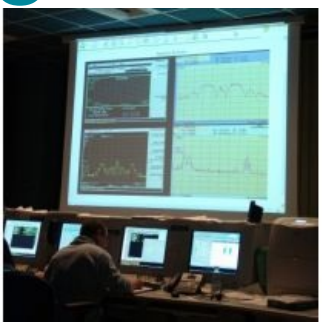
GIOVE-B Transmitting its First Signals



Following a successful launch on 27 April, GIOVE-B has begun transmitting navigation signal on 7 May. This is a historic step for satellite navigation since GIOVE-B is now, for the first time, transmitting the GPS-Galileo common signal using a specific optimised waveform, MBOC (multiplexed binary offset carrier), in accordance with the agreement drawn up in July 2007 by the EU and the US for their respective systems, Galileo and the future GPS III.

These GIOVE B signals, locked on-board to a highly stable Passive Hydrogen Maser clock, will provide higher accuracy in challenging environments where multipath and interference are present, and deeper penetration for indoor navigation. It demonstrates that Galileo and GPS are truly compatible and interoperable and that positioning services will benefit all users worldwide. The quality of the signals transmitted by GIOVE-B will have an important influence on the accuracy of the positioning information that will be provided by the user receivers on the ground. Onboard GIOVE-B carries a passive hydrogen maser atomic clock, which is expected to deliver unprecedented stability performance.

The signal quality can be affected by the environment of the satellite in its orbit and by the propagation path of the signals travelling from space to ground. Additionally, the satellite signals must not create interference with services operating in adjacent frequency bands, and this is also being checked. Galileo teams within ESA and industry have the means to observe and record the spectrum of the signals transmitted by GIOVE-B in real time. Several measurements are performed relating to transmitted signal power, centre frequency and bandwidth, as well as the format of the navigation signals generated on board. This allows the analysis of the satellite transmissions in the three frequency bands reserved for it.

Caption: A screen in the control room displays the spectra of signals received from GIOVE-B shortly after the spacecraft began transmitting navigation signals.

https://www.gim-international.com/content/news/giove-b-transmitting-its-first-signals