

# SATELLITE IDENTITY AND CAPABILITIES DATA SOURCES



# ITU SPACE EXPLORER DATABASE: PARAMETER ANALYSIS

## 1. NETWORK IDENTITY & REGULATORY STATUS

PARAMETER NAME	DESCRIPTION	TECHNICAL SPECIFICATION
Satellite Network/System Name	Official Designation	The unique name assigned to the satellite network or system in the filing.
Notifying Administration	Responsible Member State	The ITU Member State submitting the filing on behalf of the operator.
Organization/Operator	Operating Entity	The organization responsible for the operation of the satellite network.
Regulatory Status	Filing Stage	Current stage in the ITU regulatory process (e.g., API, Coordination Request, Notification, Recorded in MIFR).
BR IFIC Reference	Publication Source	Reference to the specific Radiocommunication Bureau International Frequency Information Circular containing the data.
Coordination Requirements	Mandatory Agreements	List of administrations or other satellite systems with which coordination is required under Radio Regulations.

## 2. ORBITAL CHARACTERISTICS (GSO & NGSO)

PARAMETER NAME	DESCRIPTION	TECHNICAL SPECIFICATION
Orbit Type	Regime Classification	Classification as Geostationary-Satellite Orbit (GSO) or Non-Geostationary Satellite Orbit (NGSO).
Orbital Position (GSO)	Nominal Longitude	The planned longitude over the equator for a geostationary satellite, in degrees (East/West).
Number of Orbital Planes (NGSO)	Constellation Structure	The total number of distinct orbital planes in a non-geostationary satellite system.
Inclination (NGSO)	Orbital Tilt	The angle between the orbital plane and the Earth's equatorial plane for NGSO satellites.
Satellites per Plane (NGSO)	Plane Population	The number of satellites operating within a single orbital plane.
RAAN/Initial Phase (NGSO)	Constellation Phasing	Parameters defining the relative positions of orbital nodes and satellites within the constellation.

## 3. SPECTRUM & TRANSMISSION PARAMETERS

PARAMETER NAME	DESCRIPTION	TECHNICAL SPECIFICATION
Frequency Bands	Assigned Spectrum	The specific ranges of radio frequencies assigned for uplink and downlink transmissions (e.g., C, Ku, Ka bands).
Class of Emission	Signal Type	A standard code describing the modulation, signal nature, and information type of the transmission.
Bandwidth	Occupied Spectrum	The width of the frequency band required for a specific transmission or emission.
Peak Power (EIRP)	Radiated Power Intensity	Maximum Equivalent Isotropically Radiated Power, indicating signal strength in the direction of maximum gain.
Power Flux Density (PFD)	Signal Intensity on Ground	Limits on the power radiated onto the Earth's surface to prevent interference with other services.
Antenna Gain	Beam Amplification	The measure of an antenna's ability to direct or receive radio frequency energy in a specific direction.

## 4. NETWORK STRUCTURE & COVERAGE

PARAMETER NAME	DESCRIPTION	TECHNICAL SPECIFICATION
Network Structure	Hierarchical Organization	The logical arrangement of network elements (e.g., Beams associated with Groups, Groups with Assignments).
Beam/Antenna Details	Spot Beam Characteristics	Technical parameters for individual beams, including coverage patterns and associated frequencies.
Service Area	Geographical Coverage	The defined areas on the Earth's surface where the satellite service is intended to be provided.
Uplink/Downlink Count	Connection Quantity	The total number of separate uplink and downlink paths defined for the network.
GIMS Graphical Data	Visual Representations	Graphical data such as antenna radiation patterns and service area maps showing coverage and interference potential.

