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SPU HIGH LEVEL SOFTWARE

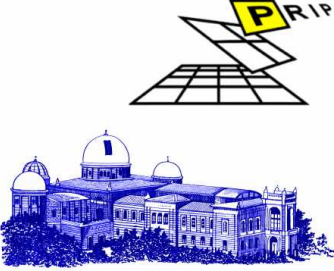
CIDL (Configuration Item Data List)

Document Ref.: PACS-TW-LI-001

Issue: 1.5

Prepared by: **R. Ottensamer** and **C. Reimers**
Checked and Approved by: **F. Kerschbaum**

Date: **18 Feb. 2009**

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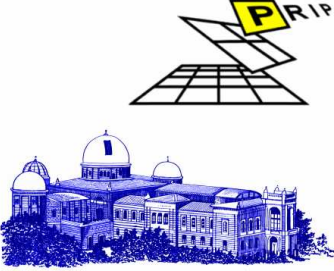
Distribution Record

Issue / Revision	Issue 1.0	Issue 1.1	Issue 1.2	Issue 1.3	Issue 1.4	Issue 1.5	
Distribution Date	19.11.2004	13.04.2006	03.11.2006	10.04.2007	01.07.2008	18.02.2009	

INTERNAL			EXTERNAL		
Department	Name	Qty	Company	Name	Qty
UVIE/ASTRO	R. Ottensamer	1			
			MPE	H. Feuchtgruber, O. Bauer, E. Wieprecht, A. Contursi, T. Müller, G. Wildgruber	1
			CSL	J.M. Gillis, A. Mazy,	1
			IAC	J.M. Herreros, P. Gomez	1
			IFSI	R. Orfei, S. Pezzato	1
			MPE	PACS Project Office (pacs@mpe.mpg.de) PACS Warm Electronic (pacs-we@ster.kuleuven.ac.be)	1
				Electronic Archives at Leuven http://pacs.ster.kuleuven.ac.be	1

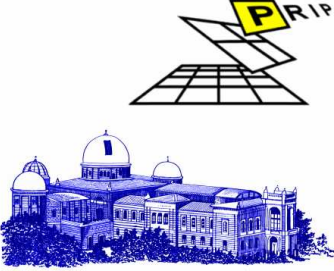
Document Change Record

Document Title		
HERSCHEL – PACS SPU HLSW CIDL		
Issue	Date	Reason for Change
Issue 1.0	19/11/2004	Initial issue for HLSW v11.1
Issue 1.1	13/04/2006	Update for HLSW v12.2
Issue 1.2	03/11/2006	Update for HLSW v13.5
Issue 1.3	20/06/2007	Update for HLSW v13.8
Issue 1.4	01/07/2008	Update for HLSW v13.9
Issue 1.5	18/02/2009	Update for HLSW v13.96

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1. Introduction

1.1. Purpose

This document reports in summary form transfer phase activities for the Herschel/PACS SPU HLSW project. The SPU HLSW CIDL document is identical to the Software Transfer Document (STD).

1.2. Scope

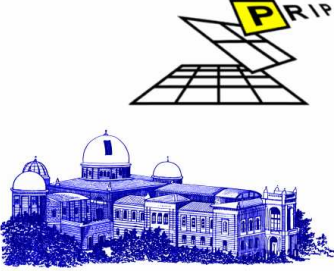
This document lists the documents and their versions as well as the list of SW source codes applicable to PACS SPU HLSW version 13.96 for SW testing, building, installation and maintenance. It is intended to be handed over from the SW developer to the maintenance organisation.

It should provide:

- a description of the procedure to build the HLSW from source code (see Section 2)
- a description of the installation procedure of the HLSW on the SPU (see Section 3)
- a list of all the deliverable configuration items (see Section 4)
- a summary of the acceptance test report (see Section 5)
- a list of SPRs raised during the TR phase and their status at this issue (see Section 6)
- a list of SCRs raised during the TR phase and their status at this issue (see Section 7)
- a list of SMRs completed during the TR phase (see Section 8)

1.3. Definitions, acronyms and abbreviations

CIDL	Configuration Item Data List
HLSW	High Level SoftWare
PACS	Photo-detector Array Camera and Spectrometer
SCR	Software Change Request
SDE	Software Development Environment
SMR	Software Modification Report
SPR	Software Problem Report
SPU	Signal Processing Unit
STD	Software Transfer Document
SW	SoftWare
TR	TRansfer

