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## CHANGE RECORD

Issue	Date	Sheet	Description of Change	Release
1	June 99		First issue of the Document	
2	June 99		<p>Intoduced 4 new Procedures:</p> <ul style="list-style-type: none"><li>- Exposure (Double Node, Filter A)</li><li>- Exposure (Small Window free run, Filter A)</li><li>- Exposure (Large Window free run, Filter A)</li><li>- Exposure (Refreshed Frame Store, Filter A)</li></ul> <p>Error corrected:</p> <ul style="list-style-type: none"><li>- Cancelled step relevant to Pattern Mask Table in procedure Exposure (Full Frame, Filter A), Exposure (Large Window, Filter A), Exposure (Small Window, Filter A)</li><li>- Reference to ifw8rd_1 vs ifc8rd_1 in Exposure (Small Window, Filter A)</li><li>- Reference to ifw8rd_3_1 vs ifc8rd_3_1 in Exposure (Small Window, Filter A)</li></ul> <p>Chapter 5 added. It shows the TC execution times.</p> <p>NOTE: Changes in Building Blocks are reported in the Building Block List that now is included to allow hypertext pointing to the block set.</p>	

3	Sept. 99		<p>Procedures changed:</p> <ul style="list-style-type: none"> <li>- Switch-on (3.1): steps 3, 9, 13</li> <li>- Full - Frame (3.2), Timing (3.3), Small-Window (3.4), Large-Window (3.5), Small-Window Free-Run (3.6), Large-Window Free-Run (3.7), Refreshed Frame Store (3.8): new name, Turn FW removed, steps 5, 7 and 8, note 1.</li> <li>- Full-Frame Double Node (3.9): new name, Turn FW removed, steps 5 and 14, note 1.</li> </ul> <p>Building Blocks Issue 4 is now applicable:</p> <ul style="list-style-type: none"> <li>- FW Operations I.3: Number of steps introduced for both MOS1 and MOS2.</li> <li>- Mode Switching I.3: New block for Fast Diagnostic; Blocks for FF O&amp;V updated.</li> <li>- EMAE Sequences I.3: Two new blocks for rfscr3rpb200 and I33ci10rdp.</li> <li>- EDU Config. I.4: New thresholds for the Threshold Mode settings; New block for the Fast Full Frame Diagnostic.</li> <li>- Pattern Mask tables I.3: Two new blocks for threshold PMT for peripheral CCDs; New EMCR-&gt;EDU mapping for all EDU loading; patten and mask tables corrected.</li> <li>- Offset tables I.2: Two new blocks with a different EMCR-&gt; EDU mapping.</li> <li>- EMCR Int-Time I.4: All blocks changed.</li> <li>- Door Operations I.2: Both blocks changed by deleting Remove PW TC.</li> <li>- EMDH Time-Synch. I.2: Block updated.</li> <li>- Bright Pixel Tables I.3: Pixel coordinates introduced.</li> <li>- Thermal I.3: New Decontamination blocks for 0 °C and +30 °C.</li> </ul>	

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## 1. INTRODUCTION

### 1.1. PURPOSE

This document provides the both the Command Procedures and the Building Blocks for the EPIC MOS activities at S/C level.

### 1.2. SCOPE

The scope of this document is to outline all the activities to be performed during the XMM Commissioning and CPV Phases.

## 2. APPLICABLE AND REFERENCE DOCUMENTS

### Applicable Documents

Doc. Id.	Document Title	Reference	Issue
<b>EST Documents</b>			
	EMCS User Manual	EPIC-EST-OP-001	1
	Software Configuration for the EMAE Unit	EPIC-EST-LI-0005	3
<b>LUX Documents</b>			
	FM2 EMCH and EMAE Parameters and Calibration	EPIC-LUX-RE-140	1.6
	FM3 EMCH and EMAE Parameters and Calibration	EPIC-LUX-RE-141	1.2
	FS1 EMCH and EMAE Parameters and Calibration	EPIC-LUX-RE-159	1.0

### Reference Documents

Doc. Id.	Document Title	Reference	Issue
<b>EST Documents</b>			
	EMCS Electrical I/F Specification	EPIC-EST-SP-001	4

## 3. TOP LEVEL ACTIVITIES

Top level activities are listed in this section. Procedures address the prime node as baseline read-out process. At the end of each case a set of variants is shown.

### 3.1. SWITCH ON (FM1)

Step	Activity	Remarks	Building block
1	Switch on (Stand-by heaters off)	No TC to be sent	
2	Load EMCR SW V.14 (not in PROM)	Note that system is in Safe Stand-by mode	<a href="#">Ld EMCR Memory v14</a>
3	Dump EMCR memory	Check that the memory content is in agreement with the EMCR SW V.14	<a href="#">Dump ECMR Memory</a>
4	Go to Idle mode	1 TC block	<a href="#">Enter Idle</a>
5	Time Synchronisation		<a href="#">On-board time management</a>
6	Set Control Temperature to -100°C		<a href="#">Set FPA Nom -100</a>
7	Load FW sequencer		<a href="#">ES Id FW</a>
8	FW sequencer set-up		<a href="#">ES set-up FW</a>
9	Synchronise FW		<a href="#">MOS1 Sync Nor 3step</a>
10	Load Bright Pixel Tables	Chain dependent	<a href="#">Load BPT FM1</a>
11	Load CCD voltages	Chain dependent	<a href="#">FM1 normal</a>
12	Load HBR Buffer thresholds and sizes		<a href="#">Default HBR Threshold and Size</a>
13	Load EDU window peripheral CCDs		<a href="#">EDU Peripheral CCDs</a>
14	Load Peripheral CCD sequencers (Full Frame)	CCD pixel with reset on demand	<a href="#">ES Id ifc8rd_1 to EMAE per</a>
15	Peripheral CCD sequencers set-up		<a href="#">ES set-up CCDs per</a>

#### Notes:

- 1) For FM2 chain, in steps 9, 10 and 11 the proper building blocks must be used ([MOS2 Sync Nor 4step](#), [Load BPT FM2](#), [FM2 normal](#))
- 2) All HBRs are set with standard thresholds (low=0, high=4095) and buffer sizes (24 kwords for each buffer) (step 12).
- 3) All peripheral CCDs are operated in standard Full Frame mode from Node 0 (step 13-14). Other sequences can be addressed by: [ES Id ifc8rp\\_1 to EMAE per](#) , [ES Id ifci10rpp to EMAE per](#) , [ES Id ifci10rdp to EMAE per](#). According to the loaded sequences, the proper EMCR Integration Time settings have to be loaded at step 8 of the following procedures.

## 3.2. Full Frame

Step	Activity	Remarks	Building block
1	Load sequencer (CCD 1) for exposure (i.e FF)		<a href="#">ES Id ifc8rd_1 to EMAE cen</a>
2	Central CCD sequencers set-up		<a href="#">ES set-up CCD cen</a>
3	Load Pattern Mask tables	Although imaging are default ones, a different exposure may be occurred	<a href="#">PMT Id cen to EMCR+EDU imaging</a> <a href="#">PMT Id per to EMCR+EDU imaging</a>
4	Load EMAE configuration (Multiplexer, Analogue Chains, Preamp.)	The three activities are strictly connected	<a href="#">EMAE Standard node 0</a>
5	Load Offset tables	Set to 0 all EDU Offset Tables	<a href="#">OT Id all EDU std (EDU1 alt)</a>
6	Configure all EDUs for Offset & Variance	Set all EDUs mode (transparent) and thresholds (0)	<a href="#">EDU Transparent single node</a>
7	Load central CCD EDU window		<a href="#">EDU Central CCD Full Frame</a>
8	Set EMCR Integration time for Full Frame		<a href="#">Full Frame (Seq. I.8, 2.6 sec)</a>
9	Configure HBR1 for Offset & Variance		<a href="#">HBR 1 transparent</a>
10	Perform Offset & Variance CCD1 case		<a href="#">Enter OV CCD1 FS</a>
11	Load calculated Offset & Variance table into relevant EDU		<a href="#">OT Id 0 to EMCR+EDU std for OV</a>
12	Configure HBR3 for Offset & Variance		<a href="#">HBR 3 transparent</a>
13	Perform Offset & Variance CCD2 case		<a href="#">Enter OV CCD2 FS</a>
14	Load calculated Offset & Variance table into relevant EDU		<a href="#">OT Id 2 to EMCR+EDU std for OV</a>
15	Configure HBR4 for Offset & Variance		<a href="#">HBR 4 transparent</a>
16	Perform Offset & Variance CCD5 case		<a href="#">Enter OV CCD5 FS</a>
17	Load calculated Offset & Variance table into relevant EDU		<a href="#">OT Id 3 to EMCR+EDU std for OV</a>
18	Configure HBR5 for Offset & Variance		<a href="#">HBR 5 transparent</a>
19	Perform Offset & Variance CCD4 case		<a href="#">Enter OV CCD4 FS</a>
20	Load calculated Offset & Variance table into relevant EDU		<a href="#">OT Id 4 to EMCR+EDU std for OV</a>
21	Configure HBR6 for Offset & Variance		<a href="#">HBR 6 transparent</a>
22	Perform Offset & Variance CCD7 case		<a href="#">Enter OV CCD7 FS</a>
23	Load calculated Offset & Variance table into relevant EDU		<a href="#">OT Id 5 to EMCR+EDU std for OV</a>
24	Configure HBR7 for Offset & Variance		<a href="#">HBR 7 transparent</a>
25	Perform Offset & Variance CCD3 case		<a href="#">Enter OV CCD3 FS</a>
26	Load calculated Offset & Variance table into relevant EDU		<a href="#">OT Id 6 to EMCR+EDU std for OV</a>
27	Configure HBR8 for Offset & Variance		<a href="#">HBR 8 transparent</a>
28	Perform Offset & Variance CCD6 case		<a href="#">Enter OV CCD6 FS</a>
29	Load calculated Offset & Variance table into relevant EDU		<a href="#">OT Id 7 to EMCR+EDU std for OV</a>
30	Configure HBRs for exposure	Set all HBRs in Imaging mode	<a href="#">HBR Imaging</a>
31	Configure EDUs for exposure	Set all EDU mode (imaging) and thresholds (35 for central CCD and 50 for peripheral CCDs)	<a href="#">EDU Imaging</a>
32	Start exposure		<a href="#">Enter Prime</a>
33	Stop exposure - Go to Idle mode		<a href="#">Observation to Idle</a>

### Notes:

- 1) In order to configure the chain in EDU threshold mode, in steps 3, 30 and 31 it is necessary to replace the present blocks with, respectively, [PMT Id cen to EMCR+EDU threshold](#) and [PMT Id per to EMCR+EDU threshold](#), [HBR Threshold](#) and [EDU threshold single node](#).
- 2) CCD 1 is operated in standard Full Frame mode from Node 0. Other sequences can be addressed, at step 1, by: [ES Id ifc8rp\\_1 to EMAE cen](#), [ES Id iffci10rpp to EMAE cen](#), [ES Id iffci10rdp to EMAE cen](#). For the last two cases, even the relevant integration time ([Full Frame \(Seq. I.10, 2.5 sec\)](#)) has to be loaded at step 8.

