

***In the Name of God
the Compassionate
the Merciful***



OMID Satellite Launch Report

46th Meeting of the Scientific and Technical
Subcommittee of the Committee on the
Peaceful Uses of Outer Space (COPUOS)

9th – 20th February 2009

Vienna

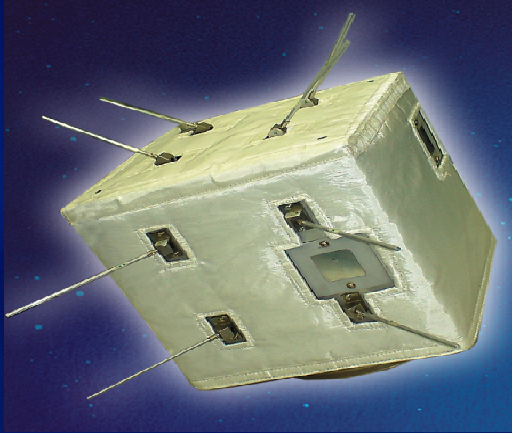
On February 2nd, 2009, we successfully launched our first domestic Satellite Launch Vehicle (SLV) named **“SAFIR-2”** carrying our first domestic telecommunication satellite called **“OMID”** and injected the satellite in LEO. This is definitely a great step forward toward development in space technology. I would like to inform you that all the work from design to manufacturing to test and operation of the satellite and its launch vehicle has been done by Iranian experts and engineers.

“OMID” Means HOPE
&
Is the name of
The First Iranian Home -Built Satellite



OMID Satellite

OMID Satellite



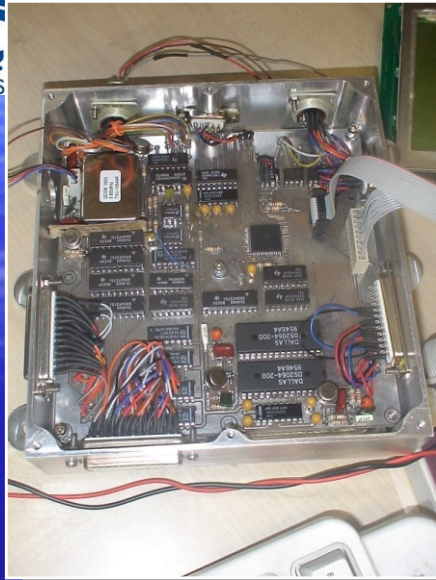
OMID Satellite Specifications

- **Store and Forward Telecommunication Satellite**
- **Dimensions:** 40cm * 40cm * 40cm
- **Weight:** 27 kg
- **Thermal Control:** Passive
- **Frequency Band:** UHF
- **Nodal Period:** 90.7minutes
- **Inclination:** 55.71degrees
- **Apogee:** 381.2km
- **Perigee:** 245.5km

