Issue ACS-SOL-PFM-1032

 - AR01

SOLAR ORBITER PFM SWA Instrument Short and Full Functional Procedure

06/08/18

SFT Dry run with Full suite.

NON HAZARDOUS PROCEDURE

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1 INTRODUCTION

1.1 Scope

This procedure defines the steps for both the Short (SFT) and Full (FFT) Functional Test for the SWA PFM Instrument. The short functional test is designed to exercise all of the Spacecraft to SWA interfaces and perform a set of non-invasive functional checks to prove the health of the instrument.

The full functional test performs a more comprehensive test of the instrument. This is intended to be run once after spacecraft environmental tests.

The SWA (Solar Wind Analyser) flight instrument consists of

- SWA Electronics Box (DPU)
- HIS
- PAS
- EAS 1 and 2

This SFT amf FFT may only be run with all sensors fully interated to the DPU.

1.2 Test Objective

The Short Functional Test (I-SFT) for SWA and Full Functional Test are inherently different tests and are coded with two independant test scripts.

The I-SFT shall have a duration of no more than one hour wheras the FFT could last up to 8 hours.

1.3 Test Specification Requirements

Both the Short and Full Functional Test scripts has been written in accordance with the SFT/FFT test procedures **[AD-21]** and **[AD-22]** as defined by the SWA instrument team
Test flows are described in **Figure 3-1** and **Figure 3-2.**

The SFT has been debugged using the EM SWA on the U-OTB i.a.w **[AD-18]** using the same SW version and database as will be used on the FM.

1.4 Applicable Documents

Ref	Document Title	Document No.	Issue No.
[AD-1]	PA Cleanliness and Contamination Control Plan	SOL.S.ASTR.PL.00005	5.0
[AD-2]	Solar Orbiter Magnetic Cleanliness and Control Plan for AIT of Solar Orbiter FM S/C	SOL.S.ASTR.PL.00101	1.0
[AD-3]	PA and Safety Plan	SOL.S.ASTR.PL.00014	7.0
[AD-4]	Solar Orbiter Quality Surveillance Plan	SOL.S.ASTR.PL.00097	2.0
[AD-5]	LDS500 – EOS C-AIT Departmental Process	LDS.0500	2.0
[AD-6]	LDS449 – AIT Working Practices in Clean Rooms.	LDS.0449	4.0
[AD-7]	Acronyms, Abbreviations & Terminology	SOL.S.ASTR.LI.00008	1.0
[AD-8]	Solar Orbiter Electrical ICD	SOL.S.ASTR.ICD.00016	18
[AD-9]	SWA Instrument User Manual	SO-SWA-MSSL-UM-002	Draft P
[AD-10]	SWA DPU Communications Interface Control Document	SO-SWA-MSSL-IF-004	4
[AD-11]	SWA TM/TC Database	SO-SWA-DPU_CD-IC-003	4r2
[AD-12]	Solar Orbiter Hazard Analysis	SOL.S.ASTR.TN.00140	2.0
[AD-13]	Solar Orbiter EGSE Configuration (PFM)	SOL.S.ASTR.TN.00364	(*)
[AD-14]	Solar Orbiter PFM Configuration	SOL.S.ASTR.TN.00363	(*)
[AD-15]	Electrical AIT Spacecraft User Manual	SOL.S.ASTR.UM.00027	(*)
[AD-16]	SOLAR ORBITER AIT Harness Configuration Technical Note	SOL.S.ASTR.TN.00412	(*)
[AD-17]	SOLAR ORBITER Cleaning Technical Note	SOL.S.ASTR.TN.00415	2
[AD-18]	SWA Instrument Short and Full Functional Test Procedure on the U-OTB	SOL.S.ASTR.TP.00126	2
[AD-19]	SWA FM Power Up & Power Down Test Procedure	SO-SWA-MSSL-TP-059	3
[AD-20]	SOLAR ORBITER PFM SWA Electrical Integration Procedure	SOL-TP-ADSS-1000268285	2
[AD-21]	SWA FM Full Functional Test Procedure	SO-SWA-MSSL-TP-058	2.0
[AD-22]	SWA FM Short Functional Test Procedure	SO-SWA-MSSL-TP-055	2.0
[AD-23]	Solar Orbiter PFM-SSMM Configuration for Payload Testing	SOL-TN-ADSS-1000281840	1.0

Note: If referred to in the text, applicable documents are identified as [AD-XX].

