

METHOD AND APPARATUS FOR CONFIGURATION AND SCHEDULING OF SIDELINK RESOURCES

TECHNICAL FIELD

This disclosure relates generally to wireless communications and, more particularly, to a method and apparatus for configuration and scheduling of sidelink resources for sidelink communications in a wireless communication network.

BACKGROUND

Sidelink (SL) communication is a wireless radio communication directly between two or more user equipment devices (hereinafter “UE”). In this type of communication, two or more UEs that are geographically proximate to each other can directly communicate without going through a base state (BS), e.g., an eNB in an long-term evolution (LTE) system or a gNB in New Radio, or a core network. Data transmission in sidelink communications is thus different from typical cellular network communications, in which a UE transmits data to a BS (i.e., uplink transmissions) or receives data from a BS (i.e., downlink transmissions). In sidelink communications, data is transmitted directly from a source UE to a target UE through the Unified Air Interface, e.g., PC5 interface. Sidelink communications can provide several advantages, for example reducing data transmission load on a core network, system resource consumption, transmission power consumption, and network operation costs, saving wireless spectrum resources, and increasing spectrum efficiency of a cellular wireless communication system.

SUMMARY

The exemplary embodiments disclosed herein are directed to solving the issues related to one or more problems presented in the prior art, as well as providing additional features that will become readily apparent by reference to the following detailed description when taken in

conjunction with the accompany drawings. In accordance with some embodiments, exemplary systems, methods, and computer program products are disclosed herein. It is understood, however, that these embodiments are presented by way of example and not limitation, and it will be apparent to those of ordinary skill in the art who read the present disclosure that various modifications to the disclosed embodiments can be made while remaining within the scope of the disclosure.

In the 5G wireless communication system, a resource granularity with a finer and more flexible configuration in the time and frequency domain are utilized. Accordingly, a flexible resource scheduling indication method is developed. Based on the flexible resource granularity, a definition and management of corresponding sidelink channel resources are proposed for sidelink communications. Further, current sidelink channel resource schemes cannot be directly applied to such flexible resource configuration and scheduling method in the 5G wireless communication system. Therefore, a method and apparatus for configuration of sidelink channel resource units in the present disclosure can achieve effective utilization of resources, improve resource allocation flexibility, reduce signaling overhead, and processing complexity, etc. As used herein, a “sidelink channel resource unit” refers to a resource set in the time and frequency domain on which sidelink communications can be performed on a respective sidelink channel.

In a first aspect, the present disclosure provides a method performed by a first wireless communication device, comprising: determining a sidelink resource unit in a sidelink resource set according to a resource aggregation level, wherein the sidelink resource unit in the sidelink resource set comprises a first number of first resource units in the time domain and a second number of second resource units in the frequency domain, and wherein the first number of the first resource units in the time domain is determined according to the resource aggregation level.

In a second aspect, the present disclosure provides a method performed by a wireless communication node, comprising: transmitting configuration information of a sidelink resource unit in a sidelink resource set to a first wireless communication device, wherein the configuration information of the sidelink resource unit comprises a resource aggregation level, wherein the configuration information is used by the first wireless communication device to determine the sidelink resource unit for sidelink communications, wherein the sidelink resource unit in the sidelink resource set comprises a first number of first resource units in the time domain and a second number of second resource units in the frequency domain, and wherein the first number of the first resource units in the time domain is determined according to the resource aggregation level.

In a third aspect, the present disclosure provides a computing device comprising at least one processor and a memory coupled to the processor, the at least one processor configured to carry out the method of any one of the first aspect and the second aspect.

In a fourth aspect, the present disclosure provides a non-transitory computer-readable medium having stored thereon computer-executable instructions for carrying out the method of any one of the first aspect and the second aspect.

BRIEF DESCRIPTION OF THE DRAWINGS

Aspects of the present disclosure are best understood from the following detailed description when read with the accompanying figures. It is noted that various features are not necessarily drawn to scale. In fact, the dimensions and geometries of the various features may be arbitrarily increased or reduced for clarity of discussion.

FIG. 1A illustrates an exemplary wireless communication network illustrating achievable modulation as a function of distance from a BS, in accordance with some embodiments of the present disclosure.