SPIRE

SUBJECT:	SPIRE ICC Calibration Team Work Packages
PREPARED BY:	Tanya Lim and Marc Savage
DOCUMENT No:	SPIRE-RAL-DOC-001431

ISSUE: Draft 0.1 **Date:** 16 October 2002

APPROVED BY: Ken King

Date:

SPIRE

Distribution

M. Fox	IC
R. Gastaud	CEA Saclay
M. Graham	IC
S. Guest	RAL
S. Molinari	IFSI
S. Sidher	RAL



Change Record

ISSUE Draft 0.1 **DATE** 16th October 2002

First draft



TABLE OF CONTENTS

1.	SCOP	Е	6
2.		JMENTS	
2.1		PLICABLE DOCUMENTS	6
2.2	Ref	FERENCE DOCUMENTS	6
3.		CALIBRATION TEAM	7
3.1		LIBRATION MEETINGS	8
3	.1.1	HCalSG	
3	.1.2	Management Meetings	10
3	.1.3	Team Meetings	
3	.1.4	ICC Meetings	
	.1.5	ICC configuration control board	
3.2		LIBRATION TEAM MANAGEMENT	
3.3		LIBRATION TEAM INTERFACES	
	.3.1	Definition of Calibration Files/Information For IA	
	.3.2	Definition of Calibration Files/Information For Time Estimator	
	.3.3	Definition of Calibration Files/Information For Uplink	
	.3.4	Definition of Calibration Specific Data Processing (IA for non-standard calibration a	,
	.3.5	Definition of a reporting system including problem reporting	
	.3.6	Interface with SW Team to design, create, test and document calibration database	
	.3.7	Interface With the Test Team to Agree Test Schedule	
3	.3.8	Training of Calibration Team Members by Members of Other Teams	
-	.3.9	Training Given by Calibration Team Members to Other ICC Team, Other Instrument	
		· HSC Team Members	
3.4	-	LIBRATION TESTING	
3	.4.1	Definition of the Calibration Requirements	
3	.4.2	Definition of the Calibration Plan for ILT	
3	.4.3	Definition of the Calibration Tests	
3	.4.4	Definition and Production of the Calibration Database	
	.4.5	Define and Write Test Observations	
	.4.6	Analyse Test Data	
3	.4.7	Populate Calibration Database	
3	.4.8	Review test results, calibration plan and test plan	
3.5		LIBRATION PREPARATORY PROGRAMME	
3.6		GHT PREPARATION	
	.6.1	Produce the PV phase calibration plan	
	.6.2	Produce the Routine Phase Calibration Plan	
3.7		PHASE	
3.8	RO	UTINE PHASE	39

FIGURES

TABLES



Glossary

Assembly Integration and Verification
Calibration File Derivation Procedure
Cryogenic Qualification Model
Calibration Uplink System
Flight Spare
Full Time Equivalent
Herschel Calibration Steering Group
Herschel Science Centre
Interactive Analysis
Instrument Control Centre
Mission Information Base
Proto- Flight Model
Performance Verification
Quick Look Analysis
Spectro-Photometric Imaging REceiver
???
Work Package



 Ref:
 SPIRE-RAL-DOC-001431

 Issue:
 Draft 0.1

 Date:
 16 October 2002

 Page:
 6 of 39

1. Scope

This document contains the work packages for the calibration team in the SPIRE ICC and fits into the larger work package structure for the entire ICC. For this first draft, only those work packages which are needed for SPIRE testing have been developed. The staffing estimates are more accurate in the short term (2003) than in the long term (2007) and may be subject to change as parameters such as team size and length and frequency of meetings become better established.

2. DOCUMENTS

2.1 Applicable Documents

2.2 Reference Documents

SPIRE-RAL-N-001327 Proposed ICC Organisation during the Development Phase



3. ICC CALIBRATION TEAM

WP Title: Participate and organize cali	bration	meeting	5		WP I	Number		
					Vers	ion:	1.0	
WP Manager: ICC Manager					Date	:	4 Oct 200)2
Description: This is a summary work pace and of the SPIRE instrument.	kage tha	t covers	all aspect	s related	to the wo	ork of the	ICC calibrat	ion
Start Date: 1 Jan 2003	End Da	ate: End	of post-o	ps		Type: Co	ontinuous	
Inputs:								
Scientific requirements for SPIRE								
> Instrument requirements document								
 Calibration team terms of reference 								
Activities:								
Calibration Meetings								
Calibration Team Management								
Calibration Team Interfaces								
Calibration Testing								
Calibration Preparatory Programme								
Flight Preparation								
PV Phase								
Routine Phase								
Outputs:								
SPIRE calibration								
Assumptions:								
The ICC calibration team are respons	ible for a	all aspect	s of SPIR	E calibra	tion			
> The ICC calibration team is led by tw	o co-lea	ders, all 1	eferences	s to team	leader in	the work	packages in	dica
only one of the two co-leaders is requ	ired for	this task.						
Notes:								
Resource estimates under the next sec	ction are	likely to	evolve. C	Current es	stimates a	account fo	or continuous	tas
and testing related tasks only.		, , , , , , , , , , , , , , , , , , ,						
FTE's are calculated on the basis of a	ι 44 weel	k work vo	ear.					
Resources:								
	2001	2002	2002	2004	2005	2006	2007	
Meetings (fte)	2001	2002	2003 0.34	2004 0.34	2005 0.34	2006 0.57	2007 0.57	
Management (fte)			0.10	0.10	0.10	0.37	0.10	
Interface Activities (fte)		0.05						
		0.05	1.63	1.22	1.07	0.73	0.63	
Calibration Testing (fte)			1.22	0.82	0.6	0.4	0.34	
			TBD	TBD	TBD	TBD	TBD	
Calibration Preparatory Prog			1	1	TBD	TBD	TBD	
Flight Preparation			-				IDD	
Flight Preparation Equipment								
Flight PreparationEquipmentTravel								
Flight Preparation Equipment			3.29	2.48	1.57	1.8	1.64	



Calibration Meetings

VP Title: Participate and organize cali	bration	meetings	5		WP	Number	
					Vers	ion:	1.0
VP Manager:					Date	-	4 Oct 2002
Description: This is a summary work pace elated to the calibration of the SPIRE ins 'hese meetings can be dedicated to establish fforts of the ICC, or agree on modification	trument, lishing or	as well a r studying	is more g	enerally,	the Herse	chel Spac	e Observatory
tart Date: 1 Jan 2003	End D	ate: end	of post-C)ps		Type: C	ontinuous
nputs:			1	•		• •	
 Scientific requirements for SPIRE 							
 Instrument definition document 							
ctivities:							
Organize and participate in regular meeting articipate and report to the ICC meetings articipate to the ICC configuration contre Dutputs: Overall Herschel calibration strategy	5	e SPIRE 1	ICC calit	bration tea	am		
•••							
SPIRE calibration plan							
Assumptions:				1.1	XX 7 1 *	C 1	
The facilities of the SPIRE project of	fice are a	available	to the Ca	undration	working	Group le	eader
Notes: All recurrent costs (Telephone, Telecunder this workpackage. Resources:	onferenc	e, Video	conferen	ce, consu	mables, t	ravels) ar	re accumulated
	2001	2002	2003	2004	2005	2006	2007
Total staff			0.34	0.34	0.34	0.57	0.57
Travel							
Equipment							
Recurrent Total			-				



3.1.1 HCalSG

WP Title: Participation to the Herschel (HCalSG)	Calibra	tion Stee	ering Gro	oup	WP	Number	
					Vers	sion:	1.0
WP Manager: SPIRE member of the H	CalSG				Date	:	4 Oct 2002
Description: The Herschel Calibration St Herschel instrument and the project in cha teams. This team is specially overlooking based) and at defining areas of commonal This team meets regularly (current basis in	arge of co all attem ity.	oordinatii pts at bu	ng the cal ilding pre	ibration a paratory	activities	s of the va	rious calibration
Start Date: 1 Jan 2003	End Da	ate: End	of Post-C	ps		Type: Co	ontinuous
Inputs:							
 SPIRE scientific requirements 							
 SPIRE instrument definition 							
Activities:							
 Participate in calibration activities resulting observatories, prepare lists of potential SF Extract from SPIRE calibration activities Report to ICC the results of each HCalSG Outputs: Potentially new calibration requirement included in the SPIRE calibration pla 	PIRE calif those tha meeting PIRE IC ents comi	bration so t are of s s, with sp C	pecific in pecial em	terest to phasis on	HCalSG	sequence	s on SPIRE
Assumptions:	11						
 Management of the HCalSG (docume) 	ontotion) is do	na antiral	y by tha	Horscho	Inroject	
Notes:	intation,) 15 00		y by the		i project.	
 The SPIRE project has two represent 	atives in	the HCal	SG				
The resources are computed assumin meeting generates 2 man-days of work	g 4 1-day	meeting	s for the	two repre	esentativ	es, and th	at each 1-day
Resources:							
	2001	2002	2003	2004	2005	2006	2007
Total			0.08	0.08	0.08	0.08	0.08



