

GC221 High Precision Vehicle GPS Tracker

Based on GSM communication technology & GPS high-precision satellite positioning technology



Manual Rev.: 1.0
Revision Date: January 2, 2024



Recycled Paper

Updated Version Instruction

Edition	Revision Date	Version Described
V1.0	2024/01/02	Document built

1.Introduction

1.1 Product Introduction

Product: GC221 GSM high precision vehicle GPS tracker

This product is based on 2G network and GPS satellite, it realizes positioning and monitoring of any remote target through SMS, application and Internet. Adopt the most advanced GPS and AGPS dual positioning technology. Built-in satellite receiving antenna, positioning accuracy can reach dynamic less than 10 meters, which can meet the requirements of vehicle positioning and tracking. Through technological innovation, this product has the characteristics of high accuracy, high sensitivity, low power consumption, and small size. Its extremely high tracking sensitivity has greatly expanded the coverage of its positioning.

1.2 GC221 Features

- ◆ 2G Universal;
- ◆ Ultra-wide voltage input range: DC 9V~90V;
- ◆ GPS continuous positioning, GPRS regular reporting;
- ◆ Support SMS and platform to query location information;
- ◆ Built-in vibration sensor to realize vehicle intelligent anti-theft.
- ◆ ACC ignition signal detection and vehicle status display;
- ◆ Remote control vehicle by Relay;
- ◆ 120 MAH lithium battery to realize illegal thread cutting alarm.

1.3 Specifications

Product Features				
1. Accurate positioning, with an accuracy of 10 meters 2. GPS Accurate positioning. 3. More Functions: ACC alarm, Low power alarm, Wire-Cut alarm, Remote oil control, Overspeed alarm, Vibration alarm, Geo-Fence, ETC.				
Application Area				
Leased Vehicles, Credit Vehicles, Passenger Vehicles, Taxi, Freight Vehicles, Car, Motorcycle, Etc.				
Device Parameters				
Item	Function	Yes	No	Description
Electrical Characteristics	Power Supply	●		Car Battery
	Work Voltage Range	●		9~90V
	Work Current	●		12V/30mA - 80mA
	Sleep Current	●		12V/5mA - 15mA
	Battery Capacity	●		3.7V/100mAH lithium Battery
	Work Temperature Range	●		-30°C~+80°C

Environmental Characteristics	Storage Temperature Range	●	-40°C~+85°C
	Operating Humidity Range	●	5%-95%
Communication Characteristics	Communication Module Brand	●	Mediatek
	Network System	●	2G
	Communication Band	●	GSM: 850/900/1800/1900MHZ
	SIM CARD	●	MICRO SIM CARD
	Communication Antenna	●	Built-in design
Position Characteristics	Positioning Type	●	GPS/AGPS/LBS
	Cold Start Time:	●	Cold Start: <30S (Open Sky)
	Warm Start Time:	●	Warm Start: <10S (Open Sky)
	Hot Start Time:	●	Hot Start: <2S (Open Sky)
	GPS Sensitivity	●	-165dBm
	Acquisition Sensitivity	●	-148dBm
	Position Accuracy	●	10 M

1.4 Indicator Definition

A

Power Status Indicator (Red LED)	
Continuously Light	External power connected
Dark	No external power

B

GPS LED Indicator (Blue LED)	
Fast flashing	Searching GPS signal
Continuously bright	GPS fixed
Continuously dark	No GPS fix or initializing

C

GSM LED Indicator (Green LED)	
Fast Flashing(0.1S interval)	Searching GSM signal
Flashing(0.1S light,2S dark)	GSM signal ok
Continuously bright	Link with server
Continuously dark	No GSM signal

1.5 Equipment wiring requirements

The device power supply is DC 9V-90V. The red line is positive pole while the black line is negative pole.

