

伽利略搜救转发器 (SART) 项目召开测试预备评审会 (TRR) 预评审

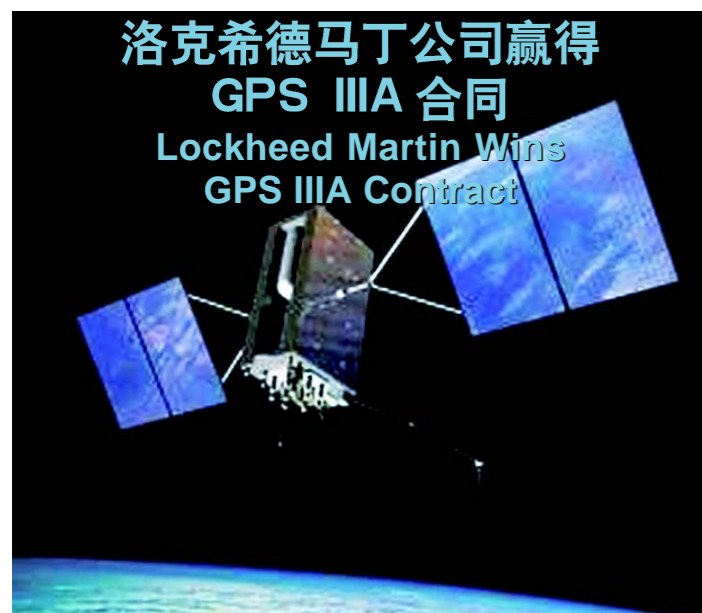
Pre-review of Test Readiness Review (TRR) for Galileo Search and Rescue Transponders (SART) Held

2008年4月28日,伽利略搜救转发器(SART)项目测试预备评审会TRR的预评审通过电话会议的形式召开。国家遥感中心、中国伽利略公司(CGI)、Astrium(UK)公司、西安504所及ESA、Astrium(Glmb)公司的代表和相关专家参加了会议。

SART项目作为伽利略专项中向欧方交付卫星载荷实物的项目之一,目前已经进入产品的测试阶段。本次会议主要目的是讨论欧方对各项测试程序、测试计划文档的意见,确保TRR各项文档编写完整规范,极端测试工作符合要求。会议中各方对讨论过的测试内容及测试方法的补充及改进都达成了一致,对于部分未讨论完的意见,504所将以书面形式进行回复。

April 28, 2008, the pre-review of the test readiness review (TRR) for the Galileo search and rescue transponders (SART) was held in the form of the telephone meeting. Representatives and experts from the National Remote Sensing Center of China, the China Galileo Industries (CGI), Astrium (UK), the Xian 504 Institute, ESA and Astrium (Glmb) attended the meeting.

The SART, one of the projects providing EU with satellite payload in the Galileo project, has entered the testing phase. The main purpose of the meeting was to discuss EU's suggestions on test procedures and test plan documents, ensuring the integrity and norms of the TRR document and extreme tests meet the requirements. Parties in the meeting have reached consensus on improvement and supplement of test contents and test methods. The suggestions on which the discussion has not been finished will be replied by the 504 Institute in writing.



GPS III 卫星
GPS III satellite

Inside GNSS 杂志 2008 年五月 / 六月期: 洛克希德马丁空间系统公司领导的团队已获得美国空军批准, 建立 GPS Block IIIA 卫星, 该合同高达 35.68 亿美元。

该决定于 5 月 15 日宣布。此次采购的是三套 Block III 卫星中的第一套。这一套卫星计划于 2014 年发射。

美国空军仅希望购买一共八颗 IIIA 卫星。另外八颗 IIIB 卫星将在 IIIB 阶段交货, 16 颗 GPS IIIC 卫星在更晚些时候交货。

假如 IIIA 性能不佳或由于保证工业基础安全的需要, 美国空军保留对两批采购中的一批或两批重新招标的权利。但是, 洛杉矶空军基地太空和导弹系统中心 GPS 中队指挥官戴夫麦登上校说: “我们的主要意向是和一个供应商建立长期合作关系”。

GPS III 计划已经酝酿将近十年。该计划于 1998 年克林顿执政期间首次提出, 并于 2000 年获得国会首次资助。但由于联邦政府和空军财政预算将 GPS III 计划紧缩, 该计划被一再推迟。

May/June 2008, Inside GNSS, A team led by Lockheed Martin Space Systems Company has won U. S. Air Force approval to build the GPS Block IIIA satellites under a contract valued at up to \$3.568 billion dollars.

