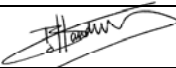

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OBJET / PURPOSE :		CLASSIFICATION :			
Post Test Review: Unit Functional Test of Integrated SPIRE AVM Warm Units					
PARTICIPANTS ATTENDEES	SOCIETE FIRM	SIGNATURE SIGNATURE	PARTICIPANTS ATTENDEES	SOCIETE FIRM	SIGNATURE SIGNATURE
A Knight	AAS-F		K.King	RAL	
B Gobillot	AAS-F		A.Dowell	RAL	
B.Collaudin	AAS-F		A.Gatti	ESA	
S Idler	ASED		C.Scharmberg	ESA	
S Hamer	ASED		A.Koppe	ASED	
R.Stritter	ASED				
REDACTEUR / WRITTEN BY : B.Collaudin					
<p>The SPIRE AVM UFT1 is considered successfully completed. Software upload with OBSM was not successful. (NCR to be issued). Investigation are on going. Retest will be performed at instrument level, then on FM satellite. UFT2 has not been performed, and will be executed on SPIRE FM. SPIRE AVM can be replaced by FM as soon as necessary. It is to be noticed that half of the time allocated to SPIRE UFT was used to debug the IEGSE to CCS communication.</p>					
DISTRIBUTION : PARTICIPANTS / ATTENDEES	POUR ACTION : FOR FURTHER ACTION				
	POUR INFORMATION : FOR INFORMATION ASP: Y.Roche, P.Couzin, G.Beaufils, D.Montet ASED: M.Mueller, M.Koelle, R.Hohn ESA:F.Pedersen				
APPROUVE PAR / APPROVED BY					
NOM / NAME					
SIGNATURE / SIGNATURE					

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SUITE / CONTINUED :

Post Test Review: SPIRE AVM WU Unit Functional Test (on SVM FM)

Astrium FN

28 March 2007

Agenda:

1. Introduction
2. Test Item Identification
3. Review of Test Data Completeness
4. Review of Test Documentation Completeness (As-Run / Procedure Variations)
5. NCR Status
6. Open Work
7. AOB
8. Conclusions

1. Introduction

This Post Test Review shall confirm the execution of the SPIRE AVM Warm Unit Functional Test performed at Astrium FN on the H-SVM FM on 27 & 28 March 2007 i.a.w procedures

- HP-2-ASED-TP-0142_1 AVM SPIRE UFT Procedure (Redlined)
- ACS: HP-2-ASED-SD-152_1 (22/3/07) for use of both procedures
 - HP-2-ASED-PR-0080_1A AVM SPIRE DPU SW Upload Procedure (Redlined)
 - Using SPIRE procedure SPIRE-RAL-PRC-002866 (20/3)

The SPIRE HPSPU S/W version could not be updated during this test with the test flow being:

- 1st UFT run (OK)
- Update HPSPU S/W (not successful)
- 2nd UFT run (verification of S/W upload with the success criteria that the 2 runs shall be identical) (not performed)

Note that the SPIRE WUs were mechanically and electrically integrated prior to these activities i.a.w:

11/1/2007 - H-P-MI-AI-1422 AVM Herschel Warm Unit TRR for test in FN
 AVM Herschel Warm Unit PTR for test in FN H-P-MI-AI-1425 23/1/2007

The TRR for this SPIRE AVM UFT test has been performed in 2 steps, with intermediate wrap-up meetings, as the IEGSE-CCS communication was not initially successful

21/2/2007 H-P-ASP-MN-8836 1st SPIRE AVM WU TRR
 21/3/2007 H-P-ASP-MN-8919 2nd SPIRE AVM WU TRR

Plus a certain number of wrap-up meeting mainly related to the IEGSE – CCS communication problems.

2007-02-23 H-P-ASP-MN-8849 SPIRE UFT wrap-up meeting n°1
 2007-03-02 H-P-ASP-MN-8870 SPIRE UFT wrap-up meeting n°2
 2007-03-09 H-P-ASP-MN-8891 SPIRE UFT wrap-up meeting n°3
 2007-03-27 H-P-ASP-MN-8942 SPIRE wrap up meeting n°4 - NRB on NCR 3064

ACTION

2. Identification of Test Item

Hardware:

Current SVM Hardware Configuration

Ref. SVM ABCL (at delivery) H-P-LI-AI-0023 Iss 7 15/11/06

Changes subsequent to delivery:

