

SpireEngPatchPM Patch Two Bit Flips April 2010
 File: H_FCP_SPI_APAT.xls
 Author: L.Lucas-hp



Procedure Summary

Objectives

This procedure patches the DPU PM (RAM) in the two specific areas where bit flips were seen.

The main steps are:

- Stop the SPIRE on-board monitoring
- Check the checksums of the PM
- Dump the 2 PM words to be patched (to check their contents before attempting the patch)
- Patch the 2 PM words (SCM05500)
- Dump the 2 PM words after patching
- Check the checksums of the PM again
- Start the on-board monitoring (whatever the result of patching)

Based on procedure: SpireEngPatchPM Version number:1
 Generated:26/04/2010

Summary of Constraints

The instrument should normally be in REDY mode before execution of this observation.

Spacecraft Configuration

Start of Procedure

Mode = REDY

End of Procedure

Mode = REDY

Reference File(s)

Input Command Sequences

Output Command Sequences

HFSAPAT

Referenced Displays

ANDs	GRDs	SLDs
SA_7_559		
ZAZ90999		
SA_1_559		
SA_6_559		

Configuration Control Information

DATE	FOP ISSUE	VERSION	MODIFICATION DESCRIPTION	AUTHOR	SPR REF
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27/04/2010 3.1 1 Created

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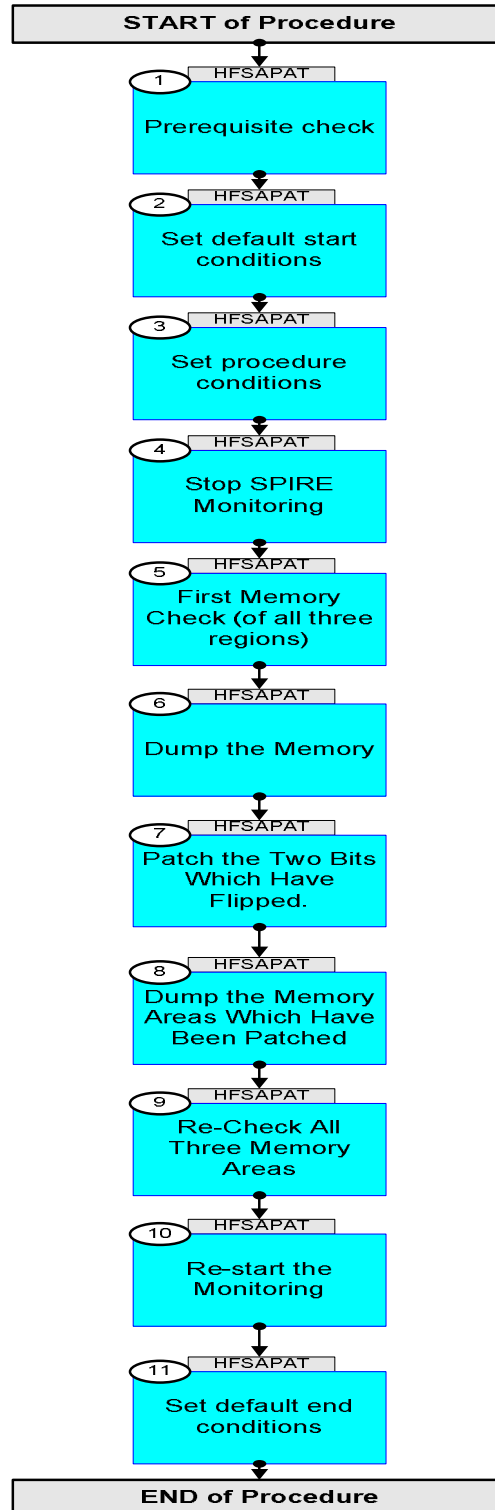
Status : Version 1 - Updated

Last Checkin: 27/04/2010

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Procedure Flowchart Overview