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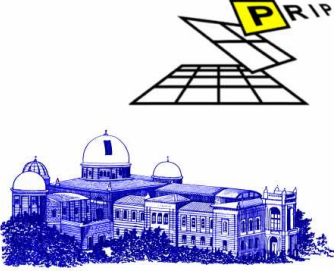
1.4. Related Documents

1.4.1. Applicable Documents

AD001	PACS-TW-GS-001	SPU High Level Software Specification Document
AD002	PACS-TW-ID-001	SPU HLSW to DPU Interface Description
AD003	PACS-TW-SR-001	HERSCHEL/PACS SPU HLSW User Requirement Document
AD004	PACS-TW-HM-002	SPU HLSW User Manual

1.4.2. Reference Documents

RD001	BSSC(96)2	Guide to applying the ESA software engineering standards to small Software projects
RD002	PACS-CL-ID-004	Interface Control Document DEC/MEC – SPU
RD003	FPL-IC-1214-01-CRS	PACS SPU HW-SW Interface Control Document
RD004	IFSI/OBS/PL/2000-001	DPU/ICU On board Software Product Assurance Plan
RD005	DIPSAPII-DAS-31-06 issue 2	SMCS332 user manual
RD006	VUG42R300BX	Wind River Virtuoso user guide (version 4.2, revision 3)
RD007	PACS-IC-TN-001	PACS and LFI SPU_SUSW and DPU_ASW Protocol
RD008	PACS-IC-PL-001	PACS SPU Limited Functional Tests
RD009	SCI-PT-ICD-7527	Packet Structure – Interface Control Document (PS-ICD)
RD010	FPL-IC-1214-04-CRS	SPU LLSW Drivers SW Interface Control Document

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2. Build Report

The software required to compile the SPU HLSW is:

- Virtuoso real time OS _v4.2 R3_ with library
- LLSW drivers from CRISA _v1.4_
- ADSP 21k library _v3.3_
- G21k Compiler and ld21k Linker _v3.3_

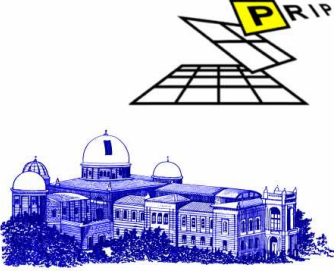
The following list shows the report of the HLSW build procedure:

SW Build Date / Time	
SW Build Location	
Hardware Environment	
Software Environment	
SW Build Version	
Problems encountered during the Build	
SW Build CPU / elapsed Time	

3. Installation Report

The following list shows the report of the HLSW installation procedure:

SW Installation Date / Time	
SW Installation Location	
Hardware Environment	
Software Environment	
SW Installation Version	
Problems encountered during the Installation	
SW Build CPU / elapsed Time	
Disk Space used	

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4. Configuration Item List

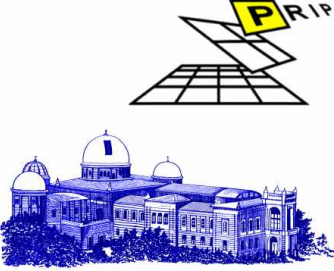
4.1. Documents

#	Configuration Number	Document Name	Issue	Distribution Date
1	PACS-TW-SR-001	SPU HLSW URD	3.1	29.03.2004
2	PACS-TW-ID-001	SPU HLSW to DPU ICD	5.1	16.04.2004
3	PACS-TW-GS-001	SPU HLSW SSD (incl. ADD+DDD+SRD)	4.8	18.02.2009
4	PACS-TW-HM-002	SPU HLSW SUM	13.96	18.02.2009
5	PACS-TW-TR-012	SPU HLSW Test Report	5.0	29.05.2002
10	IFSI/OBS/PL/2000-001	SW PA Plan (from IFSI)		08.01.2001
11	HSO/PACS,SPU HLSW	Release Notes	13.96	18.02.2009
12	PACS-TW-TN-015	SPU HLSW installation procedure in EEPROM and RAM	Draft	31.08.2004

4.2. Software Development Environment (SDE)

Hardware

#	Item	Version / Inventory nb.	Note
1	PC _09_ (UVIE EGSE)	_408-3/99_	
2			
3			

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Software

#	Software Package / File(s)	Version	Note
1	Windows NT	4.0 SP6	
2	Virtuoso	<u>4.2 R3</u>	
3	MS Visual C++	<u>6.0+SP</u>	
4			
5			

