WHAT IS CLAIMED IS:

1. An inter-vehicle wireless payment method based on a 5G communication network, comprising:

a request sending step, in which a requesting vehicle sends a payment request to a base station;

a request-based retrieving step, in which the base station retrieves vehicle information of a friend vehicle of the requesting vehicle based on the payment request;

an encrypting step, in which the base station encrypts payment request information using the vehicle information of the friend vehicle;

a broadcasting step, in which the base station broadcasts the encrypted payment request information;

a decrypting and receiving step, in which at least one vehicle within a broadcast coverage of the base station attempts to decrypt the broadcasted payment request information using its respective vehicle information, and if one of the at least one vehicle decrypts the broadcasted payment request information successfully, the one of the at least one vehicle, that is the friend vehicle, acts as a responding vehicle and acquires the payment request information;

a payment implementation step, in which the responding vehicle generates payment information based on the payment request information and sends the payment information to the base station, the base station sends the payment information to a payment platform, and the payment platform returns a payment result to the responding vehicle; and

a Device-to-Device (D2D) communication step, in which the base station allocates a D2D communication channel to the requesting vehicle and the responding vehicle, and the responding vehicle and the requesting vehicle communicate with each other via the D2D communication channel.

2. The inter-vehicle wireless payment method based on a 5G communication network according to claim 1, characterized in that:

in the request-based retrieving step, the base station retrieves driver information of the requesting vehicle and a vehicle identification number (VIN) of the friend vehicle according to a VIN of the requesting vehicle contained in the payment request by means

of mobile edge computing; and

in the encrypting step, the base station encrypts the payment request information using the VIN of the friend vehicle and broadcasts the encrypted payment request information.

3. The inter-vehicle wireless payment method based on a 5G communication network according to claim 1, characterized in that communicating, by the responding vehicle and the requesting vehicle, with each other via the D2D communication channel comprises:

notifying, by the responding vehicle, the requesting vehicle of the payment result; and

communicating repayment agreement information between the requesting vehicle and the responding vehicle.

4. The inter-vehicle wireless payment method based on a 5G communication network according to claim 1, characterized in that the D2D communication step comprises substeps of:

detecting, by the base station, that the requesting vehicle and the responding vehicle are in a same cell or in adjacent cells, and determining whether a D2D connection between the requesting vehicle and the responding vehicle is possible according to a strategy with a maximum number of allowed D2D connections;

if it is determined that the D2D connection is possible, allocating, by the base station, resources for the D2D connection and establishing a link for the D2D connection; otherwise, entering a waiting state; and

allocating, by the base station, the D2D communication channel to the requesting vehicle and the responding vehicle, and communicating, by the responding vehicle and the requesting vehicle, with each other via the D2D communication channel.

5. An inter-vehicle wireless payment method based on a 5G communication network, comprising:

a frequency band applying step, in which a requesting vehicle applies a Device-to-Device (D2D) communication frequency band from a base station;

a resource allocating step, in which the base station performs resource allocation

according to a strategy with a maximum number of allowed D2D connections;

an encrypting and broadcasting step, in which the requesting vehicle broadcasts encrypted payment request information using the D2D communication frequency band allocated in the resource allocating step, and stops broadcasting when a friend vehicle responds, wherein the payment request information is encrypted using vehicle information of the friend vehicle;

a decrypting and receiving step, in which at least one vehicle decrypts the broadcasted payment request information using its respective vehicle information, and if one of the at least one vehicle decrypts the broadcasted payment request information successfully, the one of the at least one vehicle, that is the friend vehicle, acts as a responding vehicle and acquires the payment request information;

a payment implementation step, in which the responding vehicle generates payment information based on the payment request information and sends the payment information to the base station, the base station sends the payment information to a payment platform, and the payment platform returns a payment result to the responding vehicle; and

a D2D communication step, in which the base station allocates a D2D communication channel to the requesting vehicle and the responding vehicle, and the responding vehicle and the requesting vehicle communicate with each other via the D2D communication channel.

6. The inter-vehicle wireless payment method based on a 5G communication network according to claim 5, characterized in that communicating, by the responding vehicle and the requesting vehicle, with each other via the D2D communication channel comprises:

notifying, by the responding vehicle, the requesting vehicle of the payment result; and

communicating repayment agreement information between the requesting vehicle and the responding vehicle.

7. The inter-vehicle wireless payment method based on a 5G communication network according to claim 5, characterized in that:

when there exist N friend vehicles, the encrypting and broadcasting step is cyclically

performed, till one of the N friend vehicles successfully decrypts the broadcasted payment request information using the vehicle information of the one of the N friend vehicles.