## 3.3. Timing

Step	Activity	Remarks	Building block
1	Load sequencer (CCD 1) for exposure (i.e Timing)	Timing Diagnostic	<a href="#">ES Id timage3 to EMAE</a>
2	Central CCD sequencers set-up		<a href="#">ES set-up CCD cen</a>
3	Load Pattern Mask tables		<a href="#">PMT Id cen to EMCR+EDU timing</a> <a href="#">PMT Id per to EMCR+EDU imaging</a>
4	Load EMAE configuration (Multiplexer, Analogue Chains, Preamp.)	The three activities are strictly connected	<a href="#">EMAE Standard node 0</a>
5	Load Offset tables	Set to 0 all EDU Offset Tables	<a href="#">OT Id all EDU std (EDU1 alt)</a>
6	Configure all EDUs for Offset & Variance	Set all EDUs mode (transparent) and thresholds (0)	<a href="#">EDU Transparent single node</a>
7	Load central CCD EDU window		<a href="#">EDU Central CCD Timing</a>
8	Set EMCR Integration time for Timing		<a href="#">Free-run (Seq. 1.8, 2.6 s per. CCD)</a>
9	Configure HBR1 for Offset & Variance		<a href="#">HBR 1 transparent</a>
10	Perform Offset & Variance CCD1 case		<a href="#">Enter OV CCD1 FS</a>
11	Load calculated Offset & Variance table into relevant EDU		<a href="#">OT Id 0 to EMCR+EDU std for OV</a>
12	Configure HBR3 for Offset & Variance		<a href="#">HBR 3 transparent</a>
13	Perform Offset & Variance CCD2 case		<a href="#">Enter OV CCD2 FS</a>
14	Load calculated Offset & Variance table into relevant EDU		<a href="#">OT Id 2 to EMCR+EDU std for OV</a>
15	Configure HBR4 for Offset & Variance		<a href="#">HBR 4 transparent</a>
16	Perform Offset & Variance CCD5 case		<a href="#">Enter OV CCD5 FS</a>
17	Load calculated Offset & Variance table into relevant EDU		<a href="#">OT Id 3 to EMCR+EDU std for OV</a>
18	Configure HBR5 for Offset & Variance		<a href="#">HBR 5 transparent</a>
19	Perform Offset & Variance CCD4 case		<a href="#">Enter OV CCD4 FS</a>
20	Load calculated Offset & Variance table into relevant EDU		<a href="#">OT Id 4 to EMCR+EDU std for OV</a>
21	Configure HBR6 for Offset & Variance		<a href="#">HBR 6 transparent</a>
22	Perform Offset & Variance CCD7 case		<a href="#">Enter OV CCD7 FS</a>
23	Load calculated Offset & Variance table into relevant EDU		<a href="#">OT Id 5 to EMCR+EDU std for OV</a>
24	Configure HBR7 for Offset & Variance		<a href="#">HBR 7 transparent</a>
25	Perform Offset & Variance CCD3 case		<a href="#">Enter OV CCD3 FS</a>
26	Load calculated Offset & Variance table into relevant EDU		<a href="#">OT Id 6 to EMCR+EDU std for OV</a>
27	Configure HBR8 for Offset & Variance		<a href="#">HBR 8 transparent</a>
28	Perform Offset & Variance CCD6 case		<a href="#">Enter OV CCD6 FS</a>
29	Load calculated Offset & Variance table into relevant EDU		<a href="#">OT Id 7 to EMCR+EDU std for OV</a>
30	Load sequencer (CCD 1) for exposure (i.e. Timing)	Timing normal	<a href="#">ES Id tnc1_n1 to EMAE</a>
31	Central CCD sequencers set-up		<a href="#">ES set-up CCD cen</a>
32	Configure HBRs for exposure	Set all HBRs in Imaging mode	<a href="#">HBR Timing</a>
33	Configure EDUs for exposure	Set all EDU mode (imaging) and thresholds (35 for central CCD and 50 for peripheral CCDs)	<a href="#">EDU Timing</a>
34	Start exposure		<a href="#">Enter Fast</a>
35	Stop exposure – Go to Idle mode		<a href="#">Observation to Idle</a>

### Notes:

- 1) In order to configure the chain in EDU threshold mode, in steps 3, 32 and 33 it is necessary to replace the present blocks with, respectively, [PMT Id cen to EMCR+EDU threshold](#) and [PMT Id per to EMCR+EDU threshold](#), [HBR Threshold](#) and [EDU threshold single node](#).
- 2) CCD 1 is operated in standard Timing mode from Node 0. Other sequences can be addressed by, respectively, [ES Id tdiovtge05p to EMAE](#) at step 1 and [ES Id timnctng03p to EMAE](#) at step 30. In this case, the relevant integration time ([Free-run \(Seq. 1.10, 2.5 s per. CCD\)](#)) has to be loaded at step 8.

## 3.4. Small Window

Step	Activity	Remarks	Building block
1	Load sequencer (CCD 1) for exposure (i.e. Small Window)		<a href="#">ES Id ifw8rd 1 to EMAE</a>
2	Central CCD sequencers set-up		<a href="#">ES set-up CCD cen</a>
3	Load Pattern Mask tables	Although imaging are default ones, a different exposure may be occurred	<a href="#">PMT Id cen to EMCR+EDU imaging</a> <a href="#">PMT Id per to EMCR+EDU imaging</a>
4	Load EMAE configuration (Multiplexer, Analogue Chains, Preamp.)	The three activities are strictly connected	<a href="#">EMAE Standard node 0</a>
5	Load Offset tables	Set to 0 all EDU Offset Tables	<a href="#">OT Id all EDU std (EDU1 alt)</a>
6	Configure all EDUs for Offset & Variance	Set all EDUs mode (transparent) and thresholds (0)	<a href="#">EDU Transparent single node</a>
7	Load central CCD EDU window		<a href="#">EDU Central CCD SW (110)</a>
8	Set EMCR Integration time for Small Window		<a href="#">Small Window (Seq. I.8, 110, 0.4-2.8 sec)</a>
9	Configure HBR1 for Offset & Variance		<a href="#">HBR 1 transparent</a>
10	Perform Offset & Variance CCD1 case		<a href="#">Enter OV CCD1 FS</a>
11	Load calculated Offset & Variance table into relevant EDU		<a href="#">OT Id 0 to EMCR+EDU std for OV</a>
12	Configure HBR3 for Offset & Variance		<a href="#">HBR 3 transparent</a>
13	Perform Offset & Variance CCD2 case		<a href="#">Enter OV CCD2 FS</a>
14	Load calculated Offset & Variance table into relevant EDU		<a href="#">OT Id 2 to EMCR+EDU std for OV</a>
15	Configure HBR4 for Offset & Variance		<a href="#">HBR 4 transparent</a>
16	Perform Offset & Variance CCD5 case		<a href="#">Enter OV CCD5 FS</a>
17	Load calculated Offset & Variance table into relevant EDU		<a href="#">OT Id 3 to EMCR+EDU std for OV</a>
18	Configure HBR5 for Offset & Variance		<a href="#">HBR 5 transparent</a>
19	Perform Offset & Variance CCD4 case		<a href="#">Enter OV CCD4 FS</a>
20	Load calculated Offset & Variance table into relevant EDU		<a href="#">OT Id 4 to EMCR+EDU std for OV</a>
21	Configure HBR6 for Offset & Variance		<a href="#">HBR 6 transparent</a>
22	Perform Offset & Variance CCD7 case		<a href="#">Enter OV CCD7 FS</a>
23	Load calculated Offset & Variance table into relevant EDU		<a href="#">OT Id 5 to EMCR+EDU std for OV</a>
24	Configure HBR7 for Offset & Variance		<a href="#">HBR 7 transparent</a>
25	Perform Offset & Variance CCD3 case		<a href="#">Enter OV CCD3 FS</a>
26	Load calculated Offset & Variance table into relevant EDU		<a href="#">OT Id 6 to EMCR+EDU std for OV</a>
27	Configure HBR8 for Offset & Variance		<a href="#">HBR 8 transparent</a>
28	Perform Offset & Variance CCD6 case		<a href="#">Enter OV CCD6 FS</a>
29	Load calculated Offset & Variance table into relevant EDU		<a href="#">OT Id 7 to EMCR+EDU std for OV</a>
30	Configure HBRs for exposure	Set all HBRs in Imaging mode	<a href="#">HBR Imaging</a>
31	Configure EDUs for exposure	Set all EDU mode (imaging) and thresholds (35 for central CCD and 50 for peripheral CCDs)	<a href="#">EDU Imaging</a>
32	Start exposure		<a href="#">Enter Prime</a>
33	Stop exposure - Go to Idle mode		<a href="#">Observation to Idle</a>

### Notes:

- 1) In order to configure the chain in EDU threshold mode, in steps 3, 30 and 31 it is necessary to replace the present blocks with, respectively, [PMT Id cen to EMCR+EDU threshold](#) and [PMT Id per to EMCR+EDU threshold](#), [HBR Threshold](#) and [EDU threshold single node](#).
- 2) CCD 1 is operated in standard Small Window mode from Node 0. Other sequences can be addressed by [ES Id iswci10rdp to EMAE](#) at step 1. In this case, the relevant integration time ([Small Window \(Seq. I.10, 110, 0.3-2.7 sec\)](#)) has to be loaded at step 8.

## 3.5. Large Window

Step	Activity	Remarks	Building block
1	Load sequencer (CCD 1) for exposure (i.e. Large Window)		<a href="#">ES Id ifw8rd 3 1 to EMAE</a>
2	Central CCD sequencers set-up		<a href="#">ES set-up CCD cen</a>
3	Load Pattern Mask tables	Although imaging are default ones, a different exposure may be occurred	<a href="#">PMT Id cen to EMCR+EDU imaging</a> <a href="#">PMT Id per to EMCR+EDU imaging</a>
4	Load EMAE configuration (Multiplexer, Analogue Chains, Preamp.)	The three activities are strictly connected	<a href="#">EMAE Standard node 0</a>
5	Load Offset tables	Set to 0 all EDU Offset Tables	<a href="#">OT Id all EDU std (EDU1 alt)</a>
6	Configure all EDUs for Offset & Variance	Set all EDUs mode (transparent) and thresholds (0)	<a href="#">EDU Transparent single node</a>
7	Load central CCD EDU window		<a href="#">EDU Central CCD LW (310)</a>
8	Set EMCR Integration time for Large Window		<a href="#">Large Window (Seq. I.8, 310, 1-3 sec)</a>
9	Configure HBR1 for Offset & Variance		<a href="#">HBR 1 transparent</a>
10	Perform Offset & Variance CCD1 case		<a href="#">Enter OV CCD1 FS</a>
11	Load calculated Offset & Variance table into relevant EDU		<a href="#">OT Id 0 to EMCR+EDU std for OV</a>
12	Configure HBR3 for Offset & Variance		<a href="#">HBR 3 transparent</a>
13	Perform Offset & Variance CCD2 case		<a href="#">Enter OV CCD2 FS</a>
14	Load calculated Offset & Variance table into relevant EDU		<a href="#">OT Id 2 to EMCR+EDU std for OV</a>
15	Configure HBR4 for Offset & Variance		<a href="#">HBR 4 transparent</a>
16	Perform Offset & Variance CCD5 case		<a href="#">Enter OV CCD5 FS</a>
17	Load calculated Offset & Variance table into relevant EDU		<a href="#">OT Id 3 to EMCR+EDU std for OV</a>
18	Configure HBR5 for Offset & Variance		<a href="#">HBR 5 transparent</a>
19	Perform Offset & Variance CCD4 case		<a href="#">Enter OV CCD4 FS</a>
20	Load calculated Offset & Variance table into relevant EDU		<a href="#">OT Id 4 to EMCR+EDU std for OV</a>
21	Configure HBR6 for Offset & Variance		<a href="#">HBR 6 transparent</a>
22	Perform Offset & Variance CCD7 case		<a href="#">Enter OV CCD7 FS</a>
23	Load calculated Offset & Variance table into relevant EDU		<a href="#">OT Id 5 to EMCR+EDU std for OV</a>
24	Configure HBR7 for Offset & Variance		<a href="#">HBR 7 transparent</a>
25	Perform Offset & Variance CCD3 case		<a href="#">Enter OV CCD3 FS</a>
26	Load calculated Offset & Variance table into relevant EDU		<a href="#">OT Id 6 to EMCR+EDU std for OV</a>
27	Configure HBR8 for Offset & Variance		<a href="#">HBR 8 transparent</a>
28	Perform Offset & Variance CCD6 case		<a href="#">Enter OV CCD6 FS</a>
29	Load calculated Offset & Variance table into relevant EDU		<a href="#">OT Id 7 to EMCR+EDU std for OV</a>
30	Configure HBRs for exposure	Set all HBRs in Imaging mode	<a href="#">HBR Imaging</a>
31	Configure EDUs for exposure	Set all EDU mode (imaging) and thresholds (35 for central CCD and 50 for peripheral CCDs)	<a href="#">EDU Imaging</a>
32	Start exposure		<a href="#">Enter Prime</a>
33	Stop exposure - Go to Idle mode		<a href="#">Observation to Idle</a>

### Notes:

- 1) In order to configure the chain in EDU threshold mode, in steps 3, 30 and 31 it is necessary to replace the present blocks with, respectively, [PMT Id cen to EMCR+EDU threshold](#) and [PMT Id per to EMCR+EDU threshold](#), [HBR Threshold](#) and [EDU threshold single node](#).
- 2) CCD 1 is operated in standard Large Window mode from Node 0. Other sequences can be addressed by [ES Id ilwci10rdp to EMAE](#) at step 1. In this case, the relevant integration time ([Large Window \(Seq. I.10, 310, 0.9-2.7 sec\)](#)) has to be loaded at step 8.

