**Mission Requirements Document (MRD)**

**Satellite Name**

**Satellite Subsystem (Acronym)**

**Document Control**

|  |  |
| --- | --- |
| **Field** | **Value** |
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| Prepared By | <Author / Team> |
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**Revision History**

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| 0.1 | <YYYYMMDD> |  | All | Initial draft template |
|  |  |  |  |  |

**Table of Content**

1. Introduction
2. Mission Overview
3. System Specifications
4. Product Breakdown Structure (PBS)
5. Block Diagram
6. Backplane Pin Allocations
7. Data Budget
8. Operation Scenarios
9. Requirement Allocation Sheet
10. Schedule

# Introduction

{This mission requirements template includes information on writing procedures for successfully defining the mission requirements of a specific subsystem.}

{Insert the purpose and scope of this document and the boundaries of what is (and is not) covered.}

{Optional: reference higher level project documents (e.g., Mission Concept of Operations, System Requirements Document).}

# Mission Overview

## Mission Statement & Objectives

*{Insert a concise summary of* ***why*** *the mission exists,* ***what*** *it aims to achieve, and optionally* ***how*** *it will achieve it.}*

1. {Objective 1}
2. {Objective 2}
3. {Objective 3}

## **Mission** Profile

{Optional: include a table of the parameter, value, and rationale for the mission profile}

# System Specifications

## Functional Requirements

1. {Requirement 1}
2. {Requirement 2}
3. {Requirement 3}

## Performance Requirements

|  |  |  |
| --- | --- | --- |
| Item | Requirement | Verification Method |
| Item 1 | ≥ Requirement 1 | Method 1 |
| Item 2 | ≥ Requirement 2 | Method 2 |
| Item 3 | ≤ Requirement 3 | Method 3 |
| Item 4 | ≤ Requirement 4 | Method 4 |

## Environment & Reliability

{State the radiation, temperature, vibration requirements for successful operation of the mission.}

# Product Breakdown Structure (PBS)

Level 0: CubeSat name

  └── Level 1: Subsystem name

        ├── Element 1

        ├── Element 2

        ├── Element 3

        ├── Element 4

        └── Element 5

# Block Diagram

**Placeholder:** Insert high level functional block diagram showing CPU, memory, power in, data busses (I²C, SPI, UART), interfaces to EPS, ADCS, COM, PAYLOAD.

# Backplane Pin Allocations

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Connector | Pin No. | Signal Name | I/O | Description | Subsystem |
| *(List all connectors & signals – match Birds backplane spec)* | X | X | X | XXX | XXX |
| ... | ... | ... | ... | ... | ... |
|  |  |  |  |  |  |

# Data Budget

## Data Source

|  |  |  |  |
| --- | --- | --- | --- |
| Source | Description | Data Rate (kbps) | Estimated Daily Data (MB) |
| Source 1 | {Description 1} | {Value} | {Value} |
| Source 2 | {Description 2} | {Value} | {Value} |
| Source 3 | {Description 3} | {Value} | {Value} |
| Source 4 | {Description 4} | {Value} | {Value} |

## Data Storage Allocation

|  |  |  |
| --- | --- | --- |
| Data Type | Storage Location | Size Allocated (MB) |
| Type 1 | {Location 1} | {Value} |
| Type 2 | {Location 2} | {Value} |
| Type 3 | {Location 3} | {Value} |

# Operation Scenarios

{Explain step by step the operations scenarios this subsystem will run in.}

*(Add contingency, software update, and ground test scenarios as needed)*

# Requirement Allocation Sheet

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **ID** | **System Requirement** | **ID** | **Design Requirement** | **ID** | **Verification Requirement** | **Verification Method** |
| SR1 | {Description} | DR1.1 | {Description} | VR1.1.1 | {Description} | {Description} |
| DR1.2 | {Description} | VR1.2.1 | {Description} | {Description} |
| … | … | … | … | … | … | … |

**12 Schedule**

|  |  |  |  |
| --- | --- | --- | --- |
| Milestone | Planned Date | Actual Date | Notes |
| {Milestone 1} | <YYYYMMDD> | <YYYYMMDD> |  |
| {Milestone 2} | <YYYYMMDD> | <YYYYMMDD> |  |
| {Milestone 3} | <YYYYMMDD> | <YYYYMMDD> |  |
| {Milestone 4} | <YYYYMMDD> | <YYYYMMDD> |  |
| {Milestone 5} | <YYYYMMDD> | <YYYYMMDD> |  |
| {Milestone 6} | <YYYYMMDD> | <YYYYMMDD> |  |