

# **EMI TEST REPORT**



Report Number : KSQ-FCC011101

## **Appendix B User's Manual**



# Cellvic GPS

## Quick Installation Guide

## User's Manual

## FCC NOTICE

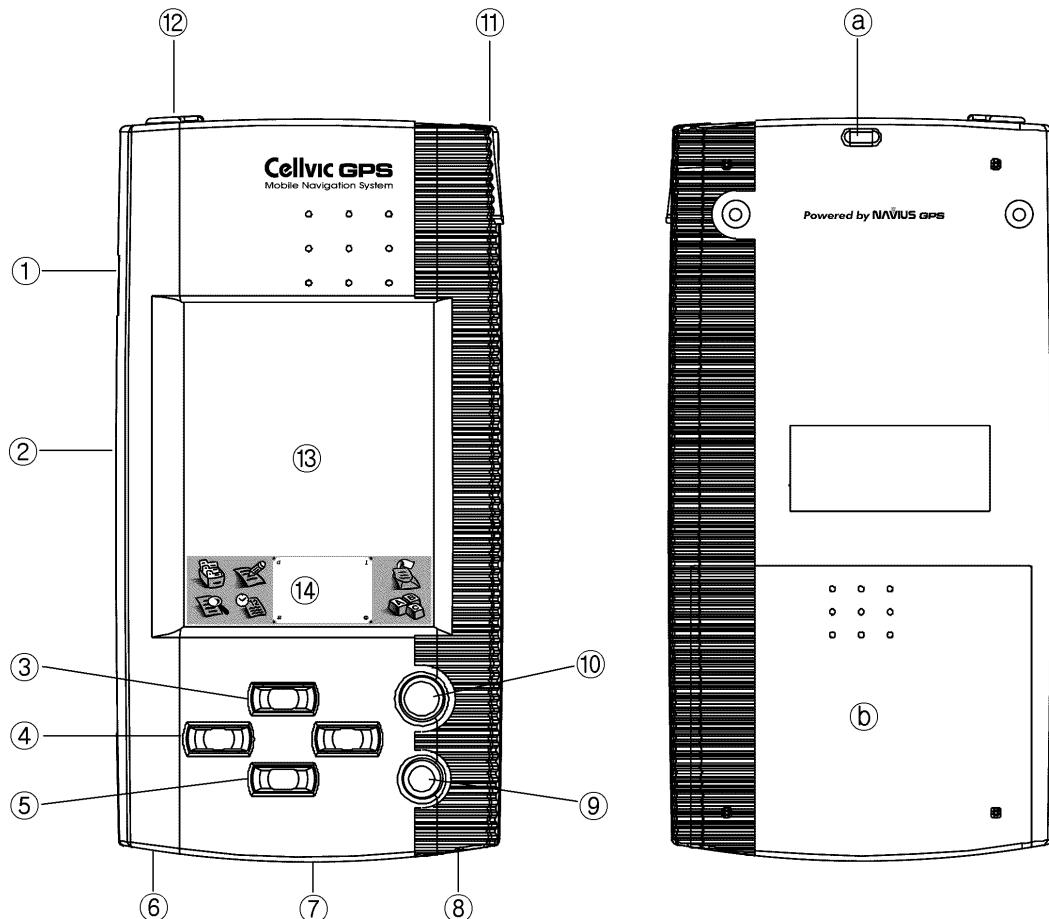
This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) This device must accept any interference received, including interference that may cause undesired operation.

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communication. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures :

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit difference from that to which the receiver is connected.
- Consult the dealer of an experienced radio/TV technician for help.

NOTE : The manufacturer is not responsible for any radio or TV interference caused by unauthorized modifications to this equipment. Such modifications could void the user's authority to operate the equipment.

## [1] NAVIUS GPS external appearance explanation



- (1) Power key
- (2) IR port(IrDA)
- (3) Upper direction direction Key
- (4) Left side direction Key
- (5) Down direction Key
- (6) Reset
- (7) Serial Port
- (8) AC power jack.
- (9) GPS Key(LED)
- (10) ENTER Key(LED)
- (11) Stylus Pen
- (12) Outside GPS ant. Jack
- (13) LCD & Touch Screen
- (14) Recognition Panel & Fixed icons
- (a) Handy-strip Holder
- (b) Lithium- ion electric cell lid

(Attention! Sample product can be different from above condition.)