The decision was announced May 15. The acquisition covers the first of three sets of Block III satellites currently scheduled to begin launching in 2014.

The Air Force only expects to purchase a total of eight IIIA satellites. Another 8 satellites would be delivered under the GPS IIIB phase, and a final 16 GPS IIICs later on.

The Air Force retains the right to re-compete either or both of the next two Block III acquisitions, in case of poor IIIA performance or because of needs to secure the industrial base. However, Col. Dave Madden, commander of the GPS Wing at the Space & Missile Systems Center, Los Angeles Air Force Base, says, “Our primary intent is to develop a long-term relationship with one vendor.”

The GPS III program has been almost 10 years in the making. First proposed in 1998 during the Clinton administration and receiving its first congressional funding in 2000, the program has repeatedly been delayed as the GPS III line item was cut from either federal or Air Force budgets.

GNSS 简讯 GNSS Brief News

■ Inside GNSS 杂志 2008 年五月 / 六月期: 4 月 15 日, 欧洲航天局 (ESA) 理事会设立伽利略主管一职, 以适应其在欧洲全球导航卫星系统计划中发挥的新的更大的作用。根据欧空局的总干事 Jean-Jacques Dordain 的推荐, 理事会同意任命前导航部主任 René Oosterlinck 为伽利略计划以及导航相关活动的主任, 任期至 2010 年底。

May/June 2008, Inside GNSS, On April 15, the Council of the European Space Agency (ESA) has created a Galileo Directorate to accommodate the agency's newly enhanced role in Europe's GNSS program. Acting on recommendations of ESA's Director General Jean-Jacques Dordain, the council agreed to bring back René Oosterlinck, former head of the Navigation Department, to serve as the director of the Galileo program and navigation-related activities (D/GAL) through the end of 2010.

■ GPS 世界 2008 年 5 月 9 日消息: 市场研究公司 ABI 今天表示, 具有 GPS 功能的手机市场将在未来四年蓬勃发展。2012 年将有超过 5.5 亿单位的出货量。

May 9, 2008, GPS World, The market for GPS-enabled handsets is set to boom over the next four years, with more than 550 million units shipping in 2012, market research firm ABI Research said today.



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欧洲议会最终批准 伽利略系统 EP Gives Final Approval to Galileo System

新华社 2008 年 4 月 23 日消息: 周三, 欧洲议会最终批准欧洲卫星导航系统——伽利略系统。欧洲议会全体大会以 607 票赞成, 36 票反对, 8 票弃权通过该决议。

伽利略计划由 30 颗卫星组成, 耗资 34 亿欧元, 预计在 2013 年之前投入运营。

来自匈牙利的欧洲议会报告起草人 Etelka Barsi-Pataky 说: “伽利略将成为第一个欧洲共有的基础设施”。

欧盟交通部长称该项目在技术上优于美国的 GPS 系统。欧盟将成立一个特别小组监督该项目。

一项将由欧洲委员会和欧洲全球导航卫星系统监督机构管理的新规则规定了伽利略和欧洲轨道卫星导航服务 (EGNOS 系统) 的安全要求。

伽利略基础设施合同将进行公开招标。

伽利略计划部署阶段为 2008 年至 2013 年, 该阶段将建立所有的空间和地面基础设施。随后进入开发阶段。

根据欧洲议会当天通过的文件, 欧盟将为该项目提供全额资助, 并成为“该项目创造和开发的所有有形资产和无形资产的所有者”。各成员国、第三国或国际组织也可



伽利略计划
Galileo programme

简讯 Newsletter

● 欧洲议会最终批准伽利略系统
EP Gives Final Approval to Galileo System

● 欧盟发射伽利略计划第二颗卫星
EU Launches Second Satellite for Galileo Project

● 伽利略计划 GIOVE-B 航天器发射信号
Galileo's GIOVE-B Spacecraft Transmits Signals

● 伽利略搜救转发器 (SART) 项目召开测试预备评审会 (TRR) 预评审
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● 洛克希德马丁公司赢得 GPS IIIA 合同
Lockheed Martin Wins GPS IIIA Contract

