IRS 1A

IRS-1A is the first satellite in the IRS constellation. It was launched from Baikonur cosmodrome, Khazakhstan. It operated in sun-synchronous near polar orbit at an inclination of 99 degrees at an altitude of 904 km. One orbit around the earth took about 103 minutes and the satellite made 14 orbits per day. The 22 day repetivity ensured repeated collection of data of the same geographical area at the same local time. The equatorial crossing time for IRS-1A in the descending node was 9:40 AM. It had two types of cameras known as Linear Self Scanning Sensors (LISS-I and LISS-II). LISS-I had a spatial resolution of 72.5m with a swath of 148 km on ground. LISS-II had two separate imaging sensors LISS-IIA and LISS-IIB with spatial resolution of 36.25m each. They were mounted on the spacecraft in such a way so as to provide a composite swath of 146.98 km on ground. Both LISS-I and LISS-II operated in four spectral bands covering visible and near infrared region. It had following payload and orbital parameters. Mission completed during July 1996 after serving for 8 years and 4 months. The satellite provided excellent data during 1988 - 1991. Only standard corrected products are supplied. For archived data please contact NRSC/NDC.

IRS 1A Specifications

Mission Category	Operational Remote Sensing
Launch Date Category	March 17, 1988
Launch Site Category	Baikanur Cosmodrome Kazakhstan
Launch Vehicle	Vostok
Weight	975 kg
Onboard Power	600 Watts
Communication	S-band, X-band and VHF(commanding only)
Stabilization	Three axis body stabilized (zero momentum) with 4 Reactions Wheels, Magnetic torquers
RCS	Monopropellant Hydrazine based with sixteen 1 Newton thrusters
Payload	Three solid state Push Broom Cameras LISS-1(72.5 metre resolution), LISS-2A and LISS-2B (36.25 metre resolution)
Orbit	Polar Synchronous
Altitude	904 Km
Inclination	99.08 Degrees

Local Time	10.30 a.m. (descending node)
Repetivity	22 days (307 orbits)
Orbits / Day	14
Period	103 Minutes
Mission completed	July 1996

IRS 1A Sensors

Characteristics of LISS I Sensor

It has four spectral bands in the range of 0.45 to 0.86 µm (0.45 to 0.53 µm to 0.59 µm, 0.62 to 0.68 µm and 0.77 to 0.86 µm) in the visible and near infrared range with two different spatial resolutions of 72.5 m. and 36.25 meter from one no. of open LISS-1 and two nos. of LISS-2 sensors respectively. It provides repetitive coverage after every 22 days. Like all other LANDSAT/ SPOT missions which are designed for global coverage IRS is also in sun synchronous, polar orbit at about 900 km altitude and cover a width of 148 km. on ground. It uses linear array detectors (CCD) like SPOT.

Sensor	LISS I
Resolution	72.5
Swath	148 Km
Repetivity	22 Days
Spectral Bands	0.45-0.52 microns(B1) 0.52-0.59 microns(B2) 0.62-0.68 microns(B3) 0.77-0.86 microns(B4)

Characteristics of LISS II Sensor

Sensor	LISS II
Resolution	36.25
Swath	74 X 2 Km
Repetivity	22 Days
Spectral Bands	0.45-0.52 microns(B1) 0.52-0.59 microns(B2) 0.62-0.68 microns(B3) 0.77-0.86 microns(B4)