

Update PACS SPU RAM Data DRAM ground image via memory dump  
File: H\_FCP\_OBS\_4249.xls  
Author: lstefanov-hp



## Procedure Summary

### Objectives

This Herschel OBSM nominal procedure is used to perform a PACS SPU RAM Data DRAM ground image update from memory dump of one or several PACS SPU RAM Data DRAM memory areas. It is used for both SPU SWL and SPU LWL subsystems.

The memory dump is commanded using TC(6,5) and the memory locations content is received on ground in TM(6,6) packets.

The procedure assumes that the command stack has already been generated using the OBSM system and is ready for loading on the Manual Stack. The command stack generation activity is not covered by this procedure.

### Summary of Constraints

CDMU in Operational Mode  
- PACS instrument in INIT mode (DPU ASW running)  
- SPU ON  
- DPU-SPU connection established

Memory areas are Dumped through TC(6,5); this TC will be delayed when there is an ongoing:

- TC(6,2) Load Memory Using Absolute Addresses
- TC(6,5) Dump Memory Using Absolute Addresses
- TC(6,9) Check Memory Using Absolute Addresses
- TC(8,4,1,1) Copy Memory

### Spacecraft Configuration

#### Start of Procedure

CDMU in Operational Mode  
- PACS instrument in INIT mode (DPU ASW running)  
- SPU ON  
- DPU-SPU connection established

#### End of Procedure

Same as start

### Reference File(s)

#### Input Command Sequences

#### Output Command Sequences

OFCP424m  
OFCP424o

### Referenced Displays

ANDs      GRDs      SLDs

### Configuration Control Information

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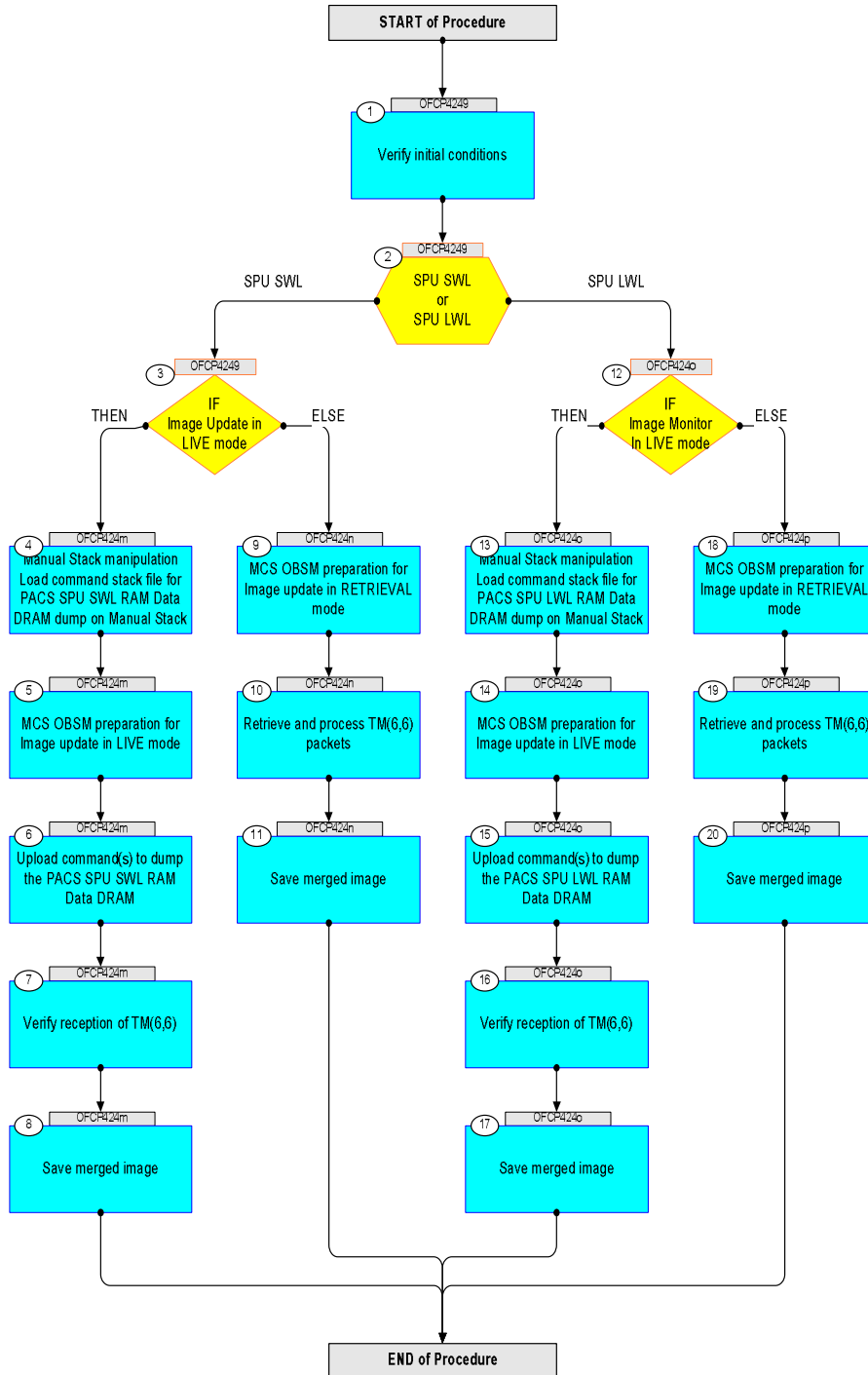