3.1.2 Management Meetings

	P Title: Participate and organize ma	nagemen	its meeti	ngs		WP	Number	
						Vers	sion:	1.0
	P Manager: ICC calibration team lea					Date		4 Oct 2002
org	scription: The co-calibration team lead anize regular progress meetings (could reduled. This work package also covers	l be tele/v	video con	ferences)				
Sta	rt Date: 1 Jan 2003	End Da	ate: End	of Post-C)ps		Type: co	ntinuous
Inj	puts:							
≻	SPIRE scientific requirements							
≻	List of calibration team members							
۶	Definition of responsibilities of vario	us SPIRI	E instrum	ent contr	ibutors			
Ac	tivities:							
De	erall management activities fine calibration activities/work package onitor progress on all calibration activit							
Ou	tputs:							
۶	Progress report to ICC and SPIRE pro-	oject						
۶	SPIRE calibration plan							
As	sumptions:							
≻	The facilities of the SPIRE project of	fice are a	vailable	to the IC	C calibra	tion tear	n leader.	
۶	Management meetings will generally one such meeting every two months, for in this WP. Management meeting	except w	hen getti	ng closer	to launcl	h. Only	the meetin	gs are accounted
No	tes:							
	This is mostly a management work p package only in the sense that one of							
_	sources:							
Re		2001	2002	2003	2004	2005	2006	2007
Re		2001						



3.1.3 Team Meetings

WP Title: Organize and participate in	Calibrati	ion Tean	ı meeting	gs	WP I	Number	
					Vers	ion:	1.0
WP Manager: ICC Calibration team le	eader				Date		6 Oct 2002
Description: To make sure progress is m understand the instrument behaviour, def meetings, teleconferences, videoconferen	ine the ca	libration	needs an	d produce			
Start Date: 1 Jan 2002	End Da	ate: End	of Post-C	ps		Type: Co	ontinuous
Inputs:							
SPIRE science requirements: they de	efine the u	iltimate g	oals of th	ne calibra	tion tean	1.	
 SPIRE calibration requirements: thes related to calibration. 	se should	translate	the previ	ous docui	ments int	o statem	ents more precisely
The calibration team terms of referent the calibration team activities.	nce: they s	should he	old the ex	pectation	of the S	PIRE pro	ject with respect to
> SPIRE major milestone lists: these d	efine a fra	amework	for the c	alibration	activitie	s to be so	cheduled.
Activities:							
Organize regular meetings of the calibrat Maintain and follow-up action lists origin Produce and archive minutes of these me	nating from	m the me	etings				
Outputs:							
Regular reports of the calibration tea	m activiti	es to the	SPIRE p	roject.			
SPIRE calibration plan.							
Assumptions:							
The calibration team meetings will b foresee one such meeting every two meetings last one day. We assume th organize and follow-up, and 2 man.d	months, e at the ma	xcept for npower r	2006-7 vieeded for	where this r these me	s frequen eeting is	cy is dou 1 man.da	ibled. These ay per meeting to
Notes:							
 Resources are estimated for co-leade 	rs only, tł	nis will b	e revised	as team p	personne	l increase	es.
Resources:							
	2001	2002	2003	2004	2005	2006	2007
Total			0.08	0.08	0.08	0.16	0.16

3.1.4 ICC Meetings

	P Title: Participate in ICC meetings					WP	Number		
						Vers	ion:	1.0	
W	P Manager: Calibration team leader	•				Date	:	4 Oc	t 2002
	scription: The SPIRE ICC holds regu								
	ticipates. At these meetings the calibration							nd possi	bly to th
wh	ole SPIRE project or consortium when	n ICC mee	etings oc	cur at con	nsortium	meetings	•		
Sta	rt Date: 1 Jan 2003	End Da	ate: End	of Post-C	Ops		Type: Co	ontiuous	
Inj	outs:	•			•				
\triangleright	None								
Ac	tivities:								
Re	port calibration team progress to the re	est of the l	ICC, proj	ect or co	nsortium				
Ou	tputs:								
\triangleright	Progress reports issued with the same	e frequen	cy as the	ICC mee	etings.				
	sumptions:								
AS	_								
As:	None								
۶	_								
۶	None	is WP de	pends of	the frequ	ency of t	he ICC n	neetings,	which is	set
> No	None tes:								
> No	None tes: The exact amount of resources for th	have assu	med bi-n	nonthly 2	day meet	tings whe	ere the cal	ibration	
> No >	None tes: The exact amount of resources for th outside of the Calibration team. We have	have assu	med bi-n	nonthly 2	day meet	tings whe	ere the cal	ibration	
> No >	None tes: The exact amount of resources for th outside of the Calibration team. We leader and deputy attend. In the year	have assu	med bi-n	nonthly 2	day meet	tings whe	ere the cal	ibration	
> No >	None tes: The exact amount of resources for th outside of the Calibration team. We leader and deputy attend. In the year	have assu	med bi-n	nonthly 2	day meet	tings whe	ere the cal	ibration	



3.1.5 ICC configuration control board

Version: 1.0 WP Manager: Calibration Team leader Date: 10 Oct 200 Description: All major changes to the ICC will go through a configuration control board to which the Calibra Team Leader has to participate. This work-package covers this participation. Start Date: 10 Oct 200 Start Date: 1 Jan 2003 End Date: End of Post-Operations Type: continuous Inputs: > Terms of reference of the ICC Teams > > Terms of reference of the ICC configuration control board Activities: Participate in the ICC configuration control board Outputs: > Decisions of the ICC configuration control board Assumptions: > Notes: > > Resources for this work package can only be computed once the configuration control board has been defined. Currently we assume a 1 day meeting every two-months. Resources: Image: 1001 2002 2003 2004 2006 2007 Image: 1002 1003 0.03 0.03 0.03 0.03	WP Title:	: Participate in the IC	C configuration	control	board		WP I	Number		
Description: All major changes to the ICC will go through a configuration control board to which the Calibra Team Leader has to participate. This work-package covers this participation. Start Date: 1 Jan 2003 End Date: End of Post-Operations Inputs: > > Terms of reference of the ICC Teams > Terms of reference of the ICC configuration control board Activities: Participate in the ICC configuration control board Outputs: > Decisions of the ICC configuration control board Assumptions: > > Resources for this work package can only be computed once the configuration control board has been defined. Currently we assume a 1 day meeting every two-months. Resources: 2001 2002 2003 2004 2005 2006 2007							Vers	ion:	1.0	
Team Leader has to participate. This work-package covers this participation. Start Date: 1 Jan 2003 End Date: End of Post-Operations Type: continuous Inputs: > Terms of reference of the ICC Teams > Terms of reference of the ICC configuration control board Activities: Participate in the ICC configuration control board Outputs: > > Decisions of the ICC configuration control board Assumptions: > > Notes: > Resources for this work package can only be computed once the configuration control board has been defined. Currently we assume a 1 day meeting every two-months. Resources: 2001 2002 2003 2004 2005 2006 2007	WP Mana	ager: Calibration Tear	n leader				Date	:	10 Oct	t 2002
Start Date: 1 Jan 2003 End Date: End of Post-Operations Type: continuous Inputs: > Terms of reference of the ICC Teams > > Terms of reference of the ICC configuration control board Activities: Participate in the ICC configuration control board Outputs: > > > > Decisions of the ICC configuration control board Assumptions: > > Notes: > > > Resources for this work package can only be computed once the configuration control board has been defined. Currently we assume a 1 day meeting every two-months. Resources: 2001 2002 2003 2004 2005 2006 2007							ontrol boa	ard to wh	ich the Ca	libratior
Inputs: > > Terms of reference of the ICC Teams > > Terms of reference of the ICC configuration control board > Activities: Participate in the ICC configuration control board Outputs: > > Decisions of the ICC configuration control board Assumptions: > Notes: > Resources for this work package can only be computed once the configuration control board has been defined. Currently we assume a 1 day meeting every two-months. Resources: 2001 2002 2003 2004 2006 2007	Team Lea	der has to participate. T	his work-packag	e covers	this parti	cipation.				
 Terms of reference of the ICC Teams Terms of reference of the ICC configuration control board Activities: Participate in the ICC configuration control board Outputs: Decisions of the ICC configuration control board Assumptions: Notes: Resources for this work package can only be computed once the configuration control board has been defined. Currently we assume a 1 day meeting every two-months. Resources: 	Start Dat	e: 1 Jan 2003	End D	ate: End	of Post-C	Operation	s	Type: co	ntinuous	
 Terms of reference of the ICC configuration control board Activities: Participate in the ICC configuration control board Outputs: Decisions of the ICC configuration control board Assumptions: Notes: Resources for this work package can only be computed once the configuration control board has been defined. Currently we assume a 1 day meeting every two-months. Resources: 2001 2002 2003 2004 2005 2006 2007 	Inputs:									
Activities: Participate in the ICC configuration control board Outputs: > Decisions of the ICC configuration control board Assumptions: > Notes: > Resources for this work package can only be computed once the configuration control board has been defined. Currently we assume a 1 day meeting every two-months. Resources: 2001 2002 2003 2004 2005 2006 2007	Term	s of reference of the ICO	C Teams							
Participate in the ICC configuration control board Outputs: > Decisions of the ICC configuration control board Assumptions: > Notes: > Resources for this work package can only be computed once the configuration control board has been defined. Currently we assume a 1 day meeting every two-months. Resources: 2001 2002 2003 2004 2005 2006 2007	Term	s of reference of the ICC	C configuration c	control bo	ard					
Outputs: > Decisions of the ICC configuration control board Assumptions: > Notes: > Resources for this work package can only be computed once the configuration control board has been defined. Currently we assume a 1 day meeting every two-months. Resources: 2001 2002 2003 2004 2005 2006 2007	Activities	:								
Outputs: > Decisions of the ICC configuration control board Assumptions: > Notes: > Resources for this work package can only be computed once the configuration control board has been defined. Currently we assume a 1 day meeting every two-months. Resources: 2001 2002 2003 2004 2005 2006 2007	Participate	e in the ICC configuration	on control board							
 Decisions of the ICC configuration control board Assumptions: Notes: Resources for this work package can only be computed once the configuration control board has been defined. Currently we assume a 1 day meeting every two-months. Resources: 	-									
Assumptions: > Notes: > Resources for this work package can only be computed once the configuration control board has been defined. Currently we assume a 1 day meeting every two-months. Resources: 2001 2002 2003 2004 2005 2006 2007	Outputs:									
 Notes: Resources for this work package can only be computed once the configuration control board has been defined. Currently we assume a 1 day meeting every two-months. Resources: 	Decis	tions of the ICC configu	ration control bo	ard						
 Notes: Resources for this work package can only be computed once the configuration control board has been defined. Currently we assume a 1 day meeting every two-months. Resources: 										
Notes: > Resources for this work package can only be computed once the configuration control board has been defined. Currently we assume a 1 day meeting every two-months. Resources: 2001 2002 2003 2004 2005 2006 2007	Assumpti	ons:								
Resources for this work package can only be computed once the configuration control board has been defined. Currently we assume a 1 day meeting every two-months. Resources: 2001 2002 2003 2004 2005 2006 2007	\triangleright									
defined. Currently we assume a 1 day meeting every two-months. Resources: 2001 2002 2003 2004 2005 2006 2007	Notes:									
Resources:	Resou	urces for this work pack	age can only be	computed	l once the	e configu	ration con	ntrol boar	d has been	n
2001 2002 2003 2004 2005 2006 2007	define	ed. Currently we assume	e a 1 day meeting	g every tv	vo-month	ıs.				
	Resource	s:								
			2001	2002	2003	2004	2005	2006	2007	
10tdi	Tota	1	2001	2002	_					
	100	<u> </u>			0.05	0.05	0.05	0.05	0.05	