(*) Latest applicable version at the time of execution

1.5 Reference Documents

Ref	Document Title	Document No.	Issue No.
[RD-1]	Solar Orbiter TM/TC SCOE Operational & Maintenance Manual	SOL.ASSBV.UM.00101	1.2
[RD-2]	Power SCOE User Manual	SOL.ASIEM.UM.10001	5
[RD-3]	Space Segment User Manual Vol 2 DHS	SOL.S.ASTR.UM.00002	1
[RD-4]	Solar Orbiter Swagelok® Purge Equipment User Manual	SOL.S.ASTR.UM.00029	1
[RD-5]	Solar Orbiter Parcom® Purge Equipment User Manual	SOL.S.ASTR.UM.00030	1

Note: If referred to in the text, reference documents are identified as [RD-XX].

2 ACRONYMS AND ABBREVIATIONS

Acronym	Meaning
ACS	Activity Control Sheet
BSR	Battery Simulator Rack
CSW	Central Software
EM	Engineering Model
ETB	Engineering Test Bench
FFT	Full Functional Test
FM	Flight Model
IRR	Internal Readiness Review
NCR	Non Conformance Report
OBC	On Board Computer
OC	Open Center
PA	Product Assurance
PCDU	Power, Control & Distribution Unit
PHI	Polarimetric and Helioseismic Imager
QA	Quality Assurance
RIU	Remote Interface Unit
RTE	Real Time Environment
RTS	Real Time Simulator
SAS	Solar Array Simulator
SFT	Short Functional Test
SimFE	Simulator Front End
SWA	Solar Wind Analyser
SSMM	Solid State Mass Memory
SSS	Solid State Switch
TRB	Test Review Board
U/H	Unit/Harness

Table 2-1 Table of Acronyms

Reference is made to the project acronyms and abbreviations list **[AD-7]**.

3 OVERVIEW OF TEST

3.1 Unit under Test (UUT)

For the purpose of this procedure the PFM SWA will be the unit under test. The PFM OBC, RIU, SSMM and PCDU will all be required to test the SWA for power and TM/TC.

3.2 Procedure Description

This procedure will perform the following steps for the SFT. See Figure 3-1:

- Power the PFM Platform (OBC, PCDU and RIU)
- Power the SSMM with Nominal spacewire
- Execute complete SWA SFT Sequence using SWA side A
- Power Off SWA
- Reconfigure spacewire to Redundant side
- Repeat complete SWA SFT sequence on SWA side B
- Power Off SWA
- Power down the SSMM
- Power down the PFM (OBC, PCDU and RIU)

And for the FFT. See Figure 3-2 :

- Power the PFM Platform (OBC, PCDU and RIU)
- Power the SSMM with Nominal spacewire
- Execute complete SWA FFT Sequence using SWA side A
- Reconfigure spacewire to Redundant side
- Execute SWA FFT sequence on SWA side B
- Power Off SWA
- Power down the SSMM
- Power down the PFM (OBC, PCDU and RIU)

3.3 Test Sequences

During the running of this procedure automated test sequences will be used to perform already validated steps in order to speed up and simplify the test. These are listed below:

3.3.1 Flight control procedures;

Various flight control procedures will be used to switch on units or perform specific tasks, the sequences coded to the flight procedures contain the FCP name i.e. the FCP to switch the spacewire from Nominal to Redundant CRF_DH_3055, is named TPDC_CRF_DH_3055. For descriptions of the flight procedures refer to **[RD-3]**.

3.3.2 TSSC_PLATFORM_ON

This sequence is used to switch on the various platforms; this is common to all benches. This sequence will perform all steps to power and configure the PFM. At the end of the sequence the PFM will have the OBC, PCDU and RIU powered on nominal sides and propulsion control board on with drivers disabled.

This includes a default option which is powering the platform using:

- The battery simulator configured to output 25.2V, 6.0A
- The SAS configured to output 55.0V, 4.0A (per section).

3.3.3 TSSC_PFORM_OFF

This sequence is used to switch off the various platforms, this is common to all benches, it will perform all steps to safely configure and power off the PFM core platform units OBC, PCDU and RIU.

3.3.4 TPDC_SSMM_ON_PL

This sequence is used to switch ON power to the SSMM; it will perform all steps to safely switch ON the SSMM.

This sequence controls the default OBC/SSMM configurations to be applied for all PFM Payload SFT and FFT testing.[AD-23]

3.3.5 TPDC_CRP_DH_3055

This sequence is used to switch to redundant SpW link for a selected payload instrument with SSMM in INIT Mode.

