|  |
| --- |
| ANTS1 Assembly  Insert here the name of the project. |
| ISIS-TVL2-PRC-0005 |
|  |
| Version: 1.0 |
| CI Number: N/A |
| DRL ID: N/A |

Release Information

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | Name | Function | Signature | Date |
| Prepared by: | C. Vos (CVOS) | SAIT Engineer |  |  |
| Reviewed by: | H. Santos (HSAN) |  |  |  |
| Approved by: | G. Coronel (GCOR) | SAIT Engineer |  |  |
| Authorized by: |  |  |  |  |

Execution Information

|  |  |  |  |
| --- | --- | --- | --- |
| Project = Insert here the name of the project.  WO = Insert here the number of the work order. | | | |
|  | Name (Initials) | Date | Signature |
| Performed by: |  |  |  |
| Peer-Reviewed by |  |  |  |
| QA inspection by: |  |  |  |

Distribution List

|  |  |  |
| --- | --- | --- |
| Name | Organization | Description |
| N/A | ISISPACE | Innovative Solutions In Space B.V. |
|  |  |  |

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Change Log

|  |  |  |  |
| --- | --- | --- | --- |
| Version | Date | Affects | Description |
| 1.0 | 2024-11-15 | All | First Version based on ISIS-1UPLT-PRC-0001 |

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Acronyms

| Name | Description |
| --- | --- |
| ABF | Apply Before Flight |
| ANTS1 | ISISPACE Antenna Subsystem (version 1) |
| CSKB | CubeSat Kit Bus |
| DB | IOBC Daughterboard |
| ESD | Electrostatic Discharge |
| GSE | Ground Support Equipment |
| ICEPS2 | ISISPACE Compact Electric Power System (version 2) |
| IOBC | ISISPACE On Board Computer |
| MGSE | Mechanical Ground Support Equipment |
| MMCX | Micro Miniature Coaxial connector |
| PCB | Printed Circuit Board |
| PLT | Platform |
| RX | Receiver |
| SAIT | System Assembly, Integration, and Test |
| STA1U | Stack Integration 1U Support Jig |
| STS | ISISPACE Structure |
| TRXVU | ISISPACE Transmiter/Receiver VHF/UHF |
| TX | Transmitter |
| VISJ | Vertical Integration Support Jig |

# Introduction

This document concerns the standard **1U platform**. This document contains the procedure to assemble the AntS1 onto the Platform Module.

## Applicable Documents

The table below contains documents which applicability is required. The contents of the present document follow the standards, guidelines and requirements here mentioned.

Table 1 - Applicable Documents

|  |  |  |
| --- | --- | --- |
| **Reference** | **Name** | **Version** |
| ISIS-1UPLT-PLN-001 | 1U CubeSat Platform SAIT Plan | 2.0 |
| ISIS-1UPLT-DDD-0001 | 1U CubeSat Platform Design Description (Type A STS) | 4.0 |
| ISIS-1UPLT-DDD-0003 | 1U CubeSat Platform Design Description (Type B STS) | 1.0 |

## Reference Documents

The table below contains documents that are not fully applicable and will provide supplementary information relevant for the present document.

Table 2 - Reference Documents

|  |  |  |
| --- | --- | --- |
| Reference | Name | Version |
| ISIS.SAIT.GL.001 | SAIT guidelines | 1.0 |
| ISIS-QMS-PLN-0001 | Product Assurance Plan | 1.1 |
| ISIS.SAIT.POL.002 | SAIT Cleanliness and Contamination Control Policy | 1.0 |

# Required Equipment

## Satellite Equipment and Parts

| Item | Remark | ID / Serial number | Check |
| --- | --- | --- | --- |
| Platform Module | Platform Module (IMTQ/ICEPS/TRXVU/IOBC/DB/STS/Harnesses) | N/A |  |
| ANTS1 | ISISPACE Antenna system (version 1) |  |  |
| Ants1 | (4x) M2.5x10mm Countersunk Screw |  |  |