8. The inter-vehicle wireless payment method based on a 5G communication network according to claim 5, characterized in that:

in the encrypting and broadcasting step, the requesting vehicle broadcasts the encrypted payment request information using the D2D communication frequency band allocated in the resource allocating step, wherein the payment request information is encrypted using a vehicle identification number (VIN) of the friend vehicle;

in the decrypting and receiving step, the at least one vehicle attempts to decrypt the broadcasted payment request information using its respective VIN, and if the one of the at least one vehicle decrypts the broadcasted payment request information successfully, the one of the at least one vehicle, that is the friend vehicle, acts as the responding vehicle and acquires the payment request information.

9. An inter-vehicle wireless payment system based on a 5G communication network, comprising a first on-board terminal provided on a requesting vehicle, a second on-board terminal provided on a responding vehicle, a base station and a payment platform, wherein:

the first on-board terminal is configured to: perform 5G communication with the base station; generate a payment request and send the payment request to the base station; and perform Device-to-Device (D2D) communication with the second on-board terminal;

the base station is configured to: retrieve driver information of the requesting vehicle and vehicle information of a friend vehicle of the requesting vehicle based on the vehicle information of the requesting vehicle contained in the payment request, the friend vehicle being the responding vehicle; encrypt payment request information using the vehicle information of the friend vehicle and broadcast the encrypted payment request information; send payment information to the payment platform upon receiving the payment information from the second on-board terminal; and allocate a D2D communication channel to the requesting vehicle and the responding vehicle;

the second on-board terminal is configured to: perform 5G communication with the base station; acquire the payment request information by decrypting the broadcasted payment request information using a vehicle identification number (VIN) of the

responding vehicle; generate the payment information based on the payment request information and send the payment information to the base station; and perform D2D communication with the first on-board terminal; and

the payment platform is configured to accomplish payment based on the payment information and return a payment result to the second on-board terminal.

10. The inter-vehicle wireless payment system based on a 5G communication network according to claim 9, characterized in that the base station is further configured to:

retrieve the driver information of the requesting vehicle and a VIN of the friend vehicle according to a VIN of the requesting vehicle contained in the payment request by means of mobile edge computing; and encrypt the payment request information using the VIN of the friend vehicle and broadcast the encrypted payment request information.

11. The inter-vehicle wireless payment system based on a 5G communication network according to claim 9, characterized in that the base station is further configured to:

detect that the requesting vehicle and the responding vehicle are in a same cell or in adjacent cells; determine whether a D2D connection between the requesting vehicle and the responding vehicle is possible according to a strategy with a maximum number of allowed D2D connections; if it is determined that the D2D connection is possible, allocate resources for the D2D connection and establish a link for the D2D connection; otherwise, enter a waiting state; and allocate the D2D communication channel to the requesting vehicle and the responding vehicle to enable the responding vehicle and the requesting vehicle to communicate via the D2D communication channel.

12. The inter-vehicle wireless payment system based on a 5G communication network according to claim 9, characterized in that:

the first on-board terminal comprises:

a first Global Positioning System (GPS) module configured to acquire clock information to keep in synchronization with the base station, and to establish an uplink and a downlink;

a first 5G communication module configured to implement 5G communication with the base station and implement D2D communication with the second on-board terminal;

and

a first payment module configured to generate the payment request;

the second on-board terminal comprises:

a decryption module configured to decrypt the encrypted payment request information broadcasted by the base station using the vehicle information of the responding vehicle;

a second payment module configured to generate the payment information based on the decrypted payment request information;

a second GPS module configured to acquire clock information to keep in synchronization with the base station, and to establish an uplink and a downlink; and

a second 5G communication module configured to implement 5G communication with the base station and implement D2D communication with the first on-board terminal.

13. The inter-vehicle wireless payment system based on a 5G communication network according to claim 9, characterized in that:

the base station comprises:

a communication module configured to communicate with the first on-board terminal and the second on-board terminal respectively;

a core network configured to have vehicle-related information stored therein;

a mobile edge computing module configured to retrieve the driver information of the requesting vehicle and the vehicle information of the friend vehicle from the vehicle-related information stored in the core network based on the vehicle information of the requesting vehicle contained in the payment request, and encrypt the payment request information using the vehicle information of the friend vehicle;

a broadcasting module configured to broadcast the encrypted payment request information;

a payment module configured to send the payment information to the payment platform upon receiving the payment information from the second on-board terminal; and

a D2D establishing module configured to allocate the D2D communication channel to the requesting vehicle and the responding vehicle.