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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
Beginning of Procedure				
TC Seq. Name : HFSAPAT (Patch 2 bits April)				
TimeTag Type: Y Sub Schedule ID: <input type="checkbox"/>				
1		Prerequisite check		Next Step: 2
1.1		HSC/ICC input		<input type="checkbox"/>
		Verify that the HSC has supplied a valid OBSID value: OBS_ID = 0xnnnn nnnn		
1.2		TM Checks		<input type="checkbox"/>
		Check Telemetry, for comparison later TM2N SMT1N500		AND=SA_7_559
		Check Telemetry, for comparison later THSK SM00T500		AND=SA_7_559
		Check telemetry, for comparison later MODE SM00M500		AND=SA_7_559
2		Set default start conditions		Next Step: 3
		Note that a TM(5,1) packet [New_Step_Report] is generated after each of the following SET_OBS_STEP telecommands		
	ET=+ UT=+00.00.00	SET_OBS_STEP Command Parameter(s) : OBSERVATION_STEP SP03N500 Subsch. ID : 370 Det. descr. : SET OBSERVATION STEP	SET_OBS_STEP SC003500	
	ET=+ UT=+00.00.01	SET_BBID Command Parameter(s) : BUILDING_BLOCK_ID SP01N500 Subsch. ID : 370 Det. descr. : SET BUILDING BLOCK IDENTIFIER	SET_BBID SC001500 80010001 <hex>	

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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
		Verify Telemetry BBFULLTYPE SM2LN500	= ClearObs	AND=ZAZ90999
	ET=+ UT=+00.00.00	SET_OBS_STEP SET_OBS_STEP Command Parameter(s) : OBSERVATION_STEP SP03N500 Subsch. ID : 370 Det. descr. : SET OBSERVATION STEP	SC003500 1 <hex>	
	ET=+ UT=+00.00.01	SET_OBSID SET_OBSID Command Parameter(s) : OBSERVATION_ID SP00N500 Subsch. ID : 370 Det. descr. : SET OBSERVATION IDENTIFIER	SC000500 00000000 <hex>	
		Verify Telemetry OBSID SM10N500	= 00000000 <hex>	AND=ZAZ90999
	ET=+ UT=+00.00.00	SET_OBS_STEP SET_OBS_STEP Command Parameter(s) : OBSERVATION_STEP SP03N500 Subsch. ID : 370 Det. descr. : SET OBSERVATION STEP	SC003500 0 <hex>	
	ET=+ UT=+00.00.01	SET_BBID SET_BBID Command Parameter(s) : BUILDING_BLOCK_ID SP01N500 Subsch. ID : 370 Det. descr. : SET BUILDING BLOCK IDENTIFIER	SC001500 80000000 <hex>	
		Verify Telemetry BBFULLTYPE SM2LN500	= Null	AND=ZAZ90999
	ET=+ UT=+00.00.00	SET_OBS_STEP SET_OBS_STEP Command Parameter(s) : OBSERVATION_STEP SP03N500 Subsch. ID : 370 Det. descr. : SET OBSERVATION STEP	SC003500 0 <hex>	

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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
	ET=+ UT=+00.00.01	SET_BBID Command Parameter(s) : BUILDING_BLOCK_ID Subsch. ID : 370 Det. descr. : SET BUILDING BLOCK IDENTIFIER	SET_BBID SP01N500 80020001 <hex>	SC001500
		Verify Telemetry BBFULLTYPE SM2LN500	= StartObs	AND=ZAZ90999
3		Set procedure conditions		Next Step: 4
	ET=+ UT=+00.00.00	RESET_DRCU_COUNTERS RESET_DRCU_COUNTERS Subsch. ID : 370 Det. descr. : RESET DRCU COUNTERS	RESET_DRCU_COUNTERS	SCD00505
		Verify that the TRESET parameter has the same value as the THSK parameter TRESET SM01T500	same as THSK	AND=SA_1_559
		THSK SM00T500	any	AND=SA_1_559
		Note that a TM(5,1) packet [New_Step_Report] is generated after each of the following SET_OBS_STEP telecommands		
	ET=+ UT=+00.00.00	SET_OBS_STEP SET_OBS_STEP Command Parameter(s) : OBSERVATION_STEP Subsch. ID : 370 Det. descr. : SET OBSERVATION STEP	OBSERVATION_STEP SP03N500 1 <hex>	SC003500
	ET=+ UT=+00.00.01	SET_OBSID SET_OBSID Command Parameter(s) : OBSERVATION_ID Subsch. ID : 370 Det. descr. : SET OBSERVATION IDENTIFIER	OBSERVATION_ID SP00N500 OBS_ID	SC000500
		Verify Telemetry OBSID SM10N500	OBS_ID	AND=ZAZ90999
	ET=+ UT=+00.00.00	SET_OBS_STEP SET_OBS_STEP Command Parameter(s) : OBSERVATION_STEP Subsch. ID : 370 Det. descr. : SET OBSERVATION STEP	OBSERVATION_STEP SP03N500 0 <hex>	SC003500