DATE	FOP ISSUE	VERSION	MODIFICATION DESCRIPTION	AUTHOR	SPR REF
04/09/08	2	1	Created	lstefanov-hp	

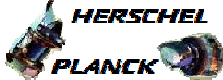

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## Procedure Flowchart Overview




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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch	AIT Comment
<b>Beginning of Procedure</b>					
OFCP4249 TC Seq. Name : OFCP4249 ( ) PACS SPU RAM Data DRAM ground image update  TimeTag Type: B Sub Schedule ID:  <input type="checkbox"/>					
1		Verify initial conditions		Next Step: 2	
		Check: - PACS instrument in <b>INIT mode</b> (DPU ASW running) - SPU ON - DPU-SPU connection established			
		Instrument SOE to confirm PACS instrument mode and SPU status.			
2		SPU SWL or SPU LWL  type: [Switch]		Next Step: SPU SWL 3 SPU LWL 12	
3		IF Image Update in LIVE mode  type: [If]		Next Step: THEN 4 ELSE 9	
End of Sequence					
OFCP424m TC Seq. Name : OFCP424m ( ) PACS SPU SWL RAM Data DRAM image update in Live mode  TimeTag Type: B Sub Schedule ID:  <input type="checkbox"/>					
4		Manual Stack manipulation Load command stack file for PACS SPU SWL RAM Data DRAM dump on Manual Stack		Next Step: 5	
		<b>NOTE:</b> The current procedure assumes that the memory dump in Live mode is performed using commands with immediate execution.			
		Select the File -> <b>LoadStack</b> option from the main menu of the Manual Stack window			
4.1		IF PACS Nominal			

