

ABSTRACT

VEHICLE COMMUNICATION SYSTEM AND METHOD PROVIDING HIGH RESPONSIVITY TO MULTIPLE POLLING UNITS

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To enable communications between a vehicle-installed device and an antenna unit even when the vehicle-installed device passes through an area where neighboring communication areas overlap each other, a toll collection point of a multiple-lane express road is provided with a gantry having antenna units provided corresponding to the lanes. The antenna units are controlled so that neighboring units alternately transmit signals. The antenna units transmit signals according to a predetermined cycle and transmit an unmodulated carrier wave. Upon receiving a signal, a vehicle-installed device generates a response signal by using a control circuit and transmits a signal by reflection, fixes a communication party for further communications and assumes a status of waiting for an interrogation signal. If the vehicle-installed device receives pilot signals repeatedly from a single antenna unit, the device determines that the communications have failed, and cancels the fixation of communication party and invalidates the party to become able to communicate with other antenna units. The vehicle-installed device will communicate with one of the antenna units without a failure even if the device passes through an overlapping area, thus performing tolling processing without a failure.

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