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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch	
	ET=+ UT=+00.00.01	SET_BBID Command Parameter(s) : BUILDING_BLOCK_ID TC Control Flags : Subsch. ID : 370 Det. descr. : SET BUILDING BLOCK IDENTIFIER	SET_BBID SP01N500 GBM IL DSE --- -- ---	SC001500 8d530001 <hex>	
		Verify Telemetry BBFULLTYPE	SM2LN500	= StopMonitoring AND=ZAZ90999	
4		Stop SPIRE Monitoring		Next Step: 5	
	ET=+ UT=+00.00.00	STOP_MONITORING_RAW TC Control Flags : Subsch. ID : 370 Det. descr. : STOP ONBOARD MONITORING	STOP_MONITORING GBM IL DSE --Y -- ---	SC007500	
	ET=+ UT=+00.00.05	SET_BBID Command Parameter(s) : BUILDING_BLOCK_ID TC Control Flags : Subsch. ID : 370 Det. descr. : SET BUILDING BLOCK IDENTIFIER	SET_BBID SP01N500 GBM IL DSE --- -- ---	SC001500 8d5e0001 <hex>	
		Verify Telemetry BBFULLTYPE	SM2LN500	= StopMonitoring AND=ZAZ90999	
		WAIT a few minutes and ensure monitoring has been stopped			
5		First Memory Check (of all three regions)		Next Step: 6	

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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
	ET=+ UT=+00.00.00	CHECK_MEMORY_RAW CHECK_MEMORY Command Parameter(s) : MEMORYID_CHECKMEM SPM9N500 STARTADDR_CHECKMEM SPMAN500 NSAU_CHECKMEM SPMBN500 TC Control Flags : GBM IL DSE --Y -- --- Subsch. ID : 370 Det. descr. : CHECK MEMORY USING ABSOLUTE ADDRESSES	SCM02500 0 <hex> 4000 <hex> 174B <hex>	
	ET=+ UT=+00.00.04	CHECK_MEMORY_RAW CHECK_MEMORY Command Parameter(s) : MEMORYID_CHECKMEM SPM9N500 STARTADDR_CHECKMEM SPMAN500 NSAU_CHECKMEM SPMBN500 TC Control Flags : GBM IL DSE --- -- --- Subsch. ID : 370 Det. descr. : CHECK MEMORY USING ABSOLUTE ADDRESSES	SCM02500 0 <hex> 6000 <hex> ffff <hex>	
	ET=+ UT=+00.00.04	CHECK_MEMORY_RAW CHECK_MEMORY Command Parameter(s) : MEMORYID_CHECKMEM SPM9N500 STARTADDR_CHECKMEM SPMAN500 NSAU_CHECKMEM SPMBN500 TC Control Flags : GBM IL DSE --- -- --- Subsch. ID : 370 Det. descr. : CHECK MEMORY USING ABSOLUTE ADDRESSES	SCM02500 0 <hex> 15fff <hex> 59 <hex>	
6		Dump the Memory		Next Step: 7
		The memory area of interest, where bit flips have been seen, will be dumped for SPIRE to perform some checks.		