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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch	AIT Comment
		Select file  <b>PASPDDSW_DI_XXXXYYY_N_NoModel_NoModel_YYYY_DDDThhmmss.machine</b>  from directory  <a href="#">/home/pmcops/HPMCS/SESSION/current/data/CMD/STACKS/OBSM/PASPDDSW</a>  as indicated by the OBSM engineer			
		IMPORTANT:  <b>XXXXYYY</b> = Image ID(X) and Version(Y) - depend on image used for stack generation  <b>YYYY_DDD hhmmss</b> - depend on stack generation time  <b>machine</b> - depends on the name of the machine used for stack generation			
		File name <b>examples</b>  - No model associated to the memory image:  PASPDDSW_DI_0002001_N_NoModel_NoModel_2007_254T123300.sun043  - CT PASPDDSW1, ID 0003, Version 001 associated to the memory image:  PASPDDSW_DI_0002001_C_PASPDDSW1_0003001_2007_337T093320.sun043			
4.2		ELSE PACS Redundant			
		Select file  <b>PASDDSWR_DI_XXXXYYY_N_NoModel_NoModel_YYYY_DDDThhmmss.machine</b>  from directory  <a href="#">/home/pmcops/HPMCS/SESSION/current/data/CMD/STACKS/OBSM/PASDDSWR</a>  as indicated by the OBSM engineer			
		IMPORTANT:  <b>XXXXYYY</b> = Image ID(X) and Version(Y) - depend on image used for stack generation  <b>YYYY_DDD hhmmss</b> - depend on stack generation time  <b>machine</b> - depends on the name of the machine used for stack generation			
		File name <b>examples</b>  - No model associated to the memory image:  PASDDSWR_DI_0002001_N_NoModel_NoModel_2007_254T123300.sun043  - CT PASDDSWR1, ID 0003, Version 001 associated to the memory image:  PASDDSWR_DI_0002001_C_PASDDSWR1_0003001_2007_337T093320.sun043			

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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch	AIT Comment													
4.3		Check command stack loaded																
		Check that loaded stack contains one or several TCs <b>PC028380</b>																
		Display the Manual Stack in 'Full mode' and check that the <b>Memory ID</b> parameter in the PC028380 command(s) is set to <b>54 hex</b> :  <b>Memory ID = 54 hex</b>  <b>Note:</b> The Memory ID of the target memory device is stored in the MSB of the 16-bit long Mem ID TC parameter. The LSB of the same parameter carries the most significant 8 bits of the Start Address.																
		Execute Telecommand  <b>DPU_MEMORY_DUMP</b>  <i>Command Parameter(s) :</i> <table style="margin-left: 40px;"> <tr> <td><b>DPU_MEMORY_BLOCK_ID</b></td> <td>PP009380</td> <td><b>54xx hex</b></td> </tr> <tr> <td><b>DPU_MEMORY_ADDR</b></td> <td>PP003380</td> <td>&lt;hex&gt; (Def)</td> </tr> <tr> <td><b>DPU_DATA_LENGTH</b></td> <td>PP008380</td> <td>&lt;dec&gt; (Def)</td> </tr> </table> <i>TC Control Flags :</i> <table style="margin-left: 40px;"> <tr> <td><b>GBM IL DSE</b></td> <td></td> </tr> <tr> <td><b>--Y -- ---</b></td> <td></td> </tr> </table> <i>Subsch. ID : 90</i> <i>Det. descr. : DUMP OF A DPU MEMORY AREA</i> This Telecommand will not be included in the export	<b>DPU_MEMORY_BLOCK_ID</b>	PP009380	<b>54xx hex</b>	<b>DPU_MEMORY_ADDR</b>	PP003380	<hex> (Def)	<b>DPU_DATA_LENGTH</b>	PP008380	<dec> (Def)	<b>GBM IL DSE</b>		<b>--Y -- ---</b>		<b>PC028380</b>	<b>TC</b>	
<b>DPU_MEMORY_BLOCK_ID</b>	PP009380	<b>54xx hex</b>																
<b>DPU_MEMORY_ADDR</b>	PP003380	<hex> (Def)																
<b>DPU_DATA_LENGTH</b>	PP008380	<dec> (Def)																
<b>GBM IL DSE</b>																		
<b>--Y -- ---</b>																		
5		MCS OBSM preparation for Image update in LIVE mode		Next Step: 6														
		<b>Note:</b> It is assumed that the OBSM application is already running and the OBSM Desktop is displayed on the MCS client. Starting the OBSM application is not covered by the current procedure.																
5.1		Select 'Image UPDATE' from the menu																
		Select the <b>Image</b> menu of the <b>OBSM Desktop</b> .  From the Image menu, select <b>Update</b> .  The 'Image Catalog' window opens.																
5.2		Select image to be updated																
5.2.1		IF PACS Nominal																