## **[2] Cellvic GPS specification**

### **(1) PDA.**

- Cellvic OS 1.21/GPS Edition
- 160 x 160 dots LCD, 2/4/16 GREY level support, and 0.26 dots pitch
- 8MB DRAM, 2MB FLASH
- Multimedia Card 32/64MB(option)
- 7 keys
- 1 SERIAL PORT(MODEM,CDMA and PC)
- 1 IrDA PORT

### **(2) GPS**

- Conexant Zodiac 12 channel GPS chipsets
- Zodiac Chipset has CityTracker™ for improving performance in high blockage environment
- Built-in GPS antenna, External GPS antenna available(option)
- Supports NMEA-0183 V2.1 protocol
- TTFF (Time To First Fix) is below 60 seconds
- Horizontal error average 10 meter

### **(3) POWER**

- Lithium-Ion 3.7V 1,550mA Rechargeable Battery built-in (option)
- AAA x 3-battery pack
- AC/DC adaptor 5V 600mA (option)
- Cigar-jack adapter (option)
- Lithium ion 9 ~ 10 hours, AAA pack 4 ~ 5 hours(When turn on GPS)

[Caution].

Sample product does not support warning of low battery. So, you should charge Li-ion battery regularly.

### **[3] Product overview**

#### **(1) What is GPS?**

The Global Positioning System uses 24 satellites above the earth to determine the accurate position. You can get latitude, longitude and altitude with accuracy to a few meters. Also, GPS receivers can determine speed and direction. GPS devices receive spread spectrum RF signal from a minimum of four satellites and use triangulation technique to calculate time, position and velocity. GPS receivers typically output the information for user once per a second.

#### **(2) Benefits of Cellvic GPS**

##### **GPS Inside!**

The unit combines powerful GPS location technology with successful Cellvic PDA technology. Using the GPS technology of Navius, the device can provide various Location Based Service.

The unit is a cost effective navigation system. There is no need to carry both PDA and GPS receiver.

Unlike general handheld GPS devices, Cellvic GPS provides large memory for saving waypoints, routes and tracks. Using Autosync technology, the device can backup and restore data to/from a PC. Optional 16/32MB multimedia card can provide 4/16 grey vector map positioning service.

##### **Powerful PDA**

The unit provides a perfect Personal Information Management tool. The device supports uni-stroke character recognition for multiple European languages.

The device has CDMA Internet connection port for various Internet applications (Email, Micro web browser and LBS service).

The device supports data-sync with Microsoft Outlook.

##### **Developer Support**

Free SDK based on GNU C/C++ compiler helps you to develop GPS applications. It provides APIs for GUI, MMC access and GPS decoding.

#### **(3) Use the Cellvic GPS at your own risk**

Cellvic GPS uses GPS to determine user's position. Signals of GPS satellites are very weak, so you cannot determine your position under bad condition. Also, continuous operation of GPS is limited within battery capacity. We recommend that you would never depend only upon Cellvic GPS to navigate.

Unlike professional handheld GPS, the unit is not waterproof and does not resist external shock. Operating temperature is limited within +10~+40 degree centigrade.

## [4] GeoQuest

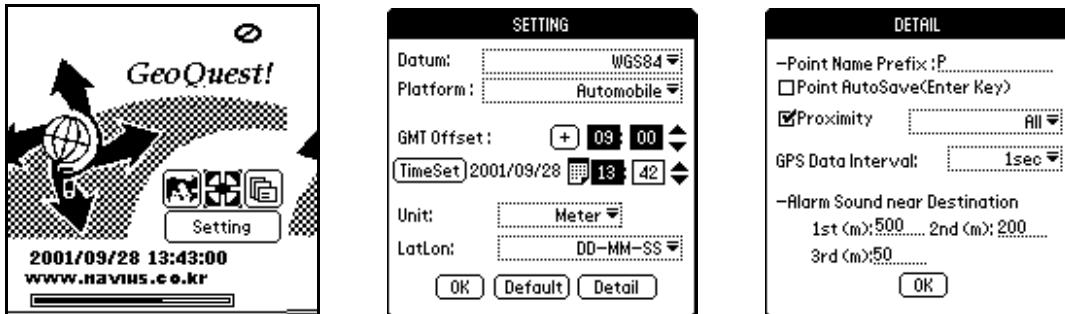
## (1) What is GeoQuest?