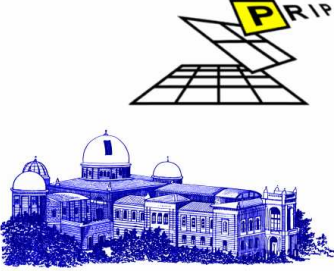
4.3. Test Environment

Hardware

#	Item	Version / Inventory nb.	Note
1	SPU	<u>EM2</u>	
2	DPU	<u>CFM1</u>	
4	PC <u>IRSUN01</u> (SCOS2000)	<u>60</u>	with SCOS2000
5	PC <u>CDMSSim</u> (CDMS Simulator)	<u>2.5</u>	
6	PC <u>09</u>	<u>408-3/99</u>	for SPU HLSW and DMC simulator upload and maintenance
7			

Software

#	Software Package / File(s)	Version	Note
1	SCOS2000 with MIB 8.6N	<u>2.3e95</u>	running on <u>irsun01</u>
2	DMC simulator		running on SPU LWL board
3	SPU LLSW	1.4	
4	SPU SUSW	4.7	
5	SPU HLSW	<u>13.8</u>	running on SPU SWL board
6	6 simulated data files, based on CQM ILT data		
7	4 detector tables		
8			
9			

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4.4. SPU High Level Software

HLSW Version 13.9

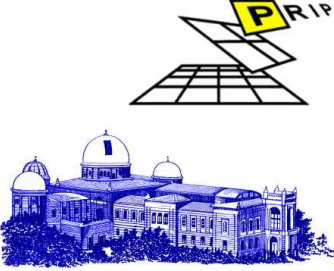
Hardware

none

Software

SW Component	Files
Header Files	"bitmodel.h", "genspu.h", "globals.h", "iface.h", "macro.h", "pacscod.h", "qsmodel.h", "rangecod.h", "spuasw.h", "spu_io.h", "spulib.h"
Low Level Driver Library	"l_dsp.h/oba/obc", "l_edac.h/obc", "l_eeeprom.obc", "l_errcod.h", "l_gendef.h", "l_hwmap.h", "l_itlmis.oba", "l_memory.h/oba/pbc", "l_pscgen.obc", "l_pscint.h/obc", "l_smcsco.h/obc", "l_smcsge.h/obc", "l_smcsin.h/obc", "l_smcsre.h/obc", "l_smcstr.h/obc"
Communication Interface	"datatx.c", "smcs_isr.s", "spu_io.c", "supervs.c", "watchpc.c"
Command Acknowledgment	"C2EEPROM.c", "check.c", "DMC_Con.c", "dump.c", "Load.c", "perform.c", "Re_Sel.c", "Spu_tst.c", "Str_Stp.c", "w_reset.c", "write.c"
Compression Software	"average.c", "bitmodel.c", "bol1_2.c", "bol3.c", "bol4.c", "bol_ex.c", "buf_bol.c", "buf_spec.c", "csw.c", "dmch_cp.c", "dxs.c", "fill_in.c", "fill_out.c", "integ.c", "llc.c", "pacs_cod.c", "pacs_srt.c", "p_proc.c", "qsmodel.c", "ramp_ft.c", "rangecod.c", "spec1_2.c", "spec3.c", "spec4.c", "T_S_fm.c", "T_S_Red.c"
Housekeeping	"hk.c"
Miscellaneous	"phot_gn.c", "spec_gn.c", "Spvs_Tst.c", "asm_lib.s"
Additional	"Node1.c", "Node1.h", "allnodes.h"