## 3.6. Small Window - Free Run

Step	Activity	Remarks	Building block
1	Load sequencer (CCD 1) for exposure (i.e. Small Window)		<a href="#">ES Id iswci10rdp to EMAE</a>
2	Central CCD sequencers set-up		<a href="#">ES set-up CCD cen</a>
3	Load Pattern Mask tables	Although imaging are default ones, a different exposure may be occurred	<a href="#">PMT Id cen to EMCR+EDU imaging</a> <a href="#">PMT Id per to EMCR+EDU imaging</a>
4	Load EMAE configuration (Multiplexer, Analogue Chains, Preamp.)	The three activities are strictly connected	<a href="#">EMAE Standard node 0</a>
5	Load Offset tables	Set to 0 all EDU Offset Tables	<a href="#">OT Id all EDU std (EDU1 alt)</a>
6	Configure all EDUs for Offset & Variance	Set all EDUs mode (transparent) and thresholds (0)	<a href="#">EDU Transparent single node</a>
7	Load central CCD EDU window		<a href="#">EDU Central CCD SW (110)</a>
8	Set EMCR Integration time for Small Window	IFFci10rdp for peripheral CCDs is required	<a href="#">Free-run (Seq. I.10, 2.5 s per. CCD)</a>
9	Configure HBR1 for Offset & Variance		<a href="#">HBR 1 transparent</a>
10	Perform Offset & Variance CCD1 case		<a href="#">Enter OV CCD1 FS</a>
11	Load calculated Offset & Variance table into relevant EDU		<a href="#">OT Id 0 to EMCR+EDU std for OV</a>
12	Configure HBR3 for Offset & Variance		<a href="#">HBR 3 transparent</a>
13	Perform Offset & Variance CCD2 case		<a href="#">Enter OV CCD2 FS</a>
14	Load calculated Offset & Variance table into relevant EDU		<a href="#">OT Id 2 to EMCR+EDU std for OV</a>
15	Configure HBR4 for Offset & Variance		<a href="#">HBR 4 transparent</a>
16	Perform Offset & Variance CCD5 case		<a href="#">Enter OV CCD5 FS</a>
17	Load calculated Offset & Variance table into relevant EDU		<a href="#">OT Id 3 to EMCR+EDU std for OV</a>
18	Configure HBR5 for Offset & Variance		<a href="#">HBR 5 transparent</a>
19	Perform Offset & Variance CCD4 case		<a href="#">Enter OV CCD4 FS</a>
20	Load calculated Offset & Variance table into relevant EDU		<a href="#">OT Id 4 to EMCR+EDU std for OV</a>
21	Configure HBR6 for Offset & Variance		<a href="#">HBR 6 transparent</a>
22	Perform Offset & Variance CCD7 case		<a href="#">Enter OV CCD7 FS</a>
23	Load calculated Offset & Variance table into relevant EDU		<a href="#">OT Id 5 to EMCR+EDU std for OV</a>
24	Configure HBR7 for Offset & Variance		<a href="#">HBR 7 transparent</a>
25	Perform Offset & Variance CCD3 case		<a href="#">Enter OV CCD3 FS</a>
26	Load calculated Offset & Variance table into relevant EDU		<a href="#">OT Id 6 to EMCR+EDU std for OV</a>
27	Configure HBR8 for Offset & Variance		<a href="#">HBR 8 transparent</a>
28	Perform Offset & Variance CCD6 case		<a href="#">Enter OV CCD6 FS</a>
29	Load calculated Offset & Variance table into relevant EDU		<a href="#">OT Id 7 to EMCR+EDU std for OV</a>
30	Configure HBRs for exposure	Set all HBRs in Imaging mode	<a href="#">HBR Imaging</a>
31	Configure EDUs for exposure	Set all EDU mode (imaging) and thresholds (35 for central CCD and 50 for peripheral CCDs)	<a href="#">EDU Imaging</a>
32	Start exposure		<a href="#">Enter Prime</a>
33	Stop exposure - Go to Idle mode		<a href="#">Observation to Idle</a>

### Notes:

- 1) In order to configure the chain in EDU threshold mode, in steps 3, 30 and 31 it is necessary to replace the present blocks with, respectively, [PMT Id cen to EMCR+EDU threshold](#) and [PMT Id per to EMCR+EDU threshold](#), [HBR Threshold](#) and [EDU threshold single node](#).

## 3.7. Large Window - Free Run

Step	Activity	Remarks	Building block
1	Load sequencer (CCD 1) for exposure (i.e. Small Window)		<a href="#">ES Id ilwci10rdp to EMAE</a>
2	Central CCD sequencers set-up		<a href="#">ES set-up CCD cen</a>
3	Load Pattern Mask tables	Although imaging are default ones, a different exposure may be occurred	<a href="#">PMT Id cen to EMCR+EDU imaging</a> <a href="#">PMT Id per to EMCR+EDU imaging</a>
4	Load EMAE configuration (Multiplexer, Analogue Chains, Preamp.)	The three activities are strictly connected	<a href="#">EMAE Standard node 0</a>
5	Load Offset tables	Set to 0 all EDU Offset Tables	<a href="#">OT Id all EDU std (EDU1 alt)</a>
6	Configure all EDUs for Offset & Variance	Set all EDUs mode (transparent) and thresholds (0)	<a href="#">EDU Transparent single node</a>
7	Load central CCD EDU window		<a href="#">EDU Central CCD LW (310)</a>
8	Set EMCR Integration time for Small Window	IFFci10rdp for peripheral CCDs is required	<a href="#">Free-run (Seq. I.10, 2.5 s per. CCD)</a>
9	Configure HBR1 for Offset & Variance		<a href="#">HBR 1 transparent</a>
10	Perform Offset & Variance CCD1 case		<a href="#">Enter OV CCD1 FS</a>
11	Load calculated Offset & Variance table into relevant EDU		<a href="#">OT Id 0 to EMCR+EDU std for OV</a>
12	Configure HBR3 for Offset & Variance		<a href="#">HBR 3 transparent</a>
13	Perform Offset & Variance CCD2 case		<a href="#">Enter OV CCD2 FS</a>
14	Load calculated Offset & Variance table into relevant EDU		<a href="#">OT Id 2 to EMCR+EDU std for OV</a>
15	Configure HBR4 for Offset & Variance		<a href="#">HBR 4 transparent</a>
16	Perform Offset & Variance CCD5 case		<a href="#">Enter OV CCD5 FS</a>
17	Load calculated Offset & Variance table into relevant EDU		<a href="#">OT Id 3 to EMCR+EDU std for OV</a>
18	Configure HBR5 for Offset & Variance		<a href="#">HBR 5 transparent</a>
19	Perform Offset & Variance CCD4 case		<a href="#">Enter OV CCD4 FS</a>
20	Load calculated Offset & Variance table into relevant EDU		<a href="#">OT Id 4 to EMCR+EDU std for OV</a>
21	Configure HBR6 for Offset & Variance		<a href="#">HBR 6 transparent</a>
22	Perform Offset & Variance CCD7 case		<a href="#">Enter OV CCD7 FS</a>
23	Load calculated Offset & Variance table into relevant EDU		<a href="#">OT Id 5 to EMCR+EDU std for OV</a>
24	Configure HBR7 for Offset & Variance		<a href="#">HBR 7 transparent</a>
25	Perform Offset & Variance CCD3 case		<a href="#">Enter OV CCD3 FS</a>
26	Load calculated Offset & Variance table into relevant EDU		<a href="#">OT Id 6 to EMCR+EDU std for OV</a>
27	Configure HBR8 for Offset & Variance		<a href="#">HBR 8 transparent</a>
28	Perform Offset & Variance CCD6 case		<a href="#">Enter OV CCD6 FS</a>
29	Load calculated Offset & Variance table into relevant EDU		<a href="#">OT Id 7 to EMCR+EDU std for OV</a>
30	Configure HBRs for exposure	Set all HBRs in Imaging mode	<a href="#">HBR Imaging</a>
31	Configure EDUs for exposure	Set all EDU mode (imaging) and thresholds (35 for central CCD and 50 for peripheral CCDs)	<a href="#">EDU Imaging</a>
32	Start exposure		<a href="#">Enter Prime</a>
33	Stop exposure - Go to Idle mode		<a href="#">Observation to Idle</a>

### Notes:

- 1) In order to configure the chain in EDU threshold mode, in steps 3, 30 and 31 it is necessary to replace the present blocks with, respectively, [PMT Id cen to EMCR+EDU threshold](#) and [PMT Id per to EMCR+EDU threshold](#), [HBR Threshold](#) and [EDU threshold single node](#).

## 3.8. Refreshed Frame Store

Step	Activity	Remarks	Building block
1	Load sequencer (CCD 1) for exposure (i.e FF)		<a href="#">ES Id rfscr3rdp200 to EMAE</a>
2	Central CCD sequencers set-up		<a href="#">ES set-up CCD cen</a>
3	Load Pattern Mask tables	Although imaging are default ones, a different exposure may be occurred	<a href="#">PMT Id cen to EMCR+EDU imaging</a> <a href="#">PMT Id per to EMCR+EDU imaging</a>
4	Load EMAE configuration (Multiplexer, Analogue Chains, Preamp.)	The three activities are strictly connected	<a href="#">EMAE Standard node 0</a>
5	Load Offset tables	Set to 0 all EDU Offset Tables	<a href="#">OT Id all EDU std (EDU1 alt)</a>
6	Configure all EDUs for Offset & Variance	Set all EDUs mode (transparent) and thresholds (0)	<a href="#">EDU Transparent single node</a>
7	Load central CCD EDU window		<a href="#">EDU Central CCD Full Frame</a>
8	Set EMCR Integration time for Full Frame	IFFci10rdp for peripheral CCDs is required	<a href="#">Full Frame (Seq. I.10, 2.5 sec)</a>
9	Configure HBR1 for Offset & Variance		<a href="#">HBR 1 transparent</a>
10	Perform Offset & Variance CCD1 case		<a href="#">Enter OV CCD1 FS</a>
11	Load calculated Offset & Variance table into relevant EDU		<a href="#">OT Id 0 to EMCR+EDU std for OV</a>
12	Configure HBR3 for Offset & Variance		<a href="#">HBR 3 transparent</a>
13	Perform Offset & Variance CCD2 case		<a href="#">Enter OV CCD2 FS</a>
14	Load calculated Offset & Variance table into relevant EDU		<a href="#">OT Id 2 to EMCR+EDU std for OV</a>
15	Configure HBR4 for Offset & Variance		<a href="#">HBR 4 transparent</a>
16	Perform Offset & Variance CCD5 case		<a href="#">Enter OV CCD5 FS</a>
17	Load calculated Offset & Variance table into relevant EDU		<a href="#">OT Id 3 to EMCR+EDU std for OV</a>
18	Configure HBR5 for Offset & Variance		<a href="#">HBR 5 transparent</a>
19	Perform Offset & Variance CCD4 case		<a href="#">Enter OV CCD4 FS</a>
20	Load calculated Offset & Variance table into relevant EDU		<a href="#">OT Id 4 to EMCR+EDU std for OV</a>
21	Configure HBR6 for Offset & Variance		<a href="#">HBR 6 transparent</a>
22	Perform Offset & Variance CCD7 case		<a href="#">Enter OV CCD7 FS</a>
23	Load calculated Offset & Variance table into relevant EDU		<a href="#">OT Id 5 to EMCR+EDU std for OV</a>
24	Configure HBR7 for Offset & Variance		<a href="#">HBR 7 transparent</a>
25	Perform Offset & Variance CCD3 case		<a href="#">Enter OV CCD3 FS</a>
26	Load calculated Offset & Variance table into relevant EDU		<a href="#">OT Id 6 to EMCR+EDU std for OV</a>
27	Configure HBR8 for Offset & Variance		<a href="#">HBR 8 transparent</a>
28	Perform Offset & Variance CCD6 case		<a href="#">Enter OV CCD6 FS</a>
29	Load calculated Offset & Variance table into relevant EDU		<a href="#">OT Id 7 to EMCR+EDU std for OV</a>
30	Configure HBRs for exposure	Set all HBRs in Imaging mode	<a href="#">HBR Imaging</a>
31	Configure EDUs for exposure	Set all EDU mode (imaging) and thresholds (35 for central CCD and 50 for peripheral CCDs)	<a href="#">EDU Imaging</a>
32	Start exposure		<a href="#">Enter Prime</a>
33	Stop exposure - Go to Idle mode		<a href="#">Observation to Idle</a>