## [GeoQuest Brief]

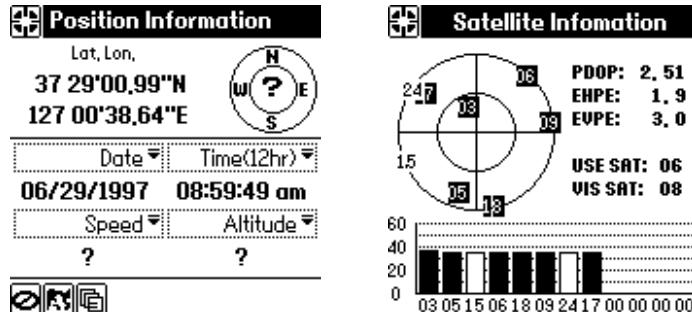
- 1) It is a default GPS application embedded in Cellvic GPS.
  - 2) It has many functions of general handheld GPS. (i.e. Waypoint, route, Track logging and mapping)

## Basic Screens

1) Startup screen, Setting screen, Detail Setting screen



## 2) Position information, Satellite Information



3) Data manager: Waypoint screen, Route screen, Track screen.



**[5]To turn on, turn off GPS.**

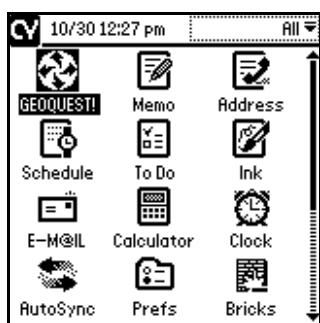
(1) To turn on GPS

[Method 1]

When power turns off, click GPS key (G letter is craved to key).

[Method 2]

After turn on power using power key, Execute GeoQuest icon with a stylus pen in program manager(figure 1), or run other GPS application.



Tip!

Confirmation of GPS working is available that LED of GPS key blinks every 1-second. Caution! Sample product can be different from above condition.

(2) To Turn off GPS

[Method 1]

To end GeoQuest, Press Application icon in LCD lower column. Select "Yes" on question in figure 4.





[Method 2]

Pressing POWER button stops running all programs including GPS.

Tip!

When GPS turns off, LED of GPS key will not blink.

## [6] To decide GPS position (NAVIGATION).

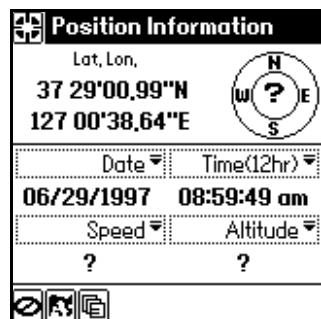
### (1) Environment to do GPS positioning

- 1) To minimize TTFF(Time To First Fix), the unit should have clear sky view. If there are large buildings nearby or heavy tree cover, the unit may not determine your location.
- 2) Time is very important factor in GPS positioning. When you first get the unit or move more than 500miles from last position while turning off GPS, you should set TIME ZONE and initialize PDA with local time.
- 3) If you can't get position during 10 or more minutes, you'd better move the unit to another location which has more clear view.

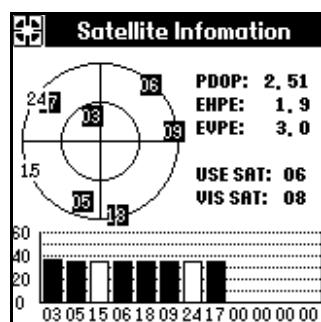
### (2) How To speed up positioning

[To view satellite page]

Press  icon with stylus pen to view satellite page Or press GPS\_KEY.



Satellite information page is below.



With a bird's-eye-view, you can see the position of each satellites. Inner circle means 45 degree above the horizon. When you first turn on GPS, there may be no satellite in satellite page. But, environment meets the requirement of acquisition, some satellites may appear.

To calculate position, the unit should collect the continuous data from satellites. So, it will take time to fix the position.

GPS Signal strength above 30 or more is valid. When the unit can use some satellite, it's color is black. If you can see three or more satellites which is filled with black color, it may be navigation state. EHPE(Expected Horizontal Position Error) and EVPE(Expected vertical Position Error) are another factors to determine navigation. If the value of EHPE is more than setting, the unit cannot determine it's position accurately.

