Navigating cross-Channel by iPad

Duncan Wells swaps his GPS chartplotter for a tablet computer on a touchscreen trip to Cherbourg

PHOTOS: DUNCAN WELLS UNLESS OTHERWISE STATED

I usually navigate using my chart table-mounted Garmin GPS192. How would an iPad compare?

We made it out and we made it back! But I don't think the iPad is ready to replace a marinised chartplotter

My iPad gives me email, internet, photos and videos, books, radio, TV and music on board. Could it also serve as my primary means of navigation? Would it save me the price of other navigational kit? Could I rely on it? After loading Navionics cartography (see our Tried and Tested review on pages 82, 83) and iNavX plotter apps, I decided to sail from Hamble to Cherbourg on a lumpy overnight passage and then back on a sunny millpond crossing to find out.

Can I mount it at the helm?

I brought the iPad up to the binnacle compass and it fair spun the compass around. A proper test resulted in 8°W to 5°E deviation with the bottom of the iPad 15cm (6in) above the compass glass and from 20°W to 18°E with the iPad 9cm (3.5in) away. The bottom of the iPad needed to be at least 23cm (9in) from the glass of the binnacle compass to rule out local deviation.

Does the tablet need protection?

I have a Hallberg-Rassy with cockpit shelves and slid my iPad into one of those. If you don't have somewhere secure to put your device, then you will need some sort of bracket. There are plenty on the market, starting at about £30. We didn't need a waterproof case because we have a windscreen and sprayhood and everything stays pretty dry even in awful conditions. However, if spray was flying about the cockpit we would have had to put it in a case. The new Lifedge case (£99) gives IP68 protection, effectively making your iPad as waterproof as your chartplotter while losing none of the functionality.

PHOTO: LIFEDGE

The new Lifedge iPad case is submersible and all functionality – except splashproof recharging – remains accessible

How long does the battery last?

Running iNavx, we found that a full charge lasts 5½ hours. Then we simply kept the charger plugged in the whole time, which not only ran the iPad but kept the battery 100% charged. Charging an iPad in the new Lifedge case is simple but with the previous model it was a bit of a struggle, and charging with either case means that the iPad is no longer waterproof. Only one case offers a spray-proof charging option and that's the Andres (£276 – see *Yachting Monthly*'s iPad case test, July 2013).

How accurate is it?

I had been told that GPS on an iPad is not terribly reliable because its 'assisted' GPS has to triangulate mobile phone masts for added accuracy. I discussed this with several experts who sell stand-alone GPS/chartplotting equipment and they all said that the iPad GPS was inferior to anything they had to offer. They said that the quality of the GPS-receiving chip in the iPad is nothing like that in the stand-alone units, as it doesn't have differential GPS (DGPS), which enhances the accuracy of GPS. I asked if the IPad is WAAS-enabled (the Wide Area Augmentation System enhances accuracy) but nobody knew.

To test the GPS receiver's accuracy, I switched off the iPad's roaming and 3G. If it was getting any GPS data now, it had to be from GPS and could not be triangulated. I placed it alongside a handheld Garmin 175C in the cockpit and it matched it 1/1000th of a minute to 1/1000th of a minute from Universal Marina in the Hamble to Cherbourg and back. The Garmin 192 by the nav station has its own antenna on the pushpit and it too gave the same information. The 175 and the 192 are WAAS-enabled and the iPad matched them. Remember that the iPad will give your heading as the direction in which it is facing. So for an accurate heading you must line the iPad up fore and aft. COG (course over ground) remains the same whichever way the iPad is facing, of course.

Can you use an iPad instead of a chartplotter? Duncan Wells thinks its disadvantages still outweigh its advantages – but only just…

How fast does it fix your position?

It is worth noting that, if you are using the GPS chip on its own without any 'assisted' GPS triangulation, it can take the iPad several minutes to get a fix – especially if the current location has not recently been determined (for example if you had the iPad switched off and drove to the boat and then asked it to find where it was). Once it has found its position, it takes just a few seconds to acquire subsequent fixes. Turn it off, turn it on again and it will have locked on.

How did the apps perform?

I bought the iNavX cartography app because it is the only one that will output NMEA (National Marine Electronics Association) data, which is essential if I want my iPad to 'talk' to my fairly old Garmin 192 plotter. However, I also wanted to see what the popular Navionics app was like so I tried this out, too. It seemed to work fine, although it allowed my boat to slide off the screen on occasion. You can press an arrow in the corner of the screen and you go back to the centre but why any plotter software should allow a boat to slide off the screen is beyond me. Raymarine's plotters do this, too.