### Notes:

- 1) In order to configure the chain in EDU threshold mode, in steps 3, 30 and 31 it is necessary to replace the present blocks with, respectively, [PMT Id cen to EMCR+EDU threshold](#) and [PMT Id per to EMCR+EDU threshold](#), [HBR Threshold](#) and [EDU threshold single node](#).
- 2) CCD 1 is operated in standard Refreshed Frame Store mode from Node 0. Other sequences can be addressed by [ES Id rfscr3rdp200 to EMAE](#) at step 1.

## 3.9. Full Frame Double Node

Step	Activity	Remarks	Building block
1	Load sequencer (CCD 1) for exposure (i.e. FF)		<a href="#">ES Id iffci10rdb to EMAE</a>
2	Central CCD sequencers set-up		<a href="#">ES set-up CCD cen</a>
3	Load Pattern Mask tables	Although imaging are default ones, a different exposure may be occurred	<a href="#">PMT Id cen to EMCR+EDU imaging</a> <a href="#">PMT Id per to EMCR+EDU imaging</a>
4	Load EMAE configuration (Multiplexer, Analogue Chains, Preamp.)	The three activities are strictly connected	<a href="#">EMAE Double node</a>
5	Load Offset tables	Set to 0 all EDU Offset Tables	<a href="#">OT Id all EDU std (EDU1 alt)</a>
6	Configure all EDUs for Offset & Variance	Set all EDUs mode (transparent) and thresholds (0)	<a href="#">EDU transparent double node</a>
7	Load central CCD EDU window		<a href="#">EDU Central CCD Double Node</a>
8	Set EMCR Integration time for Double Node	IFFci10rdb for peripheral CCDs is required	<a href="#">Double Node (Seq. I.10, 1.4 - 2.8 sec)</a>
9	Configure HBR1 for Offset & Variance		<a href="#">HBR 1 transparent</a>
10	Perform Offset & Variance CCD1 case		<a href="#">Enter OV CCD1 FS</a>
11	Load calculated Offset & Variance table into relevant EDU		<a href="#">OT Id 0 to EMCR+EDU std for OV</a>
12	Configure HBR2 for Offset & Variance		<a href="#">HBR 2 transparent</a>
13	Perform Offset & Variance CCD1 case		<a href="#">Enter OV CCD1 FS</a>
14	Load calculated Offset & Variance table into relevant EDU		<a href="#">OT Id 1 to EMCR+EDU alt for OV</a>
15	Configure HBR3 for Offset & Variance		<a href="#">HBR 3 transparent</a>
16	Perform Offset & Variance CCD2 case		<a href="#">Enter OV CCD2 FS</a>
17	Load calculated Offset & Variance table into relevant EDU		<a href="#">OT Id 2 to EMCR+EDU std for OV</a>
18	Configure HBR4 for Offset & Variance		<a href="#">HBR 4 transparent</a>
19	Perform Offset & Variance CCD5 case		<a href="#">Enter OV CCD5 FS</a>
20	Load calculated Offset & Variance table into relevant EDU		<a href="#">OT Id 3 to EMCR+EDU std for OV</a>
21	Configure HBR5 for Offset & Variance		<a href="#">HBR 5 transparent</a>
22	Perform Offset & Variance CCD4 case		<a href="#">Enter OV CCD4 FS</a>
23	Load calculated Offset & Variance table into relevant EDU		<a href="#">OT Id 4 to EMCR+EDU std for OV</a>
24	Configure HBR6 for Offset & Variance		<a href="#">HBR 6 transparent</a>
25	Perform Offset & Variance CCD7 case		<a href="#">Enter OV CCD7 FS</a>
26	Load calculated Offset & Variance table into relevant EDU		<a href="#">OT Id 5 to EMCR+EDU std for OV</a>
27	Configure HBR7 for Offset & Variance		<a href="#">HBR 7 transparent</a>
28	Perform Offset & Variance CCD3 case		<a href="#">Enter OV CCD3 FS</a>
29	Load calculated Offset & Variance table into relevant EDU		<a href="#">OT Id 6 to EMCR+EDU std for OV</a>
30	Configure HBR8 for Offset & Variance		<a href="#">HBR 8 transparent</a>
31	Perform Offset & Variance CCD6 case		<a href="#">Enter OV CCD6 FS</a>
32	Load calculated Offset & Variance table into relevant EDU		<a href="#">OT Id 7 to EMCR+EDU std for OV</a>
33	Configure HBRs for exposure	Set all HBRs in Imaging mode	<a href="#">HBR Double Node</a>
34	Configure EDUs for exposure	Set all EDU mode (imaging) and thresholds (35 for central CCD and 50 for peripheral CCDs)	<a href="#">EDU Double node</a>
35	Start exposure		<a href="#">Enter Prime</a>
36	Stop exposure - Go to Idle mode		<a href="#">Observation to Idle</a>

### Notes:

- 1) In order to configure the chain in EDU threshold mode, in steps 3, 33 and 34 it is necessary to replace the present blocks with, respectively, [PMT Id cen to EMCR+EDU threshold](#) and [PMT Id per to EMCR+EDU threshold](#), [HBR Double Node Threshold](#) and [EDU Threshold Double Node](#).

## 4. EMCS BUILDING BLOCKS

This section lists the EMCS Building Blocks and traces all changes and implements hypertext pointing to the module set.

building block name	Action	preconditions	postconditions	notes	file (.xls)	issue	change note
<a href="#">Load BPT FM1</a>	Load Bright Pixel Tables for all the HBRs	Idle mode	none		Bright Pixels tables	3	Pixel coordinates inserted
<a href="#">Load BPT FM2</a>	Load Bright Pixel Tables for all the HBRs	Idle mode	none		Bright Pixels tables	2	Pixel coordinates inserted
<a href="#">Load BPT FS</a>	Load Bright Pixel Tables for all the HBRs	Idle mode	none		Bright Pixels tables	2	Pixel coordinates inserted
<a href="#">FM1 normal</a>	Load CCD bias voltages for FM1 in cold condition	Idle mode	none		CCD voltages	1	
FM1 bright	Load CCD bias voltages for FM1 in warm condition	Idle mode	none		CCD voltages	1	TBW
<a href="#">FM2 normal</a>	Load CCD bias voltages for FM2 in cold condition	Idle mode	none		CCD voltages	1	
FM2 bright	Load CCD bias voltages for FM2 in warm condition	Idle mode	none		CCD voltages	1	TBW
<a href="#">FS normal</a>	Load CCD bias voltages for FS in cold condition	Idle mode	none		CCD voltages	1	
FS bright	Load CCD bias voltages for FS in warm condition	Idle mode	none		CCD voltages	1	TBW
<a href="#">Door</a>	Opening door				Door operations	2	Deleted Remove PW
<a href="#">Venting valve</a>	Venting valve operations				Door operations	2	Deleted Remove PW
<a href="#">EDU Imaging</a>	Setting of EDU modes and thresholds for readout of all CCDs in Full Frame mode	Idle mode	none		EDU config	2	
<a href="#">EDU Transparent single node</a>	Setting of EDU modes and thresholds for transparent readout of all CCDs in Full Frame mode	Idle mode	none		EDU config	2	
<a href="#">EDU threshold single node</a>	Setting of EDU modes and thresholds for threshold readout of all CCDs in Full Frame mode	Idle mode	none		EDU config	3	Thresholds changed
<a href="#">EDU Timing</a>	Setting of EDU modes and thresholds for readout of central CCD in Timing mode and of peripheral CCDs in Full Frame mode	Idle mode	none		EDU config	2	
<a href="#">EDU Double node</a>	Setting of EDU modes and thresholds for readout of central CCD in Double node mode and of peripheral CCDs in Full Frame mode	Idle mode	none		EDU config	2	
<a href="#">EDU transparent double node</a>	Setting of EDU modes and thresholds for transparent readout of central CCD in Double node mode and of peripheral CCDs in Full Frame mode	Idle mode	none		EDU config	2	
<a href="#">EDU threshold double node</a>	Setting of EDU modes and thresholds for threshold readout of central CCD in Double node mode and of peripheral CCDs in Full Frame mode	Idle mode	none		EDU config	3	Thresholds changed
<a href="#">EDU Central CCD Full Frame</a>	Window set up for central CCDs Full frame	Idle mode	none		EDU config	1	
<a href="#">EDU Central CCD Timing</a>	Window set up for central CCDs Timing	Idle mode	none		EDU config	1	
<a href="#">EDU Central CCD SW (110)</a>	Window set up for central CCDs Small Window	Idle mode	none		EDU config	1	
<a href="#">EDU Central CCD LW (310)</a>	Window set up for central CCDs Large Window	Idle mode	none		EDU config	1	
<a href="#">EDU Central CCD Double Node</a>	Window set up for central CCDs Double Node	Idle mode	none		EDU config	1	
<a href="#">EDU Peripheral CCDs</a>	Window set up for peripheral CCDs in Full Frame	Idle mode	none		EDU config	1	

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<a href="#">EDU all CCDs Fast Diagnostic</a>	Window set up for all CCDs in Fast Diagnostic FF or RFS	Idle mode	none	EDU config	1	New
<a href="#">EMAE Standard node 0</a>	Setting of Multiplexers, Preamplifiers and Analogue Chains for the CCD readout from primary nodes	Idle mode	none	EMAE config	1	
<a href="#">EMAE Standard node 1</a>	Setting of Multiplexers, Preamplifiers and Analogue Chains for the CCD readout from redundant nodes	Idle mode	none	EMAE config	1	
<a href="#">EMAE Double node</a>	Setting of Multiplexers, Preamplifiers and Analogue Chains for the central CCD readout from both nodes and peripheral CCD readout from primary nodes	Idle mode	none	EMAE config	1	
<a href="#">ES set-up</a>	Set up of the low and high addresses of the sequencers and sequencers low gain node 0 then run then start sequencer for FW			Emae Sequences	1	
<a href="#">ES set-up FW</a>	Set up of the low and high addresses of the sequencer relevant to FW then start sequencer for FW			Emae Sequences	1	
<a href="#">ES set-up CCDs per</a>	Set up of the low and high addresses of the sequencer relevant to peripheral CCDs sequencers low gain node 0 set up then start sequencers			Emae Sequences	1	
<a href="#">ES set-up CCD cen</a>	Set up of the low and high addresses of the sequencer relevant to central CCDs sequencers low gain node 0 set up then start sequencers			Emae Sequences	1	
<a href="#">ES du all from EMCR</a>	Dump all EMAE Sequences stored in the EMCR.	none	none	Emae Sequences	1	
<a href="#">ES du all from EMAE</a>	Dump all EMAE Sequences stored in the EMAE.			Emae Sequences	1	
<a href="#">ES Id FW</a>	Load FW sequence (#4)			Emae Sequences	2	
<a href="#">ES Id ifc8rd_1 to EMAE cen</a>	Load Imaging Full Frame Cold reset on demand Sequence central CCD node 1 (#0)			Emae Sequences	1	
<a href="#">ES Id ifci10rdp to EMAE cen</a>	Load Imaging Full Frame Cold reset on demand Sequence central CCD node 1 (#0)			Emae Sequences	1	
<a href="#">ES Id ifc8rd_1 to EMAE per</a>	Load Imaging Full Frame Cold reset on demand Sequence peripheral CCDs node 1 (#1,#2,#3)			Emae Sequences	1	
<a href="#">ES Id ifci10rdp to EMAE per</a>	Load Imaging Full Frame Cold reset on demand Sequence peripheral CCDs node 1 (#1,#2,#3)			Emae Sequences	1	
<a href="#">ES Id ifc8rd_2 to EMAE cen</a>	Load Imaging Full Frame Cold reset on demand Sequence central CCD node 2 (#0)			Emae Sequences	1	
<a href="#">ES Id ifci10rdr to EMAE cen</a>	Load Imaging Full Frame Cold reset on demand Sequence central CCD node 2 (#0)			Emae Sequences	1	