# N2YO SATELLITE DATABASE: PARAMETER ANALYSIS

## 1. IDENTIFICATION & CLASSIFICATION

PARAMETER NAME	DESCRIPTION	TECHNICAL SPECIFICATION
Satellite Name	Common Designation	The widely known name of the satellite or space object (e.g., "ISS", "STARLINK-1234").
NORAD ID	US Space Command Catalog Number	A unique, sequential 5-digit integer assigned to each tracked object.
COSPAR ID	International Designator	A three-part identifier based on launch year, number, and piece (e.g., "1998-067A").
Country	Launching State/Organization	The nation or entity responsible for the satellite's launch or operation.
Object Type	Category	General classification of the object (e.g., "PAYLOAD", "ROCKET BODY", "DEBRIS").

## 2. ORBITAL ELEMENTS & STATUS

PARAMETER NAME	DESCRIPTION	TECHNICAL SPECIFICATION
Launch Date	Deployment Timestamp	The date of the satellite's launch event.
Period	Orbital Duration	Time taken to complete one full revolution around the Earth, in minutes.
Inclination	Orbital Tilt	Angle in degrees between the orbital plane and the Earth's equatorial plane.
Apogee	Maximum Altitude	The highest point of the satellite's orbit above the Earth's surface, in kilometers.
Perigee	Minimum Altitude	The lowest point of the satellite's orbit above the Earth's surface, in kilometers.
Status	Operational State	Indication of the satellite's current condition (e.g., "Operational", "Decayed").
TLE Data	Two-Line Element Set	Raw orbital data format used for tracking predictions.

## 3. REAL-TIME TRACKING DATA

PARAMETER NAME	DESCRIPTION	TECHNICAL SPECIFICATION
Latitude	Current Geographic North/South	The satellite's present position north or south of the equator, in degrees.
Longitude	Current Geographic East/West	The satellite's present position east or west of the prime meridian, in degrees.
Altitude (Real-Time)	Current Height	The satellite's altitude above the Earth's surface at the current moment, in kilometers.
Velocity	Orbital Speed	The satellite's current speed in its orbit, in kilometers per second.
Azimuth/Elevation	Observer-Relative Position	Angles relative to a specific ground observer's horizon and north, used for sighting.

## 4. VISIBILITY & PREDICTION

Brightness (Mag)	Visual Magnitude	A measure of the satellite's brightness as seen from Earth (lower numbers are brighter).
Next Pass	Upcoming Visibility	Predicted time and date of the next visible pass for a selected ground location.
Footprint	Coverage Area	Visual representation or data on the area of the Earth's surface currently below the satellite.

# EOPORTAL SATELLITE MISSIONS DATABASE: PARAMETER ANALYSIS

## 1. MISSION & OPERATIONAL OVERVIEW

PARAMETER NAME	DESCRIPTION	TECHNICAL SPECIFICATION
Mission Name	Full Mission Title	Complete official name of the satellite mission or project.
Responsible Agency	Lead Organization	The primary space agency or organization responsible for the mission (e.g., ESA, NASA, JAXA).
Mission Status	Operational Phase	Current state of the mission (e.g., Operational, Completed, Planned, Cancelled).
Launch Date	Event Date	UTC date of orbital insertion (YYYY-MM-DD).
End of Life Date	Mission Conclusion	Actual or planned date when mission operations ceased.
Primary Objectives	Mission Goals	High-level summary of the scientific or application goals.

## 2. SPACECRAFT PLATFORM & SUBSYSTEMS

PARAMETER NAME	DESCRIPTION	TECHNICAL SPECIFICATION
Satellite Bus	Platform Model	Name of the standard satellite bus or platform used.
Total Mass (Launch)	Wet Mass	Total weight of the satellite at launch, including fuel, in kg.
Dry Mass	Structure Weight	Mass of the spacecraft without propellant, in kg.
Power Generation	Electrical Capability	Total available power in Watts (W) or Kilowatts (kW) (e.g., EOL power).
Attitude Control	Stabilization Method	Type of stabilization (e.g., 3-axis stabilized, spin-stabilized) and pointing accuracy.
Onboard Data Storage	Memory Capacity	Capacity of solid-state recorders or tape recorders in Gbits or Tbits.
RF Communication Links	Data Transmission	Frequency bands (e.g., X-band, Ka-band, S-band) and data rates for uplink/downlink.