3.2 Calibration Team Management

	P Title: Calibration Team Manageme	ent				WP	Number	
						Vers	sion:	1.0
	P Manager: Calibration team leader					Date		6 Oct 2002
	scription: This work package covers a cept those associated with meetings.	ll activiti	es associ	ated with	the man	agement	t of the cal	libration team
Sta	rt Date: 1 Jan 2003	End Da	ate: End	of Post-C)ps		Type: Co	ontinuous
Inţ	puts:							
۶	Calibration Team terms of reference							
۶	SPIRE development schedule							
	Calibration team membership breakde	own						
Ac	tivities:							
	nning work							
	neduling work							
	viewing work with individual team mer viewing work done against the plan ma							
	porting to ICC manager, HSC, other SF		ns as rea	uired				
	tputs:		1					
\triangleright	Calibration team work packages							
⊳	Calibration team work allocation							
\triangleright	Calibration team schedule							
۶	Calibration team status reports?							
As	sumptions:							
\triangleright								
No	tes:							
۶	The calibration team is co-managed b	y the two	o leaders,	, all mana	igement o	output w	ill be join	tly agreed and
	authored.							
Re	sources:							
Γ		2001	2002	2003	2004	2005	2006	2007
	Total	2001		0.1	0.1	0.1	0.1	0.1



3.3 Calibration Team Interfaces

WP Title: Interface with other ICC tea	ams				WP	Number	
					Ver	sion:	1.0
WP Manager: Calibration team leader					Dat		6 Oct 2002
Description: As explicited in the calibra with the other teams of the ICC. This sur respective work-packages dealing with e	nmary wo ach interfa	ork-packa ace.	ge lists a	ll these in		s and tie to	ogether the
Start Date: 1 Jan 2003	End Da	ate: End	of Post-C	Ops		Type: C	ontinuous
Inputs:							
SPIRE Science requirements							
 ICC teams terms of reference 							
Activities: Define calibration files and information							
Define a reporting system including prob	ion control	l board			_		
Interface with SW team to design, create Interface with Test team to agree test sch Train Calibration team members to use I	edule					her parts o	of the EGSE, HSC
Interface with SW team to design, create Interface with Test team to agree test sch Train Calibration team members to use I systems) Train other teams and HSC personnel in	edule CC system	ns (CUS,	MIB, TO	OPE, IA/		her parts o	of the EGSE, HSC
Interface with SW team to design, create Interface with Test team to agree test sch Train Calibration team members to use In systems) Train other teams and HSC personnel in Outputs:	edule CC system	ns (CUS,	MIB, TO	OPE, IA/		her parts o	of the EGSE, HSC
Interface with SW team to design, create Interface with Test team to agree test sch Train Calibration team members to use In Systems) Train other teams and HSC personnel in Outputs: SPIRE Calibration requirement	edule CC system	ns (CUS,	MIB, TO	OPE, IA/		her parts o	of the EGSE, HSC
Interface with SW team to design, create Interface with Test team to agree test sch Train Calibration team members to use I systems) Train other teams and HSC personnel in Outputs: SPIRE Calibration requirement SPIRE Calibration Plan	edule CC system	ns (CUS,	MIB, TO	OPE, IA/		her parts c	of the EGSE, HSC
 Interface with SW team to design, create Interface with Test team to agree test sch Train Calibration team members to use Insystems) Train other teams and HSC personnel in Outputs: SPIRE Calibration requirement SPIRE Calibration Plan Calibration-specific IA module 	edule CC system calibration	ns (CUS, n specific	MIB, TO	OPE, IA/		her parts o	of the EGSE, HSC
 Interface with SW team to design, create Interface with Test team to agree test sch Train Calibration team members to use Insystems) Train other teams and HSC personnel in Outputs: SPIRE Calibration requirement SPIRE Calibration Plan Calibration-specific IA module Test plans for all the instrument test 	edule CC system calibration	ns (CUS, n specific	MIB, TO	OPE, IA/		her parts o	of the EGSE, HSC
 Interface with SW team to design, create Interface with Test team to agree test sch Train Calibration team members to use Insystems) Train other teams and HSC personnel in Outputs: SPIRE Calibration requirement SPIRE Calibration Plan Calibration-specific IA module Test plans for all the instrument test Calibration database 	edule CC system calibration	ns (CUS, n specific	MIB, TO	OPE, IA/		her parts c	of the EGSE, HSC
 Interface with SW team to design, create Interface with Test team to agree test sch Train Calibration team members to use Insystems) Train other teams and HSC personnel in Outputs: SPIRE Calibration requirement SPIRE Calibration Plan Calibration-specific IA module Test plans for all the instrument test Calibration database 	edule CC system calibration	ns (CUS, n specific	MIB, TO	OPE, IA/		her parts o	of the EGSE, HSC
Interface with SW team to design, create Interface with Test team to agree test sch Train Calibration team members to use I systems) Train other teams and HSC personnel in Outputs: SPIRE Calibration requirement SPIRE Calibration Plan Calibration-specific IA module Test plans for all the instrument test Calibration database Assumptions:	edule CC system calibration	ns (CUS, n specific	MIB, TO	OPE, IA/		her parts c	of the EGSE, HSC
Interface with SW team to design, create Interface with Test team to agree test sch Train Calibration team members to use In systems) Train other teams and HSC personnel in Outputs: SPIRE Calibration requirement SPIRE Calibration Plan Calibration-specific IA module Test plans for all the instrument test Calibration database Assumptions: Notes:	edule CC system calibration	ns (CUS, n specific	MIB, TO	OPE, IA/		her parts o	of the EGSE, HSC
Interface with SW team to design, create Interface with Test team to agree test sch Train Calibration team members to use In systems) Train other teams and HSC personnel in Outputs: > SPIRE Calibration requirement > SPIRE Calibration Plan > Calibration-specific IA module > Test plans for all the instrument test > Calibration database Assumptions: > Notes:	edule CC system calibration	ns (CUS, n specific	MIB, TO	OPE, IA/		her parts o	of the EGSE, HSC
Interface with SW team to design, create Interface with Test team to agree test sch Train Calibration team members to use I systems) Train other teams and HSC personnel in Outputs: > SPIRE Calibration requirement > SPIRE Calibration Plan > Calibration-specific IA module > Test plans for all the instrument test > Calibration database Assumptions: > Notes: >	edule CC system calibration	ns (CUS, n specific	MIB, TO	OPE, IA/		her parts c	of the EGSE, HSC
 SPIRE Calibration Plan Calibration-specific IA module Test plans for all the instrument test 	edule CC system calibration	ns (CUS, n specific	MIB, TO	OPE, IA/		her parts o	of the EGSE, HSC