● GNSS 简讯
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以提供额外资助。

一个欧洲议会、理事会和委员会之间的跨机构内部小组将成立，以跟踪项目的后续执行情况、与第三国的国际协议和卫星导航市场的准备情况。

Apr 23, 2008 (Xinhua), The European Parliament (EP) gave its final approval Wednesday to the European satellite navigation system Galileo. It was adopted by a vote of 607-36 with 8 abstentions at the plenary session of the EP.

The 30-satellite project, at a cost of 3.4 billion euros, is expected to be operational by 2013.

"Galileo will be the first common European infrastructure," said parliament's rapporteur Etelka Barsi-Pataky from Hungary.

The project was touted by EU transport ministers as technologically superior to the American GPS system.

An EU oversight panel to oversee the project will be created.

A new regulation lays down security requirements for Galileo and the European Geostationary Satellite Navigation Service (EGNOS), to be managed by the European Commission and the European Global Navigation Satellite System Supervisory Authority.

Galileo infrastructure contracts will be put out to competitive tender.

The deployment phase, in which all space and ground-based infrastructure is to be established, will run from 2008 to 2013. The exploitation phase will follow.

According to the text adopted by the EP on the day, the EU will entirely fund the project, and become "the owner of all tangible and intangible assets created or developed under the programs." Member states, third countries or international organizations may provide additional funding.

An inter-institutional panel between the European Parliament, Council and Commission will also be created to follow the implementation of the programs, the international agreements with third countries, and the preparation of the satellite navigation markets.

新华社莫斯科 2008 年 4 月 27 日消息：周日早些时候，一颗伽利略卫星导航系统试验卫星成功发射，欧盟在与美国 GPS 系统竞争的道路又向前迈进了一步。

当地时间上午 4 时 16 分(格林尼治时间周六 22 时 16 分)，实验卫星中的第二颗卫星 GIOVE-B，搭乘俄罗斯“联盟”运载火箭从中亚哈萨克斯坦境内的拜科努尔发射场升空，并在四小时后与助推器成功分离。

俄塔斯社援引俄罗斯航天局 (Roskosmos) 的消息说，重达 530 千克的 GIOVE-B 由 Astrium 公司和 Thales Alenia 空间公司制造，已按预定目标进入 2.3 万公里的高空轨道，倾角 56 度。GIOVE-B 是三颗试验卫星之一，用于测试将在伽利略系统中使用的技术。欧盟称伽利略系统在覆盖范围方面优于现有的 GPS 系统，也可为司机、海员、飞行员和紧急救援人员提供导航服务。

伽利略系统的第一颗卫星已于 2005 年发射。

周三，欧洲议会最后批准由 30 颗卫星组成的伽利略计划。该计划预计耗资 34 亿欧元 (53 亿美元)，并在 2013 年之前投入运营。

欧盟将成立特别小组监督该项目。



2008 年 3 月，在荷兰的诺德韦克，欧洲空间局技术人员在“GIOVE-B”卫星上工作。(新华社/法新社图片)
A European Space Agency technician works on the "GIOVE B" satellite in Noordwijk in the Netherlands in March 2008. (Xinhua/AFP Photo)

MOSCOW, April 27, 2008 (Xinhua), The European Union on early Sunday put into orbit an experimental satellite for the bloc's Galileo global navigation system in an effort to rival the U.S. GPS system.

The GIOVE-B satellite, the second of the experimental cluster, was launched from Kazakhstan's Baikonur cosmodrome in Central Asia at 4:16 a.m. local time (22:16 GMT Saturday) atop of the Russian Soyuz-FG carrier rocket and successfully separated with the booster in four hours.