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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch	AIT Comment
		Select the image to be updated for the memory device <b>PASPDSSW</b> .  The 'Image UPDATE' window opens.			
5.2.2		ELSE PACS Redundant			
		Select the image to be updated for the memory device <b>PASDDSWR</b> .  The 'Image UPDATE' window opens.			
5.3		Start dump TM processing			
		In <b>LIVE</b> mode, processing of incoming real-time telemetry starts automatically after the image selection.			
6		Upload command(s) to dump the PACS SPU SWL RAM Data DRAM		Next Step: 7	
		<b>Uplink</b> the <b>PC028380</b> memory dump command(s) with <b>ARM-GO</b>			
		For each command, one or more TM(6,6) packets must be received on ground.			
7		Verify reception of TM(6,6)		Next Step: 8	
		<b>Note:</b> One or more TM(6,6) packets will be received for each memory dump command uplinked.			
7.1		IF PACS Prime			
		Verify Packet Reception  MEMORY_DUMP Packet Mnemonic : MEMORY_DUMP APID : 1152 Type : 6 Subtype : 6 PI1 : PI2 :			
7.2		ELSE PACS Redundant			


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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch	AIT Comment
		Verify Packet Reception  MEMORY_DUMP Packet Mnemonic : MEMORY_DUMP APID : 1153 Type : 6 Subtype : 6 PI1 : PI2 :			
7.3		Check OBSM dump packet processing			
		Check that the OBSM is processing the incoming memory dump packets.			
8		Save merged image		Next Step: END	
		Save merged image with <b>new ID</b> .			
End of Sequence					
<b>OFCP424n</b> TC Seq. Name : OFCP424n ( ) PACS SPU SWL RAM Data DRAM image update in Retrieval mode  TimeTag Type: Sub Schedule ID:  <input type="checkbox"/>					
9		MCS OBSM preparation for Image update in RETRIEVAL mode		Next Step: 10	
		<b>Note:</b> It is assumed that the OBSM application is already running and the OBSM Desktop is displayed on the MCS client. Starting the OBSM application is not covered by the current procedure.			
9.1		Select 'Image UPDATE' from the menu			
		Select the <b>Image</b> menu of the <b>OBSM Desktop</b> .  From the Image menu, select <b>Update</b> .  The 'Image Catalog' window opens.			
9.2		Select image to be updated			



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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch	AIT Comment
9.2.1		IF PACS Nominal			
		Select the image to be updated for the memory device <b>PASPDDSW.</b>  The 'Image UPDATE' window opens.			
9.2.2		ELSE PACS Redundant			
		Select the image to be updated for the memory device <b>PASDDSWR.</b>  The 'Image UPDATE' window opens.			
9.3		Start dump TM packets processing			
		Set retrieval start time and start retrieval of TM packets using the PLAY buttons.			
10		Retrieve and process TM(6,6) packets		Next Step: 11	
		Use the <b>STEP</b> button to retrieve and process the TM(6,6) packets, packet by packet and starting from the time shown in the packet time field.			
		OR			
		Use the <b>PLAY</b> button to retrieve and process the TM(6,6) packets in automated mode.  Pressing the PLAY button, the display will start to retrieve and process packets, starting from the time shown in the packet time field. This processing will stop automatically when a packet is received which creation time is greater than the one contained in the end time field.			
11		Save merged image		Next Step: END	
		Save merged image with <b>new ID.</b>			
End of Sequence					
<b>OFCP424o</b> TC Seq. Name : OFCP424o ( ) PACS SPU LWL RAM Data DRAM image update in Live mode  TimeTag Type: B Sub Schedule ID:  <input type="checkbox"/>					

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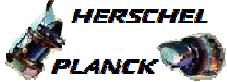



Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch	AIT Comment
12		IF Image Monitor In LIVE mode  type: [If]		Next Step: THEN 13 ELSE 18	
13		Manual Stack manipulation Load command stack file for PACS SPU LWL RAM Data DRAM dump on Manual Stack		Next Step: 14	
		<b>NOTE:</b> The current procedure assumes that the memory dump in Live mode is performed using commands with immediate execution.			
		Select the File -> <b>LoadStack</b> option from the main menu of the Manual Stack window			
13.1		IF PACS Nominal			
		Select file  <b>PASPDDLW_DI_XXXXYYY_N_NoModel_NoModel_YYYY_DDDThhmmss. machine</b>  from directory  /home/pmsops/HPMCS/SESSION/current/data/CMD/STACKS/OB SM/PASPDDLW  as indicated by the OBSM engineer			
		<b>IMPORTANT:</b>  <b>XXXXYYY</b> = Image ID(X) and Version(Y) - depend on image used for stack generation  <b>YYYY_DDD hhmmss</b> - depend on stack generation time  <b>machine</b> - depends on the name of the machine used for stack generation			
		File name <b>examples</b>  - No model associated to the memory image:  PASPDDLW_DI_0002001_N_NoModel_NoModel_2007_254T123300. sun043  - CT PASPDDLW1, ID 0003, Version 001 associated to the memory image:  PASPDDLW_DI_0002001_C_PASPDDLW1_0003001_2007_337T09332 0.sun043			
13.2		ELSE PACS Redundant			

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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch	AIT Comment
		Select file  <b>PASDDLWR_DI_XXXXYYY_N_NoModel_NoModel_YYYY_DDDThmmss.machine</b>  from directory  /home/pmcsofs/HPMCS/SESSION/current/data/CMD/STACKS/OBSM/PASDDLWR  as indicated by the OBSM engineer			
		IMPORTANT:  <b>XXXXYYY</b> = Image ID(X) and Version(Y) - depend on image used for stack generation  <b>YYYY_DDD hhmss</b> - depend on stack generation time  <b>machine</b> - depends on the name of the machine used for stack generation			
		File name <b>examples</b>  - No model associated to the memory image:  PASDDLWR_DI_0002001_N_NoModel_NoModel_2007_254T123300.sun043  - CT PASDDLWR1, ID 0003, Version 001 associated to the memory image:  PASDDLWR_DI_0002001_C_PASDDLWR1_0003001_2007_337T093320.sun043			
13.3		Check command stack loaded			
		Check that loaded stack contains one or several TCs <b>PC028380</b>			
		Display the Manual Stack in 'Full mode' and check that the <b>Memory ID</b> parameter in the PC028380 command(s) is set to <b>74 hex</b> :  <b>Memory ID = 74 hex</b>  <b>Note:</b> The Memory ID of the target memory device is stored in the MSB of the 16-bit long Mem ID TC parameter. The LSB of the same parameter carries the most significant 8 bits of the Start Address.			
		Execute Telecommand  <div style="text-align: right; margin-right: 20px;"><b>DPU_MEMORY_DUMP</b></div> <div style="text-align: right; margin-right: 20px;"><b>PC028380</b></div> Command Parameter(s) : <div style="display: flex; justify-content: space-between; margin-left: 20px;"> <div>DPU_MEMORY_BLOCK_ID</div> <div>PP009380</div> <div>74xx</div> </div> <div style="display: flex; justify-content: space-between; margin-left: 20px;"> <div>DPU_MEMORY_ADDR</div> <div>PP003380</div> <div>&lt;hex&gt; (Def)</div> </div> <div style="display: flex; justify-content: space-between; margin-left: 20px;"> <div>DPU_DATA_LENGTH</div> <div>PP008380</div> <div>&lt;dec&gt; (Def)</div> </div> TC Control Flags : <div style="display: flex; justify-content: space-between; margin-left: 20px;"> <div>GEM IL DSE</div> <div>--Y --</div> </div> Subsch. ID : 90 Det. descr. : DUMP OF A DPU MEMORY AREA This Telecommand will not be included in the export		TC	
14		MCS OBSM preparation for Image update in LIVE mode		Next Step: 15	