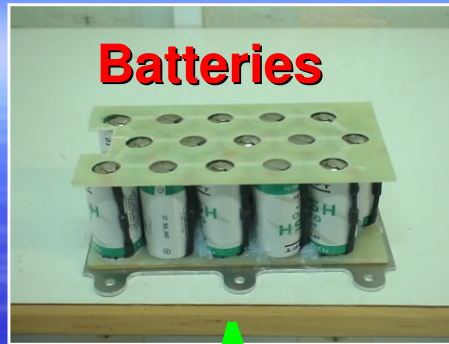


OMID-Sat Subsystems

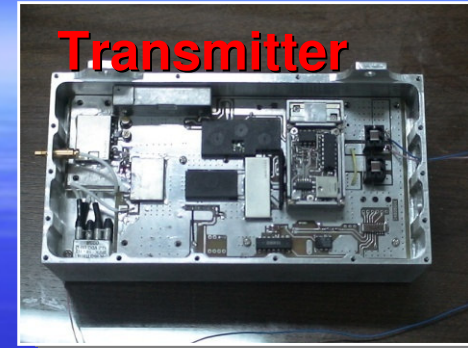
OBC



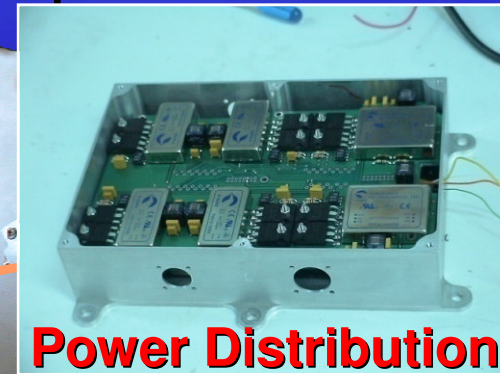
Batteries



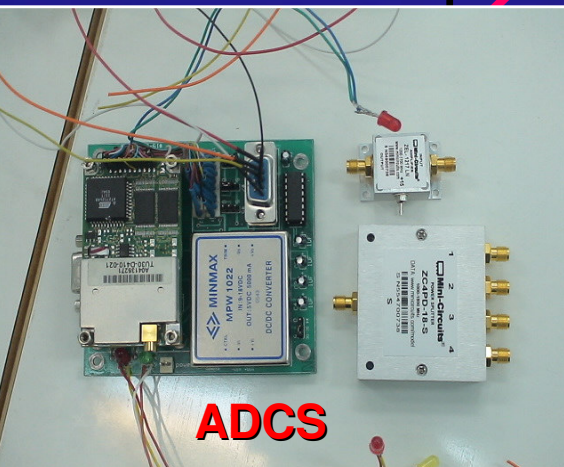
Transmitter



Power Distribution



ADCS



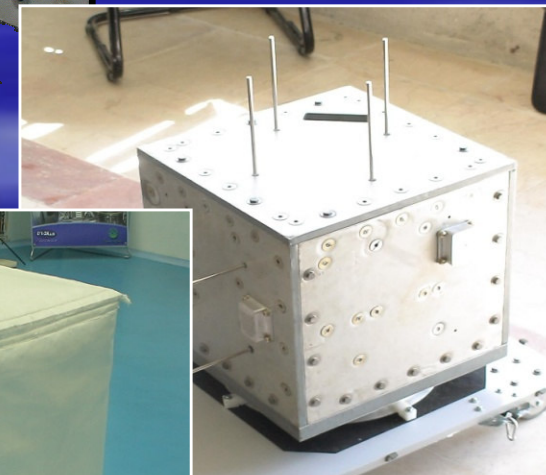
Receiver



Thermal Control



Structure



OMID Satellite Milestones

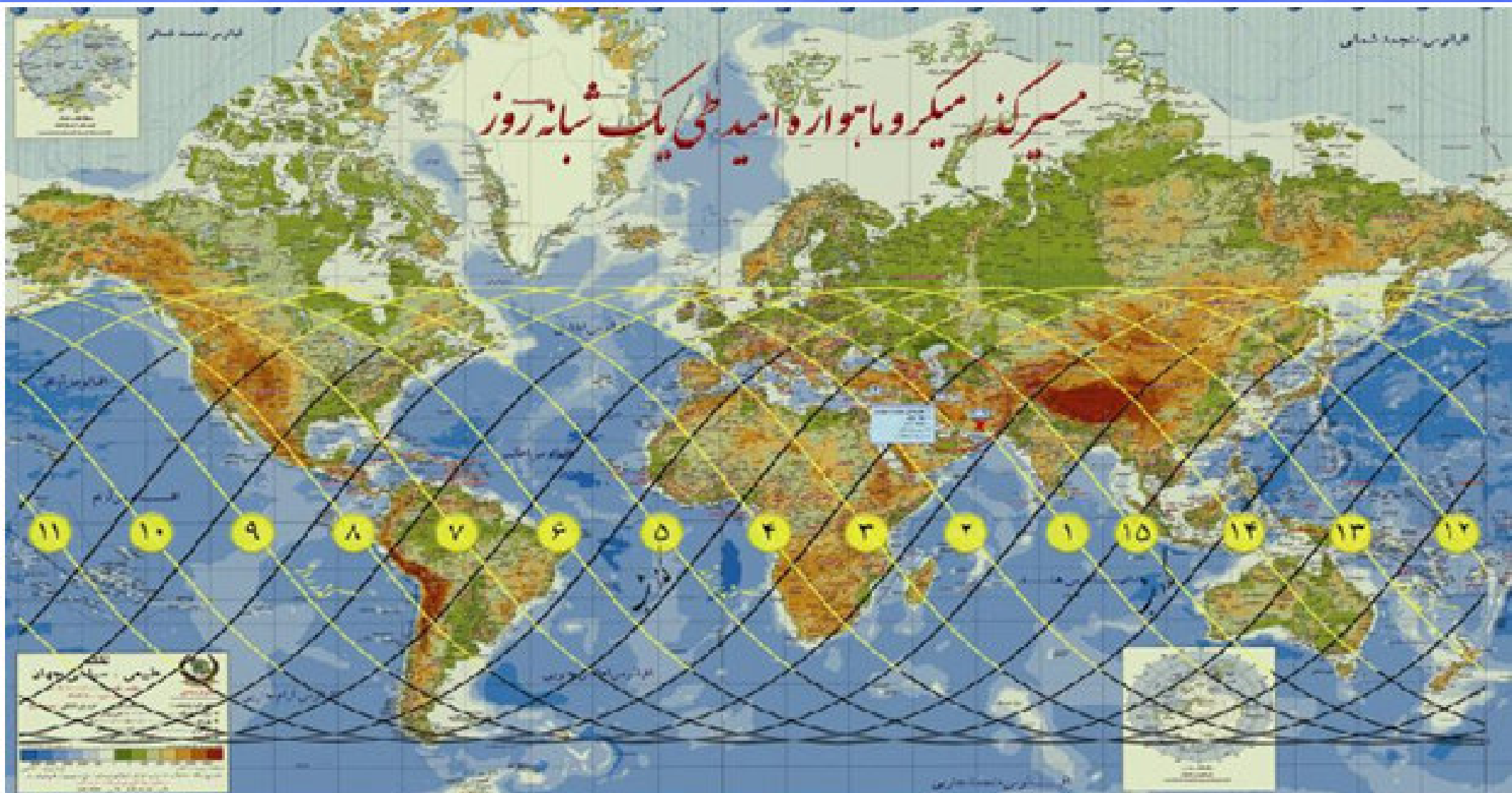
- **Satellite Electronics Manufacturing.**
- **Space Receiver and Transmitter Manufacturing.**
- **QSM Structure Technology.**
- **TVT Thermal Technology.**
- **Environmental Tests for Quality Assurance.**
- **Space GPS for Tracking.**
- **Ranging Technologies.**
- **Satellite Flight Simulation Technologies.**
- **Domestic Space System Engineering.**
- **Satellite In-orbit Operation.**
- **Period and Satellite Rise Assessment.**
- **Necessary Software Developments.**