The speed of lock seemed to vary between apps. If we closed the iNavX app and did something else on the iPad, it took fractions of a second to lock back on to our position once iNavX was reopened. Using the same process, Navionics took several seconds to find our position, and was considerably slower to locate us than iNavX.

'We were just off the Needles when it switched off in a huff and told us it was too hot'

Is the screen viewable day or night?

In shaded sunlight under our sprayhood the screen was generally bright enough on full iPad brightness. In direct sunlight it was not bright enough but one can easily shade it with one's hands to see the screen. At night, even on its lowest setting, it was too bright, much brighter than my boat's instrument displays and the Raymarine STC 6000 autopilot controller. It is not good for night vision. I could lay a red filter over the screen but then everything looks red, which is no use.

Aside from visibility, there's another reason to avoid leaving your iPad in direct sunlight. On our return passage, we were off the Needles when ours switched off in a huff and told us that it was too hot. We put it in the shade for a minute and it restarted with no problems so we put it back in the sun and a few minutes later it pulled the same trick. We kept it in the shade after that.

What else can it do?

Neither iNavx nor Navionics were able to give me a simple read out of SOG (speed over ground) and COG (course over ground) that I could see from the helm. iNavx did give me plenty of information along the top of the screen, which was useful but impossible to read from the helm. I decided to see if we could use a Wi-Fi multiplexer to enable the iPad to run the autopilot. There are two on the market, the Brookehouse iMUX and the Ship Modul Miniplex-2wi. The man in Holland who sells the Miniplex-2wi kindly sent me one over but, with so many wires, installation was beyond me so I called upon a technical friend who installed it in 45 minutes.

The wheel twitched beneath its cover – this was brilliant! We could run the system from the iPad, as I had hoped. Then the iPad sounded a prison camp-style alarm – a sound I got to hear quite a lot during the passage to Cherbourg and back. It's not always a bad alarm, sometimes it is telling you that it has found the router and all is well. Sometimes it is not. I set out into the Solent for a test and got the iPad to drive the boat around a course, exactly as the Garmin GPS chartplotter would do. It worked!

I would like an AIS transponder, but to overlay the AIS information on my plotter screen I would have to upgrade my GPS because AIS requires a

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'DON'T TRY THIS AT HOME!'
It is worth mentioning that all of the tablet navigation app suppliers advise that their product is not intended to be used as the primary means of navigation

My Hallberg-Rassy's windscreen ensured the iPad stayed dry during a lumpy passage to Cherbourg

high NMEA baud rate (data transmission speed) of 38,400 and my Garmin can handle only 4,800. However, the Miniplex can handle a high baud input so we would have been able to overlay the AIS information on the iNavx chart. You could also display all the NMEA data that appears on your digital instruments on the iNavx and Navionics – true and apparent wind, depth and so on.

'My iPad set-up cost less than £670, plus at least £35 if you want a waterproof case. A Garmin plotter will set you back £1,800'

What does it cost?

I paid £300 for a used iPad 2 with 3G, a new one costs £409. The iNavx app costs £32.49; the charts £45.49; the Miniplex-2wi from Ship Modul cost £290 (£253 for the Brookehouse iMUX). The Navionics app costs £39.99 (see pages 82, 83). My set up cost less than £670, plus £35 for a waterproof case. A Garmin plotter with a similar size screen will set you back £1,800.

Can an iPad drive a boat around a course as a Garmin chartplotter would? After wiring in a Wi-Fi multiplexer, I created a route on my iPad, chose a waypoint (BTW 140°) and got the autopilot to take us there

So can you navigate by tablet?

If you have a boat with a coachroof that slopes to the deck and no cockpit shelves, it really would be very difficult to find a place to put the tablet unless you fitted a mounting bracket – at a cost of about £100 – and it would need to be at least 22cm (9in) from the compass. Like most tablets, an iPad is not designed for the harsh environment at sea so, with no sprayhood, you would definitely need a waterproof case and, if you were sailing for more than 5½ hours, you would need to charge it, which means taking it below unless you pay £276 for a case that is sprayproof while charging.

Navigating with it was a bit of fun and it is very useful to run in the cockpit as a spare chartplotter. I found the touch-screen much quicker to use than any push-button plotter. So iPad navigation is cheaper, but it is not as reliable as a chartplotter designed specifically for the conditions. It shuts down when it gets too hot, it is only just bright enough during the day and far too bright at night. In my experience, I don't think it is ready to take over from a chartplotter.