

# The ultimate pilot's companion



Cessna 172 owner **Steve Copeland** flight-tests the new Garmin 695 and finds it a joy to fly with, if you have somewhere to put it

Aviation technology is renowned for advancing at a glacier-like pace – with, it seems, the exception of industry leader Garmin and their range of both portable and panel-mounted navigation systems. I use the term ‘navigation systems’ as referring to them as mere GPS does a major disservice. The range of products offered by them is breathtaking, as is the functionality they offer. The new Garmin 695/696 is no exception to this formula. The Garmin 695 and 696 are essentially the same piece of kit, the key hardware difference being that the 696 is shipped with the XM radio/GPS combined external antenna, whereas the 695 comes with a standard external GPS antenna. The 695 also lacks some of the more enticing software functions of its American brother.

The units do not even carry the model designation internally or externally. Differences in the software loaded by the user into the units defines the identity that they take on, with the 696 being capable of taking the US instrument procedures charts as well as both the AOPA data and the AOPA safe taxi charts. The European version unfortunately does not have this data available to it, but does share

the terrain, airways, topographical and obstacle data functions.

The first thing you notice about the 696 is the size. This is no lightweight; with a screen area three times the size of the ubiquitous x96 series it is about the size of an A5 notepad and about an inch and a half thick and it is quite weighty. The screen is clear and bright and the refresh rate is quite breathtaking – aviation meets Xbox!

Input is through a series of soft keys arranged around the edge of the unit and with a multi function FMS style joystick. Navigating around the unit is familiar to those who already own Garmin products in the x96 and GNS x30 range or have been flying the G1000 equipped aircraft that are becoming common these days. For the new user it is a bit more of a minefield, with some of the interfaces being less than intuitive to find. As with all Garmin products there is no master menu type structure, leaving the user on a voyage of discovery to work out which master menu will lead you to the correct sub menu. Not rocket science with a careful application of manual reading and use of the simulator mode, but occasionally a little frustrating!

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**Above: split screen mode gives panel data on top with moving map below**

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The second thing that you notice, or at least wonder, is where you are going to actually mount the unit. It comes as standard with a yoke mount fitting which also has an extension bar that allows it to be fitted to a variety of different yokes. Surprisingly the yoke mount does not have the familiar Garmin quick release fitting; rather it is attached to the mount using four screws directly into the back of the case. This means that to remove the unit from the aircraft you have to remove the entire bracket each time. I personally would have preferred a quick release attachment in the style of the smaller units, especially considering the unit's near electronic flight-bag capability for pre-flight planning. This is a unit you will want to sit at the table with and run ‘what if’ scenarios as well as creating your routes and entering them direct from the chart.

The main problem I found with this unit is that it is so large that when yoke-mounted it either puts the feel from the control column out of kilter or it blocks the view of key instruments.



Not an ideal situation if they are needed for instrument flight! On instrument panels with an overhang, the bracket will attach to them and leave the unit in a visible 'floating' position off to one side. I did try this in an older Cessna with the glare shield overhang and it fitted quite well angled in towards me. On the G1000 cockpit Cessna I was flying this option was not available as it would not go anywhere that did not obscure the PFD or MFD. I generally opted to have the unit either on my knee or when solo, on the seat next to me. This presented no problems for the built-in GPS antenna, which is by far the most sensitive I have ever encountered. It even managed to get a full three-dimensional WAAS signal in the house.

Having the opportunity to spend some time flying in the US I had a perfect opportunity to put the 696 through its paces, a situation made even better by the fact that my steed for the trip was to be a Garmin G1000 equipped Cessna, so it would give me a chance to compare portable versus panel mount functionality.

An IFR trip from Orlando to Key West gave me an opportunity to use the unit in flight planning mode. Entering the route is as simple as hitting the FPL button and choosing a new plan and entering the route from the inbuilt Jeppesen database after picking waypoints from the en route airways charts.

Once this is done you can then view the proposed route on the inbuilt charts in a choice of high-en route, lo en-route and VFR. In the case of my flight to Key West on Victor airways I was able to see it overlain on the airways charts. These show not only the IFR waypoints but the actual airways with the designators, allowing you to cross check your plan from the chart and see if you made any glaring errors in the data entry.

