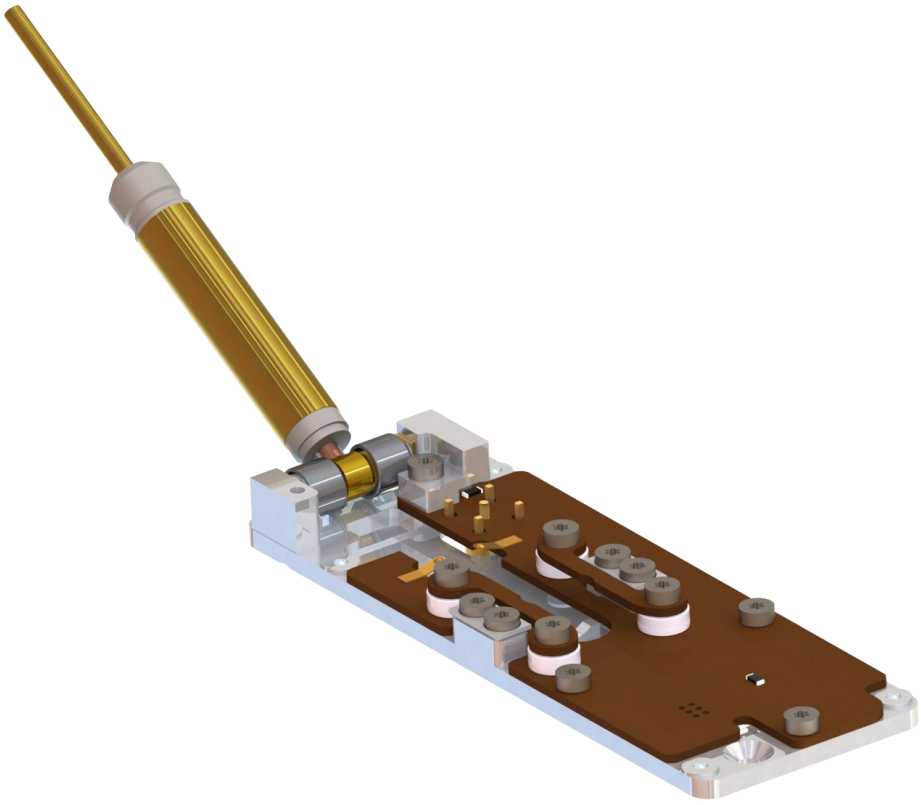

NanoCom
AM2150-O Antenna System

Manual

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Table of Contents

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1 Overview

This manual describes how to stow and mount the AM2150-O on to a spacecraft. Antenna release is commanded and controlled via I2C using the `libgssb_client` delivered as part of a SW development kit. The SDK and associated manual are included on a USB stick with each device.

2 Warnings

ESD

This product uses semiconductors that can be damaged by electrostatic discharge (ESD). When handling, care must be taken so that the devices are not damaged. Use appropriate precautions.

Take precautions not to stress the rod of the antenna. The antenna element, when stowing, should be handled by the sleeve or upper peek support. Do not apply pressure or touch the antenna rod.

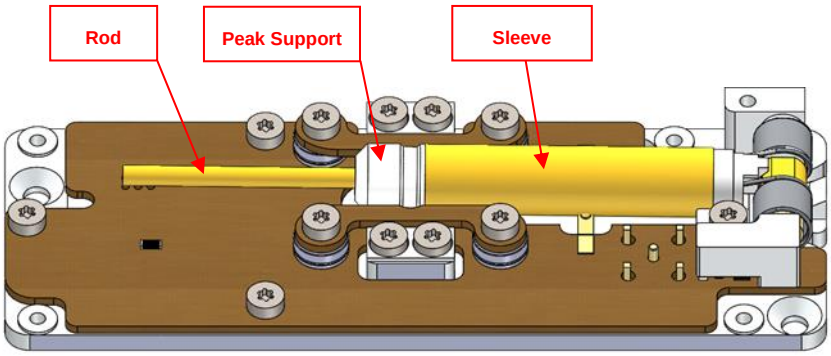

Figure 2-1 Antenna element handling points.

3 Antenna Release System

The antenna element is held down by a Dyneema monofilament wire (burnwire), which is connected to two independent burn resistors. The resistors are sequentially commanded to heat and melt the monofilament, to release the antenna. The burnwire is located as shown in Figure 3-1. Two clamps keeps the burnwire in position and ensures easy arming of the antenna.
Both the clamp system and the burn release system have flight heritage on several GomSpace products.

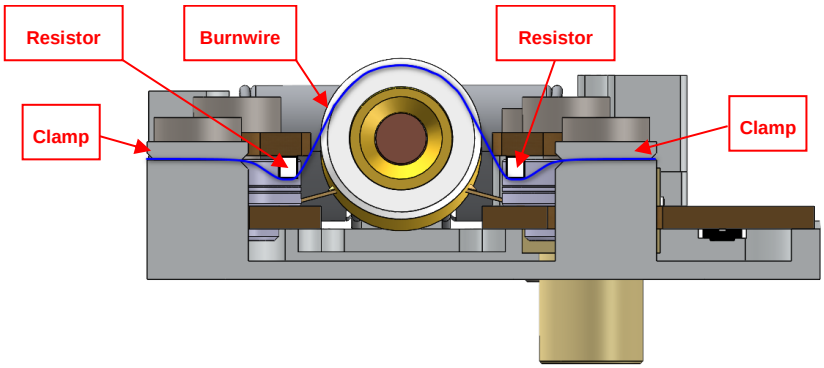

Figure 3-1 Burnwire position.