3.3.1 Definition of Calibration Files/Information For IA

	P Title: Define calibration items and	<u>l informa</u>	tion requ	uired by	IA	WP	Number		
						Vers	ion:	1.0	
	Manager: Calibration Team leade					Date		9 Oct	
the dea tak alg Th	scription: A number of calibration ite level of scientific use. These items, the ls with this joint activity between the e place during the early development prithms may require new specific cali s WP also covers the possibility that the ere the calibration item required by IA	neir accura Calibration phases of brations to the Calibr	acies, and on Team both IA a o be perfe ration Tea	I their for and the C and the in ormed. Im place	rmat have Observationstrument constrain	to be de ons Team . Howev	fined. Th n. Most of er new da	is work p this activ ta reducti	ackage vity wil ion
	rt Date: 1 Jan 2003		ate: End				Type: Co	ontinuous	
Inj	outs:	1							
\triangleright	SPIRE observing modes								
\triangleright	ICC use-cases document								
Ac	ivities:								
Ide	ree on these typical flows with the Ob ntify calibration items/information ne fine the format for these calibration ite	eded by th		s					
Ag For Ou ≻	ree on these identifications and forma malise these definitions into calibration tputs: SPIRE calibration requirements rega Contribution to the SPIRE calibration	t definitio on require arding IA		he Obser	vations te	eam			
Ag For Ou ≻	ree on these identifications and forma malise these definitions into calibration tputs: SPIRE calibration requirements rega	t definitio on require arding IA on plan	ements			eam			
Ag For Ou > As >	ree on these identifications and forma malise these definitions into calibration tputs: SPIRE calibration requirements rega Contribution to the SPIRE calibration cumptions:	t definitio on require arding IA on plan	ements			eam			
Ag For Ou > As: No	ree on these identifications and forma malise these definitions into calibration tputs: SPIRE calibration requirements rega Contribution to the SPIRE calibration sumptions: There should exist a symmetric work	t definitio on require arding IA n plan k-package	ements e in the O	bservatio	ons team.		002, this l	nas been 1	isted in
Ag For Ou > As >	tee on these identifications and forma malise these definitions into calibration tputs: SPIRE calibration requirements rega Contribution to the SPIRE calibration to the SPIRE calibration to the spire calibration there should exist a symmetric work tes: Although that work-package starts in	t definitio on require arding IA n plan k-package n 2003, sc	e in the O ome work	bservatic	ons team. dy been d	one in 20			
$\begin{array}{c} \operatorname{Ag} \\ \operatorname{For} \\ \operatorname{Ou} \\ \end{array}$	tee on these identifications and forma malise these definitions into calibration tputs: SPIRE calibration requirements regat Contribution to the SPIRE calibration to the SPIRE calibration there should exist a symmetric work tes: Although that work-package starts in the resources table. This activity will probably decrease	t definitio on require arding IA n plan k-package n 2003, sc as we get	e in the O ome work to launch	bservatic	ons team. dy been d	one in 20			
Ag For Ou > As > No >	tee on these identifications and forma malise these definitions into calibration tputs: SPIRE calibration requirements rega Contribution to the SPIRE calibration to the SPIRE calibration comptions: There should exist a symmetric work tes: Although that work-package starts in the resources table. This activity will probably decrease have been identified by then	t definitio on require arding IA n plan k-package n 2003, sc as we get	e in the O ome work to launch	bservatic	ons team. dy been d	one in 20			
Ag For Ou > As > No >	ree on these identifications and forma malise these definitions into calibration tputs: SPIRE calibration requirements regat Contribution to the SPIRE calibration to the SPIRE calibration the should exist a symmetric work tes: Although that work-package starts in the resources table. This activity will probably decrease have been identified by then Only the calibration team manpower	t definitio on require arding IA n plan k-package n 2003, sc as we get	e in the O ome work to launch	bservatic	ons team. dy been d	one in 20			



3.3.2 Definition of Calibration Files/Information For Time Estimator

	Title: Define calibration items and nator	informat	tion requ	uired by 1	the Time	WPN	Number		
Louin						Versi	on:	1.0	
WP 1	Manager: Calibration Team leader					Date		9 Oct 2	2002
respo defin Tean chang	ription: A number of calibration iten onsibility of which lies in the Observa ed. This work-package deals with thi n. Most of this activity will take place ges or addition will be brought on the launch, but the responsibility of refle	tions Tea s joint ac during the Time Es	am). The tivity bethe he early particular to the second se	se items, tween the phases of after laun	their accu Calibrat the proje ch. Calibr	aracies an ion Team ect. It is n ration ite	nd formate and the ot forese ms may/	t have to b Observation en that ma will be upo	e ons ijor lated
Start	t Date: 1 Jan 2003	End Da	te: Call	for Open	Time	'	Type: Co	ontinuous	
[npu	ts:								
> 5	SPIRE observing modes								
> 5	SPIRE time estimator use-cases docu	ment							
Activ	vities:								
ldent Defir Agre	yse which use-cases need calibration ify calibration information needed by he the format for these calibration iter e on these identifications and format halise these into calibration requirement outs:	v these us ns definition	e-cases	he Observ	vations te	am			
> 5	SPIRE calibration requirements regar	ding the '	Time Est	timator					
> (Contribution to the SPIRE calibration	plan							
Assu	mptions:								
>]	There should exist a symmetric work-	package	in the Ol	bservation	ns team				
Note	s:								
1	The Call for Open Time is listed as the Fime Estimator is delivered to the con Frozen and fulfilled.								
> (Only the manpower required from the	e Calibrat	ion Tean	n is listed	in the re	sources t	able.		
Reso	urces:								
		2001	2002	2003	2004	2005	2006	2007	
		2002		0.05	0.05	0.05	2000		
	Total				0.00	0.00		1 1	



3.3.3 Definition of Calibration Files/Information For Uplink

VP Title: Define calibration items and	informa	tion requ	uired by	the	WP	Number	
plink					Vers	ion	1.0
VP Manager: Calibration Team leader					Date		9 Oct 2002
escription: A number of calibration iter		e mandat	orv for th	e Uplink			
PIRE. These items, their accuracies and ctivity between the Calibration Team and arly phases of the project, however it ma alibration items.	format ha d the Ope	ave to be erations T	defined. Team. Mo	This wor st of this	k-packa activity	ge deals w will take	vith this joint place during the
tart Date: 1 Jan 2003	End Da	ate: End	of Operat	tions		Type: Co	ontinuous
nputs:			*		ľ	• •	
SPIRE tele-commands list							
ctivities:							
nalyse which tele-commands need calib lentify calibration information needed by efine the format for these calibration ite gree on these identifications and format ormalise these into calibration requirement	y these te ms definitio	le-comm	ands	tions Tea	m		
putputs:	•						
SPIRE calibration requirements regar	rding the	Uplink/I	Downlink				
Contribution to the SPIRE calibration	-	I					
ssumptions:							
There should exist a symmetric work	-package	in the O	perations	Team			
otes:							
The document(s) that the Calibration	Team ca	n use as	input is(a	re) ill-det	fined		
Only the manpower required from the	e Calibra	tion Tear	n is listed	l in the re	esources	table	
We assume that this activity decrease	es close to	launch					
esources:							
	2001	2002	2003	2004	2005	2006	2007
			0.2	0.2	0.2	0.1	0.1
Total			0.2	··-	·	0.1	0.1