The 530-kg cube, built by the Astrium and Thales Alenia Space, was put into the 23,000-km-altitude orbit with 56-degree inclination as designated, Itar-Tass news agency cited the Russian Federal Space Agency (Roskosmos).

The GIOVE-B, one of three experimental satellites, will test technologies to be used in the Galileo system, which the EU said is superior to the existing GPS system in coverage sphere.

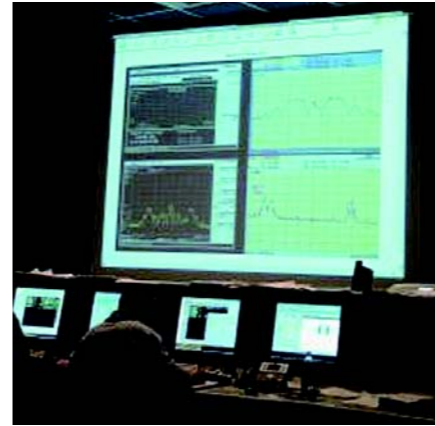
It is also designed to provide navigation service for motorists, sailors, pilots and emergency rescue staff, according to the EU.

The first satellite for the Galileo system was launched in 2005.

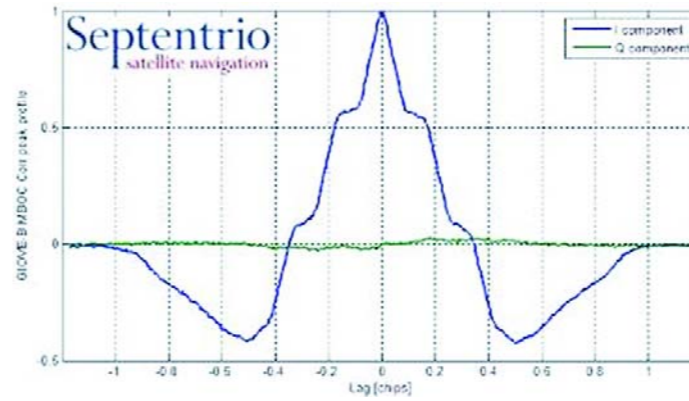
The European Parliament gave its final approval Wednesday to the 30-satellite Galileo project, which is expected to be operational by 2013 at a cost of 3.4 billion euros (5.3 billion U.S. dollars).

An EU panel to oversee the project will be created.

伽利略计划 GIOVE-B 航天器发射信号 Galileo's GIOVE-B Spacecraft Transmits Signals



伽利略控制室里的屏幕显示收到的 GIOVE-B 信号波谱
A screen in the Galileo control room displays the spectra of signals received from GIOVE-B



GIOVE-B 的 MBOC 波谱
GIOVE-B's MBOC spectra

Inside GNSS 杂志 2008 年 5 月 13 日消息：五月七日，欧洲第二颗伽利略在轨验证 (GIOVE-B) 卫星开始发出导航信号。该信号包括 GPS-Galileo 通用民用信号 MBOC。

欧空局与欧盟合作制造了 GIOVE-B。GIOVE-B 于四月二十七日从哈萨克斯坦境内的拜科努尔发射场发射升空。根据欧盟与美国在 2007 年七月达成的协议，MBOC 信号设计将被用于未来 GPS L1 波段的广播和伽利略公开服务。

GIOVE-B 信号可以帮助改善在多路径和较大干扰的恶劣环境中的定位精度，因信号具备更好的穿透性，对室内导航也有更好的改善。

欧空局伽利略项目经理 Javier Benedicto 说：“随着在太空中广播高精度信号，现在我们可以保证与 GPS 兼容和互操作的同时，有信心提供更先进的卫星定位服务。”

研究人员已经开始跟踪 GIOVE-B 新信号。斯坦福大学 GPS 实验室的博士生 Grace Gao，曾经协助对北斗 MEO 信号进行解码和梳理的她已经对 GIOVE-B 的 L1 波段上的两个码进行了解码。她确定二者均为 13 级 Gold 码，并梳理出编码器多项式算法。

