

## IIR-20(M) Satellite with L5 Civil Signal Successfully Launched

Mar 24, 2009  
GPS World

A Lockheed Martin-built modernized Global Positioning System Block IIR (GPS IIR-M) satellite, equipped with an innovative payload that will provide an on-orbit demonstration of the L5 third civil signal, was successfully launched today at 4:34 a.m. EDT from Cape Canaveral Air Force Station, Florida.

Designated GPS IIR-20(M), the spacecraft includes a new demonstration payload that will transmit a third civil signal located on the L5 frequency (1176.45MHz). The signal will comply with international radio frequency spectrum requirements. Follow-on generations of GPS spacecraft will include an operational L5 signal to improve the accuracy and performance capabilities of the system.

"Working closely with our Air Force partner, and building upon the design capabilities of the IIR-M space vehicle, the team has developed an innovative, low-risk, low-cost demonstration payload that will pave the way for the new operational third civil signal," said Don DeGryse, Lockheed Martin's vice president of Navigation Systems. "We look forward to a successful demonstration of this critical capability and setting another modernized GPS spacecraft into operations as quickly as possible."

[A video of the launch is available.](#) The satellite is currently in its 40°-inclination elliptical transfer orbit. Transit onto a circular orbit in GPS constellation plane B is expected within about two days.

The IIR-20(M) satellite is the seventh in a line of eight GPS IIR satellites that Lockheed Martin Navigation Systems, Newtown, Pennsylvania, has modernized for its customer, the Global Positioning Systems Wing, Space and Missile Systems Center, Los Angeles Air Force Base, California.

Modernized GPS IIR satellites include several features that enhance operations and navigation signal performance for military and civilian GPS users around the globe. The incorporation of the demonstration payload on the satellite was completed one month ahead of schedule and in less than one year after the Air Force awarded Lockheed Martin a \$6-million contract to design, develop, and integrate the payload onto a IIR-M spacecraft already built and in storage.

Lockheed Martin and its navigation payload provider ITT of Clifton, New Jersey, designed and built 21 IIR spacecraft and subsequently modernized eight of those spacecraft designated Block IIR-M. Each IIR-M satellite includes a modernized antenna panel that provides increased signal power to receivers on the ground, two new military signals for improved accuracy, enhanced encryption and anti-jamming capabilities for the military, and a second civil signal that will provide users with an open-access signal on a different frequency.