Where this unit really comes into its own in the 696 guise is the wealth of additional information that it provides. Scrolling through to the info section gives me the full AOPA data for the departure and destination airfields including local FBO information,

**Left: clear and bright 695 screen has a very high refresh rate**

**Below: end in sight - finals for Key West after a 696-enhanced flight**



accommodation, even taxis etc. The next screen gives me the full set of published instrument procedures, including instrument arrivals and departures. Drilling down into the airfield data also gives you the AOPA 'safe taxi' charts; these are geo referenced and allow you to use them on the ground in the moving map mode to navigate around the airport. Sadly a function that is sorely missing from the European version.

The usual array of nearest data is also available. This allows us to find nearest VOR, NDB, airports, FSS etc. and of course is constantly updated in flight. I could go on for endless pages about the sheer range of functions the unit has to offer the aviator, but I will save that for your manual reading!

Taking the unit flying is a joy. The clear and bright screen has a very high refresh rate which gives very smooth scrolling as you progress along your track. The primary moving map mode can be used in full screen with north up with up to three rows of data fields user definable from an impressive list of data, CTS, ESA, ETE, ETA, VNAV to name but a few. The unit can also display in track- or course-up mode with a compass arc overlaid onto the moving map. Further options in the moving map allow you to choose between VFR and IFR charts. In VFR map mode we can also add topographic data

Those familiar with the x96 series will also be aware of the panel mode available as a separate screen. This mode gives a GPS derived display of ground speed, altitude, vertical speed and rate of turn as well as a HSI. On the 696/695 due to the sheer size of the screen you are able to turn the top half of the moving map display over to panel mode and keep the lower half in moving map. As with previous versions for GPS derived data the accuracy is quite breathtaking.

Introduced with earlier versions of the handhelds is the smart airspace facility. This dynamically highlights airspace that is likely to be a 'threat' and de-emphasises the airspace the non-threatening areas. This markedly reduces the screen clutter and improves even further the readability of the screen. The unit also retains the GPS Terrain Avoidance Warning System from previous models but introduces a 3D view as well as the bird's eye view of earlier models. You also overlay the obstacle database onto the terrain screen to give a true three-dimensional view of threats on your path.

It is also possible to connect the unit a Garmin 330 Mode S transponder and where available, use this to display traffic information onto the moving map. Using a suitable cable it is also possible to



**Above: unit is big enough to display large sections of chart**

connect the unit to the Zaon traffic warning system for traffic alerts. Due to the lack of traffic information available over Mode S in Europe the Zaon gives a viable alternative with accurate information clearly displayed and easily interpreted on the big 696 display.

The final item of functionality worth a mention but only available again to our US cousins is the availability of XM weather and satellite radio. This provides the icing on the cake to the plethora of information available to US users but does serve to highlight the raw deal we get in Europe. The XM weather data list is impressive; it gives weather radar images, TAF and METAR data, lighting strike data etc. You can even tune into popular music stations for airborne entertainment!

All of this information of course comes at a price, with monthly database cycles for the Jeppesen database, the AOPA database and the IAP charts databases. Failure to update the IAP databases sees them disabled at the end of the current cycle. For the frequent flyer this information is well worth the expense but might be harder to swallow for the lower utilisation flyer.

One thing worth mentioning is the quality of the signal from the inbuilt antenna. Despite the unit spending most of its time on my knee or on the seat next to me in a high wing aircraft, not once did I ever lose the signal. The unit maintained a constant high quality signal complete with the WAAS differential correction all the time.

To conclude, what do I actually think about the unit? It is without doubt a marvel of engineering technology. The quality of the manufacture and clarity of the display are exceptional. In use the unit performed flawlessly, and flying around Florida the amount of information available to me was amazing. It left me confident enough to use the unit as primary source of data on airfields, frequencies, in-flight weather services and even for taxiing around on the ground. The preflight planning tools are amazing and after a few hours in the air the interface became intuitive to use.

The downside for me was bringing the unit back to the UK where it became little more than a 496 with a big screen. I lamented the loss of the AOPA data, safe taxi and IAP charts, not to mention XM Satellite services. The hefty price of the unit coupled with problems in actually mounting the unit in the aircraft (problems I was prepared to overlook with the amount of data available in the US) could be a deterrent when compared to the 296/496 units. For those flying in the US on a regular basis the unit is unbeatable. This facility to migrate the unit easily between US and European spec makes it attractive to the traveller.

Should Garmin include European data for the IAP and maybe even the AOPA type of data then this unit will fly off the shelves in Europe as quickly as it seems to be in the US. So my wish list for the European unit is the AOPA style airfield data and the inclusion of the IAP charts. This data is currently available for the G1000 range so could be made available with an appropriate subscription service. Should XM weather become available, then I suspect many of us would swap an appendage for the facility! ■



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