3.3.6 TPDC_SSMM_OFF

This sequence is used to switch OFF power to the SSMM; it will perform all steps to safely switch OFF the SSMM.

3.3.7 TIET_SWA_SFT

This sequence is the main test script used to perform the SFT
This test sequence will go through each test block defined in Error! Reference source not found.. The test sequence is called twice once for A side and once for B side. The test flow for the SWA SFT can be seen in **Figure 3-1**

3.3.8 TIET_SWA_FFT

This sequence is the main test script used to perform the FFT
This test sequence will go through each test block defined in **[AD-21]**. The test sequence is called twice once for A side and once for B side. The test flow for the SWA FFT can be seen in **Figure 3-2**

3.4 SWA Outline SFT Flow

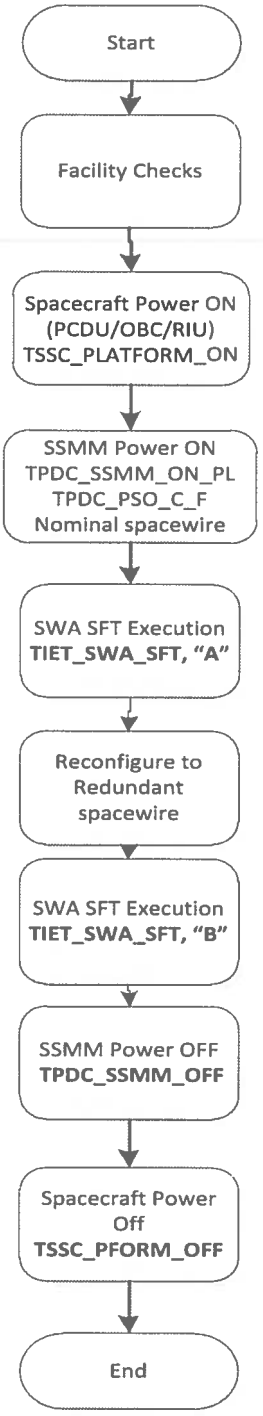

Figure 3-1 SWA Outline SFT Test Flow

3.5 SWA Outline FFT Flow

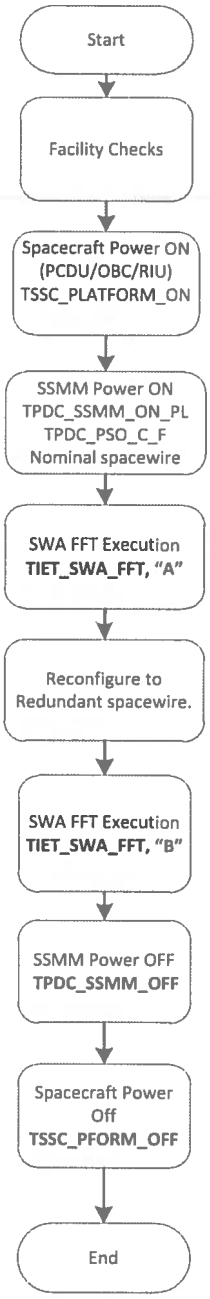

Figure 3-2 SWA Outline FFT Test Flow

4 TEST SET-UP & CONFIGURATION

4.1 Facility and Conditions

All AIT activities shall be carried out in a cleanroom meeting the environment limits defined in Error! Reference source not found.:

Parameter	Limit
Temperature	22 ± 3°C
Relative Humidity	45 - 65%
Cleanliness	ISO 8
Pressure	Ambient

Table 4-1 Facility and Conditions

AIT activities at Stevenage are planned to be carried out in the Hercules Major Cleanroom for the FM Spacecraft

4.2 Personnel

The following personnel, as a minimum, are required for the full execution of this procedure:

- ADS Electrical AIT Test Engineer
- ADS PA/QA AIT Engineer

Table 4-2 below defines the nominated responsible personnel required for the execution of this test procedure:

RESPONSIBILITY	NAME/ ORGANISATION
Test Conductor	S. SILVERTHORN
PA	A ENBANK / A. ANN.
QA	E. CARRERA / S HUDSON
EGSE Engineer	MARVIN COWELL

Table 4-2 Nominated Personnel Table

4.3 Test Set-up Schematic

The SWA Instrument is mounted on the minus Y (MY) panel and is connected with the platform equipments via the core structure using a collection of AIT jumper cables. These are defined in Figure 4-1 below :