#	File	Version	Note
A1	Hlsw.map		generated during compilation
A2	make.bat		
A3	makefile		

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4.5. Decompression

Hardware

#	Item	Version / Inventory nb.	Note
1	PC		Any PC capable of running PCSS

Software

#	Software Package / File(s)	Version	Note
1	PCSS	> 1155	

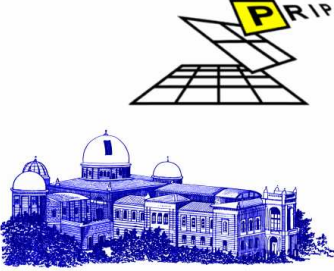
4.6. Additional Tools

Hardware

#	Item	Version / Inventory nb.	Note
1			
2			
3			

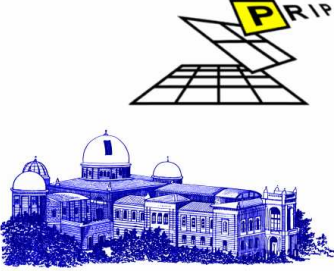
Software

#	Software Package / File(s)	Version	Note
1			
2			
3			

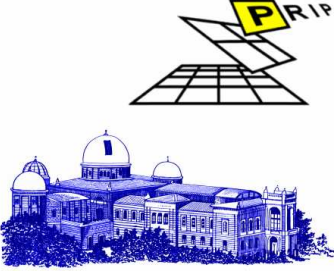
	HERSCHEL/PACS SPU HLSW CIDL	PROJECT: HERSCHEL/PACS DOC. REF.: PACS-TW-LI-001 ISSUE: 1.5 DATE: 18-FEB-09
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5. Acceptance Test Report Summary

Test Report	Version	Test Item	Pass / Fail	Summary & Statement
SPU HLSW 11.5 v1.0	23.06.2005	Proc. 4.3 Proc. 5.3 TEST1 TEST2 TEST3 TEST4 TEST5	NOK OK NOK NOK NOK OK NOK	see SPR 317 decompression error occurred; TM file inspection NOK (see SPR 317) raw channel lost (see SPR 323); see SPR 317 raw channel lost (see SPR 323); TM file inspection not ok (see SPR 317) Signed/unsigned problem in TM file inspection; TM File inspection: ok but QLA error; TM File inspection: NOK (sorting problem)
SPU HLSW 11.7 v2.0	23.08.2005	Proc. 5.3 TEST1 TEST2 TEST3 TEST4 TEST5	OK NOK OK OK OK NOK	1 decompression error “empty packets” (see SPR 361) Raw Data appear to be OK but reduced data not. Open PCSS SPR 187 on 4 sec mode; NOK due to PCSS SPR 334 but photometry; TM File inspection: NOK: - One packet missing. - SPR 367 - The problem was already in V11.1
SPU HLSW 12.0 v1.0	13.12.2005	Proc. 5.3 TEST1	OK NOK	TM File inspection: corrupted compression entities (see SPR 446). HLSW autostopped (PIX =0xAAAAxxxx) while changing the OBSID. (see SPR 449).

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		TEST2	NOK	TM File inspection: corrupted compression entities (see SPR 446).
		TEST3	NOK	TM File inspection: corrupted compression entities (see SPR 446).
		TEST4	NOK	TM File inspection: corrupted compression entities (see SPR 446).
		TEST5	NOK	TM File inspection: corrupted compression entities (SPR 446). HLSW autostopped (PIX =0xAAAxxxx) too High CPU workload.
		TEST6	NOK	TM File inspection: file could not be decompressed (SPR450) TM File inspection: corrupted compression entities (see SPR 446).
SPU HLSW 12.1 v2.0	not issued			
SPU HLSW 12.2 v3.0	28.02.2006	Proc. 5.3	OK	
		TEST1	OK	
		TEST2	OK	
		TEST3	OK	not completed
		TEST4	OK	not completed
		TEST5	NOK	Autostop after changing to the OBSID 11 (see SCR 447)
		TEST6	OK	not completed
SPU HLSW 12.81	29.09.2006	Inst. SW	OK	
		I/F	OK	
		TEST1	OK	
		TEST2	OK	
		TEST3	OK	
		TEST4	OK	
		TEST5	OK	
		TEST6	OK	
SPU HLSW 13.96	18.02.2009	Inst. SW	OK	
		I/F	OK	
		TEST1	OK	
		TEST2	OK	
		TEST3	OK	
		TEST4	OK	

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For each acceptance test, give the:

- user requirement identifier and summary
- test report identifier in the SVVP/AT/Test Reports
- test result summary

This section must contain a summary of the acceptance test reports (TR10). An overall statement of pass or fail for each subsystem should be provided. Specific test failures should be identified and discussed. This section should identify all the user requirements that the software does not comply with. The list should include the value of the need attribute of the requirement (e.g. essential, desirable).

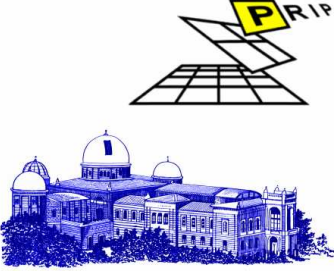
This section should present data for the following metrics:

- number of acceptance test cases passed;
- number of acceptance test cases failed;
- number acceptance test cases not attempted or completed.

Data should be presented for the whole system and individually for each subsystem.