## 3. ORBITAL CHARACTERISTICS

Orbit Type	Regime Classification	General category (e.g., Sun-synchronous, Geostationary, Low Earth Orbit).
Altitude	Mean Height	Average height above the Earth's surface in km.
Inclination	Orbital Tilt	Angle in degrees between the orbital plane and the Earth's equatorial plane.
Orbital Period	Revolution Time	Time taken to complete one full orbit around the Earth in minutes.
Repeat Cycle	Revisit Interval	Time in days for the satellite to pass over the same ground track.
Local Time of Node	Equator Crossing	Local solar time at the ascending or descending node for Sun-synchronous orbits.

## 4. INSTRUMENT PAYLOAD & MEASUREMENTS

Instrument Name(s)	Sensor Acronyms	List of individual instruments onboard the satellite.
Instrument Type	Sensor Technology	Classification (e.g., Optical Imager, SAR, Radiometer, Spectrometer, Altimeter).
Measurement Domain	Application Area	Field of study (e.g., Atmosphere, Ocean, Land, Cryosphere).
Key Geophysical Variables	Data Products	Specific parameters measured (e.g., Sea Surface Temperature, Soil Moisture, Ozone Profile).
Spatial Resolution	Ground Pixel Size	Smallest resolvable feature on the ground (e.g., in meters or km).
Swath Width	Coverage Width	Width of the area imaged in a single pass in km.

# ITU MASTER INTERNATIONAL FREQUENCY REGISTER (MIFR): SATELLITE PARAMETER ANALYSIS

## 1. IDENTIFICATION & ADMINISTRATIVE DATA

PARAMETER NAME	DESCRIPTION	TECHNICAL SPECIFICATION
Satellite Name	Identity of the Space Station	Official name of the satellite network or system as notified to the ITU.
Notifying Administration	Responsible Member State	The ITU Member State submitting the frequency assignment on behalf of the operator.
ITU Special Section	Publication Reference	Reference to the specific BR IFIC publication (e.g., API/A, CR/C, Part II-S) containing the data.
Date of Receipt	Submission Timestamp	The formal date when the complete notice was received by the ITU Radiocommunication Bureau.
Provision	Regulatory Basis	The specific Radio Regulations provision under which the assignment is notified (e.g., No. 11.31, No. 11.32).

## 2. ORBITAL CHARACTERISTICS & LOCATION

PARAMETER NAME	DESCRIPTION	TECHNICAL SPECIFICATION
Orbit Type	Orbital Regime	Classification as Geostationary-Satellite Orbit (GSO) or Non-Geostationary (NGSO).
GSO Longitude	Nominal Orbital Position	For GSO satellites, the planned longitude in degrees (East or West) over the equator.
Inclination (NGSO)	Orbital Tilt	For NGSO, the angle between the orbital plane and the Earth's equatorial plane.
Altitude (NGSO)	Orbital Height	For NGSO, apogee and perigee heights, or mean altitude, above the Earth's surface.
Period (NGSO)	Orbital Duration	Time taken for the NGSO satellite to complete one full revolution around the Earth.

## 3. FREQUENCY & TRANSMISSION PARAMETERS

PARAMETER NAME	DESCRIPTION	TECHNICAL SPECIFICATION
Assigned Frequency	Center Frequency	The specific carrier frequency assigned to the transmission (in MHz or GHz).
Bandwidth	Necessary Bandwidth	The width of the frequency band required for the transmission, typically with a letter code.
Polarization	Wave Orientation	The orientation of the electromagnetic wave (e.g., Linear (H/V), Circular (L/R)).
Class of Emission	Signal Characteristics	A three-symbol code describing the type of modulation, nature of the signal, and type of information.
Max. Power Density	Power Spectral Density	Maximum power density per Hz or kHz supplied to the antenna transmission line.
Peak e.i.r.p.	Radiated Power	Equivalent Isotropically Radiated Power; maximum power radiated in the direction of maximum antenna gain.