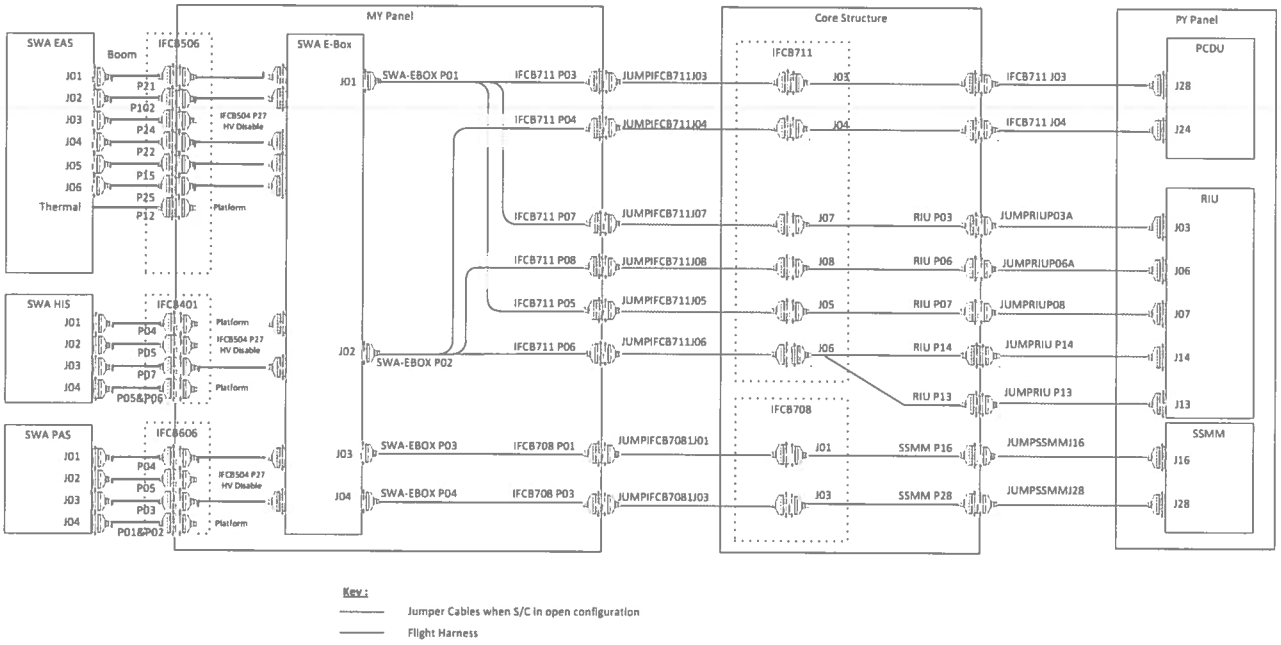

Figure 4-1 SWA SFT and FFT Configuration

There are also a number of jumper cables necessary to connect the Umbilicals and RIU / SSMM interfaces via the core structure when the spacecraft is operated in its open configuration i.e. with the plus and minus Y panels physically separated from the main structure. The AIT test interfaces required are defined in **[AD-16]** and will be verified before the test begins.

4.4 GPL Equipment

No GPL Eqipment is required for this test.

4.5 EGSE Equipment

Record the applicable version of the EGSE configuration of the bench this activity is carried on:

Bench	EGSE Configuration Technical Note	Applicable Version
PFM	SOL.S.ASTR.TN.00364	31

Table 4-3 EGSE Equipment List

5 HAZARDS AND PRECAUTIONS

5.1 General Precautions

During test preparation and operation all necessary safety precautions shall be taken in order to safeguard personnel and equipment. For general aspects, reference is made to **[AD-3]** (PA and Safety Plan) and **[AD-5]** (LDS500).

All ASU AIT activities within the clean room will be conducted in accordance with [AD-6] (LDS449) and **[AD-5]** (LDS500).

All activities on the hardware shall be conducted in accordance with **[AD-4].**

5.2 Cleanliness Precautions

The test area shall be kept clean and tidy at all times and activities shall be conducted in accordance with **[AD-1]** and **[AD-17].**

5.3 Magnetic Precautions

The specific constarints and working practices identified in **[AD-2]** must be aderhed to at all times.

5.4 Static Precautions

Antistatic wrist straps shall be worn by all personnel while working on the hardware in accordance with **[AD-5]** (LDS500).