AASI AIT Activities:

AVM Herschel Warm Unit TRR for test in FN	H-P-MI-AI-1422	11/1/2007
AVM Herschel Warm Unit PTR for test in FN	H-P-MI-AI-1425	23/1/2007

ASED AIT Activities (SPIRE panel):

FM -Z (SPIRE) Panel opened:

- CCU FM Mechanical Integrated
- SPIRE AVM HSDPU Integrated
- SPIRE WIH Integration ongoing
- SPIRE SVM SIH Integration ongoing
- -Z Panel CCH integration ongoing

ASED are currently consolidating the detailed hardware changes between SVM ABCL at delivery and the current status, this list will be available on 23 March 2006 (and at the PTR).

Current SVM S/W Configuration Status

ACMS S/W Version: 3.4 B2

CDMS S/W Version: 2.6.2

SPIRE AVM HSDPU

EIDP ref: SPIRE-RAL-DOC-0011533-AVM2

SPIRE DRCU Simulator (included in above EIDP)

Software


	HSDPU (start of Test)	HSDPU (after S/W Upload)
ASW	2.2 D	See S/W configuration in ANNEX 1
BSW	2.0	

Database MIB	SPIRE 2.2.G.2 (valid for both versions of DPU S/W)
--------------	--

HPSDB Version / Release Note

The most recent formal release of the HPSDB used for the SPIRE UFT at Astrium is:
H-P-2-ASP-LI-1285 Iss 6 26/3/2007

This version was used for CCU testing and during this test the HPSDB was manually modified. As

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yet, no formal Release Note exists for this updated version.

Currently the HPSDB is being further updated at AASF to include HIFI MIB 10.3 for the HIFI UFT that will be performed after SPIRE UFT next week. (Issue 7 received on 27/3)

3. Review of Test Data Completeness

The following shall establish that all test data is available sufficient to complete the Test Report. A preliminary evaluation will be given upon the success of the test based on the data in hand.

- EGSE set up

Problems were encountered setting up the IEGSE and communicating with the CCS.
(see wrap up meetings)

Half of the time allocated to UFT test was used to debug the communication IEGSE to CCS.

1: Size of TM packets sent by IEGSE were wrong (phase 1) (solved by new scripts)
(ref NC 3064)

2: Connection problem (for the last UFT slot, the IEGSE was connected to internet and not to CCS)
AI 1 SPIRE
AI 1 Connection check & layout to be included in the I-EGSE set up procedure) + marks on the network plugs

3: Packets synchronisation was not always OK (see wrap-up meeting n°4) Workaround solution by patch on scripts. Final solution to be proposed by IEGSE working group (see ai from Wrap-up meeting 4.). This is to be added to NC 3064 for tracability.

The Instrument EGSE working group shall formalize an IEGSE set up procedure for connection to the CCS that is common to all instruments. (remind: action still open, running from PACS AVM WU/Herschel FM UFT PTR (HP-ASP-MN-8815 - 15/2/2007 AI#1: The IEGSE working group shall formalise an IEGS set up procedure for connection to the CCS that is common to all instruments).
Ref also mail from Andy Knight on 23/2/07 to PACS (otto Bauer)

The IEGSE will have to be upgraded for IST tests (& debug) (3 new machines to allow each instruments to keep the configuration)

It is agreed that IEGSE can be used remotely by instruments only while disconnected from CCS.

SVM: There was serious problems to switch on the SVM the 2nd day. This removed about 5h of the test time. The problem was due to a bad configuration of the CDMU DFE. (to be covered by NCR)

The UFT 1 was run successfully:


Some results were not obtained at the first place, and some scripts had to be run 2 times to get the expected results. (this is known by RAL, and is associated to the DRCU simulator). (see section 1.6 of the SPIRE procedure).

No NCR generated on this topic. (not expected to appear on FM)

No NCR generated during the SPIRE UFT1.

NC1375 (Synchronisation source sequence counter) was observed during UFT (normal behaviour with ASW 2.2D, to be solved with 2.2G)

AI 2 ASED / SH
Some scripts name have to be updated for next issues of the procedure
The last script (DPU switch off) is not existing, and shall be removed & replaced by LCL switch off

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Software upload:

The software upload test was not successful.

Test was to upload the same software version to DM, move it to PM & check, and burn it to EPROM

The software image 2.2D could be uploaded in the DM (Data memory RAM) at 4000xmem ID 11.