[To return in screen ago]

- 1) Click  icon of the left side top portion in figure 7.
- 2) Press any key.

(3) How to confirm to navigate

- 1) High tone of buzzer sound.
- 2) Icon of left lower column changes by icon in figure 8 positions information display.
- 3) Black bar graph of figure 7 is kept more than 4.

(4) Position Information

Position information page shows Latitude, Longitude, Altitude, Local time from GPS Time, Speed, Direction and etc.



Latitude, Longitude are based on WGS84 map datum by default. Cellvic GPS provides 189 predefined user datums.

you can change position format to UTM by clicking Lat/Lon value. TM and KATECH are only valid in Korea.

Direction calculated by GPS is similar to magnetic compass. When you use magnetic compass, north of compass is the same direction to magnetic north in North Canada. True north is the direction to North Pole. GPS provide magnetic variation. You can get magnetic north by adding magnetic variation to direction of GPS.

## [7] Waypoint, Waypoint navigation

### (1) What is waypoint?

Waypoints are locations stored in the unit. Waypoint contains coordinate(longitude, latitude, altitude), saved date & time, user's memo, and etc. Waypoints are used for making routes and navigating to them.

### (2) Storing Waypoint

[Waypoint save condition].

1) The unit should be in navigation state.

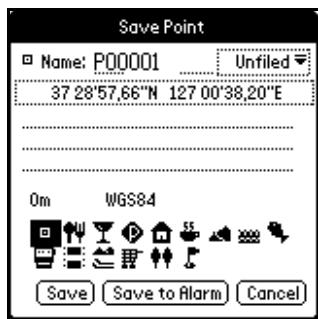
2) Direct input is possible in case of known longitude and latitude coordinate numerical value

[Waypoint save in position information display].

1) Click Menu icon of the left side top-portion.

2) Click Waypoint save menu or Press ENTER key in position information display.

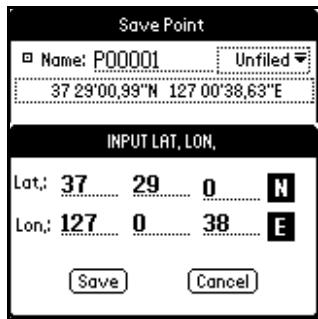
3) Change name in figure 9, and designate group to store, and store after select icon properly.



[In case of foreknowing coordinate]

1) Go in Waypoint save screen because using menu or enter key.

2) With figure 10, inputs coordinate degree, minute and second directly.



Tip!

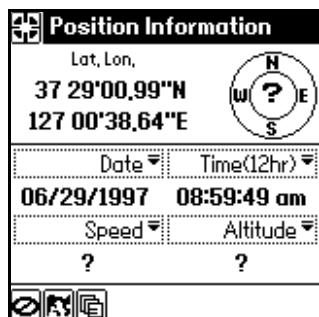
\* If you use GeoQuestMate PC program, you can download waypoints from Cellvic GPS and change the

name of waypoint more easily.

- \* Can manage many Waypoint efficiently if utilize well group.
- \* Can make only my map data if collect exchanging Waypoint information through Internet.

### (3) How to select waypoint as destination

- 1) In position information page, click  icon lower portion of screen.

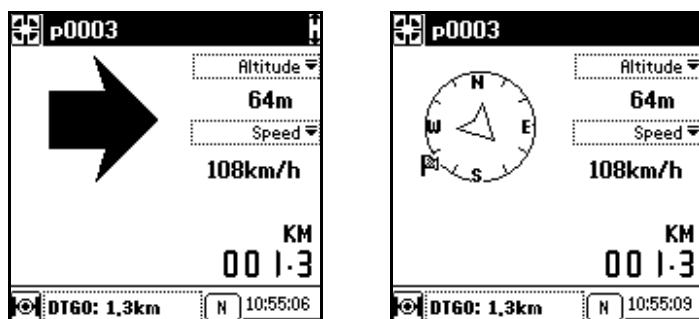


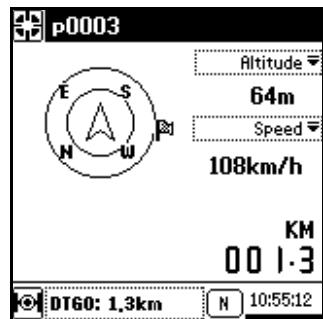
- 2) Select a waypoint as destination and Click  icon.