## 4. SERVICE & STATION DETAILS

PARAMETER NAME	DESCRIPTION	TECHNICAL SPECIFICATION
Class of Station	Station Category	Code identifying the type of station (e.g., EC=Space station in the fixed-satellite service, EH=Space research space station).
Service Area	Geographical Coverage	The defined geographical area on the Earth's surface where the service is intended to be provided.
Nature of Service	Service Type Codes	Codes indicating the specific type of radiocommunication service (e.g., CR=Public correspondence, OT=Other).



# COSPAR SATELLITE PARAMETERS: ANALYSIS OF THE INTERNATIONAL DESIGNATOR

## 1. THE COSPAR INTERNATIONAL DESIGNATOR (CID) STRUCTURE

PARAMETER COMPONENT	DESCRIPTION	TECHNICAL SPECIFICATION
Launch Year (YYYY)	Annual Identifier	The four-digit calendar year in which the successful launch occurred.
Launch Number (NNN)	Sequential Launch ID	A three-digit number indicating the sequence of the launch within that year (e.g., 001, 067).
Piece of Launch (PPP)	Object Sequence	A one-to-three letter sequence identifying the specific object from a single launch event (e.g., A, B, C, ... Z, AA, AB, ...).

## 2. OBJECT CLASSIFICATION & TYPE

PARAMETER COMPONENT	DESCRIPTION	TECHNICAL SPECIFICATION
Object Type	Category	General classification of the space object (e.g., Payload, Rocket Body, Debris, Platform).
Functional Description	Role	Brief description of the object's intended function or original purpose (e.g., "Communications Satellite", "Upper Stage").

## 3. REGISTRATION & ORIGIN

PARAMETER COMPONENT	DESCRIPTION	TECHNICAL SPECIFICATION
Registering State/Organization	Responsible Entity	The State or international organization that registered the object under the UN Registration Convention.
Country of Origin	Launching State	The nation primarily responsible for the object's launch or operation.

## 4. CONTEXTUAL & HISTORICAL DATA

PARAMETER COMPONENT	DESCRIPTION	TECHNICAL SPECIFICATION
Common Name	Primary Designation	The most widely used name for the satellite or space object (e.g., "Hubble Space Telescope").
Alternate Names	Aliases	Other known designations or historical names associated with the object.
Launch Date	Event Date	The UTC date of the launch event that deployed the object (YYYY-MM-DD).



# UNOOSA ONLINE INDEX OF OBJECTS: PARAMETER ANALYSIS

## 1. IDENTIFICATION & REGISTRATION DETAILS

PARAMETER NAME	DESCRIPTION	TECHNICAL SPECIFICATION
Name of Space Object	Primary Designation	The official name given to the satellite or space object by the registering state.
International Designator	COSPAR ID	Unique identifier assigned by COSPAR, format YYYY-NNNA (e.g., 2023-001A).
State/Organization of Registry	Registering Entity	The State or international organization that registered the object under the UN Registration Convention.
Date of Registration	Registration Timestamp	The date on which the information was officially submitted to the UN register (YYYY-MM-DD).
Registration Document Symbol	UN Document Reference	The official UN document symbol containing the registration information (e.g., ST/SG/SER.E/...).

## 2. LAUNCH & MISSION INFORMATION

PARAMETER NAME	DESCRIPTION	TECHNICAL SPECIFICATION
Date of Launch	Deployment Date	The UTC date of deployment into Earth orbit or beyond (YYYY-MM-DD).
General Function	Mission Purpose	A brief description of the object's intended function (e.g., Meteorology, Telecommunications, Space science).
Status	Operational State	The reported status of the object (e.g., In Earth orbit, Decayed, In heliocentric orbit).
Date of Decay/Reentry	End of Orbit Date	The date when the object re-entered the Earth's atmosphere or ceased to exist in orbit (if applicable).