Achievements

- Manufacturing the first domestic space system.
- Acquiring Space Technology to drive other industries.
- Encourage the students and universities for cooperation in applicable fields of Space Technologies.
- Capacity Recognition in Satellite Manufacturing, Integration and Test.
- Cooperation with Private Sector.
- Interaction between Launcher, Satellite and Ground Stations.
- Design and Manufacturing of First Domestic TT&C station.
- Design and Implementation of Satellite Monitoring and Control Softwares.
- Design and Implementation of Telemetry Coding and decoding Softwares.
- Design and Implementation of Satellite Tracking Softwares (Ranging).



OMID-Sat Paths (24 Hours)





Satellite Launch Vehicle SAFIR-2



Introduction

SAFIR-2 SLV (Satellite Launch Vehicle) is the first Iranian domestic Launch Vehicle for carrying light weight satellites up to LEO. The perigee and apogee of the satellites are 250km and 500km respectively. This SLV is 22 meters long with the diameter of 1.25 meters and weighs more than 26 tons. The mission of SAFIR-2 SLV was, placing OMID satellite in the orbit of 250km.

SLV Technologies

System Engineering

- Conceptual Design
- Preliminary Design
- Simulation
- Detail Design
- Critical Design
- Integration and Test
- Quality Assurance

SLV Technologies

Engine Technologies

- 1st Stage Engine
 - Max. Altitude: 68 km
- 2nd Stage Engine
 - Max. Payload Weight: 27 kg
 - Angle Correction for Final Payload Injection

SLV Technologies

Structure Technologies

- Light Weight.
- High Thermal Resistance.
- High Mechanical Resistance.

SLV Technologies

Propellant Technologies

- Propellant Production Industries

SLV Technologies

Control and Navigation Technologies

- Flight Simulator
- Navigation System
- Power Sources
- Batteries
- Actuators
- Barometers
- Cabling
- Testers

SLV Technologies

Sensor Technologies

- Velocity Sensors.
- Acceleration Sensors.
- Application in Navigation Systems.

Space Launch Site



Launch Pad Technologies

- Preparations.
- Accessories.
- Transport Vehicles.
- Launch Tower.
- Launcher Integration and Test.
- Propellant Charging.
- Launcher Flight Control Station.



Ground Stations Network

Ground Stations Network

- Tracking, Telemetry and Command Stations TT& C(3).
- Central Flight Control Station (1).
- Ranging Stations (4).
- Ground Receiving Stations & Terminals.



OMID Satellite In Orbit



www.isa.ir

www.omid-sat.ir

**Thank You for
Your Attention**

Iranian Space Agency