### (4) How to get to the destination

- 1) Below screen is a first screen. Screen says that You should go right to reach the destination p0003. Press right direction key or click screen to change to second screen. Second screen show your moving direction and the direction of destination as north-up. You are moving from NW to ES. Your destination is SW. You should go right to reach the destination.





Below screen is 3<sup>rd</sup> screen. Your moving direction is upward. Your destination is right direction.

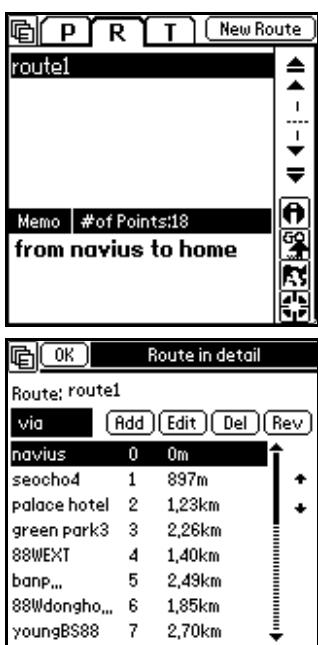
## [8] Routes and routes navigation

### (1) What is routes?

Routes are used when you cannot go to a destination directly. You can navigate a course from one place to another using a set of waypoints.

### (2) How To make routes

- 1) If select to make new route in figure 18, change in figure 19 screens.
- 2) Use function of addition, edit, delete, reverse order etc. You can add waypoints that are stored in Cellvic DB(generally, stored in DRAM).



In above screen, seocho4 may be first destination. 897m(meter) means the distance from navius to seocho4.

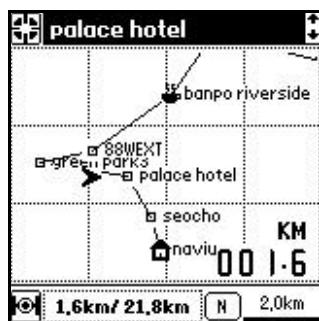
### (3) How To establish route to the destination

- 1) In route lists, Click  icon of screen right side.
- 2) If route is established to the destination, "go route" appears in Position Information.
- 3) If click "Go Route1" in figure 20, can see route guidance screen.



#### (4) About Route guidance

- Route is data that gather plain is light oil that goes finally to the destination.
- Route that do navigation with that make to the destination by a dog which do Waypoint that is linked and do navigation same.
- Route guidance screens are same with Waypoint navigation screen. Below screen is added to waypoint navigation.



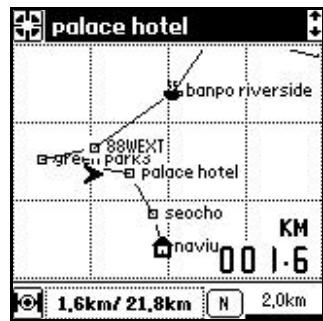
#### (5) To uninstall destination setting.

[To uninstall destination setting in position information display].

- 1) Select icon of the left side top portion and call menu.
- 2) Choose destination setting uninstallation in initialization menu.

[To uninstall destination setting in data administration display]

- 1) Select icon of the left side top portion and call menu.
- 2) Choose destination uninstallation in tool menu.



Tip! - if click NORTH-UP and HEADING-UP select can. When navigation is not, it is no reaction even if select HEADING-UP, but if become navigation, observe that become HEADING-UP.

## [9] Track storing, trace navigation

### (1) What is track?

Track is composed of numbers of saved positions. Once you select “save track” from menu in Position information, GeoQuest will save a coordinate of position periodically. You can get the trip information from saved track.

Maximum number of points is 1,024.

### (2) Track storing

#### [Track storing]

1) Move in position information screen.

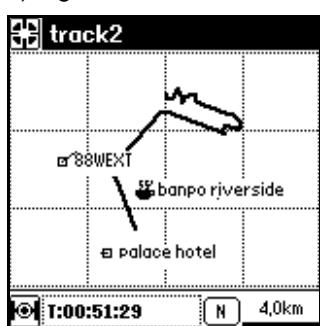
2) If choose track storage in tool menu, can input track's name and memo with figure 22.



