Examples of what this documents describes:

- Important factors to adhere to ensure good GPS accuracy when using mobile apps
- Settings affecting the accuracy of positions from the mobile apps
- Battery consumption on the phone

1. Background

BoatLogger is unique in that the data send to BoatLogger can be coming from any source. That includes apps, instruments on board, offline GPS loggers, GSM trackers, special loggers, Satellite loggers, manual input and many more.

This document is only relevant for positions that are recorded using mobile apps.

2. Positions on mobile phones

Mobile phones have a range of methods to obtain the position, among the common methods are:

- Cell tower triangulation
- WiFi based
- GPS based

While it is obvious that GPS gives the absolute best accuracy, it has the drawback of slightly higher current consumption and that it requires a reasonable free sky for the reception to work.

GPS typically gives positions with a few meters accuracy though occasionally it degrades to around 10 meters. It is rarely worse than that.

Cell tower triangulation in open spaces is usually accurate to a few hundred meters, but if affected by obstructions and buildings can be considerably worse than this.

The GPS on most modern mobile phones are of a nature that can generate very high accuracy of positions. As with any GPS, the more satellites that are in view the more accurate the positions are going to be.

3. How to ensure good positions from the app

Follow the following guidelines to ensure good positions from the app:

1. Ensure that the GPS is enabled

   The app will warn when it is started if the GPS is not enabled. It is however not a requirement (though strongly recommended) to have the GPS switched on for the app to work.

   If the GPS is not on, the positions will usually be obtained via cell-tower triangulation which is a fairly inaccurate method and will cause the track to be irregular. Furthermore, it will not give positions at all when the boat goes out of cell tower reach.

2. Ensure that the phone has good GPS reception

   a. Keep the phone in an un-obstructed location. In a plastic boat, downstairs on the chart table is a good location as the GPS signals have no problem to penetrate plastic.

   b. Do NOT keep the phone in your pocket. The phone will have a hard time to keep consistent position accuracy if you keep the pone in your pocket as your body and other obstructions will create problems. The GPS antenna will also from time to time be in un-favorable directions.

3. Keep the app in the foreground

   While both the iOS and the Android app now logs position also when not in the foreground, it could be unreliable. One issue is that Android OS can close background apps if the phone runs low on resources.

4. Keep the phone charged

   Using both GPS and perhaps mobile data is draining the battery faster than if the GPS is not on. Furthermore, when on the boat we are often further away from cell towers, which causes the phone to increase the transmitted power and hence consuming even more power.

   It is therefore recommended to keep the phone constantly plugged in for charging or at least monitor the charge from time to time.