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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
	ET=+ UT=+00.00.04	DUMP_MEMORY_RAW DUMP_MEMORY Command Parameter(s) : MEMORYID_DUMPMEM SPM6N500 STARTADDR_DUMPMEM SPM7N500 NSAU_DUMPMEM SPM8N500 TC Control Flags : GBM IL DSE --Y -- --- Subsch. ID : 370 Det. descr. : DUMP MEMORY USING ABSOLUTE ADDRESSES	SCM01500 0 <hex> BED8 <hex> 1 <hex>	
	ET=+ UT=+00.00.04	DUMP_MEMORY_RAW DUMP_MEMORY Command Parameter(s) : MEMORYID_DUMPMEM SPM6N500 STARTADDR_DUMPMEM SPM7N500 NSAU_DUMPMEM SPM8N500 TC Control Flags : GBM IL DSE --- -- --- Subsch. ID : 370 Det. descr. : DUMP MEMORY USING ABSOLUTE ADDRESSES	SCM01500 0 <hex> e7a8 <hex> 1 <hex>	
7		Patch the Two Bits Which Have Flipped.		Next Step: 8
		Await SPIRE go-ahead before continuing		
	ET=+ UT=+00.00.04	LOAD_PM_RAW LOAD_PM Command Parameter(s) : STARTADDR_LOADPM SPMGN500 SPARE_LOADPM SPMMN500 NSAU_LOADPM SPMHN500 DATA_LOADPM SPMJN500 CRC_LOADPM SPMKN500 TC Control Flags : GBM IL DSE --Y -- --- Subsch. ID : 370 Det. descr. : LOAD PROGRAM MEMORY USING ABSOLUTE ADDRESSES	SCM05500 BED8 <hex> 0 <hex> 1 <hex> (Def) 700F81000000 <hex> 85F9 <hex>	

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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
	ET=+ UT=+00.00.02	LOAD_PM_RAW LOAD_PM Command Parameter(s) : STARTADDR_LOADPM SPMGN500 SPARE_LOADPM SPMMN500 NSAU_LOADPM SPMHN500 DATA_LOADPM SPMJN500 CRC_LOADPM SPMKN500 TC Control Flags : GBM IL DSE --- -- --- Subsch. ID : 370 Det. descr. : LOAD PROGRAM MEMORY USING ABSOLUTE ADDRESSES	SCM05500 E7A8 <hex> 0 <hex> 1 <hex> (Def) 0F040002FC67 <hex> 6698 <hex>	
8		Dump the Memory Areas Which Have Been Patched		Next Step: 9
	ET=+ UT=+00.00.02	DUMP_MEMORY_RAW DUMP_MEMORY Command Parameter(s) : MEMORYID_DUMPMEM SPM6N500 STARTADDR_DUMPMEM SPM7N500 NSAU_DUMPMEM SPM8N500 TC Control Flags : GBM IL DSE --Y -- --- Subsch. ID : 370 Det. descr. : DUMP MEMORY USING ABSOLUTE ADDRESSES	SCM01500 0 <hex> BED8 <hex> 1 <hex>	
	ET=+ UT=+00.00.04	DUMP_MEMORY_RAW DUMP_MEMORY Command Parameter(s) : MEMORYID_DUMPMEM SPM6N500 STARTADDR_DUMPMEM SPM7N500 NSAU_DUMPMEM SPM8N500 TC Control Flags : GBM IL DSE --- -- --- Subsch. ID : 370 Det. descr. : DUMP MEMORY USING ABSOLUTE ADDRESSES	SCM01500 0 <hex> e7a8 <hex> 1 <hex>	
9		Re-Check All Three Memory Areas		Next Step: 10
		Await SPIRE go-ahead before continuing		