## 3. BASIC ORBITAL PARAMETERS (AS REGISTERED)

PARAMETER NAME	DESCRIPTION	TECHNICAL SPECIFICATION
Nodal Period	Orbital Duration	Time taken for the object to complete one revolution around the Earth, usually in minutes.
Inclination	Orbital Tilt	The angle between the orbital plane and the Earth's equatorial plane, in degrees.
Apogee Altitude	Maximum Altitude	The point in the orbit farthest from the Earth's surface, typically in kilometers.
Perigee Altitude	Minimum Altitude	The point in the orbit closest to the Earth's surface, typically in kilometers.

## 4. ADDITIONAL INFORMATION

PARAMETER NAME	DESCRIPTION	TECHNICAL SPECIFICATION
Other Information	Supplementary Notes	Any further relevant details, remarks, or changes provided by the registering state.
Notes	Database Remarks	Additional administrative notes or clarifications related to the database entry.

# CEOS EO HANDBOOK DATABASE: PARAMETER ANALYSIS

## 1. MISSION & AGENCY INFORMATION

PARAMETER NAME	DESCRIPTION	TECHNICAL SPECIFICATION
Mission Name	Official Designation	Full name of the satellite mission (e.g., Landsat 9, Sentinel-2A).
Agency/Operator	Responsible Entity	Organization leading the mission (e.g., NASA, ESA, JAXA).
Status	Operational State	Current phase of the mission (e.g., Operational, Planned, Approved, Completed).
Launch Date	Start of Mission	Date of orbital deployment (YYYY-MM-DD).
End of Life Date	Mission Conclusion	Date when the mission ended or is planned to end.
Mission Type	Primary Objective	General category of the mission (e.g., Earth Observation, Science, Technology Demonstration).

## 2. ORBITAL PARAMETERS

PARAMETER NAME	DESCRIPTION	TECHNICAL SPECIFICATION
Orbit Type	Regime Classification	General orbit category (e.g., Sun-synchronous, Geostationary, Low Earth Orbit).
Altitude (km)	Orbital Height	Mean height above the Earth's surface.
Inclination (deg)	Orbital Tilt	Angle between the orbital plane and the Earth's equatorial plane.
Period (min)	Orbital Duration	Time to complete one full revolution around Earth.
Repeat Cycle (days)	Revisit Frequency	Time interval between consecutive passes over the same point on Earth.
Equator Crossing Time	Local Time of Node	Local solar time at which the satellite crosses the equator.

## 3. INSTRUMENT PAYLOAD & MEASUREMENTS

PARAMETER NAME	DESCRIPTION	TECHNICAL SPECIFICATION
Instrument Name	Sensor Designation	Name and acronym of the individual onboard instrument.
Instrument Type	Technology Category	Classification of the sensor (e.g., Optical Imager, SAR, Radiometer, Spectrometer).
Waveband/Spectrum	Spectral Range	Specific regions of the electromagnetic spectrum observed (e.g., VIS, NIR, SWIR, MWIR, TIR, Microwave).
Spatial Resolution (m)	Ground Sample Distance	Smallest discernible detail on the ground, varying by band.
Swath Width (km)	Coverage Area	Width of the ground strip imaged during a single pass.
Measurements/Variables	Observational Targets	Geophysical parameters measured (e.g., Land Surface Temperature, Ocean Color, Soil Moisture, Atmospheric Composition).

## 4. LINKS & DATA ACCESS

PARAMETER NAME	DESCRIPTION	TECHNICAL SPECIFICATION
Mission URL	Official Website	Link to the official mission page for detailed information.
Instrument URL	Sensor Information	Link to specific technical details about the instrument.
Data Access URL	Data Portal	Link to the portal where mission data can be accessed or downloaded.