5.5 Test Specific Hazards and Precautions

During test all necessary safety precautions shall be taken, all hazards and precautions for this test are listed below:

- Before power is applied to the IUT the test configuration shall be verified by the test conductor.
- The handling of the test set-up shall be in accordance with this procedure
- Handling, mechanical and electrical, shall be carried out in accordance with the appropriate unit User Manual and only by qualified personnel.
- The test set-up must be grounded
- All connectors shall be covered with dust caps when not mated.
- The Mate/Demate Log shall be completed **BEFORE** any mates or demates are carried out.
- An ESD wrist strap shall be worn when working on the Hardware.
- Test equipment shall be positioned as appropriate, to avoid trailing cables.
- Test item has to be switched-off when changing Test Configuration.
- Any changes to the procedure during test have to be made and initialled by design and PA/QA before proceeding.
- All deviations during the procedure execution have to be noted in the Observation summary sheet of the ACS.
- Information specific to the 'AS-RUN' activity should be completed in the appropriate section of the 'AS-RUN' copy of this procedure.

[AD-14] identifies the following :
There is no specific hazards identified to the the SWA DPU.
All three SWA sensors have HV-disable plugs; these are connected to the S/C arming panel.
Also, the HV parts are not accessible and require operator commands to enable them.

5.6 Operation of the Purge System

SWA is purged continuously. The following general statements are taken from the PFM User Manual **[AD-15]** and are directly applicable to operation carried out within this procedure.

Operation of the Purge System involves venting nitrogen gas to the local atmosphere. Nitrogen is an asphyxiant in large quantities and is undetectable by human senses. It is roughly the same density as air and consequently does not disperse readily. (Refer to the Airbus DS CoSHH handbook for further information.)

- Personnel working in the vicinity of a nitrogen purge shall ensure adequate ventilation, particularly in enclosed volumes within the S/C structure or when opening containers.
- Local area oxygen level monitoring shall be in constant operation and it is recommended that personnel working in close proximity to equipment under purge have personal oxygen monitors. If the local area oxygen content drops below 19.5%, personnel must evacuate.
- Personnel shall not work alone in the presence of a nitrogen purge.
- Suitable warning signs shall be displayed in the vicinity of any equipment under purge to warn personnel of the risk. Signs are to be displayed in English and any other languages appropriate to the facility.

The purge cart user manuals are identified in **[RD-4]** and **[RD-5]** at least the Test Conductor responcible for running this test should be aware of the purge operations and what to do in the event of an anomaly.

5.7 Other Instrument Specific Constraints

The following constraints are taken from the SWA User Manual **[AD-9]**

5.7.1 Power Up Constraints

- A delay of minimum 1000 ms between switch on of the instrument LCL and sending the instrument HPC On command shall be respected.

5.7.2 Power Down Constraints

- A delay of minimum 500 ms between sending the instrument HPC Off command and switch off of the instrument LCL shall be respected.

5.8 Red Tag Items

Each sensor (HIS, PAS, EAS1 and EAS2 have their own HV disable plug which is wrired through to a single HV disable plug at the IFCB504 J27 connector. For the SFT and FFT the following plug must be fitted :

IFCB504 P27A "for TVAC", EAS1: HV Air Safe, EAS2: HV Air Safe, PAS: HV Disable, HIS: HV Disable,

5.9 Monitoring of SWA during test

The test sequence TIZM_PL_OOL_MON will be used during the test and monitors the following SWA parameters :

```
#SWA OOL - based on TN-288_05_02
#sType|sSubtype|sMnemonic|rLowerLimit|rUpperLimit|sFixedValue|sParameterDescription|PacketName|PacketRateCheck
PCDUA|LCLAST|AB.TM.NPWD0077|999|999|NA|#A_LCL4_16 SWA-A ST|NA|0
PCDUA|LCLBST|AB.TM.NPWD0038|999|999|NA|#A_LCL2_17 SWA-B PWR ST|NA|0
PCDUB|LCLAST|AB.TM.NPWT0077|999|999|NA|#B_LCL4_16 SWA-A ST|NA|0
PCDUB|LCLBST|AB.TM.NPWT0038|999|999|NA|#B_LCL2_17 SWA-B PWR ST|NA|0
```