The SPIRE boot software cannot dump the memory (not possible to check what was uploaded)

Then the command load_TC_and_boot did not work. (copy from DM to PM & boot)

The DPU did not respond.

The DPU was switched off and ON again.

The software was then uploaded again on DM at address at 0000xmem ID 11.

Then check sum error were received at each commands

Error message from DPU.

Type 5 subtype 4 event packet, event ID x8004- SID x0009, error code x0008

Telemetry/telecommand data FCS error.

The DPU was then switched off and on again, and the packets were received showing that the DPU is operational.

NCR to be issued on this topic

A13 AAS-F /AK

The files for this test, i.e:

- 1st UFT
- S/W Upload

Are stored on the following CCS session :2007_03_27_12_46_herigse_hpws23_REALTIME (ASTRIUM_ENV)

All data is complete and stored.

Way forward:

Software upload needs to be validated for FM, as it will be necessary to upgrade the software on SPIRE FM.

3 solution to continue this software upload test:

1. On SPIRE AVM/Herschel FM in ASED (extra slot to be requested, as FM WU integration will take place next week)
2. On FM DPU/Herschel FM
3. On SPIRE AVM/Herschel AVM in Torino
4. At instrument level (not tested before with OBSM)

SPIRE did not use the OBSM at instrument level test (ILT)


There is a common agreement not to delay the integration of the FM (option 1 killed)

It should not be tried directly on FM to burn the software in the EEPROM without validation (checksum, execution of the ASW, UFT).

Debugging of the Software uploading should not be performed directly on FM

It is propose to debug first the procedure to use OBSM at instrument level, to solve the problems experienced yesterday.

If this does not work, it shall be investigated if this can be performed on AVM.

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When this is proven to work at instrument level, a verification will be performed on the SPIRE FM DPU/Herschel FM, by uploading the similar version of the software that is on FM DPU (2.2G).

4. Review of Test Documentation Completeness

(As-Run / Procedure Variations)

procedures

- HP-2-ASED-TP-0142_1 AVM SPIRE UFT Procedure (Redlined (20/2), filled-in. There will be a new number & cover pages for test report
- ACS: HP-2-ASED-SD-152_1 (22/3/07) SW upload & checksum verification of AVM DPU to cover that fact that we use both ASED (HP-2-ASED-PR-0080_1A) & SPIRE (SPIRE-RAL-PRC-002866) software upload procedures
- An other sheet to be written to cover the 2nd software upload
-

As Run Procedures are available for :

- 1st UFT
- S/W Upload

5. NCR Status

NCR generated during this test:

NC-3047: HP Database Anomalies Observed During SPIRE AVM UFT

The tmd.dat file issue

The above problem is updated in the new version of the HPSDB.

This is open pending verification during SPIRE AVM UFT

The contents of the tmd.dat file in the new version of the HPSDB will be verified by ASED prior to the start of this test.

This NCR can be closed after this test.

NC-3048: Problems encountered with SPIRE scripts during AVM UFT

HIEGSE / IEGSE_H Issue


The HPSDB has been modified to reflect the Instrument naming convention.

The HSDB was formally issued for the CCS / IEGSE communication tests. Basically, these recent tests have demonstrated that the corrections made in the database are working.

There were some problems loading the configured database leading to a manually generated HPSDB being used.

Thus, this NCR can only be formally closed once the database is validated and delivered with a Release Note.

In addition, there was a problem due to the dst.dat file. This file is automatically generated by the database but has to be manually imported into the CCS repository. If this is not manually checked in

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and validated then the CCS will use the version currently existing in the repository. This happened in this case and thus the old H_IEGSE naming convention was used.

There are 2 possible ways forward:

- AASI shall update the CCS loading procedure to take into account this manual input (action on L Allegretti from H-P-ASP-MN-8891, SPIRE UFT wrap up, to write a technical note)
- TERMA shall update the CCS to automatically update the dst.dat file in the repository

This is under investigation at AASI (AASF will check progress on this issue, email sent to AASI 21/3/2007)

No action on SPIRE

This NCR can be closed after this test.

NC-3064: SPIRE AVM UFT: Error in translation of TM sent by SPIRE IEGSE to CCS

After the experts meeting it was identified that the TC sent by the IEGSE to CCS were too long. This will be changed by the update of the SPIRE test scripts.

Action open with SPIRE

Currently open awaiting AVM UFT / S/W Upload

The updated SPIRE test scripts are ready (under test) and will be provided to Astrium today.

