

Magnetorquer Polarisation verification

1. DOCUMENT SCOPE

The aim of this document is to clearly explain the procedure to verify the polarisation of the magnetorquers.

2. TEST 1: Electrical check

2.1. Test Description and Objectives

The aim of this test is to verify that the polarisation of the magnetorquers is the correct one.

2.2. Requirements Verification

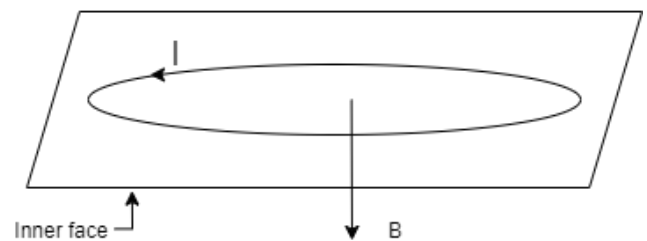
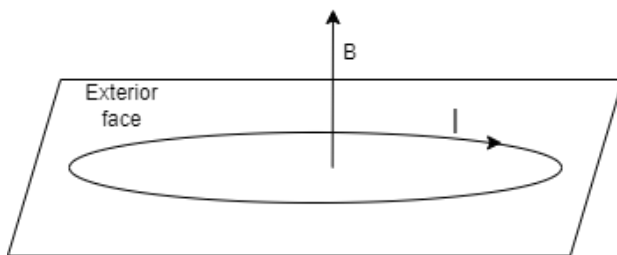
| Requirement ID | Description |
|----------------|--|
| TST-MAGT-01 | The magnetorquers must generate a magnetic field direction in accordance with the left hand rule when current is being injected. |

2.3. Test Set-Up

- Power supply.
- Two bananas.
- Outer boards boards.
- Two cables per lateral board.
- A device to measure the magnetic field (e.g magnetometer of the mobile phone).
- Cable stripper.
- Soldering station.

2.4. Pass/Fail Criteria

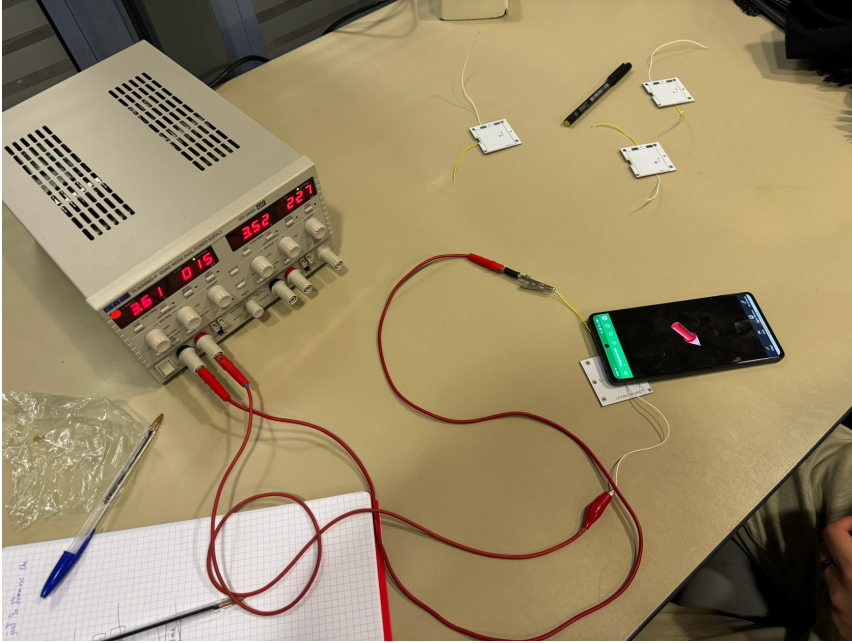
The verification will be completed if the polarisation is the same as the theoretical computed using the right hand rule.



2.5. Test Plan

1. Strip the cables at both ends.
2. Turn on the soldering station.
3. Solder one cable for each extreme of the magnetorquer. Those pins are the ADCS pin and VCC_MAG pin off the outer boards.
4. Connect the power supply.
5. Set an intensity of 16 mA.
6. Connect the bananas into the power supply.
7. Take one outer board and connect the positive banana to the ADCS pin. Afterwards, connect the negative banana to the VCC_MAG pin.
8. Turn on the device used to measure the magnetic field.
9. Turn on the output of the power supply.
10. Place in the exterior face of the board, the device. Then check that the direction of the magnetic field goes out from the center of the exterior face.
11. Turn off the output of the power supply
12. Connect the negative banana to the ADCS pin. Afterwards, connect the positive banana to the VCC_MAG pin.
13. Turn on the output of the power supply.
14. Place in the inner face of the board, the device. Then check that the direction of the magnetic field goes out from the center of the inner face.
15. Turn off the output of the power supply
16. Disconnect the power supply.

2.6. Test Results



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