3.3.4 Definition of Calibration Specific Data Processing (IA for non-standard calibration data)

WP Title: Define calibration-specific da	ata reduo	ction pro	cessing t	ools	WP	Number		
*		•	0		Vers	sion:	1.0	
WP Manager: Calibration Team leader	r				Date	:	9 Oct 20	002
Description: Though most of the calibraticalibration analysis will require specific destructed is not the standard astronomical through non-standard observing modes. For Software Team to specify and create the team of the standard stan	ata proce informat or these t	essing too ion, and two cases	ls in two (2) when	occasion calibration	s: (1) wl on infori	hen the int mation car	formation to n only be ob	be btained
Start Date: 1 st Jan 2003	End Da	ate: End	of operati	ons?		Type: Co	ontinuous	
Inputs:			1					
 SPIRE observing modes 								
SPIRE test plan(s)								
 SPIRE calibration plan 								
Activities:								
 Extract from the Calibration and Test plan Identify the specific processing tools thes Agree with the Software Team that these Prototype these tools Place request to the Software Team to pro Test the tools produced by the Software T Outputs: Specification documents for calibrati Assumptions: On the Software Team side, this active outputs in the 	e measur tools do i oduce the 'eam on specif	ements re not yet ex se tools (ic proces ld fall in t	equire ist this may r sing tools	require w	riting sp	pecificatio	n document	
externally provided algorithms in the	SPIRE I.	А.						
 Notes: ➤ The actual tools development will be the fact that the Calibration Team with Resources: 				n, but the	resourc	es needed	take into ac	ccount
	2001	2002	2003	2004	2005	2006	2007	
Total			0.3	0.3	0.3	0.3	0.3	



3.3.5 Definition of a reporting system including problem reporting

W	P Title: Define a reporting and confi	guration	control	system		WP N	lumber		
						Versi	on:	1.0	
	P Manager: Calibration Team leader					Date:		10 Oct	
inf the nec	scription: The Calibration Team will is prmation for the whole SPIRE project se reports and make them available to ressity for the Calibration Team to hav figuration control board, and its respo al say on the availability of calibration	and possi the intere e a proble nsibilities	bly a wic sted com em report s, is also	ler audien munity. T system. I part of thi	ce. The T This work Finally, th s work pa	Feam wil c-package he definit ackage as	l need a s e also dea tion of th s this boa	system to a als with the e ICC	store e
Sta	rt Date: 1 Jan 2003	End Da	ate: 31 D	ec 2003		'	Гуре:		
Inj	outs:	•							
\blacktriangleright	SPIRE Calibration requirements								
\blacktriangleright	SPIRE ICC terms of reference								
Ac	tivities:								
Spo Ag Ag De	ecify the needs of the Calibration Tean ecify the needs of the Calibration Tean ree with Software Team on the design ree with Software Team on the design fine, with ICC Team leaders, the funct	n in terms of the rep of the pro	of a proporting sy	blem repo vstem port system	ort system n		iration co	ontrol boar	ď
Ou	tputs:								
	Calibration reporting system								
\blacktriangleright	Calibration problem report system								
	ICC configuration control board								
As	sumptions:								
	Participation of the Calibration Team package.	leader to	the ICC	configura	ation con	trol boar	d is not p	art of this	work-
No	tes:								
۶	Most of the actual work in this work- participate in the specifications and to				e Softwa	re Team,	the Cali	bration Te	am will
Re	sources:								
		2001	2002	2003	2004	2005	2006	2007	
	Total			0.2					



3.3.6 Interface with SW Team to design, create, test and document calibration database

WP Title: Design, create, test and docu	ment the	e calibra	tion data	base	WP	Number		
					Vers	sion:	1.0	
WP Manager: Calibration Team leader	•				Date	;	10 O	et 2002
Description: All the calibration information								
procedures, data reduction procedures, ca								
way that allows both the Calibration Tear								
needs. This work-package deals with all a	ctions re	lated to t	he creation	on of this	informa	tion storag	ge system	1.
Start Date: 1 Jan 2003	End D	ate: End	of Post-C	Operations	5	Type:		
Inputs:								
 SPIRE calibration requirements 								
SPIRE calibration plan								
SPIRE test plan(s)								
Activities:								
	the custo	m						
Define the elements that will be stored in Define the methods required to access the			vetom					
Agree on these definitions with Software								
Agree on these definitions with both the (bservatio	ns Tean	n (so that t	hey suit	their
needs as well)	1					,	2	
Review design documentation with Softw	are Tean	n						
Test the system produced by the Software	Team							
Document the system			_			,		
Propose changes to the system in case cal	ibration	philosoph	ny has evo	olved or i	new ele	ments/met	hods are	required
Outputs:								
 SPIRE calibration database 								
 SPIRE calibration database document 	tation							
Assumptions:								
A first version of the database will ha 07/03).	ive to be	operation	nal for the	e first inst	rument	level tests	(CQM t	est in
This work-package will peak during	the prepa	ratory ph	ases, and	decrease	closer	o launch		
Notes:								
> The actual development of the system	n falls on	the Soft	ware tear	n.				
This work-package lasts till the end of	of the pos	st-operati	ons phase	e to cover	the pos	sible modi	fications	to the
system. New calibration information								
modification of the information stora	ge syster	n (which	is differe	ent from b	oth mai	ntaining th	ne system	n and
updating its content).								
Resources:								
	2001	2002	2002	2004	2005	2007	2007	
Total	2001	2002	2003	2004	2005	2006	2007	-
Total			0.3	0.3	0.2	0.2	0.1	J



3.3.7 Interface With the Test Team to Agree Test Schedule

WP Title: Agree test schedules					WP N	Number	
					Versi	on:	1.0
WP Manager: Calibration Team leader	,				Date:		10 Oct 2002
Description: The Calibration Team is responsibility of the Test Team. This work finalize the test plans.	m is how	vever not	going to	perform t	he tests.	This acti	vity falls under the
Start Date: 1 Jan 2003	End Da	ate: 1 Ma	ar 2004		'	Туре:	
Inputs: Test schedules, as drafted by the Calif.	bration T	'eam					
Activities:							
Provide test schedules to the Test Team Gather comments from the Test Team on Modify the test schedule, if needed, to acc			mments f	rom the T	est Tear	n	
Outputs:							
 Agreed test schedules 							
Assumptions:							
> As no tests are foreseen after the PFM	I, this wo	ork-packa	ige ends a	at the star	t of this l	last test c	ampaign.
Drafting the test schedules is not part	of this w	ork pack	age.				
Notes:							
> It is unclear what the ICC will be doin	ng with t	he Flight	Spare.				
Resources:							
	2001	2002	2003	2004	2005	2006	2007
Total			0.05	0.05			

3.3.8 Training of Calibration Team Members by Members of Other Teams

Desc vario	Manager: Calibration Team leader cription: To perform their duties nom ous tools used and developed in the IC	inally, th	- Calibra			Ver	•		
Desc vario	cription: To perform their duties nom	inally, th	C I'l			101	sion:	1.0	
vario						Dat		10 Oct 2	
Star		.C.	e Calibra	ition Tear	n membe	ers will	require sor	ne training i	in the
	t Date: 1 Jan 2003	End Da	te: 31 D	ec 2005			Type:		
Inpu									
	Provision of CUS								
	Provision of the MIB								
	Provision of TOPE								
	Provision of the IA and QLA								
	Provision of the HSC systems (propo	sal handl	ing syste	m, missio	n planniı	ng syste	em)		
Acti	vities:								
Rece Rece Rece	eive training in use of the MIB eive training in use of TOPE eive training in use of the IA and QLA eive training in use of the HSC system puts:		sal handl	ing and n	nission pl	anning	systems)		
-	Proficiency in the use of all these system	tems							
Assu	imptions:								
	Each system will require 1 man.week no re-training will be necessary	of trainin	ng. Altho	ough some	e systems	s may e	volve (e.g.	IA), we ass	ume
	To compute the resources needed we CUS, MIB and TOPE takes place in 2						n Team, an	d that trainin	ng in
Note	es:								
	The work package extends to the laur appear late in the mission.	ich due to	the fact	that some	e of the s	ystems	considered	l here will o	nly
	The exact amount of resources needed	d depends	s on the r	number of	f member	rs in the	e Calibratic	on Team.	
Reso	ources:								
Гг		2001	2002	2003	2004	2005	2006	2007	
	Total	2001	2002	0.3	0.09	0.09	2000	2007	
1 -				1		1		L]	



