GALILEO FOR THE MASS MARKET

With the first Galileo services set to begin this year, the European Space Agency (ESA) is working directly with European manufacturers of mass-market satellite navigation chips and receivers to ensure that their products are Galileo-ready.

Explained Riccardo de Gaudenzi, head of ESA’s Radio Frequency Systems, Payload and Technology Division, “Our objective is to make sure, ahead of the EU’s declaration of early Galileo services that mass-market devices are ready and able to make use of them. In co-ordination with the European GNSS Agency, we put out an open call to satellite navigation manufacturers offering testing with our laboratory facilities. We have gone on to work with five mass-market chipset makers and a comparable number of professional receiver manufacturers.”

Key facilities being used at ESA’s Navigation Laboratory include its state-of-the-art “hybrid localisation solution rack”, where receiver chips can be plugged in.

This rack generates simulated constellations of Galileo, GPS and other satellite navigation systems along with Wi-Fi or mobile networks which phone-based satellite navigation chips often additionally employ.

It can also simulate inputs from the kind of inbuilt gyro-type devices receivers employ for dead reckoning, to continue positioning measurements when satellites are out of view.

Another resource is the “octobox” – a mini anechoic chamber into which phones or mobile devices can be placed, in order to feed them simulated satellite navigation and cellular network signals.

And testing in the field is carried out with the Lab’s Telecommunications and Navigation Testbed Vehicle. This fully equipped van carries its own extremely accurate receivers to assess the performance of the consumer items being tested.

Whether they are being used for vehicle navigation, shipment navigation or precision agriculture, the performance of satellite navigation terminals comes down to the specialised chips embedded within them. The same is true of mobile phones, although their chips tend to be optimised for low-power, high-sensitivity operations.
Commented Philip Mattos of ST Microelectronics, whose Teseo-2 receiver chips are used in satellite navigation equipments and embedded in cars, “This is a very useful initiative from our point of view, closing the loop between Galileo and industry. Thanks to earlier collaboration with ESA and the EU, the millions of multi-constellation satnav chips we sell annually have been equipped for Galileo signals since 2009. It will take only a software update to enable them to start using Galileo. We have worked a lot with simulated Galileo signals, but this co-operation is allowing us to optimise our software based on access to actual signals and background technical information.”

Picture captions

*Satellite navigation constellation*

*Hybrid localisation solution rack*

*Octobox*

*ESA Lab’s Telecommunications and Navigation Testbed vehicle*