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Date:

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<a href="#">ES Id ifc8rd_2 to EMAE_per</a>	Map EMCR-> EMAE is : 0->1 Load Imaging Full Frame Cold reset on demand Sequence peripheral CCDs node 2 (#1,#2,#3) Map EMCR-> EMAE is : 1->2, 2->3, 3->4	peripheral CCDs a building block with sequence for central CCD	Emae Sequences	1
<a href="#">ES Id ifci10rdr to EMAE_per</a>	Load Imaging Full Frame Cold reset on demand Sequence peripheral CCDs node 2 (#1,#2,#3) Map EMCR-> EMAE is : 1->2, 2->3, 3->4	a building block with sequence for central CCD	Emae Sequences	1
<a href="#">ES Id ifc8rp_1 to EMAE_cen</a>	Load Imaging Full Frame Cold reset per pixel Sequence central CCD node 1 (#0) Map EMCR-> EMAE is : 0->1	a building block with sequence for peripheral CCDs	Emae Sequences	1
<a href="#">ES Id ifci10rpp to EMAE_cen</a>	Load Imaging Full Frame Cold reset per pixel Sequence central CCD node 1 (#0) Map EMCR-> EMAE is : 0->1	a building block with sequence for peripheral CCDs	Emae Sequences	1
<a href="#">ES Id ifc8rp_1 to EMAE_per</a>	Load Imaging Full Frame Cold reset per pixel Sequence peripheral CCDs node 1 (#1,#2,#3) Map EMCR-> EMAE is : 1->2, 2->3, 3->4	a building block with sequence for central CCD	Emae Sequences	1
<a href="#">ES Id ifci10rpp to EMAE_per</a>	Load Imaging Full Frame Cold reset per pixel Sequence peripheral CCDs node 1 (#1,#2,#3) Map EMCR-> EMAE is : 1->2, 2->3, 3->4	a building block with sequence for central CCD	Emae Sequences	1
<a href="#">ES Id ifc8rp_2 to EMAE_cen</a>	Load Imaging Full Frame Cold reset per pixel Sequence central CCD node 2 (#0) Map EMCR-> EMAE is : 0->1	a building block with sequence for peripheral CCDs	Emae Sequences	1
<a href="#">ES Id ifci10rpr to EMAE_cen</a>	Load Imaging Full Frame Cold reset per pixel Sequence central CCD node 2 (#0) Map EMCR-> EMAE is : 0->1	a building block with sequence for peripheral CCDs	Emae Sequences	1
<a href="#">ES Id ifc8rp_2 to EMAE_per</a>	Load Imaging Full Frame Cold reset per pixel Sequence peripheral CCDs node 2 (#1,#2,#3) Map EMCR-> EMAE is : 1->2, 2->3, 3->4	a building block with sequence for central CCD	Emae Sequences	1
<a href="#">ES Id ifci10rpr to EMAE_per</a>	Load Imaging Full Frame Cold reset per pixel Sequence peripheral CCDs node 2 (#1,#2,#3) Map EMCR-> EMAE is : 1->2, 2->3, 3->4	a building block with sequence for central CCD	Emae Sequences	1
<a href="#">ES Id ifc8rd_b to EMAE</a>	Load Imaging Full Frame Cold reset on demand Sequence central CCD node both (#0) Load FW sequence (#4) Map EMCR-> EMAE is : 0->1, 4->5	a building block with sequence for peripheral CCDs	Emae Sequences	1
<a href="#">ES Id ifci10rdb to EMAE</a>	Load Imaging Full Frame Cold reset on demand Sequence central CCD node both (#0) Load FW sequence (#4) Map EMCR-> EMAE is : 0->1, 4->5	a building block with sequence for peripheral CCDs	Emae Sequences	1
<a href="#">ES Id ifc8rp_b to EMAE</a>	Load Imaging Full Frame Cold reset per pixel Sequence central CCD node both (#0) Load FW sequence (#4)	a building block with sequence for peripheral CCDs	Emae Sequences	1

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<a href="#">ES Id iffc10rpb to EMAE</a>	Map EMCR-> EMAE is : 0->1, 4->5 Load Imaging Full Frame Cold reset per pixel Sequence central CCD node both (#0) Load FW sequence (#4)	a building block with sequence for peripheral CCDs	Emae Sequences	1
<a href="#">ES Id ifw5_n1 to EMAE</a>	Map EMCR-> EMAE is : 0->1, 4->5 Load Imaging Full Frame Warm Sequence central and peripheral CCDs node 1 (#0, #1, #2,#3)		Emae Sequences	1
<a href="#">ES Id ifw8rd_1 to EMAE</a>	Map EMCR-> EMAE is : 0->1, 1->2, 2->3, 3->4 Load Imaging Window Cold reset on demand Sequence 110x100 central CCD node 1 (#0)	a building block with sequence for peripheral CCDs	Emae Sequences	1
<a href="#">ES Id iswci10rdb to EMAE</a>	Map EMCR-> EMAE is : 0->1 Load Imaging Window Cold reset on demand Sequence 110x100 central CCD node 1 (#0)	a building block with sequence for peripheral CCDs	Emae Sequences	1
<a href="#">ES Id ifw8rd_2 to EMAE</a>	Map EMCR-> EMAE is : 0->1 Load Imaging Window Cold reset on demand Sequence 110x100 central CCD node 2 (#0)	a building block with sequence for peripheral CCDs	Emae Sequences	1
<a href="#">ES Id iswci10rdr to EMAE</a>	Map EMCR-> EMAE is : 0->1 Load Imaging Window Cold reset on demand Sequence 110x100 central CCD node 2 (#0)	a building block with sequence for peripheral CCDs	Emae Sequences	1
<a href="#">ES Id ifw8rd_b to EMAE</a>	Map EMCR-> EMAE is : 0->1 Load Imaging Window Cold reset on demand Sequence 110x100 central CCD node both (#0)	a building block with sequence for peripheral CCDs	Emae Sequences	1
<a href="#">ES Id iswci10rdb to EMAE</a>	Map EMCR-> EMAE is : 0->1 Load Imaging Window Cold reset on demand Sequence 110x100 central CCD node both (#0)	a building block with sequence for peripheral CCDs	Emae Sequences	1
<a href="#">ES Id ifw8rd_3_1 to EMAE</a>	Map EMCR-> EMAE is : 0->1 Load Imaging Window Cold reset on demand Sequence 310x300 central CCD node 1 (#0)	a building block with sequence for peripheral CCDs	Emae Sequences	1
<a href="#">ES Id ilwci10rdb to EMAE</a>	Map EMCR-> EMAE is : 0->1 Load Imaging Window Cold reset on demand Sequence 310x300 central CCD node 1 (#0)	a building block with sequence for peripheral CCDs	Emae Sequences	1
<a href="#">ES Id ifw8_3_2 to EMAE</a>	Map EMCR-> EMAE is : 0->1 Load Imaging Window Cold reset on demand Sequence 310x300 central CCD node 2 (#0)	a building block with sequence for peripheral CCDs	Emae Sequences	1
<a href="#">ES Id ilwci10rdr to EMAE</a>	Map EMCR-> EMAE is : 0->1 Load Imaging Window Cold reset on demand Sequence 310x300 central CCD node 2 (#0)	a building block with sequence for peripheral CCDs	Emae Sequences	1
<a href="#">ES Id ifw8rd_b to EMAE</a>	Map EMCR-> EMAE is : 0->1 Load Imaging Window Cold reset on demand Sequence 110x100 central CCD node both (#0)	a building block with sequence for peripheral CCDs	Emae Sequences	1
<a href="#">ES Id ilwci10rdb to EMAE</a>	Map EMCR-> EMAE is : 0->1 Load Imaging Window Cold reset on demand Sequence	a building block with	Emae Sequences	1

<a href="#">ES Id rfc3rd_1_200 to EMAE</a>	110x100 central CCD node both (#0) Map EMCR-> EMAE is : 0->1 Load Refreshed Frame Store Sequence on central CCD reset on demand node 1 (#0) Map EMCR-> EMAE is : 0->1	sequence for peripheral CCDs a building block with sequence for peripheral CCDs	Sequence not listed in EPIC.EST.LI.005 Issue 2	Emae Sequences	1	
<a href="#">ES Id rfscr3rdp200 to EMAE</a>	Load Refreshed Frame Store Sequence on central CCD reset on demand node 1 (#0) Map EMCR-> EMAE is : 0->1	a building block with sequence for peripheral CCDs	Sequence not listed in EPIC.EST.LI.005 Issue 2	Emae Sequences	1	
<a href="#">ES Id rfc3rd_2_200 to EMAE</a>	Load Refreshed Frame Store Sequence on central CCD reset on demend node 2 (#0) Map EMCR-> EMAE is : 0->1	a building block with sequence for peripheral CCDs	Sequence not listed in EPIC.EST.LI.005 Issue 2	Emae Sequences	1	
<a href="#">ES Id rfscr3rdr200 to EMAE</a>	Load Refreshed Frame Store Sequence on central CCD reset on demend node 2 (#0) Map EMCR-> EMAE is : 0->1	a building block with sequence for peripheral CCDs	Sequence not listed in EPIC.EST.LI.005 Issue 2	Emae Sequences	1	
<a href="#">ES Id rfc3rd_b_200 to EMAE</a>	Load Refreshed Frame Store Sequence on central CCD reset on demand node both (#0) Map EMCR-> EMAE is : 0->1	a building block with sequence for peripheral CCDs	Sequence not listed in EPIC.EST.LI.005 Issue 2	Emae Sequences	1	
<a href="#">ES Id rfscr3rdb200 to EMAE</a>	Load Refreshed Frame Store Sequence on central CCD reset on demand node both (#0) Map EMCR-> EMAE is : 0->1	a building block with sequence for peripheral CCDs	Sequence not listed in EPIC.EST.LI.005 Issue 2	Emae Sequences	1	
<a href="#">ES Id rfscr3rpp200 to EMAE</a>	Load Refreshed Frame Store Sequence on central CCD reset per pixel node 1 (#0) Map EMCR-> EMAE is : 0->1	a building block with sequence for peripheral CCDs	Sequence not listed in EPIC.EST.LI.005 Issue 2	Emae Sequences	1	
<a href="#">ES Id rfscr3rpr200 to EMAE</a>	Load Refreshed Frame Store Sequence on central CCD reset per pixel node 2 (#0) Map EMCR-> EMAE is : 0->1	a building block with sequence for peripheral CCDs	Sequence not listed in EPIC.EST.LI.005 Issue 2	Emae Sequences	1	
<a href="#">ES Id rfscr3rpb200 to EMAE</a>	Load Refreshed Frame Store Sequence on central CCD reset per pixel node both (#0) Map EMCR-> EMAE is : 0->1	a building block with sequence for peripheral CCDs	Sequence not listed in EPIC.EST.LI.005 Issue 2	Emae Sequences	1	New
<a href="#">ES Id tnc1_n1 to EMAE</a>	Load Timing Imaging Sequence on central CCD node 1 (#0) - timing normal cold Map EMCR-> EMAE is : 0->1	a building block with sequence for peripheral CCDs		Emae Sequences	1	
<a href="#">ES Id tnc1_n2 to EMAE</a>	Load Timing Imaging Sequence on central CCD	a building block with		Emae Sequences	1	