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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
	ET=+ UT=+00.00.04	CHECK_MEMORY_RAW CHECK_MEMORY Command Parameter(s) : MEMORYID_CHECKMEM SPM9N500 STARTADDR_CHECKMEM SPMAN500 NSAU_CHECKMEM SPMBN500 TC Control Flags : GBM IL DSE --Y -- --- Subsch. ID : 370 Det. descr. : CHECK MEMORY USING ABSOLUTE ADDRESSES	SCM02500 0 <hex> 4000 <hex> 174B <hex>	
	ET=+ UT=+00.00.04	CHECK_MEMORY_RAW CHECK_MEMORY Command Parameter(s) : MEMORYID_CHECKMEM SPM9N500 STARTADDR_CHECKMEM SPMAN500 NSAU_CHECKMEM SPMBN500 TC Control Flags : GBM IL DSE --- -- --- Subsch. ID : 370 Det. descr. : CHECK MEMORY USING ABSOLUTE ADDRESSES	SCM02500 0 <hex> 6000 <hex> ffff <hex>	
	ET=+ UT=+00.00.04	CHECK_MEMORY_RAW CHECK_MEMORY Command Parameter(s) : MEMORYID_CHECKMEM SPM9N500 STARTADDR_CHECKMEM SPMAN500 NSAU_CHECKMEM SPMBN500 TC Control Flags : GBM IL DSE --- -- --- Subsch. ID : 370 Det. descr. : CHECK MEMORY USING ABSOLUTE ADDRESSES	SCM02500 0 <hex> 15fff <hex> 59 <hex>	
10		Re-start the Monitoring		Next Step: 11
		Wait for go-ahead from SPIRE before continuing		
	ET=+ UT=+00.00.04	SET_BBID SET_BBID Command Parameter(s) : BUILDING_BLOCK_ID SP01N500 TC Control Flags : GBM IL DSE --Y -- --- Subsch. ID : 370 Det. descr. : SET BUILDING BLOCK IDENTIFIER	SC001500 8D520001 <hex>	

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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
		Verify Telemetry BBFULLTYPE SM2LN500	= StartMonitorin	AND=SA_6_559
	ET=+ UT=+00.00.00	START_MONITORING_RAW START_MONITORING Command Parameter(s) : TABLEID_STARTMONITORING SPB9N500 Subsch. ID : 370 Det. descr. : START ONBOARD MONITORING	SC006500 5 <hex>	
		Wait a few minutes to ensure monitoring has re-started		
11		Set default end conditions		Next Step: END
		Note that a TM(5,1) packet [New_Step_Report] is generated after each of the following SET_OBS_STEP telecommands		
	ET=+ UT=+00.00.00	SET_OBS_STEP SET_OBS_STEP Command Parameter(s) : OBSERVATION_STEP SP03N500 Subsch. ID : 370 Det. descr. : SET OBSERVATION STEP	SC003500 0 <hex>	
	ET=+ UT=+00.00.01	SET_BBID SET_BBID Command Parameter(s) : BUILDING_BLOCK_ID SP01N500 Subsch. ID : 370 Det. descr. : SET BUILDING BLOCK IDENTIFIER	SC001500 80030001 <hex>	
		Verify Telemetry BBFULLTYPE SM2LN500	= EndObs	AND=ZAZ90999
	ET=+ UT=+00.00.00	SET_OBS_STEP SET_OBS_STEP Command Parameter(s) : OBSERVATION_STEP SP03N500 Subsch. ID : 370 Det. descr. : SET OBSERVATION STEP	SC003500 1 <hex>	
	ET=+ UT=+00.00.01	SET_OBSID SET_OBSID Command Parameter(s) : OBSERVATION_ID SP00N500 Subsch. ID : 370 Det. descr. : SET OBSERVATION IDENTIFIER	SC000500 00000000 <hex>	

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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
		Verify Telemetry OBSID SM10N500	= 00000000 <hex>	AND=ZAZ90999
	ET=+ UT=+00.00.00	SET_OBS_STEP SET_OBS_STEP Command Parameter(s) : OBSERVATION_STEP SP03N500 Subsch. ID : 370 Det. descr. : SET OBSERVATION STEP	SC003500 0 <hex>	
	ET=+ UT=+00.00.01	SET_BBID SET_BBID Command Parameter(s) : BUILDING_BLOCK_ID SP01N500 Subsch. ID : 370 Det. descr. : SET BUILDING BLOCK IDENTIFIER	SC001500 80000000 <hex>	
		Verify Telemetry BBFULLTYPE SM2LN500	= Null	AND=ZAZ90999
	ET=+ UT=+00.00.01	SET_OBSID_RAW SET_OBSID Command Parameter(s) : OBSERVATION_ID SP00N500 TC Control Flags : GBM IL DSE --Y -- -- Subsch. ID : 370 Det. descr. : SET OBSERVATION IDENTIFIER	SC000500 50000000 <hex>	
End of Procedure				