6. Software Problem Reports

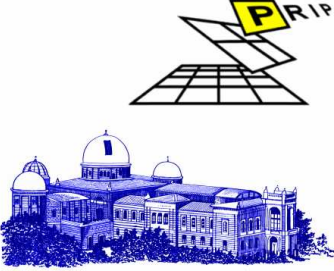
Report	Title	Submitted	Status
SPR-0540	decompression and SPU buffer problems	27-Jun-2006 16:36	Withdrawn
SPR-0537	A hell of Decompression error messages	26-Jun-2006 15:13	Closed
SPR-0529	Decompression Errors and warnings for imt643_TuttiFrutti_20050930.tm	21-Jan-2008 12:52	Closed
SPR-0532	DecMec synchronization for imt643_TuttiFrutti_20051019.tm	14-Jun-2006 19:11	Closed
SPR-0526	Bolometer DMC header entries at 20 Hz show out-of-synchronisation problems	13-Jun-2006 15:21	Closed
SPR-0465	Transparent and lossless only mode shows corrupted data for blue photometry	23-Jan-2006 17:54	Closed
SPR-0449	Autostop compression should consider the DMC header transition	14-Dec-2005 12:23	Closed
SPR-0446	Some compressed entities can not be decompressed	13-Dec-2005 19:08	Closed
SPR-0367	Buffer transmission mode in photometry do not show	25-Aug-2005 20:04	Closed

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	the expected data		
SPR-0361	DMC header transition (OBSID) in spectroscopy shows PCSS error	23-Aug-2005 19:29	Closed
SPR-0345	First bolometer science packets in blue and red channel got lost	22-Jul-2005 15:08	Closed
SPR-0337	Ramp Jumps in SFT Warm test data	12-Jul-2005 12:26	Closed
SPR-0329	buffer transmission mode in spectroscopy shows gaps in the data	30-Jun-2005 11:13	Closed
SPR-0323	lossless or transparent modes clear raw channel selection tables	23-Jun-2005 18:27	Closed
SPR-0317	double compression mode in spectroscopy provides corrupted data	22-Jun-2005 09:29	Closed
SPR-0306	Removing the Bolometer Background Cancelling Mode	25-May-2005 17:03	Closed
SPR-0275	Desynchronized DMC-header vs. science data	08-Feb-2005 12:03	Closed
SPR-0270	One compressed entity mysteriously lost	14-Jan-2005 10:08	Closed
SPR-0083	Anomaly in DMC Header compression	04-Feb-2004 10:18	Closed
SPR-0710	SPU-S crash in photometry	14-Sep-2007 17:32	Closed
SPR-1261	False saturation treatment in a certain SPU setup	07-Jan-2009 15:56	Implemented
SPR-0733	Potential SPU problem	31-Jul-2007 10:56	Analysed

7. Software Change Requests

Request	Title	Submitted	Status
SCR-0498	Adapt Reduction/Compression to FM Testdata	22-Jun-2007 10:54	Implemented
SCR-0448	Update the SPU HLSW HK	13-Dec-2005 19:25	Closed
SCR-0447	CPU Workload of the lossless compression can be reduced	13-Dec-2005 19:18	Closed
SCR-0416	Include the option for signal resolution reduction in photometry	24-Oct-2005 15:12	Closed
SCR-0415	Improve Lossless compression in photometry	24-Oct-2005 14:34	Closed
SCR-0362	Decrease the complexity using a new strategy at the detector selection step	23-Aug-2005 19:33	Closed
SCR-0360	Improve Lossless compression in spectroscopy	23-Aug-2005 14:39	Closed
SCR-0349	Spectroscopy Double compression will lead to nominal mode	27-Jul-2005 14:32	Closed

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SCR-0347	remove the sorting from spectroscopy double compression	26-Jul-2005 20:38	Closed
SCR-0314	To not perform DEC/MEC header check in buffer transmission mode	16-Jun-2005 15:42	Closed
SCR-0313	Improve the performance (speed) of the detector selection in blue photometry	16-Jun-2005 15:35	Closed
SCR-0279	Lossless compression for spectroscopy needs to be improved	23-Feb-2005 11:43	Closed
SCR-1314	More Flexibility in SPEC averaging	5-Feb-2009 13:57	Implemented
SCR-1156	Is it possible to develop, to implement and to test a better data compression (<i>for parallel mode</i>) <i>Note: This is about Compressed Sensing</i>	12-Nov-2008 10:23	Accepted for Implementation

8. Software Modification Reports

None