

This document explains common
acronyms and abbreviations
used in aerospace and Cougs in
Space and their meaning

Acronyms

Common Acronyms and
Abbreviations and Their Meanings

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1 List of Acronyms and Abbreviations

The purpose of abbreviations and acronyms is for ease of speaking and writing. The ones listed in section 1.1.1 – 1.1.26 are commonly used in aerospace and are applicable to Cougs in Space

1.1.1 A

ADC – Analog to Digital Converter

An electronic circuit that converts an analog signal to a digital one

ADCS – Attitude Determination Control System

Subsystem responsible for orienting the satellite in free space

ALT – Altitude

Elevation of the satellite above mean sea level

ATT – Attitude

Orientation of the satellite relative to the direction of travel

AWG – American Wire Gauge

Standard wire sizes

1.1.2 B

BATT – Battery (Batt)

An electrical energy storage device that uses electrochemical reactions

BOM – Bill of Materials

List of components for an assembly

1.1.3 C

CAD – Computer-Aided Design

Computer software to aid in the creation, modification, analysis, and optimization of a design

CBDR – Critical Board Design Review

A type of CDR, that focuses on the layout of circuitry. Almost always requires PCB CAD and associated documentation on the board.

CCDR – Critical Circuits Design Review

A type of CDR, that focuses on the design and implementation of circuitry. Almost always requires a schematic and associated documentation on the schematic

C&DH – Command and Data Handling

Subsystem that performs the following responsibilities and comprised of the [IHU](#) and a solid state recorder

- Manages all forms of data on the satellite
- Carries out commands ordered by the ground
- Prepares data sent to and interprets data from the ground
- Collects and processes information about all subsystems and payloads
- Keeps and distributes the satellite's time
- Autonomously monitors and responds to a wide range of onboard problems that might occur

CDR – Critical Design Review

Demonstrates that the maturity of the design is appropriate to support proceeding with full-scale fabrication, assembly, integration, and test. CDR determines that the technical effort is on track to complete the flight and ground system development and mission operations, meeting mission performance requirements within the identified cost and schedule constraints

CIS – Cougs in Space

Washington State University's picosatellite club

CMF – Critical Mission Failure

Failure of a device that prevents completion of the mission

CMT – Critical Mission Task

Operation that is integral to the success of the mission

Comms – Communication System

Subsystem responsible for communicating between the satellite and the ground

CONOPS – Concept of Operations (ConOps)

A description of the characteristics of a system from a user's perspective, similar to use cases. Answers "what I do with this system?"

1.1.4 D

DAC – Digital to Analog Converter

An electronic circuit that converts a digital signal to an analog one

DIA – Diameter

Length of a straight line passing from one side of a body the other through the center

DOF – Degrees of Freedom

The number of independent ways by which a dynamic system can move, without violating any constraint imposed on it

1.1.5 E

ECS – Environmental Control System

Subsystem responsible for maintaining safe environmental conditions include, but not limited to, temperature and radiation exposure

EPS – Electrical Power System

Subsystem responsible for accumulating energy, regulating voltage, and distributing power

EM – Engineering Model

A replica of the satellite, form, fit and functionally equivalent, used for testing, prototyping, repairing, and iterating before changes are integrated onto the flight unit

EMI – Electromagnetic Interference

A disturbance generated by an external source that affects an electrical circuit by electromagnetic induction

ETA – Estimated Time of Arrival

The time the satellite is expected to become visible to communication

ETC – Estimated Time of Completion

The time the satellite is expected to complete a task

ETD – Estimated Time of Departure

The time the satellite is expected to become invisible to communication

1.1.6 F

FRR – Flight Readiness Review

Examines tests, demonstrations, analyses, and audits that determine the system's readiness for a safe and successful flight or launch and for subsequent flight operations

Also ensures that all flight and ground hardware, software, personnel, and procedures are operationally ready

FU – Flight Unit

The satellite that is launched into space

1.1.7 G

GND – Ground

Operational center on earth responsible to communicating to the satellite including sending commands and receiving data

Also, Ground Control

Also, zero electric potential from which voltages are measured

GNSS – Global Navigation Satellite System

System using a constellation of satellites to allow device to determine their precise location, including USA's GPS, Russia's GLONASS, and European Union's Galileo

GUI – Graphical User Interface

A type of user interface that allows users to interact with a system using graphical icons and visual indicators

1.1.8 H

HAZMAT – Hazardous Material

State when radio communication has stop functioning, usually due to the satellite setting in the horizon.

