation function in the terminal device group. The fourth terminal device is any another terminal device in the terminal device group, for example, the fourth terminal device may be the group head or a group member in the terminal device group.

Optionally, the method 200 may further include that the first terminal device sends fifth information to the network device or the first terminal device sends fifth information to the fourth terminal device then the fourth terminal device sends the fifth information to the network device, so that the network device may determine that the first terminal device adopts the first transmission mode according to the fifth information, or, the first terminal device sends the fifth information to the fourth terminal device, so that the fourth terminal device may determine that the first terminal device adopts the first transmission mode according to the fifth information, or, the first terminal device may send the fifth information to the network device or the fourth terminal device after determining the first transmission mode according to the fourth configuration information, and then the fifth information is used by the network device or the fourth terminal device for determining the transmission mode adopted by the first terminal device at the next moment.

Optionally, the fifth information sent by the first terminal device to the network device may be carried in, for example, uplink control information, MAC CE or RRC signaling, and

Therefore, in a method for determining a transmission mode in a sidelink in an embodiment of the present application, a transmission mode adopted by one or more terminal devices when performing a sidelink is configured by a network device or a terminal device, especially for multiple terminal devices in unicast or multicast communication, the appropriate transmission mode may be configured according to actual applications, thereby avoiding resource conflict and improving a resource utilization rate and a data transmission efficiency.

The method for determining a transmission mode in a sidelink according to an embodiment of the present application is described above in detail from the perspective of terminal device with reference to FIG. 1 to FIG. 3, and a method for determining the transmission mode in the sidelink according to an embodiment of the present application will be described below from the perspective of a network device with reference to FIG. 4.

FIG. 4 shows a schematic flowchart of a method 300 for determining a transmission mode in a sidelink according to an embodiment of the present application. The method 300 may be performed by a network device. Specifically, for example, the network device may be the network device in FIG. 1 or FIG. 2. As shown in FIG. 4, the method 300 includes S310-S330. In S310, a first message sent by a first terminal device is received, the first message includes first information, wherein the first information includes at least one piece of the following information: a transmission mode adopted by the first terminal device for performing a sidelink communication, a group identifier of a terminal device group where the first terminal device is located, and group head information of the terminal device group, wherein the group head information is used for indicating the group head in the terminal device group, and the group head is a terminal device with resource coordination or allocation function in the terminal device group, in S320, a first transmission mode in multiple transmission modes is determined according to the first message; and in S330, first configuration information is sent to the first terminal device, wherein the first configuration information is used for indicating the first terminal device to adopt the first transmission mode to perform the sidelink communication with another terminal device.

Optionally, as an embodiment, if the first terminal device is not a group head in the terminal device group, the group head information further includes identification information of the group head in the terminal device group; or, if the first terminal device is the group head in

device in the terminal device group, and the first indication information is used for indicating cell information or coverage information corresponding to the second terminal device.

Optionally, as an embodiment, if the second terminal device is located outside the cell coverage area, the first indication information is used for indicating that the second terminal device is located outside the cell coverage area, or, if the second terminal device is located within the cell coverage area, the first indication information includes the cell identification information of the cell where the second terminal device is located; or, if the second terminal device is located outside the coverage area of the cell where the terminal device is located, the first indication information is used for indicating that the second terminal device is located outside the coverage area of the cell where the terminal device is located and/or the first indication information includes cell identification information of the cell where the second terminal device is located; or, if the second terminal device is located within the coverage area of the cell where the terminal device is located, the first indication information is used for indicating that the second terminal device is located within the cell where the terminal device is located.

Optionally, as an embodiment, the transceiving unit 420 is further configured to receive the second information sent by the second terminal device.

Optionally, as an embodiment, the second information is carried in a sidelink transmission channel, which is a Physical Sidelink Control Channel (PSCCH) or a Physical Sidelink Shared Channel (PSSCH).

Optionally, as an embodiment, the transceiving unit 420 is further configured to send second configuration information to the second terminal device, wherein the second configuration information is used for indicating the second terminal device to adopt the first transmission mode to perform the sidelink communication.

Optionally, as an embodiment, the first message is carried in uplink control information, MAC CE or RRC signaling.

Optionally, as an embodiment, the first configuration information further includes at least one piece of the following information: group identification information of the terminal device group where the terminal device is located, type information of multicast communication or broadcast communication, RAT class indication information and QoS attribute information.

What is claimed is:

1. A method for determining a transmission mode of a sidelink, comprising:

receiving, by a first terminal device, first configuration information sent by a network device, wherein the first configuration information is used for indicating a first transmission mode;

determining, by the first terminal device, the first transmission mode in a plurality of transmission modes based on the first configuration information; and

adopting, by the first terminal device, the first transmission mode to perform a sidelink communication with another terminal device.