3.3.9 Training Given by Calibration Team Members to Other ICC Team, Other Instrument Team or HSC Team Members

WP Title: Train ICC members in use of	of calibra	tion-spe	cific tools	5	WPI	Number	
					Versi	ion:	1.0
WP Manager: Calibration Team leade					Date		10 Oct 2002
Description: The Calibration Team will have to master as well. These tools are the information derivation procedures. The C	e calibrati	ion-speci	fic data p	rocessing	g module	s, and the	calibration
Start Date: 1 Jan 2003	End Da	ate: Laur	ich			Type: Co	ontinuous
Inputs:	•						
 Calibration-specific data-processing 	tools						
> Calibration information derivation p	rocedures						
Activities:							
Organise training sessions in calibration- Organise training sessions in use of calib				n procedi	ures		
Outputs:							
> None							
Assumptions:							
 The Calibration Team will organize instrument. 	regular tra	aining sea	ssions, m	ostly arou	and the d	ifferent te	est phases of the
Notes:							
>							
Resources:							
	2001	2002	2003	2004	2005	2006	2007
Total			0.03	0.03	0.03	0.03	0.03
	1						

3.4 Calibration Testing

	on Testing					WP	Number		
						Ver	sion:	1.0	
	oration Team leader					Dat		10 Oct 200	2
	mmary work-package ting. Those aspects wi								
Start Date: 1 Jan 20	03	End Da	te: Laun	ch			Type: Co	ontinuous	
Inputs:									
Instrument Requ	irements Document								
Science Require	ments Document								
> AIV Plan									
Activities:									
	hation Doguinamonts								
Definition of the Cali	ibration Requirements	5							
Definition of Calibra									
	ction of the Calibratic	on Databa	ase						
Write Test Observati									
Analyse Test Data									
Populate the Calibrat	ion Database								
Review the test resul	ts, calibration plan and	d test pla	n						
Outputs:									
SPIRE Ground C	Calibration								
Assumptions:									
assumption is cu	nsibilities of he calibration rently made that the here cus. The calibration	calibratio	on team	will speci	fy tests a	und, if n	ot already	defined, define	• the
running tests.								, r	
				_				, <u>r</u>	
running tests.								,	
running tests. Notes: ▹								,	
running tests. Notes: ≻								,	
running tests. Notes:		2001	2002	2003	2004	2005	2006	2007	
running tests. Notes: ▷		2001	2002	2003 1.22	2004 0.82	2005 0.6	2006 0.4		



3.4.1 Definition of the Calibration Requirements

WP Title: Calibration Testing					WP	Number	
					Vers	sion:	1.0
WP Manager: Calibration Tea	n leader				Date	:	10 Oct 2002
Description: This work-package	describes the wo	rk to defi	ine the to	p level ca	libration	n requirem	nents for SPIRE.
Start Date: 1 Jan 2003	End D	ate: Lau	nch			Type: Co	ontinuous
Inputs:							
 Instrument Requirements Do 	cument						
 Science Requirements Docur 	ment						
Activities:							
Definition of the calibration docu Extract calibration requirements the Produce top level calibration requirements and the produce top level calibration requirements and the product of t	from science requirements documents	iirements ent	5				
Outputs:							
 SPIRE Calibration Requirem 	ents Document						
SPIRE Calibration Document	tation Scheme						
Assumptions:							
\blacktriangleright							
Notes:							
Most work on this work pack requirements document main			in the 20)03 onwa	rds time	frame only	v calibration
Resources:							
	2001	2002	2003	2004	2005	2006	2007
Total			0.02	0.02	0.02	0.02	0.02



3.4.2 Definition of the Calibration Plan for ILT

			LΤ			WP 1	Number		
						Vers	ion:	1.0	
-	Manager: Calibration Team lead					Date	-	10 Oct	
with	cription: This WP describes all the the extracted requirements and the rmation the tests and data analysis r ved.	n turns this	into a se	t of calib	ration inf	formation	. For eac	h piece of	
Star	rt Date: 1 Jan 2003	End D	ate: Laur	nch			Type: Co	ontinuous	
Inp	uts:								
\triangleright	Calibration Requirements Docume	nt							
\triangleright	IA, Time Estimator, Uplink Requir	ements as	agreed w	ith data p	rocessing	g and ops	teams.		
Acti	ivities:								
Re-a Defi Defi Defi	abine agreed calibration file definiti arrange calibration file definitions in ine test/instrument data needed for e ine data processing algorithm/metho inition of Calibration Specific Data ine timeline of data gathering activity	nto 'calibra each activit od needed f Processing	tion activ y for each a	vities' activity (i	ncluding		ta)		
	puts:								
\triangleright	SPIRE Ground Test Calibration Pla	ın							
\triangleright	SPIRE Calibration File/Object Def	inition Pro	cedures (CFDPs)					
Ass	umptions:								
≻	Astronomical ground calibration is	in the prep	paratory p	orogramn	ne sectior	ı.			
\triangleright	PV and Routine calibration plans as	re in a sepa	arate secti	ion					
Not	es:								
	As defined by this WP the calibrati currently defined as being in the ca	libration p	lan into s	eparate d	ocuments	8.	• •		
۶	As this WP relates to the planning of and PFM testing 03/04 and the bull							M testing	07/03
\triangleright	Effort in years 2005-2007 relates to	maintena	nce of CF	FDPs.					
\triangleright	IA definition covered in interface V	VP.							
Res	ources:								
		2001	2002	2003	2004	2005	2006	2007	
	Total			0.5	0.2	0.1	0.1	0.1	
L	Total			0.5	0.2	0.1	0.1	0.1	



3.4.3 Definition of the Calibration Tests

						Number		
					Vers	ion:	1.0	
Manager: Calibration Team leader					Date			t 2002
							alibration	plan an
t Date: 1 Jan 2003	End Da	ate: Laun	ch			Type: Co	ontinuous	
its:								
Ground Calibration Plan								
vities:								
cessary specify new tests face with the test team to confirm sch the observations in the CUS		-	•	specificat	tions			
puts:								
Approved test specification								
Approved test plan								
imptions:								
The test team will expect the calibrati	on team	to be able	e to use t	he CUS l	out not T	OPE.		
s:								
			we may s	plit the in	nformatio	on current	ly defined	l as bein
							M testing	07/03
Some effort is scoped for FS specifica	tions an	d possible	e commi	ssioning	phase sp	ecification	ns.	
ources:								
	2001	2002	2003	2004	2005	2006	2007	
Total			0.2	0.1	0.04	0.04	0.04	
	es this to either currently existing test Date: 1 Jan 2003 ts: Ground Calibration Plan vities: pare test requirements in calibration pressary specify new tests face with the test team to confirm scherche observations in the CUS outs: Approved test specification Approved test plan mptions: The test team will expect the calibrati s: The calibration plan may be a too largen n the calibration plan into separate do As this WP relates to the planning of and PFM testing 03/04 and the bulk of Some effort is scoped for FS specification urces:	es this to either currently existing tests or if ne Date: 1 Jan 2003 End Date: Figure 1 Jan 2003 End Date: Ground Calibration Plan Vities: pare test requirements in calibration plan with cessary specify new tests face with the test team to confirm scheduling of the observations in the CUS Date: Approved test specification Approved test plan mptions: The test team will expect the calibration team s: The calibration plan may be a too large document As this WP relates to the planning of the group and PFM testing 03/04 and the bulk of the plan Some effort is scoped for FS specifications an urces: 2001	es this to either currently existing tests or if necessary of Date: 1 Jan 2003 End Date: Laun ts: Ground Calibration Plan vities: pare test requirements in calibration plan with pre-exis cessary specify new tests face with the test team to confirm scheduling of all test the observations in the CUS outs: Approved test specification Approved test plan mptions: The test team will expect the calibration team to be able s: The calibration plan may be a too large document and we n the calibration plan into separate documents. As this WP relates to the planning of the ground tests it and PFM testing 03/04 and the bulk of the planning will Some effort is scoped for FS specifications and possible urces: 2001 2002	as this to either currently existing tests or if necessary defines notes that the currently existing tests or if necessary defines notes that the currently existing test to the calibration Plan Approved test specification Approved test plan mptions: The calibration plan may be a too large document and we may so n the calibration plan into separate documents. As this WP relates to the planning of the ground tests it is top loand PFM testing 03/04 and the bulk of the planning will be composed to the second possible commit urces: 2001 2002 2003	a Date: 1 Jan 2003 End Date: Launch ts: Ground Calibration Plan vities: pare test requirements in calibration plan with pre-existing test specification pare test requirements in calibration plan with pre-existing test specification cessary specify new tests face with the test team to confirm scheduling of all tests the observations in the CUS outs: Approved test specification Approved test plan mptions: The test team will expect the calibration team to be able to use the CUS I s: The calibration plan may be a too large document and we may split the in n the calibration plan into separate documents. As this WP relates to the planning of the ground tests it is top loaded to 2 and PFM testing 03/04 and the bulk of the planning will be complete bef Some effort is scoped for FS specifications and possible commissioning surces: 2001 2002 2003 2004	es this to either currently existing tests or if necessary defines new test specification Date: 1 Jan 2003 End Date: Launch Is: Ground Calibration Plan Fities: pare test requirements in calibration plan with pre-existing test specifications ressary specify new tests face with the test team to confirm scheduling of all tests the observations in the CUS Date: Approved test specification Approved test specification Approved test specification Approved test plan mptions: The test team will expect the calibration team to be able to use the CUS but not T s: The calibration plan may be a too large document and we may split the information n the calibration plan into separate documents. As this WP relates to the planning of the ground tests it is top loaded to 2003 assume and PFM testing 03/04 and the bulk of the planning will be complete before CQM. Some effort is scoped for FS specifications and possible commissioning phase specifications urces: 2001 2002 2003 2004 2005	Set this to either currently existing tests or if necessary defines new test specifications Image: The test is the constraint of the test team will expect the calibration team to be able to use the CUS but not TOPE. Set Topological test team will expect the calibration team to be able to use the CUS but not TOPE. Set The calibration plan may be a too large document and we may split the information current n the calibration plan into separate documents. As this WP relates to the planning of the ground tests it is top loaded to 2003 assuming CQ and PFM testing 03/04 and the bulk of the planning will be complete before CQM testing. Some effort is scoped for FS specifications and possible commissioning phase specification Approximation CQ Mathematical test Mathematical test test is and possible commissioning phase specification	End Date: 1 Jan 2003 End Date: Launch Type: Continuous ts: Ground Calibration Plan Type: Continuous vities: Pare test requirements in calibration plan with pre-existing test specifications Seesary specify new tests face with the test team to confirm scheduling of all tests Type: Continuous eta observations in the CUS Seesary specification Approved test specification Approved test plan mptions: Face and the calibration team to be able to use the CUS but not TOPE. s: Continuous Seesary split the information currently defined in the calibration plan may be a too large document and we may split the information currently defined in the calibration plan into separate documents. As this WP relates to the planning of the ground tests it is top loaded to 2003 assuming CQM testing and PFM testing 03/04 and the bulk of the planning will be complete before CQM testing. Some effort is scoped for FS specifications and possible commissioning phase specifications. urces: 2001 2002 2003 2004 2005 2006 2007