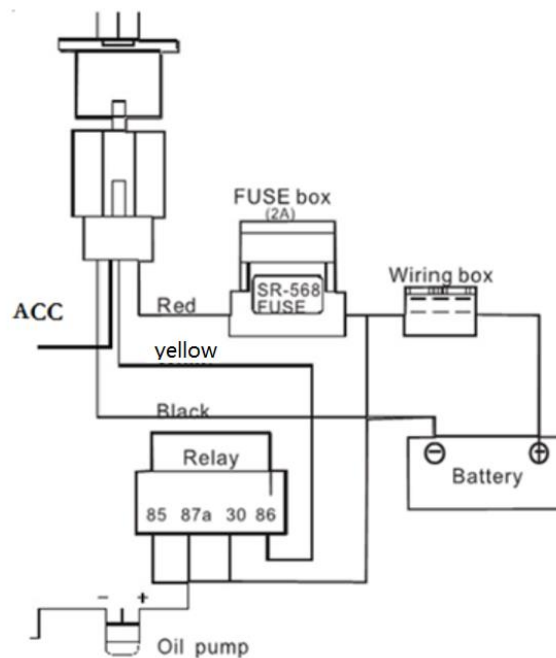
The negative pole of power supply connects with ground or the metals. Please do not connect with other ground lines.

When finishing the power supply wire connection, please make the plug of power supply to the device.

1)2pin wire connection method:

The red line is connected to the positive pole of the power supply, and the black line is connected to the negative pole of the power supply.

2)4pin wire connection method under external power DC12V:



The default relay working voltage is DC12V.

When external power > 12V, please use voltage converter to supply DC12V for relay.

2.SMS Command Description

All the commands are SMS command; no case-sensitive, no space between parameters.

1)Center Number Setting		
SMS Command	Parameter	Sample
Add Center Number	CENTER,A,[phone number]#	CENTER,A,008613800138000#
Command Description	1.Center number should be SOS number, so please set SOS number first; 2.Only this number can control relay	
Delete Center Number	CENTER,D#	CENTER,D#
Check Center Number	CENTER#	CENTER#

2)SOS Number Setting		
SMS Command	Parameter	Sample
Add SOS Number	SOS,A,[phone number 1][,phone number 2][,phone number 3]#	SOS,A,008613800138000,008613900139000, 008618800188000# Or SOS,A,008613800138000,,#
Delete SOS Number	SOS,D,[sequence number 1][, sequence number 2][,sequence number 3]#	SOS,D,1# Or SOS,D,008618800188000#
Check SOS Number	SOS#	SOS#

3)APN Setting		
SMS Command	Parameter	Sample
APN Setting	APN,[network name]# Or APN,[apnname],[user],[pwd]#	1: APN,internet# 2: APN,java.claro.com.br,claro,claro#
Command Description	1)Please get APN from the sim card mobile operator in the tracker; 2)It is needed to set APN to make the tracker send data to server.	
APN Check	APN#	
Command Description	Check the current APN parameters	

4)Server Setting		
SMS Command	Parameter	Sample
Server Setting	SERVER,1,<domain name>,<port>[,0]# Or SERVER,0,<IP>,<port>[,0]#	1.SERVER,1,www.18gps.net,7018,0# 2: SERVER,0,58.61.154.247,7018,0#
Command Description	Server setting is done in factory, normally after APN setting, the tracker will be online.	

SERVER Check	SERVER#
Command Description	Check the current server parameters

5)Upload Time Setting		
SMS Command	Parameter	Sample
Upload Time Setting	TIMER,[T1],[T2]#	TIMER,10,1800#
Command Description	T1 ranges 0/5~18000 or 0(seconds), upload interval when ACC ON, 0 means no upload, default is 10; T2 ranges 0/5~18000 (seconds), upload interval when ACC OFF, default is 10;	
TIMER Check	TIMER#	
Command Description	Check the current parameters of T1 and T2	

6)Set Distance Interval Of GPS Data Sending		
SMS Command	Parameter	Sample
Distance Setting	DISTANCE,[D]#	DISTANCE,300#
Command Description	D ranges 0/50~10000 (meters), distance interval, default is 300; Noted: default upload interval based on time	
Check Setting	DISTANCE#	
Command Description	Check the current distance interval	

7)Set The Angle Upload		
SMS Command	Parameter	Sample
Angle Setting	ANGLEREP,[X],[A],[B]#	ANGLEREP,ON,30,3#
Command Description	X=ON/OFF, default: ON A=5 ~ 180 degrees, diversion angle degree, default: 30 degrees; B=2 ~ 5 seconds, detecting time, default: 3 seconds	
Close The Angle Upload	ANGLEREP,OFF#	
Check Setting	ANGLEREP#	
Command Description	Check the angle upload status and its parameters	

8) GPRS Switch Setting		
SMS Command	Parameter	Sample
GPRS Switch	GPRSON,X#	GPRSON,1#
Command Description	X=0 or 1;"1" means GPRS ON, "0" means GPRS OFF, default:1	
Check Setting	GPRSON#	
Command Description	Check the current GPRS status	