3) Figure 23 marks state that is storing track.



4) Figure 24 shows track that is storing when selected View Track.5) figure 25 shows stored track's list.



(3) Track navigation

[Track Navigation]

- Track navigation can use when wish to be no large meaning, and spreads track and visit street comparing with current position.

1) Track storage discontinuance - if discontinue track storage, choose track storage discontinuance in initialization in menu of position information screen.

## [10] Miscellaneous functions

### (1) Saving Average Position

Averaging position offers more accurate coordinate to you.

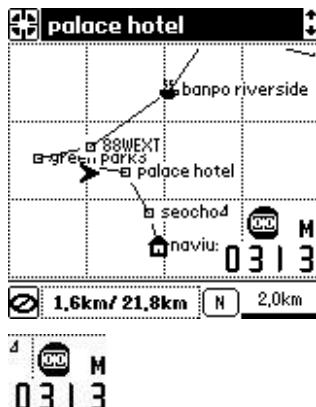
[How to start saving average position]

1) First, check the unit is in navigation mode. If you can see  icon left bottom portion, select "Averaging Pos." menu.

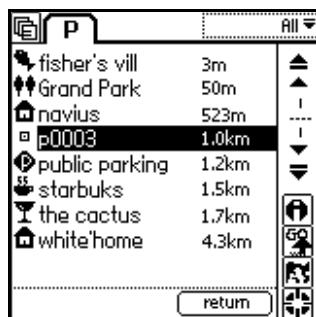


Caution! While averaging position, you would keep the unit stable. Clear sky view will give better result.

### (2) Speed sensor warning



### (3) Find near waypoint



### (4) Data exchange using IrDA

Function of data exchange helps you sharing waypoints and routes with another user of Cellvic GPS.

- 1) In Data Manager, Select IrDA menus. When you can see "Ready!" each of Cellvic GPS, select Send button with stylus pen.



(5)

## [11] Map function.

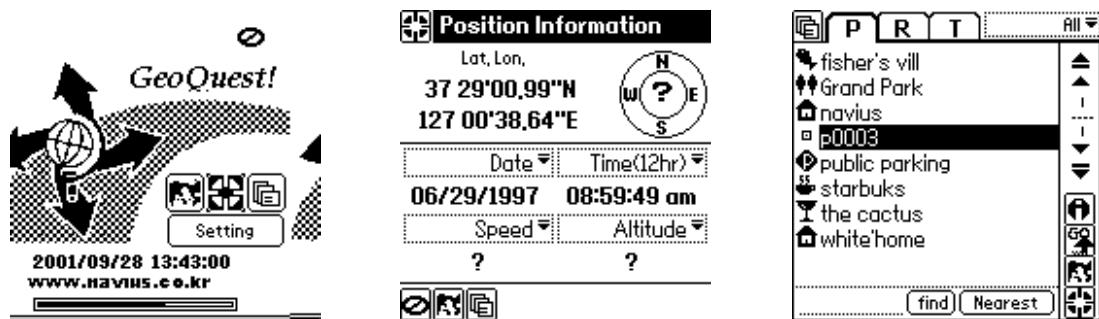
(1) Map information.

[About Map]

- 1) Map data is stored in files on MMC(Multimedia card).
- 2) Since transmission speed with MMC is limited, drawing speed of map is slow.
- 3) Basically, GeoQuest uses four grays (white, light gray, dark gray, black) for drawing map.

(2) How to select Map function

Many of screens have Map  icon. You can select  icon for view maps.

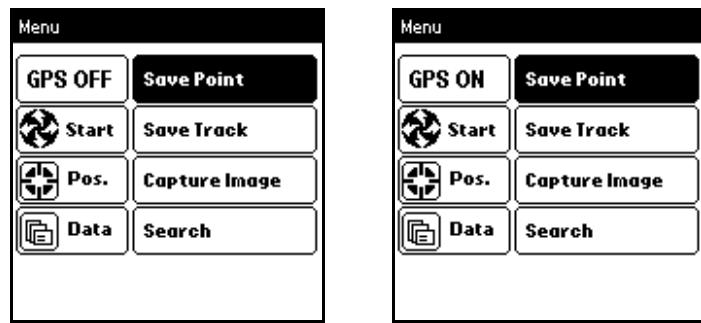


Caution! Map function is under development. So, it is very slow to display map. Also, user interface is not completed.