PCDUA|LCLACURR|AB.TM.NPWD3267|0.1|1.1|NA|#A_LCL4_16 SWA-A TM|NA|0
PCDUA|LCLBCURR|AB.TM.NPWD2768|0.1|1.1|NA|#A_LCL2_17 SWA-B PWR TM|NA|0
PCDUB|LCLACURR|AB.TM.NPWT3267|0.1|1.1|NA|#B_LCL4_16 SWA-A TM|NA|0
PCDUB|LCLBCURR|AB.TM.NPWT2768|0.1|1.1|NA|#B_LCL2_17 SWA-B PWR TM|NA|0
RAWFIX|INSTR|AB.TM.NIAD2103|0|0|NA|#Detect request for switch-off|AB.TM.YIA58211|10
RAWFIX|INSTR|AB.TM.NIAD2104|0|0|NA|#Detect request for transition to safe-mode|AB.TM.YIA58211|10
RAWFIX|INSTR|AB.TM.NIAD2105|0|0|NA|#Detect request for transition to safe-mode & switch-off|AB.TM.YIA58211|10
RAWFIX|INSTR|AB.TM.NIAD2106|0|0|NA|#Detect request for DPU reset|AB.TM.YIA58211|10
RAWLIM|INSTR|AB.TM.NIA02108|100|350|NA|#Detect DPU DC-DC converter current out-of-limit|AB.TM.YIA58211|10
RAWLIM|INSTR|AB.TM.NIA02109|-30|65|NA|#Detect primary DPU DC-DC temperature sensor out-of-limit|AB.TM.YIA58211|10
RAWLIM|INSTR|AB.TM.NIA02110|-30|65|NA|#Detect secondary DPU DC-DC temperature sensor out-of-limit|AB.TM.YIA58211|10
RAWFIX|INSTR|AB.TM.NIAD2111|0|0|NA|#Detect unexpected 5V rail 1 status flag|AB.TM.YIA58211|10
RAWFIX|INSTR|AB.TM.NIAD2112|0|0|NA|#Detect unexpected 5V rail 2 status flag|AB.TM.YIA58211|10
#TBD NIA02115 TBD TBD NA Detect DPU secondary voltage monitor V1 out-of-limit
#TBD NIA02116 TBD TBD NA Detect DPU secondary voltage monitor V2 out-of-limit
ENDFILE|ENDFILE|ENDFILE|0|0|ENDFILE|ENDFILE|ENDFILE|0

5.10 Expected TM Messages

As reported under NCR 1027 the following TM(5,1) is expected every hour the DPU is switched on :

AB.TM.YIA58436 [SWA_E_BKA_TIMEOUT_RESET]

5.11 Restricted Telecommands

The SWA User Manual Error! Reference source not found. identifies the following commands as Prohibited :

Prohibited (Can not be sent)

- ZIA58906 *[SWA_TC_HIS_MEM_POKE]*
- ZIA58911 *[SWA_TC_HIS_EDAC]*
- ZIA58912 *[SWA_TC_HIS_ERROR]*
- ZIA58914 *[SWA_TC_HIS_MACRO_STOP]*
- ZIA58923 *[SWA_TC_HIS_RUN_ADDR]*
- ZIA58932 *[SWA_TC_HIS_DSCB_WRITE]*
- ZIA58793 *[SWA_TC_EAS1_ENG7_MODE]*
- ZIA58841 *[SWA_TC_EAS2_ENG7_MODE]*

And the following as Hazardous / Dangerous :

Dangerous (Can be sent with operator agreement)

- ZIA58053 *[SWA_TC_HIS_MEM_LOAD]*
- ZIA58900 *[SWA_TC_HIS_MRAM_WR]*
- ZIA58901 *[SWA_TC_HIS_MEM_COPY]*
- ZIA58902 *[SWA_TC_HIS_MEM_PAT]*
- ZIA58907 *[SWA_TC_HIS_HV_PWR]*
- ZIA58908 *[SWA_TC_HIS_DAC_SET]*
- ZIA58909 *[SWA_TC_HIS_DAC_REL]*
- ZIA58928 *[SWA_TC_HIS_AC_LINK]*
- ZIA58913 *[SWA_TC_HIS_MACRO_START]*
- ZIA58916 *[SWA_TC_HIS_RESET]*
- ZIA58917 *[SWA_TC_HIS_MODE]* *(*)*
- ZIA58918 *[SWA_TC_HIS_CLEAR]*
- ZIA58919 *[SWA_TC_HIS_PARAM_SET]*
- ZIA58939 *[SWA_TC_HIS_SAFETY_SET]*
- ZIA58927 *[SWA_TC_HIS_EVR]*
- ZIA58940 *[SWA_TC_HIS_SAFE_EMERGENCY]*
- ZIA58053 *[SWA_TC_MEM_LD]*