9)Relay Command		
SMS Command	Parameter	Sample
Set the petrol/electricity control	RELAY,[A]#	RELAY,1# RELAY,0#
Command Description	A=0/1; 0 means connection, 1 means cut off; default: 0	
Relay Status Check	RELAY#	

Command Description	Check the status of the control
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10) Set The Delay Of The Defense		
SMS Command	Parameter	Sample
Set The Delay Of The Defense	DEFENSE,[A]#	DEFENSE,10#
Command Description	A= 1 ~ 60 (minute), delay of the defense, default: 10 (minutes).	
Defense Check	DEFENSE#	
Command Description	Check the parameters of the defense	
Disarm	DSRESET#	
Command Description	Cancel the current Arm status	

11)Parameters Check		
SMS Command	Parameter	Sample
Parameters Check	PARAM#	PARAM#
Command Description	Check device parameters	

12)Factory		
SMS Command	Parameter	Sample
Restore To Factory	FACTORY#	FACTORY#
Command Description	Restore to factory setting (except domain name/APN/locked domain name)	

13)Time Zone Setting		
SMS Command	Parameter	Sample
Set GMT Parameter	GMT,[A],[b],[C]#	GMT,E,3,30#
Command Description	A: E or W "E" means eastern time zone, "W" means western time zone; default: E B: 0 ~ 12; time zone default: 3 C: 0/15/30/45; half time zone; default:30	

14)GPRS Setting Check		
SMS Command	Parameter	Sample
Query Device Network Setting	GPRSSET#	GPRSSET#
Command Description	Query device network setting	

15)Language Setting		
SMS Command	Parameter	Sample
Language Setting	LANG,X#	LANG,0#
Command Description	X = 0/1; 1 Chinese, 0 English	
Back To Currently Set	LANG#	LANG#

Language		
Command Description	Back to currently set language	

16)Moving Alarm Setting		
SMS Command	Parameter	Sample
Set Moving Alarm	MOVING,[A][R][M]#	MOVING,ON,300,1#
Command Description	A=ON/OFF, default: OFF; R=100 ~ 1000, moving radius, unit: meter, default: 300; M=0 ~ 3, 0: GPRS only, 1: SMS+GPRS, 2: GPRS+SMS+phone call, 3: GPRS+ call, default:1	
Close Moving Alarm	MOVING,OFF#	MOVING,OFF#
Check Moving Alarm	MOVING#	MOVING#
Command Description	Check the status and the parameters of the moving alarm	

17)Power Cut-Off Alarm Setting		
SMS Command	Parameter	Sample
Set Power Cut-Off Alarm	POWERALM, [A][M][T1][T2]#	POWERALM,ON,2,5,300#
Command Description	A=ON/OFF, default: ON;M=0/1/2/3, way of alarming, 0: GPRS only, 1: SMS+GPRS, 2 : GPRS+SMS+phone call,3: GPRS+ call, default: 2; T1=2 ~ 3600 (second), default:5; alarm waiting time when power cut-off T2=1 ~ 3600 (second), default: 300; time interval for alarm sending	
Close Power Cut-Off Alarm	POWERALM,OFF#	POWERALM, OFF#
Check	POWERALM#	POWERALM#
Command Description	Check the parameters of the alarm	

18)Vibration Alarm Setting		
SMS Command	Parameter	Sample
Set Vibration Alarm	SENALM,[A][M]#	SENALM,ON,2#
Command Description	A=ON/OFF, default: OFF; M=0/1/2/3, way of alarming, 0 :GPRS only, 1: SMS+GPRS, 2 : GPRS+SMS+phone call, 3:GPRS+ call, default:2	
Close Vibration Alarm	SENALM,OFF#	SENALM,OFF#
Check Vibration Alarm	SENALM#	SENALM#
Command Description	Check the parameters of the alarm	

19)ACC Alarm Setting		
SMS Command	Parameter	Sample
Set ACC Alarm	ACCALM,A,[M],[T],[N]#	ACCALM,ON,1,10,0#
Command Description	A=ON/OFF default: :OFF; M=0/1; way of alarming, 0 GPRS,1 SMS+GPRS, 2 :GPRS+SMS+phone call, 3:GPRS+ call, default:2 T=5~60 S; default: 10 S N=0~2 ; 0: ACC status alarm; 1:ACC OFF alarm; 2: ACC ON alarm; default: 0;	
Query parameters	ACCALM#	ACCALM#