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<a href="#">ES Id tdc2_n1 to EMAE</a>	node 2 (#0) - timing normal cold Map EMCR-> EMAE is : 0->1 Load Transparent Timing Imaging Sequence on central CCD node 1 (#0) - timing diagnostic cold	sequence for peripheral CCDs a building block with sequence for peripheral CCDs	Emae Sequences	1	
<a href="#">ES Id tdiovtge05p to EMAE</a>	Map EMCR-> EMAE is : 0->1 Load Transparent Timing Imaging Sequence on central CCD node 1 (#0) - timing diagnostic cold	a building block with sequence for peripheral CCDs	Emae Sequences	1	
<a href="#">ES Id tdc2_n2 to EMAE</a>	Map EMCR-> EMAE is : 0->1 Load Transparent Timing Imaging Sequence on central CCD node 2 (#0) - timing diagnostic cold	a building block with sequence for peripheral CCDs	Emae Sequences	1	
<a href="#">ES Id tdiovtge05r to EMAE</a>	Map EMCR-> EMAE is : 0->1 Load Transparent Timing Imaging Sequence on central CCD node 2 (#0) - timing diagnostic cold	a building block with sequence for peripheral CCDs	Emae Sequences	1	
<a href="#">ES Id timage3 to EMAE</a>	Map EMCR-> EMAE is : 0->1 Load Timing Imaging Sequence on central CCD node 1 (#0)	a building block with sequence for peripheral CCDs	Emae Sequences	1	
<a href="#">ES Id timnctng03p to EMAE</a>	Map EMCR-> EMAE is : 0->1 Load Timing Imaging Sequence on central CCD node 1 (#0)	a building block with sequence for peripheral CCDs	Emae Sequences	1	
<a href="#">ES Id timnctng03r to EMAE</a>	Map EMCR-> EMAE is : 0->1 Load Timing Imaging Sequence on central CCD node 2 (#0)	a building block with sequence for peripheral CCDs	Emae Sequences	1	
<a href="#">ES Id+setup I33ci10rdp to EMAE</a>	Load Full Frame Fast Diagnostic Sequence on all CCDs node 1 (#0) and setup Map EMCR-> EMAE is : 0->1, 1->2, 2->3, 3->4		Emae Sequences	1	New
<a href="#">Full Frame - Refreshed Frame Store (EMAESeq. I.8, 2.6 sec)</a>	Setting of EMCR integration time for Full Frame readout of all Idle mode CCDs (and Refreshed Frame Store for central CCD)	none	EMCR int-time	1	New
<a href="#">Full Frame - Refreshed Frame Store (EMAESeq. I.10, 2.5 sec)</a>	Setting of EMCR integration time for Full Frame readout of all Idle mode CCDs (and Refreshed Frame Store for central CCD)	none	EMCR int-time	1	New
<a href="#">Double Node (EMAESeq. I.8, 1.5-3 sec)</a>	Setting of EMCR integration time for Double-node readout of Idle mode central CCD and Full Frame readout of peripheral CCDs	none	EMCR int-time	1	New
<a href="#">Double Node (EMAESeq. I.10, 1.4 - 2.8 sec)</a>	Setting of EMCR integration time for Double-node readout of Idle mode central CCD and Full Frame readout of peripheral CCDs	none	EMCR int-time	1	New
<a href="#">Small Window (EMAESeq. I.8, 110, 0.4 - 2.8 sec)</a>	Setting of EMCR integration time for Small Window readout of Idle mode central CCD and Full Frame readout of peripheral CCDs	none	EMCR int-time	1	New
<a href="#">Small Window (EMAESeq. I.10, 110, 0.3 - 2.7 sec)</a>	Setting of EMCR integration time for Small Window readout of Idle mode central CCD and Full Frame readout of peripheral CCDs	none	EMCR int-time	1	New
<a href="#">Large Window (EMAESeq. I.8, 310, 1 - 3 sec)</a>	Setting of EMCR integration time for Large Window readout of Idle mode central CCD and Full Frame readout of peripheral CCDs	none	EMCR int-time	1	New
<a href="#">Large Window (EMAESeq. I.10, 310, 0.9 - 2.7 sec)</a>	Setting of EMCR integration time for Large Window readout of Idle mode central CCD and Full Frame readout of peripheral CCDs	none	EMCR int-time	1	New
<a href="#">Free-run (EMAESeq. I.8, 2.6 sec for per. CCD)</a>	Setting of EMCR integration time for Free-run readout of Idle mode central CCD and Full Frame readout of peripheral CCDs	none	EMCR int-time	1	New
<a href="#">Free-run (EMAESeq. I.10, 2.5 sec for</a>	Setting of EMCR integration time for Free-run readout of Idle mode	none	EMCR int-time	1	New

<a href="#">per. CCD)</a>	central CCD and Full Frame readout of peripheral CCDs					
<a href="#">On-board time management</a>	Setting of EMDH and EMCR on-board time	Idle mode	none	EMDH time-synch	2	Commands changed
<a href="#">MOS1 Sync Nor 3step</a>	Synchronize FW MOS1	Idle mode	none	FW operations MOS1	1	New: steps for FM1
<a href="#">FW MOS1 to Filter A position</a>	Move FW MOS1 to filter A position	Idle mode	none	FW operations MOS1	1	New: steps for FM1
<a href="#">FW MOS1 to Filter A Calibration position</a>	Move FW MOS1 to filter A Calibration position	Idle mode	none	FW operations MOS1	1	New: steps for FM1
<a href="#">FW MOS1 to Filter B position</a>	Move FW MOS1 to filter B position	Idle mode	none	FW operations MOS1	1	New: steps for FM1
<a href="#">FW MOS1 to Filter B Calibration position</a>	Move FW MOS1 to filter B Calibration position	Idle mode	none	FW operations MOS1	1	New: steps for FM1
<a href="#">FW MOS1 to Filter C position</a>	Move FW MOS1 to filter C position	Idle mode	none	FW operations MOS1	1	New: steps for FM1
<a href="#">FW MOS1 to Filter C Calibration position</a>	Move FW MOS1 to filter C Calibration position	Idle mode	none	FW operations MOS1	1	New: steps for FM1
<a href="#">FW MOS1 to Filter D position</a>	Move FW MOS1 to filter D position	Idle mode	none	FW operations MOS1	1	New: steps for FM1
<a href="#">FW MOS1 to Filter D Calibration position</a>	Move FW MOS1 to filter D Calibration position	Idle mode	none	FW operations MOS1	1	New: steps for FM1
<a href="#">FW MOS1 to Open position</a>	Move FW MOS1 to Open position	Idle mode	none	FW operations MOS1	1	New: steps for FM1
<a href="#">FW MOS1 to Open Calibration position</a>	Move FW MOS1 to Open Calibration position	Idle mode	none	FW operations MOS1	1	New: steps for FM1
<a href="#">FW MOS1 to Close position</a>	Move FW MOS1 to Close position	Idle mode	none	FW operations MOS1	1	New: steps for FM1
<a href="#">FW MOS1 to Close Calibration position</a>	Move FW MOS1 to Close Calibration position	Idle mode	none	FW operations MOS1	1	New: steps for FM1
<a href="#">MOS2 Sync Nor 4step</a>	Synchronize FW MOS2	Idle mode	none	FW operations MOS2	1	New: steps for FM2
<a href="#">FW MOS2 to Filter A position</a>	Move FW MOS2 to filter A position	Idle mode	none	FW operations MOS2	1	New: steps for FM2
<a href="#">FW MOS2 to Filter A Calibration position</a>	Move FW MOS2 to filter A Calibration position	Idle mode	none	FW operations MOS2	1	New: steps for FM2
<a href="#">FW MOS2 to Filter B position</a>	Move FW MOS2 to filter B position	Idle mode	none	FW operations MOS2	1	New: steps for FM2
<a href="#">FW MOS2 to Filter B Calibration position</a>	Move FW MOS2 to filter B Calibration position	Idle mode	none	FW operations MOS2	1	New: steps for FM2
<a href="#">FW MOS2 to Filter C position</a>	Move FW MOS2 to filter C position	Idle mode	none	FW operations MOS2	1	New: steps for FM2
<a href="#">FW MOS2 to Filter C Calibration position</a>	Move FW MOS2 to filter C Calibration position	Idle mode	none	FW operations MOS2	1	New: steps for FM2
<a href="#">FW MOS2 to Filter D position</a>	Move FW MOS2 to filter D position	Idle mode	none	FW operations MOS2	1	New: steps for FM2
<a href="#">FW MOS2 to Filter D Calibration position</a>	Move FW MOS2 to filter D Calibration position	Idle mode	none	FW operations MOS2	1	New: steps for FM2

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<a href="#">FW MOS2 to Open position</a>	Move FW MOS2 to Open position	Idle mode	none	FW operations MOS2	1	New: steps for FM2
<a href="#">FW MOS2 to Open Calibration position</a>	Move FW MOS2 to Open Calibration position	Idle mode	none	FW operations MOS2	1	New: steps for FM2
<a href="#">FW MOS2 to Close position</a>	Move FW MOS2 to Close position	Idle mode	none	FW operations MOS2	1	New: steps for FM2
<a href="#">FW MOS2 to Close Calibration position</a>	Move FW MOS2 to Close Calibration position	Idle mode	none	FW operations MOS2	1	New: steps for FM2
<a href="#">HBR Imaging</a>	Setting of HBR configuration for Full Frame readout of all CCDs	Idle mode	none	HBR config	1	
<a href="#">HBR Threshold</a>	Setting of HBR configuration for threshold Full Frame readout of all CCDs	Idle mode	none	HBR config	1	
<a href="#">HBR Double Node</a>	Setting of HBR configuration for Double-node readout of central CCD and Full Frame readout of peripheral CCDs	Idle mode	none	HBR config	1	
<a href="#">HBR Double Node Threshold</a>	Setting of HBR configuration for threshold Double-node readout of central CCD and Full Frame readout of peripheral CCDs	Idle mode	none	HBR config	1	
<a href="#">HBR Timing</a>	Setting of HBR configuration for timing readout of central CCD and Full Frame readout of peripheral CCDs	Idle mode	none	HBR config	1	
<a href="#">HBR 1 transparent</a>	Setting of HBR configuration for transparent readout of HBR 1	Idle mode	none	HBR config	1	
<a href="#">HBR 2 transparent</a>	Setting of HBR configuration for transparent readout of HBR 2	Idle mode	none	HBR config	1	
<a href="#">HBR 3 transparent</a>	Setting of HBR configuration for transparent readout of HBR 3	Idle mode	none	HBR config	1	
<a href="#">HBR 4 transparent</a>	Setting of HBR configuration for transparent readout of HBR 4	Idle mode	none	HBR config	1	
<a href="#">HBR 5 transparent</a>	Setting of HBR configuration for transparent readout of HBR 5	Idle mode	none	HBR config	1	
<a href="#">HBR 6 transparent</a>	Setting of HBR configuration for transparent readout of HBR 6	Idle mode	none	HBR config	1	
<a href="#">HBR 7 transparent</a>	Setting of HBR configuration for transparent readout of HBR 7	Idle mode	none	HBR config	1	
<a href="#">HBR 8 transparent</a>	Setting of HBR configuration for transparent readout of HBR 8	Idle mode	none	HBR config	1	
<a href="#">Default HBR Threshold and Size</a>	Default HBR Threshold and Size set up	Idle mode	none	HBR config	1	
<a href="#">Ld EMDH Memory</a>	Load EMDH memory			Maintenance	1	
<a href="#">EMDH Memory cks rep</a>	Checksum report on EMDH memory			Maintenance	1	
<a href="#">EMDH Memory dmp rep</a>	Dump report on EMDH memory			Maintenance	1	
<a href="#">Ld EMCR Memory</a>	Load EMCR memory			Maintenance	2	
<a href="#">Ld EMCR Memory v14</a>	Load EMCR memory sw issue 14			Maintenance	1	
<a href="#">EMCR Memory cks rep</a>	Checksum report on EMCR memory			Maintenance	1	
<a href="#">EMCR Memeory dmp rep</a>	Dump report on EMCR memory			Maintenance	1	
<a href="#">EMCR cold restart</a>	Cold restart of EMCR - use of PROM program			Maintenance	1	
<a href="#">Enter OV CCD1 DN</a>	Enter Offset and Variance Mode CCD1 double node			Mode Switching	1	
<a href="#">Enter OV CCD1 LW</a>	Enter Offset and Variance Mode CCD1 Large window			Mode Switching	1	
<a href="#">Enter OV CCD1 SW</a>	Enter Offset and Variance Mode CCD1 Small window			Mode Switching	1	
<a href="#">Enter OV CCD1 FS</a>	Enter Offset and Variance Mode CCD1 FS camera			Mode Switching	2	Parameter values updated
<a href="#">Enter OV CCD2 FS</a>	Enter Offset and Variance Mode CCD2 FS camera			Mode Switching	2	Parameter values updated
<a href="#">Enter OV CCD3 FS</a>	Enter Offset and Variance Mode CCD3 FS camera			Mode Switching	2	Parameter values updated

