the GNSS chip 7, the DSRC antenna 10, the DSRC communication processing section 11, a realtime clock 33, a main processing section 34, and a spoofing detecting section 31. Of them, the realtime clock 33, a main processing section 34 and a spoofing detecting section 34 correspond to the processing section 3 of FIG. 1. Each of these sections which are contained in the processing section 3 may be realized in software by a program executed by a CPU and in hardware by a separate unit having a corresponding function.

[0015]

A positioning result 35 outputted from the GNSS chip 7 is supplied to the spoofing detecting section 31. GNSS time data 37 showing the current time is contained in data generated by the GNSS chip 7 based on the GNSS satellite information. The GNSS chip 7 outputs the GNSS time data 37 to the realtime clock 33 of the on-board unit 2. The realtime clock 33 outputs GNSS time data 40 in the form which can be used as a time stamp and so on in the data processing and so on by the on-board unit 2 in response to the GNSS time data 37 received from the GNSS chip 7. The GNSS time data 37 outputted from the GNSS chip 7 and the GNSS time data 40 outputted from the realtime clock 33 are different in the form but have substantively identical contents.

[0016]

The roadside system 16 always generates the DSRC time data showing the current time. The DSRC communication processing section 11 receives the DSRC time data through the DSRC antenna 10 and transfers to the spoofing detecting section 31.

[0017]

Moreover, the positioning result 36 outputted from the GNSS chip 7 and the GNSS time data 40 outputted from the realtime clock 33 are further

calculated speed of the vehicle 1 and the threshold value Vth of the speed set by the threshold value setting section 42 and determines which of them is more. When the speed of the vehicle 1 is smaller than the threshold value (Step A14; YES), the control advances to the processing of step A15. When the speed of the vehicle 1 is equal to or more than the threshold value (Step A14; NO), it is determined that there is a suspicion that a spoofing has been carried out (Step A18).

[0050]

The determining section 41 compares the calculated acceleration of the vehicle 1 and a threshold value Ath of the acceleration set by the threshold value setting section 42 and determines which of them is more. When the acceleration of the vehicle 1 is smaller than the threshold value (Step A15; YES), the control advances to the processing of step A16. When the acceleration of the vehicle 1 is equal to or more than than the threshold value (Step A15; NO), it is determined that there is a suspicion that a spoofing has been carried out (Step A18).

[0051]

The determining section 41 the calculated angular speed of the vehicle 1 and the threshold value Ath of the angular speed set by the threshold value setting section 42 and determines which of them is more. When the angular speed of the vehicle 1 is smaller than the threshold value (Step A16; YES), the control advances to the processing of step A17. When the acceleration of the vehicle 1 is equal to or more than the threshold value (Step A16; NO), it is determined that there is a suspicion that a spoofing has been carried out (Step A18). By this processing, when a change rate of the direction of the vehicle is large unnaturally, it is possible to determine that

the GNSS chip 7, the DSRC antenna 10, the DSRC communication processing section 11, a realtime clock 33, a main processing section 34, and a spoofing detecting section 31. Of them, the realtime clock 33, a main processing section 34 and a spoofing detecting section 31 correspond to the processing section 3 of FIG. 1. Each of these sections which are contained in the processing section 3 may be realized in software by a program executed by a CPU and in hardware by a separate unit having a corresponding function.

[0015]

A positioning result 36 outputted from the GNSS chip 7 is supplied to the spoofing detecting section 31. GNSS time data 37 showing the current time is contained in data generated by the GNSS chip 7 based on the GNSS satellite information. The GNSS chip 7 outputs the GNSS time data 37 to the realtime clock 33 of the on-board unit 2. The realtime clock 33 outputs GNSS time data 40 in the form which can be used as a time stamp and so on in the data processing and so on by the on-board unit 2 in response to the GNSS time data 37 received from the GNSS chip 7. The GNSS time data 37 outputted from the GNSS chip 7 and the GNSS time data 40 outputted from the realtime clock 33 are different in the form but have substantively identical contents.

[0016]

The roadside system 16 always generates the DSRC time data showing the current time. The DSRC communication processing section 11 receives the DSRC time data through the DSRC antenna 10 and transfers to the spoofing detecting section 31.

[0017]

Moreover, the positioning result 36 outputted from the GNSS chip 7 and the GNSS time data 40 outputted from the realtime clock 33 are further

calculated speed of the vehicle 1 and the threshold value Vth of the speed set by the threshold value setting section 42 and determines which of them is more. When the speed of the vehicle 1 is smaller than the threshold value (Step A14; YES), the control advances to the processing of step A15. When the speed of the vehicle 1 is equal to or more than the threshold value (Step A14; NO), it is determined that there is a suspicion that a spoofing has been carried out (Step A18).

[0050]

The determining section 41 compares the calculated acceleration of the vehicle 1 and a threshold value Ath of the acceleration set by the threshold value setting section 42 and determines which of them is more. When the acceleration of the vehicle 1 is smaller than the threshold value (Step A15; YES), the control advances to the processing of step A16. When the acceleration of the vehicle 1 is equal to or more than than the threshold value (Step A15; NO), it is determined that there is a suspicion that a spoofing has been carried out (Step A18).

[0051]

The determining section 41 the calculated angular speed of the vehicle 1 and the threshold value Ath of the angular speed set by the threshold value setting section 42 and determines which of them is more. When the angular speed of the vehicle 1 is smaller than the threshold value (Step A16; YES), the control advances to the processing of step A17. When the angular speed of the vehicle 1 is equal to or more than the threshold value (Step A16; NO), it is determined that there is a suspicion that a spoofing has been carried out (Step A18). By this processing, when a change rate of the direction of the vehicle is large unnaturally, it is possible to determine that