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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch	AIT Comment
		<p><b>Note:</b>            It is assumed that the OBSM application is already running and the OBSM Desktop is displayed on the MCS client.            Starting the OBSM application is not covered by the current procedure.</p>			
14.1		Select 'Image UPDATE' from the menu			
		<p>Select the <b>Image</b> menu of the <i>OBSM Desktop</i>.</p> <p>From the Image menu, select <b>Update</b>.</p> <p>The 'Image Catalog' window opens.</p>			
14.2		Select image to be updated			
14.2.1		<p>IF            PACS Nominal</p>			
		<p>Select the image to be updated for the memory device <b>PASPDDLW</b>.</p> <p>The 'Image UPDATE' window opens.</p>			
14.2.2		<p>ELSE            PACS Redundant</p>			
		<p>Select the image to be updated for the memory device <b>PASDDLWR</b>.</p> <p>The 'Image UPDATE' window opens.</p>			
14.3		Start dump TM processing			
		In <b>LIVE</b> mode, processing of incoming real-time telemetry starts automatically after the image selection.			
15		Upload command(s) to dump the PACS SPU LWL RAM Data DRAM		Next Step: 16	
		<b>Uplink</b> the <b>PC028380</b> memory dump command(s) with <b>ARM-GO</b>			
		For each command, one or more TM(6,6) packets must be received on ground.			

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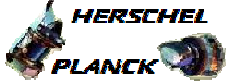




Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch	AIT Comment
16		Verify reception of TM(6,6)		Next Step: 17	
		<b>Note:</b> One or more TM(6,6) packets will be received for each memory dump command uplinked.			
16.1		IF PACS Prime			
		Verify Packet Reception  MEMORY_DUMP Packet Mnemonic : MEMORY_DUMP APID : 1152 Type : 6 Subtype : 6 PI1 : PI2 :			
16.2		ELSE PACS Redundant			
		Verify Packet Reception  MEMORY_DUMP Packet Mnemonic : MEMORY_DUMP APID : 1153 Type : 6 Subtype : 6 PI1 : PI2 :			
16.3		Check OBSM dump packet processing			
		Check that the OBSM is processing the incoming memory dump packets.			
17		Save merged image		Next Step: END	
		Save merged image with <b>new ID</b> .			
End of Sequence					
<b>OFCP424p</b> TC Seq. Name :OFCP424p ( ) PACS SPU LWL RAM Data DRAM image update in Retrieval mode  TimeTag Type: Sub Schedule ID:  <input type="checkbox"/>					

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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch	AIT Comment
18		MCS OBSM preparation for Image update in RETRIEVAL mode		Next Step: 19	
		<b>Note:</b> It is assumed that the OBSM application is already running and the OBSM Desktop is displayed on the MCS client. Starting the OBSM application is not covered by the current procedure.			
18.1		Select 'Image UPDATE' from the menu			
		Select the <b>Image</b> menu of the <b>OBSM Desktop</b> . From the Image menu, select <b>Update</b> . The 'Image Catalog' window opens.			
18.2		Select image to be updated			
18.2.1		IF PACS Nominal			
		Select the image to be updated for the memory device <b>PASPDDLW</b> . The 'Image UPDATE' window opens.			
18.2.2		ELSE PACS Redundant			
		Select the image to be updated for the memory device <b>PASDDLWR</b> . The 'Image UPDATE' window opens.			
18.3		Start dump TM packets processing			
		Set retrieval start time and start retrieval of TM packets using the PLAY buttons.			
19		Retrieve and process TM(6,6) packets		Next Step: 20	

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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch	AIT Comment
		Use the <b>STEP</b> button to retrieve and process the TM(6,6) packets, packet by packet and starting from the time shown in the packet time field.			
		OR			
		Use the <b>PLAY</b> button to retrieve and process the TM(6,6) packets in automated mode.  Pressing the <b>PLAY</b> button, the display will start to retrieve and process packets, starting from the time shown in the packet time field. This processing will stop automatically when a packet is received which creation time is greater than the one contained in the end time field.			
20		Save merged image		Next Step: END	
		Save merged image with <b>new ID</b> .			
End of Sequence					
<b>End of Procedure</b>					