NC to be completed with wrap-up meetings 3 & 4

To be closed after action of EGSE working group (to update the tcl generation tool) will be closed

NC-3112: CCS / IEGSE Communication: Subscribe parameters

During the setup of the IEGSE to the CCS at Astrium FN, when sending 200 TCs the same TM synchronisation / update problem that was seen during EQM testing was seen again.

The system goes into an infinite wait loop waiting for a TC which has already been received but not recognised due to an incorrect time stamp (TOPE problem seen on EQM).

This was already reported on EQM in Bug Report 1703.

Running the "subscribeparams" tcl script written by S Ilse for EQM, modified for Herschel FM (1000→50 TC's) works as a workaround solution for this problem.

There are several open actions:

TERMA should trace what happened to the above mentioned bug report

ASED (Koelle) will check the TERMA database for updates on this bug report


AASI state that this problem was solved by TERMA but no confirmation was received from ASED.

This appears not to be the case, however TERMA cannot replicate this error at CCS level and thus it can only be investigated by ASED.

This TCL script has to be kept running throughout instrument testing.

This problem will not be changed on the IEGSE so the solution shall be to either...

- Change the CCS (already attempted by TERMA...did not work)
- Use as is with the tcl script workaround

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The step to run this script (when IEGSE / CCS communication is required) is included in the Astrium UFT procedure.

The bug report 1703 is attached in ANNEX 1 of these MoM and shall be “re-activated” to try and solve this problem.

Still OPEN

New NCR's

1 NCRs will be raised on PRISMA (by A Knight) as a result of anomalies seen during this test .
 SPIRE Software upload failed.

A 2nd NCR to be issued on the SVM switch on procedure
 Configuration of the CDME DFE was incorrect It is not fully understand why.

6. Open Work

Only normal work:
 Continue investigation on the 3 open NCR's (3064 & 2 new NCRs)
 ASED to create Test Report
 AASF to create Evaluation Report

7. AOB


ASED to sent to SPIRE the content of the 5 first TC sent by the OBSM tool to SPIRE DPU

8. Conclusions

The SPIRE AVM UFT is considered successful.
 Software upload was not successful, and needs to be further investigated and verified.
 No further instruments tests are required on this AVM configuration (no blocking SPIRE FM integration)


AI 3 – AAS-F

AI 4 - ASED

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ACTION LIST

N°	Description	Actionee / Responsible	Due Date
1	Connection check & layout to be included in the IEGSE set up procedure) + marks on the network plugs Some scripts name have to be updated for next issues of the procedure	SPIRE/DA	
2	The last script (DPU switch off) is not existing, and shall be removed & replaced by LCL switch off 2 new NCR to generate:	ASED/SH	
3	1 on Software upload failure 1 on Problem to start the SVM (CDMU DFE configuration)	AAS/F-AK	
4	ASED to sent to SPIRE the content of the 5 first TC sent by the OBSM tool to SPIRE DPU	ASED / SH	

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Older NCR Status (from DRB):
Status as reviewed at SPIRE FM DRB

NC-2640: Database problem for SPIRE Memory Dump and Load TC (6,x)

Raised during AVM tests at AASI

The SPIRE MIB files have been updated and incorporated into the latest HPSDB.
The above will be implicitly tested during the DPU S/W upload (as part of AVM UFT) i.e. if the upload is successfully completed then this NCR can be closed.

Currently open awaiting AVM UFT / S/W Upload

NC-2910: SPIRE Time Synchronisation not executed

Raised during AVM tests at AASI

AI, RAL: to perform the test locally.

Action remains open at RAL

SPIRE shall investigate, specifically to ascertain whether this NCR will affect this UFT. See Open Work.

NC-1375: Source Sequence Counter Errors on CCS

Raised during H-EPLM EQM tests

This problem has been addressed in the new version of the OBSW.
Thus, this problem should be seen during the first AVM UFT run but, after S/W upload, should disappear.

Currently open awaiting AVM UFT / S/W Upload

NC-1672: CCS uses UTC instead of TAI time

IEGSE anomaly see during H-EPLM EQM tests

SPIRE agree to the proposal for closure from AASF (Couzin)
However, anomaly is still seen during the recent CCS / IEGSE communication tests.