2. The method of claim 1, further comprising:

sending, by the first terminal device, a first message to the network device, wherein the first message comprises group identifier information of a terminal device group where the first terminal device is located, or identification information of a second terminal device, wherein the second terminal device is a terminal device which performs unicast communication with the first terminal device.

3. The method of claim 2, wherein the first message is carried in uplink control information, a Media Access Control Control Element (MAC CE), or a Radio Resource Control (RRC) signaling.

4. The method of claim 2 or 3, wherein the first configuration information comprises at least one piece of following pieces of information:

the group identification information of the terminal device group where the first terminal is located, the identification information of the second terminal device which performs unicast communication with the first terminal device, type information of unicast communication, multicast communication or broadcast communication, or Quality of Service (QoS) attribute information.

5. The method of any one of claims 2 to 4, wherein the first configuration information is carried in broadcast information, or RRC signaling.

6. A method for determining a transmission mode of a sidelink, comprising:

receiving a first message sent by a first terminal device, wherein the first message comprises group identifier information of a terminal device group where the first terminal

device is located, or identification information of a second terminal device, wherein the second terminal device is a terminal device which performs unicast communication with the first terminal device;

determining a first transmission mode in a plurality of transmission modes according to the first message; and

sending first configuration information to the first terminal device, wherein the first configuration information is used for indicating the first terminal device to adopt the first transmission mode to perform the sidelink communication with another terminal device.

7. The method of claim 6, wherein the first message is carried in uplink control information, a Media Access Control Control Element (MAC CE), or a Radio Resource Control (RRC) signaling.

8. The method of claim 6 or 7, wherein the first configuration information comprises at least one piece of following pieces of information:

the group identification information of the terminal device group where the first terminal is located, the identification information of the second terminal device which performs unicast communication with the first terminal device, type information of unicast communication, multicast communication or broadcast communication, or Quality of Service (QoS) attribute information.

9. The method of any one of claims 6 to 8, wherein the first configuration information is carried in broadcast information, or RRC signaling.

10. A terminal device, comprising:

a transceiving unit configured to receive first configuration information sent by a network device, wherein the first configuration information is used for indicating a first transmission mode; and

a processing unit configured to determine the first transmission mode in a plurality of transmission modes based on the first configuration information;

wherein the transceiving unit is further configured to adopt the first transmission mode to perform a sidelink communication with another terminal device.

11. The terminal device of claim 10, wherein the transceiving unit is further configured to:

send a first message to the network device, wherein the first message comprises group

identifier information of a terminal device group where the terminal device is located, or identification information of a second terminal device, wherein the second terminal device is a terminal device which performs unicast communication with the first terminal device.

12. The terminal device of claim 11, wherein the first message is carried in uplink control information, a Media Access Control Control Element (MAC CE), or a Radio Resource Control (RRC) signaling.

13. The terminal device of claim 11 or 12, wherein the first configuration information comprises at least one piece of following information:

the group identification information of the terminal device group where the first terminal is located, the identification information of the second terminal device which performs unicast communication with the first terminal device, type information of unicast communication, multicast communication or broadcast communication, or Quality of Service (QoS) attribute information.

14. The terminal device of any one of claims 11 to 13, wherein the first configuration information is carried in broadcast information, or RRC signaling.

15. A network device, comprising:

a transceiving unit configured to receive a first message sent by a first terminal device, wherein the first message comprises group identifier information of a terminal device group where the first terminal device is located, or identification information of a second terminal device, wherein the second terminal device is a terminal device which performs unicast communication with the first terminal device; and

a processing unit configured to determine a first transmission mode in a plurality of transmission modes according to the first message;

wherein the transceiving unit is configured to send first configuration information to the first terminal device, wherein the first configuration information is used for indicating the first terminal device to adopt the first transmission mode to perform a sidelink communication with another terminal device.

16. The network device of claim 15, wherein the first message is carried in uplink control information, a Media Access Control Control Element (MAC CE), or a Radio Resource Control (RRC) signaling.

17. The network device of claim 15 or 16, wherein the first configuration information comprises at least one piece of following information:

the group identification information of the terminal device group where the first terminal is located, the identification information of the second terminal device which performs unicast communication with the first terminal device, type information of unicast communication, multicast communication or broadcast communication, or Quality of Service (QoS) attribute information.

18. The network device of any one of claims 15 to 17, wherein the first configuration information is carried in broadcast information, or RRC signaling.