# WMO OSCAR SATELLITE DATABASE: PARAMETER ANALYSIS

## 1. GENERAL & PROGRAMMATIC INFORMATION

PARAMETER NAME	DESCRIPTION	TECHNICAL SPECIFICATION
Satellite Name/Acronym	Official Designation	Full name and common acronym used to identify the satellite (e.g., "Metop-C", "GOES-16").
Status	Operational State	Current condition (e.g., Operational, Planned, Commissioning, Decommissioned).
Agency/Operator	Responsible Organization	Entity responsible for operating the satellite (e.g., NOAA, ESA, EUMETSAT, JMA).
Launch Date	Start of Mission	Date of deployment into orbit (YYYY-MM-DD).
End of Service Date	Mission Conclusion	Actual or planned date when the satellite ceased or will cease operations.
Program/Mission	Affiliated Project	Broader observing program the satellite is a part of (e.g., GOES-R Series, EPS-SG).

## 2. ORBITAL CHARACTERISTICS

PARAMETER NAME	DESCRIPTION	TECHNICAL SPECIFICATION
Orbit Type	Regime Classification	General orbit category (e.g., Geostationary (GEO), Low Earth Orbit (LEO), Highly Elliptical (HEO)).
Altitude (km)	Orbital Height	Mean height above the Earth's surface for LEO/HEO, or fixed altitude for GEO.
Inclination (deg)	Orbital Tilt	Angle between the orbital plane and the Earth's equatorial plane.
Period (min)	Orbital Duration	Time taken to complete one full revolution around the Earth.
Equator Crossing Time	Local Time of Node	Local solar time at which the satellite crosses the equator (ascending or descending node), for Sun-synchronous orbits.
Longitude (GEO only)	Geostationary Position	The fixed longitude over the equator for geostationary satellites (e.g., 137°W).

## 3. INSTRUMENT PAYLOAD & CAPABILITIES

PARAMETER NAME	DESCRIPTION	TECHNICAL SPECIFICATION
Instrument Name/Acronym	Sensor Designation	Name and acronym of each individual observing instrument on board (e.g., "ABI", "IASI", "SEVIRI").
Instrument Type	Technology Category	Classification of the sensor (e.g., Imager, Sounder, Radiometer, Spectrometer, Radar).
Status (Instrument)	Sensor Operational State	The specific operational status of the individual instrument, which may differ from the satellite's status.
Measurements/Variables	Observational Targets	List of geophysical variables or parameters the instrument is designed to measure (e.g., Temperature, Humidity, Ozone, Ocean Color).

## 4. LINKS & ANCILLARY INFORMATION

PARAMETER NAME	DESCRIPTION	TECHNICAL SPECIFICATION
OSCAR Page Link	Database Entry URL	Direct hyperlink to the full OSCAR database page for the specific satellite.
WMO Space Programme Info	Programmatic Context	Links and references to the wider WMO Space Programme objectives supported by the satellite.



# SPACE-TRACK SATELLITE DATABASE: PARAMETER ANALYSIS

## 1. IDENTIFICATION & CLASSIFICATION

PARAMETER NAME	DESCRIPTION	TECHNICAL SPECIFICATION
NORAD Catalog Number	US Space Command ID	Unique, sequential 5-digit or 9-digit integer assigned to each tracked object.
International Designator	COSPAR ID	Format YYYY-NNPP (e.g., 1998-067A) indicating launch year, launch number, and piece.
Object Name	Common Designation	Standard name assigned to the object (e.g., "ISS (ZARYA)", "STARLINK-1007").
Object Type	Classification	Category of the object: PAYLOAD, ROCKET BODY, or DEBRIS.

