

STEREO Impact Boom FM Alignment Test Report

Document # IMP-592-DOC

Revision: -

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1. OVERVIEW

The STEREO Boom alignment tests for the Flight Model (1 and 2) Booms were conducted May 26 through September 13, 2004 at the Space Sciences Laboratory in Berkeley, California using the STEREO IMPACT Boom Thermal Vacuum Chamber and its associate gantry for g negation. Robert Ullrich, Lancelot Braasch, Dave Curtis and Jeremy McCauley were in attendance for instrument handling, verification and test observation.

Alignment testing was conducted on the Booms (See Figure 1) following each deployment to verify alignment of the magnetometer mount to the base of the Boom. A total of four deployments have been performed with each Boom (one tuning, one functional, one hot thermal vacuum, and one cold thermal vacuum deployment). A Pro3600 digital inclinometer (reading to 0.01 degree with an accuracy of +/- 0.02 degree) was used to measure the change in the angle to level between the mounting foot nearest the connector housing and the flat top of the magnetometer mount in the XY and XZ planes.

All alignment tests passed the criteria outlined below. Final testing will be performed on the spacecraft after deployment of the Boom for EMC testing.

2. REFERENCE DOCUMENTS (Attached):

- APL Document APL 7381-9003 Rev A – STEREO Environment Definition, Observatory and Instrument Test Requirements Document (Not attached)

Magnetometer Alignment Provisions (email attachment)

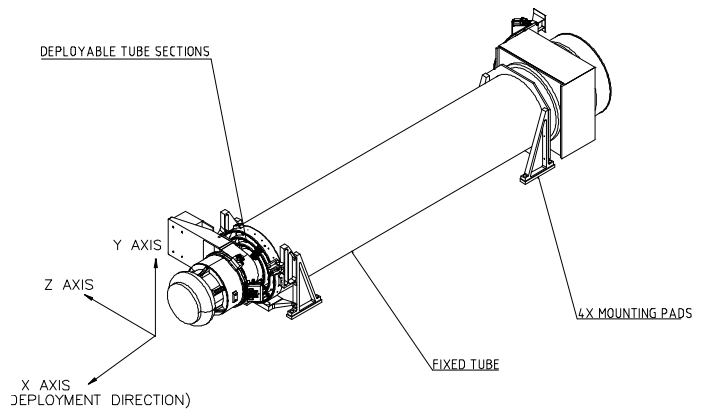


Figure 1: Definition of Axes

3. PASS/FAIL CRITERIA – From Magnetometer Alignment Provisions

Table 1. Magnetometer Pointing Uncertainty Requirement Allocations

Magnetometer to Boom Alignment Error	52.5 Random 0 Bias	IMPACT
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4. ALIGNMENT MEASUREMENTS (Measurements in arcmin)

Deploy #:	FM1	FM1	FM1	FM1	FM2	FM2	FM2	FM2	Flight Tests	
	T1	F1	F2	F3	T1	F1	F2	F3	AVG	STDEV
Date:	26-May	10-Jun	14-Jul	15-Jul	2-Aug	25-Aug	8-Sep	13-Sep		
dXY	10.8	2.4	0.6	6.6	9.6	3.6	2.4	6.0	5.3	3.6
dXZ	4.8	6.0	3.6	6.0	9.6	4.2	10.2	0.6	5.6	3.1
RoSoS:	11.8	6.5	3.6	8.9	13.6	5.5	10.5	6.0	7.7	3.9