显然，GIOVE-B 发送的信号不同于伽利略接口控制文件中的信号，广播的码为 Gold 码。

一些机构现在正在分析信号的性能。这些机构包括位于意大利 Fucino 的 GIOVE-B 控制中心、位于荷兰的欧空局欧洲空间研究和技术中心的伽利略处理中心 (ESTEC)、位于比利时 Redu 的欧空局地面站和

位于英国的卢瑟福阿普尔顿实验室 (RAL) Chilbolton 天文台

欧空局称，欧空局和工业界的伽利略团队有对 GIOVE-B 发射信号的波谱进行实时观察和记录的方法。他们实施与发射信号功率、中心频率和带宽以及卫星产生的导航信号格式相关的测量，从而可以对卫星预留的其它三个频率波段的信号发送进行分析。

Chilbolton 天文台长达 25 米的天线使研究人员可以高精度地分析 GIOVE-B 信号特征并且验证信号是否符合伽利略系统的设计规范。当 Redu 和 Chilbolton 天文台可以看见卫星时，这个巨大的天线就被激活并且开始跟踪卫星。GIOVE-B 运行轨道高度为 23173 千米，每 14 小时 3 分环绕地球一圈。

May 13, 2008, Inside GNSS, Europe's second Galileo In-Orbit Validation Element (GIOVE-B) satellite began transmitting navigation signals on May 7, including the common GPS-Galileo civil signal MBOC.

Built under a cooperation between the European Space Agency (ESA) and European Union (EU), GIOVE-B was launched April 27 from the Baikonur cosmodrome in Kazakhstan. The MBOC signal design will be used by the future GPS L1C broadcasts as well as the Galileo Open Service in accordance with an agreement drawn up in July 2007 between the EU and the United States.

The GIOVE-B signals will help improve positioning accuracy in challenging environments with multipath and interference as well as better penetration for indoor navigation.

"Now with GIOVE-B broadcasting its highly accurate signal in space, we have a true representation of what Galileo will offer to provide the most advanced satellite positioning services, while ensuring compatibility and interoperability with GPS," said ESA's Galileo project manager, Javier Benedicto.

Researchers have already begun tracking the new GIOVE-B signals. Grace Gao, a doctoral candidate in the GPS Laboratory at Stanford University (USA) who helped decode and characterize the Compass MEO signals, has decoded the two GIOVE-B codes in the L1 band. She identifies them both as 13-stage Gold codes. Gao has also derived the code generator polynomials.

Apparently, the codes that GIOVE-B are transmitting are different from the ones in the Galileo Interface Control Document (ICD). The broadcast codes are Gold codes.

The quality of the signals is now being analyzed by several facilities, including the GIOVE-B Control Centre in Fucino, Italy, the Galileo Processing Centre at ESA's European Space Research and Technology Centre (ESTEC), in the Netherlands, the ESA ground station at Redu, Belgium, and the Rutherford Appleton Laboratory (RAL) Chilbolton Observatory in the United Kingdom.

According to ESA, 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, center 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.

Chilbolton's 25-meter antenna enables researchers to analyze the characteristics of GIOVE-B signals with great accuracy and verify that they conform to the Galileo system's design specification. Whenever the satellite is visible from Redu and Chilbolton, the large antennas are activated and track the satellite. GIOVE-B is orbiting at an altitude of 23,173 kilometers, making a complete journey around the Earth every 14 hours and 3 minutes.

欧盟发射伽利略计划第二颗卫星 EU Launches Second Satellite for Galileo Project



2008 年 4 月 23 日，工作人员在哈萨克斯坦的拜科努尔航天中心发射架上准备欧洲空间局伽利略 (GIOVE-B) 卫星。(新华社/法新社图片)
Workmen prepare the Galileo (GIOVE-B) satellite of the European Space Agency on its launch pad at Kazakhstan's Baikonur cosmodrome, April 23, 2008. (Xinhua/AFP Photo)