Command Description	Query the set parameters
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20)Low External Power Alarm Setting		
SMS Command	Parameter	Sample
Set Low External Power Alarm	EXBATALM,<A>[,M][,N1][,N2][,T]#	EXBATALM,ON,1,115,125,10#
Command Description	A=ON/OFF; default: OFF M=0 ~ 1; 0 = GPRS, 1 = SMS+GPRS; default: 1 N1=10-360; default: 115, means 11.5V N2=10-360; default: 125, means 12.5V T=1-300; default: 10 (second)	
Close Low External Power Alarm	EXBATALM,OFF#	EXBATALM,OFF#
Check Setting	EXBATALM#	EXBATALM#
Command Description	Query the set parameters	

21)Low Inside Battery Alarm Setting		
SMS Command	Parameter	Sample
Set Low Inside Battery Alarm	BATALM,[A][,M]#	BATALM,ON,1#
Command Description	A=ON/OFF, default: ON; M=0/1, way of alarming, 0: GPRS only, 1: SMS+GPRS, default: 1	
Close Low Inside Battery Alarm	BATALM,OFF#	BATALM,OFF#
Check Setting	BATALM#	BATALM#
Command Description	Query the set parameters	

22) Analog Data Upload Setting		
SMS Command	Parameter	Sample
Set Analog Data Setting	ADT,[A][,T]#	ADT,ON,600#
Command Description	A=ON/OFF, On/Off AD data upload, default: On B=5 ~ 3600, Default: 600s; Upload time interval, unit: seconds This command is for external power voltage upload setting	
Close Analog Data upload	ADT,OFF#	ADT,OFF#
Check Setting	ADT#	ADT#
Command Description	Query the set parameters	

23)Overspeed Alarm Setting		
SMS Command	Parameter	Sample
Set Overspeed Alarm	SPEED,[A][,B][,C][,M]#	SPEED,ON,20,120,1#
Command Description	A=ON/OFF, turn on/off the over speed alarm, default: OFF B=5 ~ 600 (second), time interval, default: 20 (second) C=1 ~ 255(km/h), speed limit, default: 100(km/h); M=0/1, way of alarm, 0 : GPRS only, 1: SMS+GPRS, default: 1.	
Check Setting	SPEED#	SPEED#
Command Description	Check the parameters of over speed	

24)Static Data Filtering Setting		
SMS Command	Parameter	Sample
Set Static Data Filtering	SF,[A][,B]#	SF,ON,100#
Command Description	A=ON/OFF; static drift filtering switch; default: ON B=10-1000(m); maximal filtering distance; default: 100(m)	
Check Setting	SF#	SF#
Command Description	Check the parameters of the Setting	

25) RESET		
SMS Command	Parameter	Sample
Tracker Reboot	RESET#	RESET#
Command Description	The device would reboot in 20S after receiving the command	

26) Check Position with URL link		
SMS Command	Parameter	Sample
Check URL	URL#	URL#
Command Description	The tracker will reply position with URL Link	

27)Current position Check		
SMS Command	Parameter	Sample
Check Position Status	WHERE#	WHERE#
Command Description	The tracker will reply position with Latitude and Longitude	

28)Firmware Version Check		
SMS Command	Parameter	Sample
Check Firmware Version	VERSION#	VERSION#
Command Description	The tracker will reply position with URL Link	

29)Self-Check		
SMS Command	Parameter	Sample
Check Device Status	CHECK#	CHECK#
Command Description	Check IMEI, version, domain name port, IP, APN, CSQ, GPRS connection, GPS satellite number and signal strength, battery voltage, external battery voltage, return interval, SOS number, center number, family number, ICCID, URL, battery temperature, ETC.	

30)Mileage Statistics		
SMS Command	Parameter	Sample
Set Mileage Statistics	MILEAGE,ON[,L][,K]#	MILEAGE,ON,0,1000#
Command Description	ON=Turn on mileage calculation L=0 ~ 999999,Mileage initial value, unit: km; default: 0, mileage return to zero K=1000 ~ 1200, K value for the proportional coefficient(instrument speed/GPS speed), and then multiplied by 1000; Default=1000	
Close Mileage Statistics	MILEAGE,OFF#	MILEAGE,OFF#
Query Current Mileage	MILEAGE#	MILEAGE#