14. An on-board terminal, comprising:

a Global Positioning System (GPS) module configured to acquire clock information to keep in synchronization with a base station, and to establish an uplink and a downlink;

a 5G communication module configured to implement 5G communication with the base station and implement Device-to-Device (D2D) communication with another on-board terminal;

a decryption module configured to decrypt, using vehicle information of a vehicle provided with the on-board terminal, an encrypted payment request information broadcasted by the base station to acquire a payment request information; and

a payment module configured to generate payment information according to the payment request information,

wherein the encrypted payment request information is encrypted, before being broadcasted, by the base station using vehicle information of a friend vehicle of a requesting vehicle provided with the another on-board terminal, the vehicle information of the friend vehicle being retrieved based on a payment request received from the another on-board terminal provided on the requesting vehicle, and the friend vehicle being the vehicle provided with the on-board terminal, and

wherein the 5G communication module is further configured to send the payment information to the base station which in turn forwards the payment information to a payment platform, receive a payment result returned by the payment platform, and communicate with the another on-board terminal provided on the requesting vehicle via a D2D communication channel allocated by the base station.

15. An inter-vehicle wireless payment system based on a 5G communication network, comprising a first on-board terminal provided on a requesting vehicle, a second on-board terminal provided on a responding vehicle, a base station and a payment platform, wherein:

the first on-board terminal is configured to: perform 5G communication with the base station; apply a Device-to-Device (D2D) communication frequency band from the base station; broadcast encrypted payment request information using the D2D communication frequency band allocated by the base station; stop broadcasting when a friend vehicle responds, wherein the friend vehicle is the responding vehicle and the payment request

information is encrypted using vehicle information of the friend vehicle; and perform D2D communication with the second on-board terminal;

the base station is configured to: perform resource allocation according to a strategy with a maximum number of allowed D2D connections; send received payment information to the payment platform; and allocate a D2D communication channel to the requesting vehicle and the responding vehicle;

the second on-board terminal is configured to: perform 5G communication with the base station; perform D2D communication with the first on-board terminal; acquire the payment request information by decrypting successfully the broadcasted payment request information using the vehicle information of the responding vehicle; and generate the payment information based on the payment request information and send the payment information to the base station; and

the payment platform is configured to accomplish payment based on the payment information and return a payment result to the second on-board terminal.

16. The inter-vehicle wireless payment system based on a 5G communication network according to claim 16, characterized in that:

the first on-board terminal comprises:

a first Global Positioning System (GPS) module configured to acquire clock information to keep in synchronization with the base station, and to establish an uplink and a downlink;

a first 5G communication module configured to implement 5G communication with the base station and implement D2D communication with the second on-board terminal; and

a broadcasting module configured to broadcast the encrypted payment request information using the D2D communication frequency band allocated by the base station, wherein the payment request information is encrypted using the vehicle information of the friend vehicle; and

a first payment module configured to generate the payment request information;

the second on-board terminal comprises:

a decryption module configured to decrypt the encrypted payment request

information broadcasted by the first on-board terminal using the vehicle information of the responding vehicle;

a second payment module configured to generate the payment information based on the decrypted payment request information;

a second GPS module configured to acquire clock information to keep in synchronization with the base station, and to establish an uplink and a downlink; and

a second 5G communication module configured to implement 5G communication with the base station and implement D2D communication with the first on-board terminal.

17. An on-board terminal, comprising:

a Global Positioning System (GPS) module configured to acquire clock information to keep in synchronization with a base station, and to establish an uplink and a downlink;

a 5G communication module configured to implement 5G communication with the base station and implement D2D communication with another on-board terminal, and to apply a D2D communication frequency band from the base station; and

a broadcasting module configured to broadcast encrypted payment request information using the D2D communication frequency band that is allocated by the base station according to a strategy with a maximum number of allowed D2D connections, wherein the payment request information is encrypted using vehicle information of a friend vehicle of a vehicle provided with the on-board terminal , so that the another on-board terminal provided on the friend vehicle decrypts, using the vehicle information of the friend vehicle, the broadcasted payment request information to acquire the payment request information, generates payment information based on the payment request information, sends the payment information to the base station which in turn forwards the payment information to a payment platform, and receive a payment result returned by the payment platform,

wherein the 5G communication module is further configured to communicate with the another on-board terminal provided on the friend vehicle via a D2D communication channel allocated by the base station.

18. A computer-readable media, having a computer program stored therein, characterized in that, when executed by a processor, the computer program causes an inter-vehicle wireless payment method based on a 5G communication network according

to any one of claims 1-8 to be implemented.

19. A computer device, comprising: a storage, a processor and a computer program that is stored in the storage and is executable by the processor, characterized in that, when executing the computer program, the processor is caused to implement an inter-vehicle wireless payment method based on a 5G communication network according to any one of claims 1-8.