(3) Invoking menu screen

When you are viewing map, you can't see original GUI(i.e. pull-down menus, dialog boxes). You can invoke alternative map menu pressing GPS\_KEY. Use left, right, upper, down key to navigate menu.

Press ENTER key to execute or GPS\_KEY to return to map.



(4) How to exit map

[Method 1]

Select Start, Pos, Data from menu(GPS\_KEY, ENTER)

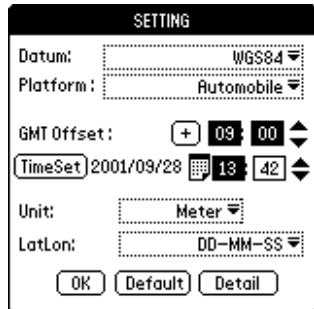
[Method 2]

Select  icon in hardicons.



## [12] Preference

### (1) Settings



#### 1) Datum

The default datum is WGS84. If you don't have knowledge of Map datum, refer to appendix.

#### 2) Platform

The unit supports three platform classes. The class is used to set process noise parameters, velocity decay time constants, and speed and altitude limits. You can get better solution when you select proper platform class.

- \* Pedestrian: For low dynamic environment. For example handheld or hiking
- \* Automotive: For moderate dynamic environment. For example car, truck, motorcycles, bicycles.
- \* Aircraft: For high dynamic environment. For example airplanes or helicopters

The default platform class is automotive.

#### 3) GMT(Greenwich Mean Time) Offset

For proper working of GPS, you should set this value. For example, "+ 02:00" for user who lives in Paris.

#### 4) TimeSet

To change date, press icon. You can input local time in this dialog to initialize GPS time.

Alternatively, you can initialize local time clock program in PDA.

Press OK button to initialize GPS with local time.

If you move from more than 500miles with the unit turned off, Press "TimeSet" to force GPS to coldstart. This function is very helpful for rapid initialization.

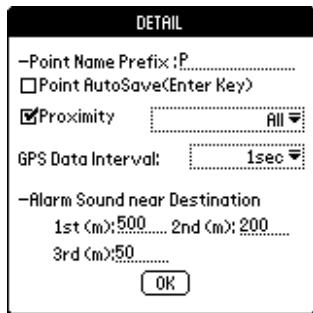
#### 5) Unit

Supports Meter and Mile.

#### 6) LatLon

DD-MM-SS, DD-MM.MM, DD.DDDDDDD

## (2) Detail Settings



### 1) Point Name Prefix

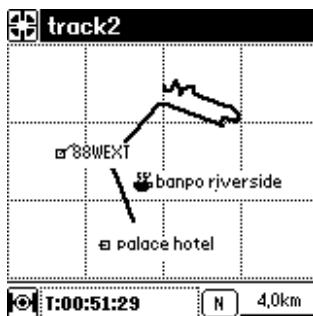
When you save waypoint, automatic name prefix appears.

### 2) Point AutoSave

When you can't input the name of waypoint, check this value. If so, you don't need to press Enter twice. Of course, you should remember what saved waypoints are.

### 3) Proximity

Proximity helps you to know where you are. You can select groups of waypoint to achieve better view. If you select All, all groups are displayed in the screen.



### 4) GPS Data Interval

The default value is every one second.

### 5) Alarm Sound near Destination

If you reach 500m, 200m and 50m front of destination, the unit alarms user with buzzer.

### **[13] problem solving**

#### **(1) GPS does not get fixed**

[Cause of case and solution method that GPS does not become navigation]

- 1) Is battery lacking? - Function that do not execute GPS according to battery level does not implemented for now. Cellvic GPS does not work below 2.7 volts, you should charge before use.
- 2) Did you set time? - GeoQuest use PDA's time to initialize GPS receiver. You should set Time Zone and set correct local time.
- 3) Is there no GPS signal? - Move to place that there is no obstacle and turn on again.
- 4) Do you travel more 500miles with the unit turned off?  
- It may take some ten minutes to do navigation. After click Time Set button (attention: Correspond to COLD START), Click OK button. Please wait 3 ~ 5 minute.