31) Heartbeat Interval Setting		
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SMS Command	Parameter	Sample
Set Heartbeat Interval	HBT,[T1],[T2]#	HBT,3,5#
Command Description	T1 ranges 1~300(minutes), heartbeat package upload interval when ACC ON; default is 3; T2 ranges 1~300 (minutes), heartbeat package upload interval when ACC OFF; default is 5;	
Check Setting	HBT#	HBT#
Command Description	Check the current parameters of T1 and T2	

32) IMEI Setting		
SMS Command	Parameter	Sample
Set IMEI Number	IMEI,IMEI Number#	IMEI,358288881234567#
Check IMEI Number	IMEI#	IMEI#
Command Description	Check the current IMEI Number	

3.Platform & APP

3.1 Platform:

Website: <http://www.18gps.net>

Login as Plate No./IMEI

Enter ID, ID is in the label on the tracker .

The default password:123456

3.2 APP:

Please search **CLOUD TRACKING** in Google store or Apple store.

Please choose server as 18GPS--> 18GPS

Login as ID

ID is in the label on the tracker

Password:123456

In production, IP, port had been set in, normally the tracker will be auto online after APN setting. If the tracker offline, please get APN from sim card in the tracker mobile operator, then set it by SMS command.

4.Installation

4.1 Preparation before installation

4.1.1 Please open the packing box to check whether the type of device is correct and whether the accessories are included.

4.1.2 This product is a high-tech electronic device, installation should be undertaken by a professional.

4.1.3 Please follow the following procedures to install your tracker, during installation, there should be no power to the device.

4.1.4 Installing sim card:

The device need to insert a sim card which support GSM 2G network. The sim card should be enabled for GPRS.

1) Testing sim card: to test sim card, please install it into a normal GSM 2G network mobile phone

and ensure it can send and receive SMS, and GPRS enabled.

- 2) Installing sim card: please remove the upper cover of device, insert sim card as shown then replace cover, lock the shell with 4 bolts.

4.2 Installation

The GPS tracker must be installed under professional personnel.

Note:

- 1) Please install the device in the hidden place as followings:
 - Under Front windshield;
 - In the front instrument panel;
 - Under back windshield;
- 2) Avoid being placed with signal radiators like reverse sensor ;
- 3) The device has antennas inside. Please ensure the receiving side of the device is face up and without metal cover.

Note: The metal cover will lessen the receiving of GPS signals.

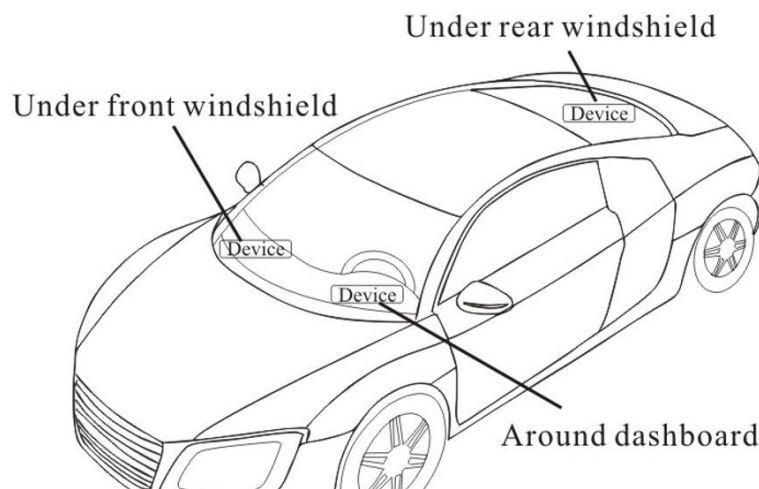
4.3 Installation place

There are two kinds of installation: covert and non covert.

4.3.1 If you need the covert installation, please refer installation to an auto electrical contractor.

Note:

- 1) To prevent theft of the tracker, please install it as covertly as possible.
- 2) Avoid placing the tracker close to higher power electrical devices, such as reversing radar, anti-theft device or other vehicle communication equipment.
- 3) The tracker should be fixed into position with cable ties or wide double-side tape.
- 4) During installation, please make sure the receiving side face is up, with no metal object above the device to interfere with GPS reception. The following places are suggested for installation:



Installation place suggested

- Under the dash board below the front windshield;
- In the parcel shelf in the rear;
- In the front bumper(non-material face), please ensure the device cannot get wet;

- Under the wiper version (non-metal), please ensure the device cannot get wet.