- ZIA58789 *[SWA_TC_EAS1_ENG3_MODE]*
- ZIA58837 *[SWA_TC_EAS2_ENG3_MODE]*
- ZIA58790 *[SWA_TC_EAS1_ENG4_MODE]*
- ZIA58838 *[SWA_TC_EAS2_ENG4_MODE]*
- ZIA58784 *[SWA_TC_EAS1_SET_MCP_HV]*
- ZIA58832 *[SWA_TC_EAS2_SET_MCP_HV]*
- ZIA58767 *[SWA_TC_EAS1_SET_HEM_HIGH_VOLT]*
- ZIA58815 *[SWA_TC_EAS2_SET_HEM_HIGH_VOLT]*
- ZIA58863 *[SWA_TC_PAS_WR_MASTER_CTRL_REG]*
- ZIA58868 *[SWA_TC_PAS_SET_HV_CEM]*
- ZIA58869 *[SWA_TC_PAS_SET_MAIN_HV]*
- ZIA58873 *[SWA_TC_PAS_WR_MAILBOX_CTRL]* *(*)*

The two commands marked (*) are expected during the SFT and will therefore need to be confirmed by the operator prior to being sent to the Spacecraft. Occurrence of these commands has not been confirmed for the FFT at this issue of the procedure.

6 DETAILED PROCEDURE STEPS

6.1 Facility Parameter Checks

Activity N°	Facility Parameter Checks	Pass Criteria	Result	Pass / Fail
6.1.1	Confirm the PFM is in a powered down state.	OK	OK	P
6.1.2	Confirm facility temperature is within the specified limits.	22 ± 3°C	22.4°C	P
6.1.3	Confirm facility relative humidity is within the specified limits.	45 - 65%	53.2%	P
6.1.4	Confirm all EGSE equipment have been calibrated and recorded prior to starting the test.	OK	OK	P
6.1.5	Confirm the PFM configuration and grounding has not been compromised. In particular verify that the OBC, RIU, PCDU and SSMM AIT harness configurations are in accordance with **[AD-16]**. This will be particularly necessary after any mechanical movements of the PY panel e.g. rotations when the AIT jumper cables may have been disconnected.	OK	OK	P
6.1.6	Confirm that the PFM SWA has been fully integrated with the PFM i.a.w. **[AD-20]** and connected i.a.w. **Figure 4-1**	AIT/QA	OK	P
6.1.7	Fill in the mate and demate log and perform the following mates: **IFCB504 J27C** **Mate SWA Air Safe (EAS / PAS) and HV Disable (HIS) Safe Plug**	AITQA	SAFE PLUGS FITTED AT UNIT CONNECTORS	

SEE INTERIM PTR 2.

DISCUSSED AT PTR 2.

Activity No.	SWA Short Functional Test	Pass Criteria	Result	Pass/ Fail
6.2.5	Execute the complete ambient SWA SFT on side A with the following sequence: **TIET_SWA_SFT** with input parameters **$sUnit_Side** := "A" **$sPAS_HVSafety** := "AIRSAFE"	Record version and as-run number:	V1.18 1/5/18 04	P
6.2.6	Switch to redundant SpW link by executing the following sequence **TPDC_CRP_DH_3055** with input parameters **$P_ID** := "SWA"	OK	N/P	— OBS #4
	SWA SFT for Redundant Instrument			
6.2.7	Verify that the SWA Redundant spacewire link is ON by checking the following TM parameters: Payload 7 Link Status **NSMD0084 = "NomDis RedEnab"**	**NSMD0084** = "NomDis RedEnab"	N/P	—
6.2.8	Execute the complete ambient SWA SFT on side B with the following sequence: **TIET_SWA_SFT** with input parameters **$sUnit_Side** := "B" **$sPAS_HVSafety** := "AIRSAFE"	Record version and as-run number:	V1.18 1/5/18 04	P
	Power Down SSMM and Platform			
6.2.9	Power off the SSMM by executing the following sequence: **TPDC_SSMM_OFF**	OK	OK	P

6.2 SWA Short Functional Test

The following section will perform the Short Functional Test for the SWA unit.