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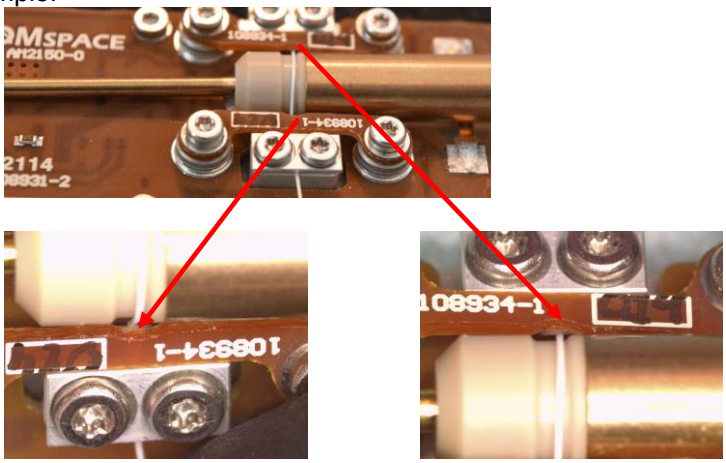
3.1 Critical Device Checks

The table below lists device checks that are critical every time the antenna is stowed.

Item	Description
Tightening torque screws burnwire clamps	Each of the two burnwire clamps, used to fixate the burnwire, are held in place by M2 screws. Helical inserts in the aluminium base studs secure the screws against vibration or shock loosening. Therefore, do not apply any kind of tread-locking fluid to these screws. The tightening torque is 0.34 – 0.38Nm
Total number of burns	The total activation times for each burn resistor is 8. To ensure this is fulfilled the total number of burns should not exceed 7 prior to launch. Total number of burns can be queried using the `libgssb_client` command `gs_gssb_ar6_get_release_status`. `Burn_tries` status should equal or be less than 7.
Antenna state	It is possible to query the release state of the antenna using the `libgssb_client` command `gs_gssb_ar6_get_release_status`. The `status` should equal 0 to verify the antenna is properly stowed. (0 = stowed and 1 = released).
Position of burnwire	By visual inspection it must be verified that the burnwire is touching / crossing the burn resistors at the centre of their bodies. This it to ensure the resistors will be able to melt the wire when a burn channel is activated. This is verified by inspecting: 1) Top view: burn wire is crossing the centre of the resistor PCB. 2) Side view: burn wire is crossing the centre of the resistor body. Example: 
Tie down of antenna element	The antenna element should be tied down, so it rests and thereby fixated by the groove in the aluminium base. This is to prevent the antenna element from moving during exposure to vibration and shock.

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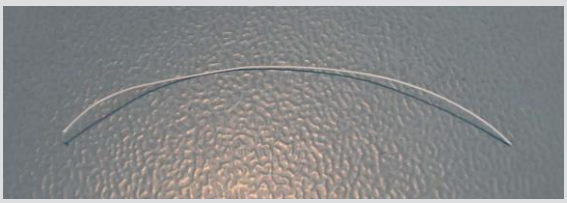
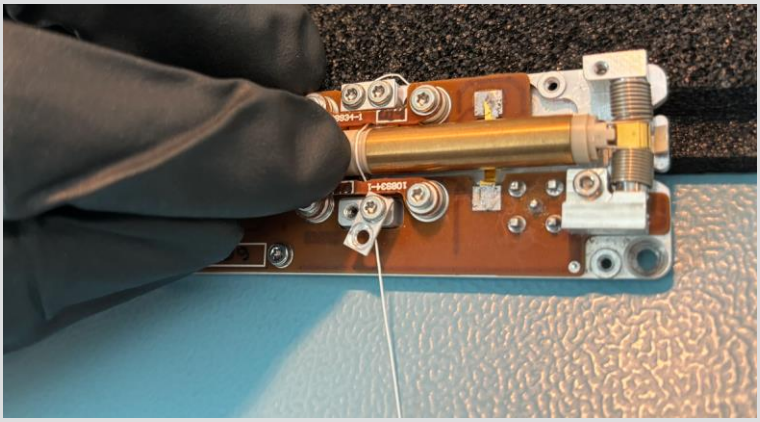
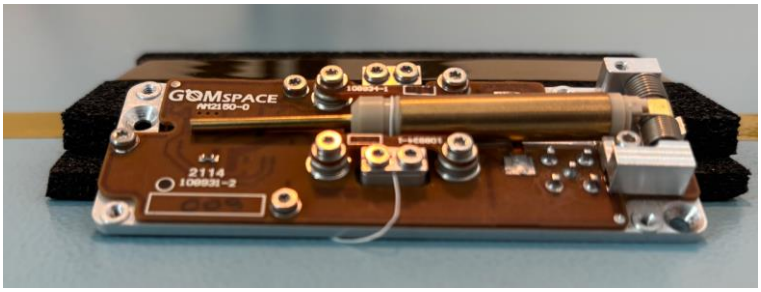
3.2 Stowing the Antenna

Below is a step-by-step procedure on how to stow the antenna.

Step	Description	Picture
1	Cut a 6 to 8cm long piece of burnwire from the wire delivered with the antenna.	
3	Loosen the M2 screws holding the wire clamps into place. Align and burnwire across the top resistor and tighten the associated clamp. The burnwire must cross the centre of the burn resistor body in the middle on the curvature on the PCB.	
4	Fold down the antenna and guide the burn wire over the antenna and under the second burn resistor and clamp with one screw. Use the curve in the PCB	
6	Insert the last screw and tighten.	
7	Perform Critical Device Checks	

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4 Mounting on the structure

For all mounting options M2.5 countersunk screws must be used.

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