# EMCS

<a href="#">Enter OV CCD4 FS</a>	Enter Offset and Variance Mode CCD4 FS camera			Mode Switching	2	updated Parameter values updated
<a href="#">Enter OV CCD5 FS</a>	Enter Offset and Variance Mode CCD5 FS camera			Mode Switching	2	Parameter values updated
<a href="#">Enter OV CCD6 FS</a>	Enter Offset and Variance Mode CCD6 FS camera			Mode Switching	2	Parameter values updated
<a href="#">Enter OV CCD7 FS</a>	Enter Offset and Variance Mode CCD7 FS camera			Mode Switching	2	Parameter values updated
<a href="#">Enter OV Timing FS</a>	Enter Offset and Variance Mode for Timing CCD1 FS camera			Mode Switching	1	
<a href="#">Enter Prime</a>	Enter Prime Mode			Mode Switching	1	
<a href="#">Enter Fast</a>	Enter Fast Mode			Mode Switching	1	
<a href="#">Enter in Flight Test</a>	Enter In Flight Test Mode			Mode Switching	1	
<a href="#">Enter Diagnostic FF-RFS</a>	Enter CCD Diagnostic Mode Full frame or Refreshed Frame Store			Mode Switching	1	
<a href="#">Enter Fast Diagnostic FF</a>	Enter CCD Fast Diagnostic Mode Full frame			Mode Switching	1	New
<a href="#">Enter Diagnostic LW</a>	Enter CCD Diagnostic Mode LW			Mode Switching	1	
<a href="#">Enter Diagnostic SW</a>	Enter CCD Diagnostic Mode SW			Mode Switching	1	
<a href="#">Enter Diagnostic Timing</a>	Enter CCD Diagnostic Mode Timing			Mode Switching	1	
<a href="#">Enter Diagnostic DN</a>	Enter CCD Diagnostic Mode Double Node			Mode Switching	1	
<a href="#">Enter Idle</a>	Enter Idle Mode				1	
<a href="#">Observation to Idle</a>	Prime or Fast Mode to Idle Mode			Mode Switching	1	
<a href="#">OT Id all to EMCR</a>	Load all Offset tables to EMCR. Full frame case. An Offset Table for each table is in a separate file.	none	none	Offset tables	1	
<a href="#">OT Id all EDU std (EDU1 alt)</a>	Load all Offset tables to EDU in the Normal Area (EDU 1 Alternate Area). Full frame case. An Offset Table for each table is in a separate file. Map EMCR->EDU is : 0->0, 0->1, 0->2, 0->3, 0->4, 0->5, 0->6, 0->7.	none	none	Offset tables	1	New
<a href="#">OT Id all EDU alt (EDU1 nor)</a>	Load all Offset tables to EDU in the Alternate Area (EDU 1 Normal Area). Full frame case. An Offset Table for each table is in a separate file. Map EMCR->EDU is : 0->0, 0->1, 0->2, 0->3, 0->4, 0->5, 0->6, 0->7.	none	none	Offset tables	1	New
<a href="#">OT Id 0 to EMCR for OV</a>	Load Offset table from EMDH to EMCR tab #0. after Offset and variance computation. Full frame case. First and last 4 columns are overwritten.	offset and variance computation		Offset tables	1	
<a href="#">OT Id 1 to EMCR for OV</a>	Load Offset table from EMDH to EMCR tab #1. after Offset and variance computation. Full frame case.	offset and variance computation		Offset tables	1	

# EMCS

<a href="#">OT Id 2 to EMCR for OV</a>	First and last 4 columns are overwritten. Load Offset table from EMDH to EMCR tab #2. after Offset and variance computation. Full frame case.	offset and variance computation	Offset tables	1
<a href="#">OT Id 3 to EMCR for OV</a>	First and last 4 columns are overwritten. Load Offset table from EMDH to EMCR tab #3. after Offset and variance computation. Full frame case.	offset and variance computation	Offset tables	1
<a href="#">OT Id 4 to EMCR for OV</a>	First and last 4 columns are overwritten. Load Offset table from EMDH to EMCR tab #4. after Offset and variance computation. Full frame case.	offset and variance computation	Offset tables	1
<a href="#">OT Id 5 to EMCR for OV</a>	First and last 4 columns are overwritten. Load Offset table from EMDH to EMCR tab #5. after Offset and variance computation. Full frame case.	offset and variance computation	Offset tables	1
<a href="#">OT Id 6 to EMCR for OV</a>	First and last 4 columns are overwritten. Load Offset table from EMDH to EMCR tab #6. after Offset and variance computation. Full frame case.	offset and variance computation	Offset tables	1
<a href="#">OT Id 7 to EMCR for OV</a>	First and last 4 columns are overwritten. Load Offset table from EMDH to EMCR tab #7. after Offset and variance computation. Full frame case.	offset and variance computation	Offset tables	1
<a href="#">OT Id 0 to EMCR+EDU std for OV</a>	First and last 4 columns are overwritten. Load Offset table #0 from EMDH to EDU Normal area. after Offset and variance computation. Full frame case.	offset and variance computation	Offset tables	1
<a href="#">OT Id 1 to EMCR+EDU std for OV</a>	First and last 4 columns are overwritten. Map EMCR->EDU is : 0->0. Load Offset table #1 from EMDH to EDU Normal area. after Offset and variance computation. Full frame case.	offset and variance computation	Offset tables	1
<a href="#">OT Id 2 to EMCR+EDU std for OV</a>	First and last 4 columns are overwritten. Map EMCR->EDU is : 1->1. Load Offset table #2 from EMDH to EDU Normal area. after Offset and variance computation. Full frame case.	offset and variance computation	Offset tables	1
<a href="#">OT Id 3 to EMCR+EDU std for OV</a>	First and last 4 columns are overwritten. Map EMCR->EDU is : 2->2. Load Offset table #3 from EMDH to EDU Normal area. after Offset and variance computation.	offset and variance	Offset tables	1



# EMCS

<a href="#">OT Id 4 to EMCR+EDU alt for OV</a>	Map EMCR->EDU is : 3->3. Load Offset table #4 from EMDH to EDU Alternate area. after Offset and variance computation. Full frame case. First and last 4 columns are overwritten. Map EMCR->EDU is : 4->4.	offset and variance computation		Offset tables	1	
<a href="#">OT Id 5 to EMCR+EDU alt for OV</a>	Load Offset table #5 from EMDH to EDU Alternate area. after Offset and variance computation. Full frame case. First and last 4 columns are overwritten. Map EMCR->EDU is : 5->5.	offset and variance computation		Offset tables	1	
<a href="#">OT Id 6 to EMCR+EDU alt for OV</a>	Load Offset table #6 from EMDH to EDU Alternate area. after Offset and variance computation. Full frame case. First and last 4 columns are overwritten. Map EMCR->EDU is : 6->6.	offset and variance computation		Offset tables	1	
<a href="#">OT Id 7 to EMCR+EDU alt for OV</a>	Load Offset table #7 from EMDH to EDU Alternate area. after Offset and variance computation. Full frame case. First and last 4 columns are overwritten. Map EMCR->EDU is : 7->7.	offset and variance computation		Offset tables	1	
<a href="#">OT du all from EMCR</a>	Dump all Offset tables from EMCR. An Offset Table for each table is in TM pkts.	none	none	Offset tables	1	
<a href="#">OT du all from EDU std</a>	Dump all Offset tables from EDU Normal area. An Offset Table for each table is in TM pkts. Map EDU-> EMCR is : 1->1, 2->2, ....	none	none	Offset tables	1	
<a href="#">OT du all from EDU alt</a>	Dump all Offset tables from EDU Alternate area. An Offset Table for each table is in TM pkts. Map EDU-> EMCR is : 1->1, 2->2, ....	none	none	Offset tables	1	
<a href="#">PMT Id cen to EMCR imaging</a>	Load Pattern Mask tables to EMCR for CCD1. Imaging case	none	none	Pattern mask tables	3	
<a href="#">PMT Id cen to EMCR timing</a>	Load Pattern Mask tables to EMCR for CCD1. Timing case	none	none	Pattern mask tables	3	
<a href="#">PMT Id cen to EMCR threshold</a>	Load Pattern Mask tables to EMCR for CCD1. Threshold case	none	none	Pattern mask tables	3	
<a href="#">PMT Id cen to EMCR+EDU imaging</a>	Load Pattern Mask tables to EDUfor CCD1. Imaging case Map EMCR->EDU is : 0->0, 0->1	none	none	Pattern mask tables	3	Mapping changed
<a href="#">PMT Id cen to EMCR+EDU timing</a>	Load Pattern Mask tables to EDU for CCD1. Timing case Map EMCR->EDU is : 0->0, 0->1	none	none	Pattern mask tables	3	Mapping changed
<a href="#">PMT Id cen to EMCR+EDU threshold</a>	Load Pattern Mask tables to EDU for CCD1.	none	none	Pattern mask tables	3	Mapping changed