Activity No.	SWA Short Functional Test	Pass Criteria	Result	Pass/ Fail
	Power Up Platform and SSMM			
6.2.1	Execute the following sequence to power on the PFM : **TSSC_PLATFORM_ON** with input parameters **$OBC_CONFIG** := "A\|0\|FAST" **$RTE_INIT** := FALSE Note : The OBC memory is used during this test for context memory operations. CUSTOM VOC = 55V ISC = 4.0A	OK	ON	P OBS 1
6.2.2	Switch ON the SSMM by executing the following sequence: **TPDC_SSMM_ON_PL** with input parameters ~~**$PAY** := "SWA"~~ ~~**$STEST** := "SFT"~~ MM = "INT"	OK	ON	P OBS 2
6.2.3	Create and enable un-bound downlink from the SSMM to forward any SSMM routed packets to ground execute the following sequence: **TPDC_PSO_C_F**	OK	ON	P
	SWA SFT for Nominal Instrument			
6.2.4	Verify that the SWA Nominal spacewire link is ON by checking the following TM parameters: Payload 7 Link Status **NSMD0084 = "NomEnab RedDisab"**	**NSMD0084** = "NomEnab RedDisab"	NomEnab RedDisab	P

Activity No.	SWA Short Functional Test	Pass Criteria	Result	Pass/ Fail
6.2.10	Power off the platform by executing the following sequence: **TSSC_PFORM_OFF** with input parameters **$RTS_RUNNING** := FALSE	OK	OK	P

6.3 SWA Full Functional Test

The following section will perform the Full Functional Test for the SWA unit.

Activity No.	SWA Full Functional Test	Pass Criteria	Result	Pass/ Fail
	Power Up Platform and SSMM			
6.3.1	Execute the following sequence to power on the PFM : **TSSC_PLATFORM_ON** with input parameters **$OBC_CONFIG** := "A\|0\|FAST" **$RTE_INIT** := FALSE	OK		
6.3.2	Switch ON the SSMM by executing the following sequence: **TPDC_SSMM_ON_PL** with input parameters **$PAY** := "SWA" **$STEST** := "FFT"	OK		
6.3.3	Create and enable un-bound downlink from the SSMM to forward any SSMM routed packets to ground execute the following sequence: **TPDC_PSO_C_F**	OK		
	SWA FFT for Nominal Instrument			
6.3.4	Verify that the SWA Nominal spacewire link is ON by checking the following TM parameters: Payload 7 Link Status **NSMD0084 = "NomEnab RedDisab"**	**NSMD0084** = "NomEnab RedDisab"		

NOT PERFORMED

Activity No.	SWA Full Functional Test	Pass Criteria	Result	Pass/ Fail
6.3.5	Execute the complete SWA FFT on side A with the following sequence: **TIET_SWA_FFT** with input parameters **$sUnit_Side** := "A"	Record version and as-run number:		
6.3.6	Switch to redundant SpW link by executing the following sequence **TPDC_CRP_DH_3055** with input parameters **$P_ID** := "SWA"	OK		
	SWA FFT for Redundant Instrument			
6.3.7	Verify that the SWA Redundant spacewire link is ON by checking the following TM parameters: Payload 7 Link Status **NSMD0084 = "NomDis RedEnab"**	**NSMD0084** = "NomDis RedEnab"		
6.3.8	Execute the complete SWA FFT on side A with the following sequence: **TIET_SWA_FFT** with input parameters **$sUnit_Side** := "B"	Record version and as-run number:		
	Power Down SSMM and Platform			
6.3.9	Power off the SSMM by executing the following sequence: **TPDC_SSMM_OFF**	OK		
6.3.10	Power off the platform by executing the following sequence: **TSSC_PFORM_OFF** with input parameters **$RTS_RUNNING** := FALSE	OK		

NOT PERFORMED

6.4 Post Test Analysis

The following should be performed after the test for post test analysis by the Instrument team.

Activity No.	Result Retrieval	Pass Criteria	Result	Pass/ Fail
6.4.1	Retrieve the raw TMTC Log files (Binary and Ascii) and copy them to the results directory for analysis.	OK	OK	P
6.4.2	Perform an Open Center raw TM analysis (HA) and copy to the results directory for analysis.	OK	OK	P
6.4.3	Extract the Open Center Log book and copy to the results directory for analysis.	OK	Ok	P
6.4.4	Extract the HTML As-run Files for the session and and copy to the results directory for analysis.	OK	OK	P
6.4.5	Copy the final version of the SFT / FFT script to the results directory for analysis.	OK	Ok	P
6.4.6	Delivery all the test results collected to the Instrument team.	OK	Date : 10.08.18	P.

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DOCUMENT CHANGE DETAILS

ISSUE	RELEVANT INFORMATION/INSTRUCTIONS
1	Initial Issue

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