## 2. TWO-LINE ELEMENT (TLE) ORBITAL DATA

PARAMETER NAME	DESCRIPTION	TECHNICAL SPECIFICATION
Epoch	Time of Observation	Specific UTC timestamp (Year and Day fraction) for which the orbital elements are valid.
Mean Motion	Orbital Frequency	Number of revolutions the object completes per day.
Eccentricity	Orbit Shape	A value between 0 and 1 describing how elliptical the orbit is (0 = circular).
Inclination	Orbital Tilt	The angle in degrees between the orbital plane and the Earth's equatorial plane.
Right Ascension of the Ascending Node	Orientation of Orbit	The angle from the vernal equinox to the point where the orbit crosses the equator northward.
Argument of Perigee	Perigee Location	The angle from the ascending node to the orbit's closest point to Earth (perigee).
Mean Anomaly	Position in Orbit	An angle describing the object's position along its orbit at the epoch time.
B* Drag Term	Atmospheric Drag Coefficient	A term used to model the effects of atmospheric drag on the satellite's motion.

## 3. DERIVED & STATUS PARAMETERS

Period	Orbital Period	Derived time in minutes for the object to complete one full revolution.
Apogee/Perigee Heights	Altitude Extremes	Derived highest and lowest altitudes of the orbit above the Earth's surface in kilometers.
Element Set Number	TLE Version	A sequential number indicating the version of the orbital element set.
Revolution Number at Epoch	Orbit Count	The number of full revolutions completed by the object up to the epoch time.
Decay Date	Reentry Time	The predicted or actual UTC date when the object re-entered the Earth's atmosphere (if applicable).

## 4. LAUNCH & ORIGIN INFORMATION

Launch Date	Launch Facility	The specific location or spaceport from which the launch occurred.
Country of Origin	Responsible State	The nation or organization responsible for the object's launch or operation.

# UCS SATELLITE DATABASE: PARAMETER ANALYSIS

## 1. IDENTIFICATION & REGISTRATION

PARAMETER NAME	DESCRIPTION	TECHNICAL SPECIFICATION
Name of Satellite	Primary & Alternate Names	Current official name and known aliases (e.g., "Starlink-3000", "ISS").
COSPAR Number	International Designator	Format YYYY-NNPP (e.g., 2024-001A), indicating launch year and sequence.
NORAD Number	US Space Command ID	Sequential catalog number assigned by 18th Space Defense Squadron.
Country of Registry	UN Registration	Country responsible for registering the space object with the United Nations.
Operator/Owner	Responsible Entity	Organization or company that operates or owns the satellite.
Country of Operator	Operator's Home Country	Nation where the operating entity is primarily based.

## 2. MISSION & OPERATIONAL DETAILS

PARAMETER NAME	DESCRIPTION	TECHNICAL SPECIFICATION
Users	User Category	Broad classification of end-users (e.g., Commercial, Military, Government, Civil).
Purpose	General Function	Primary mission type (e.g., Communications, Earth Observation, Navigation).
Detailed Purpose	Specific Application	More granular function description (e.g., Optical Imaging, Meteorology, SIGINT).
Date of Launch	Launch Date	Calendar date of orbital insertion (Year-Month-Day).
Expected Lifetime	Design Life	Planned operational lifespan in years.

## 3. ORBITAL PARAMETERS

PARAMETER NAME	DESCRIPTION	TECHNICAL SPECIFICATION
Class of Orbit	Orbital Regime	General classification (e.g., LEO, MEO, GEO, Elliptical).
Type of Orbit	Orbit Characteristic	Specific characteristic (e.g., Polar, Sun-Synchronous, Equatorial).
Longitude of GEO	GEO Position	For geostationary satellites, the longitude in degrees.
Perigee/Apogee	Altitude Extremes	Lowest and highest points of the orbit in kilometers.
Inclination	Orbital Tilt	Angle in degrees relative to the Earth's equator.
Period	Orbital Period	Time taken to complete one full revolution in minutes.
Eccentricity	Orbit Shape	Measure of deviation from a perfect circle (0 to <1).