1.1.9 I

IFJR – In-Flight JTAG Reprogrammer

Processor in charge of updating every programmable processor

IFSD – In-Flight Shutdown

State when satellite must shutdown during low power periods

IHU – Internal Housekeeping Unit

Processor responsible for operating the C&DH and communicating with the solid state recorder, see [C&DH](#) for a list of responsibilities
Also, the main processor of the satellite

IMU – Inertial Measurement Unit

An electronic device that measures the satellite's acceleration, angular rate, and surrounding magnetic field

1.1.10 J

1.1.11 K

1.1.12 L

LED – Light Emitting Diode

An electrical component that emits light, at a specified wavelength (color), when energized, commonly used for indication

LEO – Low Earth Orbit

An orbit around earth at an altitude less than 2,000 km

LKP – Last Known Position

Last confirmed location of the satellite just before LOS

LOM – Loss of Mission

State when the mission can no longer be completed usually due to a critical mission failure

LOS – Loss of Signal

State when radio communication has stop functioning, usually due to the satellite setting in the horizon

1.1.13 M**MOP – Mission Operation Plan**

A plan that describes all actions regarding the mission when the mission is operational, including, but not limited to, operations planning, flight control, mission data receipt/delivery, tracking and navigation, maintenance and support, spacecraft support and analysis, and mission data processing and achieving

MRR – Mission Readiness Review

Examines tests, demonstrations, analyses, and audits that determine the system's readiness for successful completion of the mission
Also ensures that all flight and ground hardware, software, personnel, and procedures are functionally ready

MSL – Mean Sea Level

An average level of the surface of earth's oceans

MST – Mission Sequence Test

Tests the ground operations and satellite for successful execution of a mission

MTOF – Maximum Take-Off Weight

Maximum weight the satellite may be to be launched by the launch provider

1.1.14 N**N/A – Not Applicable**

Indication that information does not apply to a particular case in question

NWR – Not Worth Reporting

Indication that information is not significant to record and report

1.1.15 O**1.1.16 P****PCB – Printed Circuit Board**

A board that mechanically supports and electrically connects electrical components together using conductive traces, pads, and other features etched from a layer of copper adhered to a non-conductive substrate

PDR – Preliminary Design Review

Demonstrates that the preliminary design meets all system requirements with acceptable risk and within the cost and schedule constraints and establishes the basis for proceeding with detailed design

PFM – Photo Flight Model

A replica of the satellite, exteriorly equivalent, used for photography and demonstrative purposes

PMIC – Power Management Integrate Circuit

Processor responsible for managing the [EPS](#)

PNR – Point of No Return

Point beyond which one must on one's current course of action because turning back is physically impossible, prohibitively expensive, or dangerous

PWM – Pulse Width Modulation

An electrical signal modulation that varies the duty cycle of an AC source in order to vary the average DC voltage

1.1.17 Q

QA – Quality Assurance

A way of preventing mistakes or defects in the satellite

1.1.18 R

RBF – Remove Before Flight

Device intended to be removed from the satellite before launch

RF – Radio Frequency

A band of frequencies from 20kHz (end of audio) to 300GHz (start of infrared). The signal can either be alternating electrical current or electromagnetic radiation

1.1.19 S

SMT – Surface Mount Technology (SMD)

A mounting mechanism where an electrical component is placed on the surface of the [PCB](#), in contrast to [THT](#). A device that uses SMT is called a surface mount device (SMD)

SOP – Standard Operating Procedure

Set of step-by-step instructions compiled by an organization to help workers carry out complex routine operations. SOPs aim to achieve efficiency, quality output and uniformity of performance, while reducing miscommunication and failure to comply with industry regulations

SRR – System Requirements Review

Review of the system requirements to ensure they have been completely and properly identified. It ensures the that the system can proceed into initial systems development and that all system and performance requirements are defined and testable, and are consistent with cost, schedule, risk, technology readiness, and other system constraints

1.1.20 T

TBD – To Be Determined

Placeholder term to indicate details about something have yet to be decided

TBR – To Be Resolved

Placeholder term to indicate an issue about something is yet to be fixed

THT – Through Hole Technology

A mounting mechanism where an electrical component uses leads that are inserted into holes on the [PCB](#), in contrast to [SMT](#)

TLMY – Telemetry

Automated communications process by which measurements and other data are collected at the satellite and transmitted to the ground. Commonly includes various key health statistics

1.1.21 U

UHF – Ultra High Frequency

Radio frequencies in the range 300MHz to 3GHz

UTC – Universal Coordinated Time

The time standard the satellite time is based off

1.1.22 V

VHF – Very High Frequency

Radio frequencies in the range 30MHz to 300MHz

1.1.23 W

WBS – Work Breakdown Structure

A hierarchal structure that splits a project into individual components or sub-projects until the end of each branch is a single or list of single deliverables

WDT – Watch Dog Timer

An electronic timer used to detect and recover from computer malfunctions. If it is not pet on time, it barks and resets the system

1.1.24 X

1.1.25 Y

1.1.26 Z