

SPIRE

SUBJECT: SPIRE PFM Mass Properties Summary

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Change Record

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Table of Contents

CHANGE RECORD	2
1. SCOPE	2
2. APPLICABLE DOCUMENTS.....	2
3. BUILD STANDARD	2
4. MASS	3
5. CENTRE OF GRAVITY	3
6. MOMENTS OF INERTIA.....	3

1. SCOPE

This document summarises the mass properties of all SPIRE FM units

2. APPLICABLE DOCUMENTS

AD 1	SCI-PT-IIDB/SPIRE-02124	SPIRE IID-B
AD 2	SPIRE-RAL-REP- 002766	SPIRE FPU Mass Properties Measurement Report
AD 3	HERS-SPIRE-RP-CGS-018	Herschel PFM SPIRE DPU mechanical test report
AD 4	Sap-SPIRE-QA-0421-06	HS_DRCU(HS_DCU & HS_FCU)FM EIDP

3. BUILD STANDARD

All units measured are full flight configuration except where indicated in the individual test reports.

4. MASS

Unit	Measured mass (Kg)	ref	IID-B mass (Kg)	IID-B allocated mass (Kg)
HSFPU	45.52	AD 2	45.0	47.2
HSJFP	2.73		2.73	2.8
HSJFS	1.0		1.0	1.0
Sub total HOB	49.25		48.73	51.0
HSFCU	16.177	AD 4	16.48	15.0
HSDCU	16.779	AD 4	16.96	15.5
HSDPU	7.614 ¹	AD 3	7.23	7.0
HSWIH	1.74		1.5	1.5
Sub total warm units	42.31		42.17	39.0
Total	91.56		90.9	90.0

Note ¹ HERS GEN RFD CGS 001 refers

5. CENTRE OF GRAVITY

Unit	ref	Measured values (mm)			IID-B values (ICD) (mm)		
		X	Y	Z	X	Y	Z
HSFPU		220.9 (est)	98.68	429.75	220.88	97.58	430.55
HSJFP		n/a	n/a	n/a	n/a	n/a	n/a
HSJFS		n/a	n/a	n/a	n/a	n/a	n/a
HSFCU	AD 4	148.2	161.5	131.4	148.8	153	138.5
HSDCU	AD 4	217.9	132.1	166.9	213.2	132.4	157.9
HSDPU	AD 3	91.602	130.258	84.965	87.0	120.5	89.5

6. MOMENTS OF INERTIA

Unit	ref	Measured values (kgm ²)			IID-B values (ICD) (kgm ²)		
		Ixx	Iyy	Izz	Ixx	Iyy	Izz
HSFPU		3.056 (est)	3.008 (est)	1.559 (est)	3.056	3.008	1.559
HSJFP		n/a	n/a	n/a	n/a	n/a	n/a
HSJFS		n/a	n/a	n/a	n/a	n/a	n/a
HSFCU	AD 4	0.320	0.306	0.269	0.338	0.318	0.282
HSDCU	AD 4	0.458	0.251	0.429	0.471	0.25	0.444
HSDPU		n/a	n/a	n/a	n/a	n/a	n/a