

# OVERVIEW OF KOMPSAT-5 PROGRAM, MISSION, AND SYSTEM

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## 1. KOMPSAT-5 PROGRAM

Korea Aerospace Research Institute (KARI, hereafter), a government-funded research institute, is engaged not only in developing aerospace-related technologies but also in supporting a national aerospace development policy under the supervision of the Ministry of Education, Science and Technology (MEST, hereafter). KARI, as system integrator, is responsible for the development of the Fifth KOrea Multi-Purpose SATellite (KOMPSAT-5, hereafter) System according to the National Long Term Space Development Plan.

## 2. MISSION OVERVIEW

The main mission objectives of KOMPSAT-5 system are to provide the following applications (GOLDEN mission):

- **G**eographic Information System (GIS)
- **O**cean Management
- **L**and Management
- **D**isaster Monitoring
- **E**Nvironment Monitoring

The KOMPSAT-5 satellite will be delivered to low Earth orbit for all-weather day-night monitoring of Korean peninsula. Launch will be occurred in 2010. After achieving mission orbit and implementing In-Orbit Test (IOT, hereafter), repetitive Synthetic Aperture Radar (SAR, hereafter) observations for Earth's land and ocean will be conducted for five (5) years.

The primary mission of KOMPSAT-5 system is to provide High Resolution mode SAR image of one (1) m resolution, Standard mode SAR image of three (3) m resolution, and Wide Swath mode SAR image of twenty (20) m resolution with viewing condition of the incidence angle of forty-five (45) degrees, using COSI (COrea SAR Instrument, hereafter) payload, for meeting GOLDEN mission objectives.

### **3. SYSTEM DESCRIPTION**

The KOMPSAT-5 system consists of space segment (KOMPSAT-5 satellite), ground segment, launch segment, and various external interfaces including additional ground stations to support COSI and AOPOD (Atmosphere Occultation and Precision Orbit Determination, hereafter) payloads data reception and launch and early operations.

The KOMPSAT-5 satellite system is a single KOMPSAT-5 satellite flying in dawn-dusk orbit with 28 days repeat ground track period at normal altitude 550 km. The KOMPSAT-5 satellite is composed of spacecraft bus, COSI primary payload, and AOPOD secondary payload.

The KOMPSAT-5 ground segment (KGS, hereafter) means the ground station at KARI site. The KGS is comprised of a Mission Control Element, an Image Reception and Processing Element, and a Calibration/Validation Element. The satellite interfaces with ground via both S-band and X-band communications capabilities.

The launch segment includes the Dnepr launch vehicle, launch related equipment, and launch services/operations required for delivery the satellite into mission orbit.

KOMPSAT-5 external interfaces include the King Sejong station at South Pole to support urgent imaging request, additional ground stations to support LEOP, International GPS Service (IGS) providing high accuracy ground based GPS data products to KARI for Precision Orbit Determination (POD) processing, and International Laser Ranging Service (ILRS) data center providing laser ranging data for the KOMPSAT-5 to KARI.