3.4.4 Definition and Production of the Calibration Database

WP Title: Definition and Production of t	he Calibr	ation Dat	abase		WP I	Number	
					Vers	ion:	1.0
WP Manager: Calibration Team leade					Date	*	10 Oct 2002
Description: This work package describe							
interacting with the software team to prod	luce and	maintain	the datab	ase and t	o popula	te the dat	abase.
Start Date: 1 Jan 2003	End Da	ate: Laun	ich			Type: Co	ontinuous
Inputs:							
Ground Calibration Plan							
Activities:							
Agree set of calibration objects with othe	r ICC too	me					
Determine what other data should be place							
Agree with software team format and cor							
Define and carry out acceptance procedur	re for the	database					
Produce/obtain the data needed to popula	te the dat	abase					
Agree updates within the ICC	1. (.						
Update the database with the calibration Outputs:	Jala						
-	otion dat	basa					
Populated, easily maintainable calibration		abase					
Assumptions:							
> The database for QLA and test data i	s a test te	am respo	nsibility				
Obtaining data to populate the data b	ase is cov	vered by	other wor	k packag	ges		
Notes:							
 Other data could include reports, doc 	umentati	on, mode	ls, astron	omical da	ata from	non-SPIF	RE source etc
Updates may be agreed via a ccb							
Slightly more work scoped in 2007 a	s some a	djustment	ts may be	made fo	r flight d	ata	
Resources:							
	2001	2002	2003	2004	2005	2006	2007
Total	2001	2002	0.3	0.1	0.04	0.04	0.08
	1	I		~	0.04	0.01	
L							



3.4.5 Define and Write Test Observations

WP Title: Define and Write Test Obser	rvations				WP N	Number	
					Versi	ion:	1.0
WP Manager: Calibration Team leader					Date		10 Oct 2002
Description: This work package describe	es the writ	ing of ca	libration	test obse	rvations	in the CU	S.
Start Date: 1 Jan 2003	End Da	te: Laun	ich			Type: Co	ontinuous
Inputs:							
Ground Calibration Plan							
Activities:							
Determine which tests arising from the ca	libration	plan are	not plann	ed v the	test team		
Agree with the test team that the calibration							
Define the observations in the CUS			*				
Deliver them to the test team							
Outputs:							
CUS observations							
Assumptions:							
All other aspects of preparing and run	nning the	tests are	the respo	onsibility	of the tes	st team	
Notes:							
No work is scoped at present as we a If this is not the case this wp will be			ne baselin	e that the	e perform	ance tests	s will be sufficie
Resources:							
	2001	2002	2003	2004	2005	2006	2007
			0	0	0	0	0
Total							

3.4.6 Analyse Test Data

WP Title: Analyse Test Data					WP N	Number		
					Versi	on:	1.0	
WP Manager: Calibration Team leader					Dates			et 2002
Description: This work package describe				is needed	l, the sett	ing requi	rements of	on
analysis tools and the actual analysis of ca	alibration	test data	l .					
Start Date: 1 Jan 2003	End Da	ate: Laur	nch			Type: Co	ontinuous	
Inputs:								
Ground Calibration Plan								
Activities:								
Determine which tests arising from the ca					test team			
Agree with the test team that the calibration	on observ	vations a	e require	d				
Define the observations in the CUS								
Deliver them to the test team								
Outputs:								
 CUS observations 								
Assumptions:								
 All other aspects of preparing and run 	nning the	tests ind	cluding m	onitoring	OLA at	re the res	ponsibilit	v of the
test team	ining the	(0515, III	induning in	onntornig	, Q LI I, U		ponoronn	y or the
Notes:								
No work is scoped at present as we as	re workir	ng with th	ne baselin	e that the	perform	ance test	s will be	sufficient
If this is not the case this wp will be a				•	periorii			
Resources:								
	2001	2002	2003	2004	2005	2006	2007]
Total			0	0	0	0	0	
	I		1	1	l			J
ι								



3.4.7 Populate Calibration Database

W	P Title: Populate Calibration Databa	se				WP I	Number		
						Versi	ion:	1.0	
	P Manager: Calibration Team leader					Date			et 2002
De	escription: This work package describe	s the step	os needed	to popul	ate the ca	alibration	database		
	art Date: 1 Jan 2003	End Da	ate: Laur	ch			Type: Co	ontinuous	5
In	puts:								
۶	Models of astronomical sources								
۶	Data from other astronomical observa	atories							
۶	Deliveries from sub-system teams (in	formatio	n and tes	t data)					
۶	Analysed test data								
۶	Simulations of SPIRE data								
A	ctivities:								
Us Int	neck data meets database format require se database interface to load the data int form ICC of update (if not done so auto	o the dat	abase	nat if nec	essary				
	utputs:								
	Populated database								
As	ssumptions:								
≻	There will be a suitable user interface	e availabl	e to the e	ntire cali	bration te	eam			
No	otes:								
	Most of the effort in this work packag sources into a format suitable for the database concept.								
	The 2003 effort is estimated for subs from both the CQM and PFM and 20 FS data. The effort scoped for 2006 a	05 where	e we will	finalise t	he analys	sis of PFN	A data an		
Re	esources:								
ſ		2001	2002	2003	2004	2005	2006	2007	1
	Total			0.2	0.3	0.3	0.1	0.1	1
			•	•	•		•		1



3.4.8 Review test results, calibration plan and test plan

	P Title: Review test results, calibration	on plan a	nd test p	olan		WP N	Number	
						Versi	on:	1.0
	P Manager: Calibration Team leader					Date		10 Oct 2002
	scription: This work package describe	es the activ	vities ass	ociated w	ith revie	wing the	calibratio	on plan and test
pla	n.							
Sta	art Date: 1 Jan 2003	End Da	ate: 2006	?		1	Type: Co	ontinuous
[n]	puts:							
	Calibration plan							
	Test plan (including test schedule)							
Ac	tivities:							
	ree review dates with test team							
	ree review dates with the ICC							
	pare review documentation							
	epare review presentations Id reviews							
	itputs:							
⊳ ⊳	Reviewed progress							
	Reviewed progress							
As	sumptions:							
	It is assumed that joint reviews of the will be held following both CQM and in any other joint reviews (e.g. test re	d PFM tes	sting. It i	s not expe	ected that	t the calib		
					-			
	It is assumed that the calibration tean either an internal status update within						ese may ta	ake the form of
		the ICC	or of a fo	ormal ICC	C review.			
	either an internal status update within Reviewing the status within the calib	the ICC	or of a fo	ormal ICC	C review.			
> No	either an internal status update within Reviewing the status within the calib regular calibration team meetings.	the ICC ration tea	or of a for m is cons	ormal ICC sidered a	C review.			
⊳ No	either an internal status update within Reviewing the status within the calib regular calibration team meetings. tes: The 2006 effort assumes we will be t	the ICC ration tea	or of a for m is cons	ormal ICC sidered a	C review.			
> No	either an internal status update within Reviewing the status within the calib regular calibration team meetings. tes:	the ICC ration tea	or of a for m is cons	ormal ICC sidered a	C review.			
> No	either an internal status update within Reviewing the status within the calib regular calibration team meetings. tes: The 2006 effort assumes we will be t	the ICC ration tea	or of a for m is cons	ormal ICC sidered a	C review.			
> No	either an internal status update within Reviewing the status within the calib regular calibration team meetings. tes: The 2006 effort assumes we will be t	a the ICC ration tea esting a f	or of a form is control of a form is control of a form is control of a form	ormal ICC sidered a re.	C review.	nent activ	vity and w	vill be done via