## Ground Support Equipment and tools

| Item | Remark | ID / Serial number | Check |
| --- | --- | --- | --- |
| VISJ jig | Vertical Integration Support Jig |  |  |
| ESD wrist strap |  |  |  |
| ESD cable for MGSE |  |  |  |
| Screwdriver Torx 8 (M2.5) | Example: AEX 8x75 |  |  |
| Torque screwdriver | Torque ≈ 0.5 Nm  Example: A.402 or A.301MT |  |  |
| Torque Bit Torx 8 (M2.5) | Example: EX.108 |  |  |
| Screwdrivers Hex 1.3 (Omnetics screwdriver) | Example: Wera Hex Key, 1.3mm Ball End (SW 1,3) |  |  |

## Consumables

| Item | Remark | ID / Serial number | Check |
| --- | --- | --- | --- |
| Epoxy | Example: Scotch-Weld DP2216 Epoxy adhesive |  |  |
| Kapton Tape | Flight approved |  |  |
| Large ESD bag |  |  |  |

## Preparation

| Step | Description | Remark | Check |
| --- | --- | --- | --- |
|  | Collect all satellite equipment and parts, GSEs and Tools according to the checklists in this section | Make sure not to touch anything without gloves and ESD wrist strap attached |  |
|  | Make sure all fasteners are cleaned with ultrasound machine |  |  |
|  | Make sure also that all structural parts are clean. |  |  |
|  | Take high resolution pictures of during the execution of the procedure and store them in the appropriate folder following the subsequent naming guidelines |  |  |

# AntS1 onto Platform Module Assembly Procedure

| Step | Description | Check | Comment |
| --- | --- | --- | --- |
|  | Position the Platform Module in the **VISJ** with the **(Z-) face upwards** and **connect the ESD cable** to the platform module on any of the solar panels mounting holes (either in the side frames of Type A STS or in the brackets of Type B STS)**.**  A picture containing text  Description automatically generated  *Take photo of the platform module on the VISJ* |  |  |
|  | Take the AntS1 and remove the four (4x) M2.5x4 Countersunk Screws cover of the ANTS |  |  |
|  | Be sure that **Harness #8** is properly routed from the **ICEPS,** **CH3-I2C** **connector,** to the Z- face and connect the **Harness #8, ANTS connector,** to the J1 connector on ANTS.  **Note:** Fasten the two screws little by little so that the connector does not get too much of an angle during insertion.  A picture containing text, electronics  Description automatically generatedA person working on a circuit board  Description automatically generated with low confidenceA close-up of a circuit board  Description automatically generated with medium confidence |  |  |
|  | Check if connectors **J2** and **J3** are epoxied to the board. If not:  Put **epoxy** between the connectors and the board as can be seen in the figure below.  **Note** that the connectors are the ones of the AntS1 board itself, and not the harness connectors |  |  |
|  | Be sure that **Harness #9** is properly routed from the **TRXVU, TX connector,** to the Z- face and connect the **Harness #9, ANTS-TX connector,** to the J3 connector on ANTS. |  |  |
|  | Be sure that **Harness #10** is properly routed from the **TRXVU, RX connector,** to the Z- face and connect the **Harness #10, ANTS-RX connector,** to the J2 connector on ANTS. |  |  |
|  | Tuck the harnesses inside the platform (or pull them from a side of the platform).  **Make sure the harnesses for the Solar Panel (harnesses #13 and #19) (if the Solar Panel -Z is part of the work order) are pulled through the hole in the middle of the ANTS1**.  **Note: This cannot be done later due to the connector size.**  And mount the **ANTS** to the negative (Z-) side of the platform structure using **(4x) M2.5x10** CSK Torx screws.  Use the fixation holes indicated by red circles and not the holes with helicoils.  Torque ≈ **0.5 Nm.**    Longer elements (VHF) placed along X axis. Shorter elements (UHF) placed along Y axis |  |  |
|  | Take photos of the platform module from all sides |  |  |
|  | Place the platform module in a safe place (e.g. ESD bag and Useful box) |  |  |
| **Activity performed by:** Initials  **Date:** Click here to enter a date. | | | |

# Procedure Variation Log

The following table shall be used to log all variations with respect to the original procedure. Please provide as much information as possible regarding the nature and cause of the change. Add pages as required.

| PV # | Section / Page / Step affected | Description | Reason for deviation | Initiated by (Initials) | QA Sign off |
| --- | --- | --- | --- | --- | --- |
| …… | …… | …… | …… | …… | …… |
| …… | …… | …… | …… | …… | …… |
| …… | …… | …… | …… | …… | …… |
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| …… | …… | …… | …… | …… | …… |
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