## 4. PHYSICAL & LAUNCH CHARACTERISTICS

PARAMETER NAME	DESCRIPTION	TECHNICAL SPECIFICATION
Launch Mass	Wet Mass	Total mass of the satellite at launch, including fuel, in kg.
Dry Mass	Empty Mass	Mass of the satellite without propellant in kg.
Power	Power Generation	Electrical power capability in Watts.
Launch Vehicle	Rocket	Specific rocket model used for deployment.
Launch Site	Launch Location	Facility and country from which the satellite was launched.
Contractor	Manufacturer	Primary entity that built the satellite.
Country of Contractor	Manufacturer Location	Country where the prime contractor is based.

# JONATHAN MCDOWELL'S GCAT: SATELLITE PARAMETER ANALYSIS

## 1. IDENTIFICATION PARAMETERS

PARAMETER NAME	DESCRIPTION	TECHNICAL SPECIFICATION
JCAT	Internal GCAT Identifier	Alphanumeric primary key (e.g., S46112); prefix denotes catalog subset (S=Standard, A=Auxiliary, F=Failed).
Satcat	US Space Command ID	5-digit or 9-digit integer assigned by the 18th Space Defense Squadron (formerly NORAD ID).
Piece	COSPAR Designator	Format YYYY-NNPP (e.g., 1998-067A); derived from launch year and sequence.
Name	Primary Object Name	Standardized designation for the object (e.g., "ISS", "Starlink-1007").
PLName	Payload Name	Designation for the functional payload, distinct from the satellite bus.
LName	Launch Name	Identifier for the launch event associated with the object.

## 2. LAUNCH AND ORIGIN PARAMETERS

PARAMETER NAME	DESCRIPTION	TECHNICAL SPECIFICATION
LDate	Launch Date	UTC timestamp of lift-off (Year-Month-Day Hour:Minute).
Launch Site	Departure Facility	Specific pad and spaceport code (e.g., KSC LC39A).
Launch Vehicle	Rocket Type	Rocket family and specific variant configuration (e.g., Falcon 9 v1.2).
StateCode	Country of Origin	ISO-standard or custom code for the responsible nation.
OrgCode	Operator Organization	Code for the specific agency or company operating the satellite.

## 3. PHYSICAL PROPERTIES

PARAMETER NAME	DESCRIPTION	TECHNICAL SPECIFICATION
Type	Object Taxonomy	Classification code: P (Payload), R (Rocket Stage), C (Component), D (Debris).
Shape	Geometry	Geometric approximation for drag/solar pressure (e.g., Cylindrical, Box, Sphere).
Mass	Launch Mass	Wet mass of the object at launch in kilograms.
DryMass	Structural Mass	Mass of the satellite excluding propellant.
Size	Dimensions	Max length x diameter/width in meters.
Motor	Propulsion	Primary engine model used for orbital maneuvering or apogee kick.

## 4. ORBITAL AND TRAJECTORY PARAMETERS

PARAMETER NAME	DESCRIPTION	TECHNICAL SPECIFICATION
Orbit Status	Regional Classification	Categorization of location (e.g., Earth Orbit, Heliocentric, Deep Space).
Period	Orbital Period	Time in minutes to complete one revolution.
Inclination	Orbital Tilt	Angle in degrees relative to the equator.
Apogee/Perigee	Altitude Extremes	Highest and lowest points of the orbit in kilometers.
Epoch	Data Timestamp	Date (ODate) for which the orbital elements were valid.
OpOrbit	Operational Design	Intended destination orbit (e.g., GEO, SSO, LEO).

## 5. LIFECYCLE AND EVENT STATUS

PARAMETER NAME	DESCRIPTION	TECHNICAL SPECIFICATION
Phase	Current State	Status code (e.g., Attached, Free Flight, Landed, Reentered).
TDate	Termination Date	Date of reentry, landing, or destruction.
Destruction	End of Life Mechanism	Method of termination (e.g., Atmospheric Entry, Impact).
Events	Incident Log	Documented anomalies, breakups, dockings, or captures.