3.5 Calibration Preparatory Programme

V	P Manager: Calibration Team le	eader				Date	:	10 Oct 2	2002
	scription: This work package des		ivities as	sociated v	with gathe				
	gramme that lies outside the scop					C		U U	
Sta	art Date: 1 Jan 2003	End D	ate: Laur	nch?			Type: Co	ontinuous	
[n]	outs:								
>	Outline In-flight calibration requ	irements/plar	1						
4c	tivities:								
•	Determine what preparatory obs	ervations are	required	before la	unch.				
•	Prepare plan for making requests					tories for	r observa	tions to be c	arrie
	out								
•	Prepare and submit proposals								
•	Carry out the observations Analyse the data from the observ	vations and ac	ld the res	ults of th	is analvsi	s to the c	alibratio	ı database (s	see
	notes)	und ut							
•	Liase with leading modellers of	primary calib	rators						
•	Populate calibration database								
	itputs:								
	Populated calibration database								
	Updated outline in-flight calibra	tion plan							
As ≽	sumptions:								
·	4								
	tes:				1		4 1.1.		
	The work in this area may be ma on proposing, observing and data								
	required for HCalSG contributio								
	reformat and database entry is co	overed by the	'populate	e calibrat	ion datab	ase' WP.			
	The input for this WP will be on improved iteratively.	ly an outline i	in-flight o	calibratio	n plan as	this WP	will enab	le this to be	
⊳	May continue post-launch e.g. as	steroid monite	oring						
Re	sources:								
Γ		2001	2002	2003	2004	2005	2006	2007	
					TBD	TBD	TBD		

3.6 Flight Preparation

W	P Title: Flight Preparation					WP	Number	
						Vers	ion:	1.0
W]	P Manager: Calibration Team leader	•				Date	:	10 Oct 2002
	scription: This work top level package tht calibration activities	e describe	es the act	ivities ass	sociated	with pre-	flight prep	paration of in-
Sta	rt Date: 2005?	End Da	ate: Laun	nch			Type: Co	ontinuous
Inj	outs:							
\triangleright	Outline in-flight calibration requirem	ents/plan						
	Populated calibration database							
Ac	tivities:							
•	Produce the PV phase calibration plan	n						
•	Produce the routine phase calibration							
Ou	tputs:							
\triangleright	Detailed PV phase calibration plan an	nd schedu	ıle					
≻	Routine phase calibration plan							
As	sumptions:							
⊳	This activity will not start until at least	st 2005						
No	tes:							
⊳	The calibration database may continu	e to be p	opulated	with astro	onomical	l data for	the durati	on of this activity
Re	sources:							
Γ		2001	2002	2003	2004	2005	2006	2007
	Total			0	0	TBD	TBD	TBD
		•	•	•				· · · · · ·



3.6.1 Produce the PV phase calibration plan

VV	P Title: Produce the PV phase cal	libration pla	ın			WPN	Number	
						Versi	on:	1.0
	P Manager: Calibration Team lea					Date		10 Oct 20
De	scription: This is work package de	escribes the a	ctivities	associate	d with pr	eparation	of the PV	/ phase plan
Sta	art Date: 2005?	End D	ate: Laur	nch			Type: Co	ontinuous
Inp	puts:							
	Outline in-flight calibration requi	rements/plan	ı					
\triangleright	Calibration database status							
Ac	tivities:							
•	Check outline plan and calibration	n database p	opulation	status				
•	Determine what calibration inform		ded and	obtainabl	e in PV p	ohase		
•	Determine the types of observation	ons needed						
•	Select objects	~~	1.110.0					
•	Agree PV phase plan with other I Schedule the PV phase observation			nlonnina	anatama			
• 011	itputs:	Jis using the	mission	plaining	system			
⊳u ≽	Detailed PV phase calibration pla	n						
>	PV phase schedule	.11						
	sumptions:							
AS:	sumptions:							
	4							
	tes:	1						
	This activity will not start until at				•			
۶	The detailed PV phase plan will e detailed plan including information							
	the data will be analysed and an o			Station w	III De dei	iveu, wiid	it sources	s will be used
Re	sources:	0						
Г			1	1	1	1	T	1 1
	Total	2001	2002	2003 0	2004 0	2005 TBD	2006 TBD	2007 TBD



3.6.2 Produce the Routine Phase Calibration Plan

WP Title: Flight Prodi	ice the Routine Phase Cal		WP Number				
					Versi	on:	1.0
WP Manager: Calibra					Date		10 Oct 2002
	rk package describes the ad	ctivities a	associate	d with pro	eparation	of the ro	utine phase
calibration plan							
Start Date: 2005?	End Da	ate: Laun	ich		,	Type: Co	ontinuous
Inputs:							
 Outline in-flight ca 	ibration requirements/plan						
Calibration databas	e status						
Activities:							
• TBW							
0 / /							
Outputs:							
 Routine phase calib 	ration plan						
Assumptions:							
\triangleright							
Notes:							
This activity will no	ot start until at least 2005						
>							
Resources:							
		••••				••••	
Total	2001	2002	2003	2004	2005	2006	2007
			0	0	TBD	TBD	TBD



3.7 PV Phase

	P Title: PV Phase					WP I	Number				
						Vers	ion:	1.0			
W	P Manager: Calibration Team leader	r				Date	:	10 Oct 2002			
	scription: This is work package descri		ctivities	associated	d with PV	V phase					
Start Date: Launch End Date: End of PV phase						Type: Continuous					
Inj	outs:										
\triangleright	PV phase calibration plan										
\triangleright	PV phase schedule										
Ac	tivities:										
•	Check quality of PV phase data										
•	Analyse PV phase data										
•	Produce calibration information requ	ired for u	ıplink								
•	Produce calibration information requ										
•	Produce calibration information required for the time estimator										
•	Produce the PV Phase Calibration Re										
•	Update the Routine Phase Calibration		(. 1 1 .	1 1	1	111					
•	Liase with other groups to recommer	Id AUIS	to be rele			infration	informati				
0	tnute			lascu basi		noration	morman	on obtained.			
	tputs:					indiation	morman	on obtained.			
Ou >	tputs: Instrument ready for scientific verific					inoration	morman	on obtained.			
≻	-										
> As:	Instrument ready for scientific verific										
≻ As: ≻	Instrument ready for scientific verific										
≻ As: ≻	Instrument ready for scientific verific	cation									
> As: No	Instrument ready for scientific verific sumptions: tes:	cation									
> As: No > No	Instrument ready for scientific verific sumptions: tes:	cation									
> As: > No > >	Instrument ready for scientific verific sumptions: tes: This activity will not start until at lea	st 2007									
> As: > No >	Instrument ready for scientific verific sumptions: tes: This activity will not start until at lea	cation	2002	2003 0	2004 0	2005	2006	2007 TBD			

3.8 Routine Phase

WP Title: Routine Phase					WP N	Number					
					Versi	on:	1.0				
WP Manager: Calibration Team leader					Dates		10 Oct 2002				
Description: This is work package description	ibes the a	ctivities a	associated	l with rou	utine cali	bration					
Start Date: Start of routine phase	ons	Type: Continuous									
Inputs:	•		•		•						
 Routine phase calibration plan 											
Activities:											
• Update the calibration plan in routine	e phase										
 Definition of calibration observation 	P										
• Schedule the observations											
Retrieve observations and associated					ck quality						
• Data reduction of relevant observation	ons for each	ch calibra	ation time	period							
Update relevant calibration artifacts											
 Determine which updates will be made persistent this period Verify the planned updates for this time period and update the HSC system with the calibration artefact 											
 Update the calibration report 	ine period	i and upo		SC Sysic	iii wiui u	ic canora	anon arteraet				
Outputs:											
 Maintenance of instrument calibratio 	n										
· ··											
Assumptions:											
> 											
Notes:											
This activity will not start until at least start											
End date might be end of post-operations											
Resources:											
	2001	2002	2003	2004	2005	2006	2007				
Total			0	0	0	0	TBD				