A new version of the CCS handler was installed on the IEGSE (common for all instruments).
The IEGSE still uses TAI
There is still 33s difference between IEGSE (TAI) & CCS (UTC). IEGSE time stamps in TAI are interpreted as UTC.
Action to AAS-F to fix the problem (again)

This is not a show stopper (as the CCS doesn't care what time it is!) however and agreement must be reached in the short term to this very long standing issue (since EQM)


Proposal from AASF (and HFI)...summarized....

... use as is !

....continue to work during AIT with UTC, both for CCS and CTR on board (ie. to initialize, as it is done today CTR with UTC).

There are 2 penalties to this "use as is" statement :

- IEGSE would receive instrument packets dated in UTC. This is what

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happened during the CQM tests and led to the NCR 1672, because instruments expected time in TAI, as specified. However, a - simple - work around solution was implemented at that time (see eg. HFI input below) at IEGSE level.

- We would to the second order not comply with SRS requirement SMCD-225 H/P "The spacecraft shall deliver the timing information (time in TAI [Temps Atomique International] format) including synchronisation signals and clock to the instruments for datation of their information with an accuracy of 0.1 ms." This "non compliance" is however believed acceptable to ESA for AIT (the CTR in UTC will not be corrected to the leap second during a test).

An RFD against SMCD-225 H/P may be issued.

It is now pretty clear that any other solution (ie. set the to CTR in TAI) would have larger than expected impacts on the CCS+SCOE, and would uselessly complexify the definition of the RMS (of the MTL in fact) during IST.

From HFI, work around.....

It has been assumed that OBT arrives in TAI and is translated to UTC by shifting 33 seconds. In fact the OBT did not arrive in TAI but UTC and thus generated a mess as the above transformation had to be made in several places.

It was decided to remove all translation from supposed TAI to approximative UTC in order to avoid this mess, and with the idea that in any case, during flight this translation will not occur but we will use the correlation time given by MOC to correlate OBT to UTC.

So from HFI point of view, the CCS and OBT during ground test should stay as it is today and we do not need to get TAI in the packets but UTC.

SPIRE, again, agree to the above "use-as-is" disposition to this NCR (this will only be seen during testing on ground and will not be seen in flight where ESOC will handle synchronisation, thus, from an IEGSE perspective, SPIRE "don't care").

AASF will raise an RfW to cover this issue.

This NCR is not blocking this Test.

NC-2669: Herschel - HIFI / PACS / SPIRE - Consistency check on AVM data

This NCR concerns the consistency checker

However, in the excel table attached to the NCR which summarize the errors seen, there are several, what appear to be, "actions" for SPIRE to provide updates / justifications for MIB files, e.g:

For SPIRE: RAWFMT=I some raw values are "R" - This is an error RAWFMT to be change to "R" (or values to be rounded as integer)

Proposition:


SPIRE to correct

SPIRE:

PTC=4, Curve Raw value is real - This is compatible

Proposition:

1 - SPIRE to justify

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GENERIC:

HIPRI set while type is null

HIFI and SPIRE:

Parameters are referenced in alphanumeric displays but not in packets.

Proposition:

- 1 - Use as is
- 2 - This check is inconsistent with MIB ICD (MIB ICD to be updated)
- 3 - HIFI and SPIRE to justify - Either to add those parameters inside packets (PLF) or remove those parameters and associated references inside alphanumeric display.

SPIRE:

(PTC,PFC)=(2,14) not allowed according to MIB ICD - HPSDB normally filters this anomaly, however it deviates from PSICD for the following PFC: 8, 10, 11, 13, 14 and 15, we presume that some EGSE data could need those values.

Proposition:

SPIRE to modify.

HPSDB configuration to be modified (if EGSE data is compliant)

SPIRE:

VPD_CHAR is set to 2 while VPD_PIDREF is "N" this is inconsistent.

Proposition:

SPIRE to correct

This NCR was discussed at the SPIRE FM DRB and is under investigation at RAL.

NC-2953: SPIRE DPU anomalous behaviour during I&T

Subsequent to SPIRE AVM UFT, this NCR has been CLOSED

Most recently, the following NCRs were raised during the PACS AVM UFT and are applicable to the SPIRE AVM UFT (TBC):

NC-3035: PACS DPU Power On Anomalies seen during AVM UFT

The Astrium UFT procedure has been updated to take in to account the power on requirements as identified in H-P-2-ASP-TS-1315 (instrument switch on procedure, SVM part).

In addition, the final issued procedure will be redlined to re-enable the FDIR immediately after completion of the SPIRE force boot script.