Notice: If the windshield is pasted with metal thermal-protective coating, it may affect the performance of the device. In this case, please change the installation place after consulting the professional.

4.3.2 Non Covert Installation,

Firstly fix the device on the dash board below windshield.

- In the parcel shelf in the rear;
- In the front bumper(non-material face), please ensure the device cannot get wet;
- Under the wiper version (non-metal), please ensure the device cannot get wet.

Notice: If the windshield is pasted with metal thermal-protective coating, it may affect the performance of the device. In this case, please change the installation place after consulting the professional.

5.Trouble shooting

5.1 The device is not online or offline on the web platform.

5.1.1 The first, please check the three LED working state. If possible. You can call the device's number to check.

- If not connected, the device is out of signal. If the signals cannot reach your location, please drive to the open sky.
- If reminding the device sim card is out of deposit, please make deposit by the telecom operator.
- If you can connect to the device when calling, the sim card has deposited and please check with your operator for GPRS function. You also can check by searching the internet on your mobile phone.

5.2 When GPS unfixed, please drive in the open sky and ensure there is no metal thins on the device.

6.Appendix (Test Report)

Device Position: Device placed under the front windshield of the car with the antenna facing up.

6.1 Shade Road Test

The test section is dense with trees, which can verify the sensitivity of equipment accuracy to occlusion. The route trajectory is as follows:



Trajectory of tree-lined road

6.2 Normal Road Test

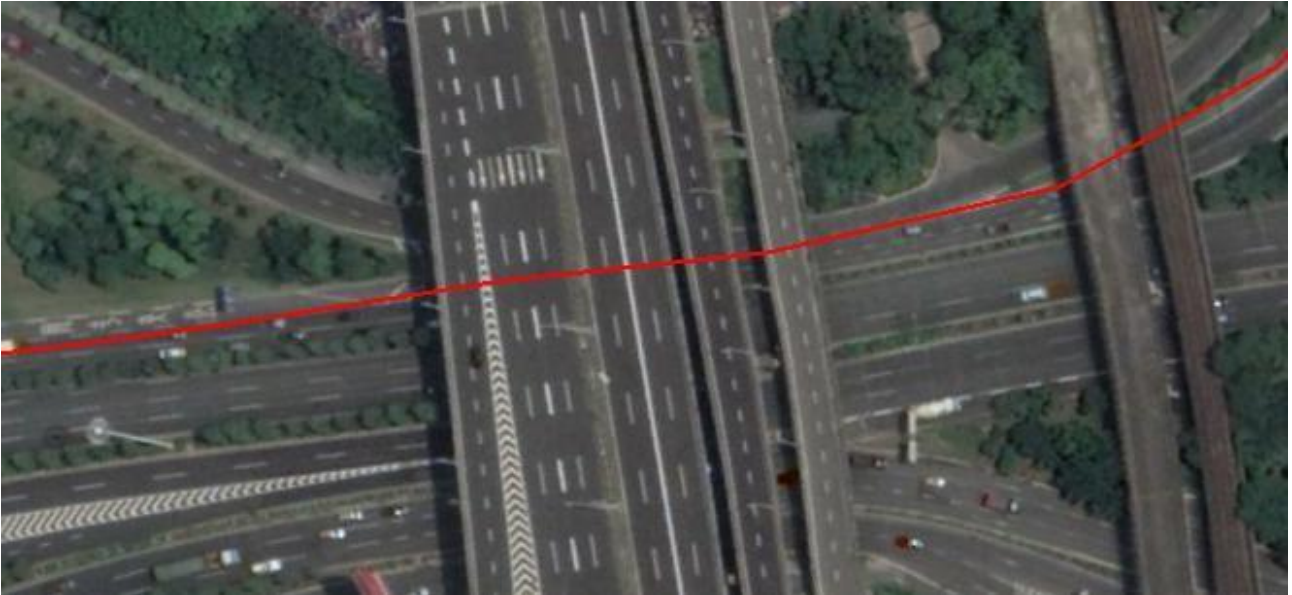
The test section is open, the lane line is clearly visible, and the route trajectory is as follows:



Trajectory of normal road

6.3 Viaduct Road Test

The vehicle is driving under the viaduct road, the trajectory is very smooth.



Trajectory of viaduct road

6.4 Urban Canyon Road Test

Tall buildings stand on both sides of the road, which can verify the impact of urban canyon on equipment accuracy.



Trajectory of urban canyon road