# EMCS

<a href="#">PMT Id per to EMCR imaging</a>	Threshold case Map EMCR->EDU is : 0->0, 0->1 Load all peripheral Pattern Mask tables to EMCR.	none	none	Pattern mask tables	2	
<a href="#">PMT Id per to EMCR threshold</a>	Imaging case Load all peripheral Pattern Mask tables to EMCR.	none	none	Pattern mask tables	1	New
<a href="#">PMT Id per to EMCR+EDU imaging</a>	Threshold case Load all peripheral Pattern Mask tables to EMCR then to EDU.	none	none	Pattern mask tables	2	Mapping changed
<a href="#">PMT Id per to EMCR+EDU threshold</a>	Imaging case Map EMCR->EDU is : 2->2, 2->3, 2->4, 2->5, 2->6, 2->7 Load all peripheral Pattern Mask tables to EMCR then to EDU.	none	none	Pattern mask tables	1	New
<a href="#">PMT du all from EMCR</a>	Threshold case Map EMCR->EDU is : 2->2, 2->3, 2->4, 2->5, 2->6, 2->7 Dump all Patten Mask tables from EMCR.	none	none	Pattern mask tables	1	
<a href="#">PMT du all from EDU</a>	Dump all Patten Mask tables starting from EDU. A Mask Table for each table is in TM pkts. Map EDU-> EMCR is : 1->1, 2->2, ....	none	none	Pattern mask tables	1	
<a href="#">HBR conf, buff_sz, thres_v</a>	Generate report about current HBR configuration, HBR buffer none size, HBR thrshold values	none	none	Reports	1	
<a href="#">Extr conf + Thermal limits</a>	Generate report about current Extraheating configuration, none thermal limits	none	none	Reports	1	
<a href="#">Pkt generation</a>	Generate report about current packet generation	none	none	Reports	1	
<a href="#">HBR BPT</a>	Generate report about current HBR BPT	none	none	Reports	1	
<a href="#">Global report</a>	Generate report about current HBR configuration, HBR buffer none size, HBR thrshold values, Extraheting configuration, thermal limits, packet generation, HBR BPT	none	none	Reports	1	
<a href="#">Du test image</a>	Dump Test Image from EMCR to EMDH			Test image	1	
<a href="#">Ld test image</a>	Load Test Image from EMDH to EMCR			Test image	1	
<a href="#">Annealing</a>	Annealing			Thermal	1	
<a href="#">Decontamination</a>	Decontamination			Thermal	1	
<a href="#">Decontamination 0 °C</a>	Decontamination			Thermal	1	New
<a href="#">Decontamination +30 °C</a>	Decontamination			Thermal	1	New
<a href="#">Deicing</a>	Deicing			Thermal	1	
<a href="#">Set FPA Nom -70</a>	Set Focal Plane temperature Nominal at -70			Thermal	1	
<a href="#">Set FPA Nom -100</a>	Set Focal Plane temperature Nominal at -100			Thermal	1	
<a href="#">Set FPA Red -70</a>	Set Focal Plane temperature Redundant at -70			Thermal	1	
<a href="#">Set FPA Red -100</a>	Set Focal Plane temperature Redundant at -100			Thermal	1	

## 4.1. Bright Pixels Tables i3

### Load BPT FM1

Step	Command Number	Command Name	Parameter Number	Parameter Name	Parameter Value (hex)	Parameter Value (engineering)	Value	NOTES (from TC reports)	Details (from Sequences dev.)
1	E33	Load HBR 1 BPT	E164	HBR1 Bright P.N.	08 01F5 0104 00F5 0181 00F5 0182 01F4 0187 01BA 01B5 01BA 01B7 01BA 01BB 01BA 01C5	8 501 260 245 385 245 386 500 391 442 437 442 439 442 443 442 453		This TC is used to load in the EMDH the bright pixel table for the HBR 1 channel.	
2	E12	Load HBR 2 BPT	E165	HBR2 Bright P.N.				This TC is used to load in the EMDH the bright pixel table for the HBR 2 channel.	
3	E13	Load HBR 3 BPT	E166	HBR3 Bright P.N.	02 009A 0128 0182 0244	2 154 296 386 580		This TC is used to load in the EMDH the bright pixel table for the HBR 3 channel.	
4	E103	Load HBR 4 BPT	E167	HBR4 Bright P.N.	03 0225 00BA 01BE 011F 0140 01E6	3 549 186 446 287 320 486		This TC is used to load in the EMDH the bright pixel table for the HBR 4 channel.	
5	E104	Load HBR 5 BPT	E168	HBR5 Bright P.N.	02 01C4 0117 0064 01BB	2 452 279 100 443		This TC is used to load in the EMDH the bright pixel table for the HBR 5 channel.	
6	E105	Load HBR 6 BPT	E169	HBR6 Bright P.N.	05 01B4 001C 0109 0042 0109 014D 0109 014A 0109 014B	5 436 28 265 66 265 333 265 330 265 331		This TC is used to load in the EMDH the bright pixel table for the HBR 6 channel.	
7	E106	Load HBR 7 BPT	E170	HBR7 Bright P.N.	05 01BD 001C 0173 00B6 0256 00ED 0037 00F5 0193 01EA	5 445 28 371 182 598 237 55 245 403 490		This TC is used to load in the EMDH the bright pixel table for the HBR 7 channel.	
8	E107	Load HBR 8 BPT	E171	HBR8 Bright P.N.	08 01BB 00C4 00FB 00E6 00FB 00E7 00FB 00E9 00B1 0132 00DD 0190 014A 0225 003D 0249	8 443 196 251 230 251 231 251 233 177 306 221 400 330 549 61 585		This TC is used to load in the EMDH the bright pixel table for the HBR 8 channel.	

### Load BPT FM2

Step Number	Command Name	Parameter Number	Parameter Name	Parameter Value (hex)	Parameter Value (engineering)	Value	NOTES (from TC reports)	Details (from Sequences dev.)
1	K33	Load HBR 1 BPT	K164	HBR1 Bright P.N.	02 0249 018A 024A 018B	2 585 394 586 395	This TC is used to load in the EMDH the bright pixel table for the HBR 1 channel.	
2	K12	Load HBR 2 BPT	K165	HBR2 Bright P.N.			This TC is used to load in the EMDH the bright pixel table for the HBR 2 channel.	
3	K13	Load HBR 3 BPT	K166	HBR3 Bright P.N.	02 0052 0058 00FA 00E4	2 82 88 250 228	This TC is used to load in the EMDH the bright pixel table for the HBR 3 channel.	
4	K103	Load HBR 4 BPT	K167	HBR4 Bright P.N.			This TC is used to load in the EMDH the bright pixel table for the HBR 4 channel.	
5	K104	Load HBR 5 BPT	K168	HBR5 Bright P.N.			This TC is used to load in the EMDH the bright pixel table for the HBR 5 channel.	
6	K105	Load HBR 6 BPT	K169	HBR6 Bright P.N.	02 0030 018A 01A4 022D	2 48 394 420 557	This TC is used to load in the EMDH the bright pixel table for the HBR 6 channel.	
7	K106	Load HBR 7 BPT	K170	HBR7 Bright P.N.	02 0170 0068 0233 00AB	2 368 104 563 171	This TC is used to load in the EMDH the bright pixel table for the HBR 7 channel.	
8	K107	Load HBR 8 BPT	K171	HBR8 Bright P.N.			This TC is used to load in the EMDH the bright pixel table for the HBR 8 channel.	

## Load BPT FS

Step Number	Command Name	Parameter Number	Parameter Name	Parameter Value (hex)	Parameter Value (engineering)	Value	NOTES (from TC reports)	Details (from Sequences dev.)
1	E33	Load HBR 1 BPT	E164	HBR1 Bright P.N.	02 0039 00F6 017A 0140	2 057 246 378 320	This TC is used to load in the EMDH the bright pixel table for the HBR 1 channel.	
2	E12	Load HBR 2 BPT	E165	HBR2 Bright P.N.	0	0	This TC is used to load in the EMDH the bright pixel table for the HBR 2 channel.	
3	E13	Load HBR 3 BPT	E166	HBR3 Bright P.N.	0A 0097 0033 024C 009F 009D 00A7 0257 00F0 0243 0106 021B 0131 0211 015C 01F3 0165 020C 016D 0043 0199	10 151 051 588 159 157 167 599 240 579 262 539 305 529 348 499 357 524 365 067 409	This TC is used to load in the EMDH the bright pixel table for the HBR 3 channel.	
4	E103	Load HBR 4 BPT	E167	HBR4 Bright P.N.	0E 01C3 0108 0106 0146 0145 014B	14 451 264 262 326 325 331	This TC is used to load in the EMDH the bright pixel table for the HBR 4 channel.	

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				009D 0158	157 344	
				0018 0161	024 353	
				0039 016C	057 364	
				0096 016D	150 365	
				01BE 0174	446 372	
				0094 0193	148 403	
				00DF 01AE	223 430	
				00F6 01C6	246 454	
				0221 020E	545 526	
				0015 0223	021 547	
				0079 022F	121 559	
5 E104	Load HBR 5 BPT	E168	HBR5 Bright P.N.	02	02	This TC is used to load in the EMDH the bright pixel table for the HBR 5 channel.
				0177 01A2	375 418	
				009B 022C	155 556	
6 E105	Load HBR 6 BPT	E169	HBR6 Bright P.N.	06	06	This TC is used to load in the EMDH the bright pixel table for the HBR 6 channel.
				00F9 0035	249 053	
				0211 0096	529 150	
				00C4 0105	196 261	
				0046 014C	070 332	
				008C 01A1	140 417	
				0082 0208	130 520	
7 E106	Load HBR 7 BPT	E170	HBR7 Bright P.N.	03	03	This TC is used to load in the EMDH the bright pixel table for the HBR 7 channel.
				0216 0007	534 007	
				013A 00C9	314 201	
				0228 01FA	552 506	
8 E107	Load HBR 8 BPT	E171	HBR8 Bright P.N.	10	16	This TC is used to load in the EMDH the bright pixel table for the HBR 8 channel.
				01AF 002D	431 045	
				0234 004C	564 076	
				01CD 0069	461 105	
				01CD 006D	461 109	
				0185 0118	389 280	
				01E2 0130	482 304	
				0258 0150	600 336	
				0226 0157	550 343	
				0251 015E	593 350	
				01A4 016A	420 362	
				013A 0179	314 377	
				0243 017C	579 380	
				01BD 017F	445 383	
				0113 0239	275 569	
				00DE 0249	222 585	
				01A9 0253	425 595	

## 4.2. CCD Voltages i1

FM1 normal

Step	Command Number	Command Name	Parameter Number	Parameter Name	Parameter Value (hex)	Parameter Value (engineering)	Value	NOTES (from TC reports)	Details (from Sequences dev.)
1	E91	Set CCD1 Voltages	E229	CCD VOD1	BE	28,956	This TC is used to set all the CCD1 voltages (bias and Set CCD1 Voltages clock) in the EMAE. Parameters are used to include the complete EMCR command foreseen for this function.		
			E228	CCD VRD1	D1	17,0335			
			E227	CCD VOG1	1A	1,0062			
			E232	CCD VOD2	BF	29,0129			
			E231	CCD VRD2	D1	16,9917			
			E230	CCD VOG2	1A	1,0062			
			E223	CCD VSS	00	0			
			E225	CCD VGR	7C	15,004			
			E224	CCD VBB	00	0			
			E226	CCD VID	A6	20,0528			
			E233	CCD I	63	5,9895			
			E234	CCD S	63	6,0093			
			E235	CCD R	84	7,9992			
			E237	CCD RESET1	95	9,0294			
			E238	CCD RESET2	95	9,0294			
			E236	CCD CCD IG	00	0			
			2	E92	Set CCD2 Voltages	E229			CCD VOD1
E228	CCD VRD1	D1				17,0335			
E227	CCD VOG1	1A				1,0062			
E232	CCD VOD2	CC				30,9876			
E231	CCD VRD2	D1				16,9917			
E230	CCD VOG2	1A				1,0062			
E223	CCD VSS	00				0			
E225	CCD VGR	7C				15,004			
E224	CCD VBB	00				0			
E226	CCD VID	A6				20,0528			
E233	CCD I	74				7,018			
E234	CCD S	74				7,0412			
E235	CCD R	74				7,0296			
E237	CCD RESET1	74				7,0296			
E238	CCD RESET2	74				7,0296			
E236	CCD CCD IG	00				0			
3	E93	Set CCD3 Voltages				E229	CCD VOD1	C5	30,0228
			E228	CCD VRD1	D1	17,0335			
			E227	CCD VOG1	1A	1,0062			
			E232	CCD VOD2	C5	29,9243			
			E231	CCD VRD2	D1	16,9917			
			E230	CCD VOG2	1A	1,0062			
			E223	CCD VSS	00	0			
			E225	CCD VGR	7C	15,004			
			E224	CCD VBB	00	0			
			E226	CCD VID	A6	20,0528			
			E233	CCD I	74	7,018			

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4	E94	Set CCD4 Voltages	E234	CCD S	74	7,0412	This TC is used to set all the CCD4 voltages (bias and Set CCD4 Voltages clock) in the EMAE. Parameters are used to include the complete EMCR command foreseen for this function.
			E235	CCD R	84	7,9992	
			E237	CCD RESET1	95	9,0294	
			E238	CCD RESET2	95	9,0294	
			E236	CCD CCD IG	00	0	
			E229	CCD VOD1	B8	28,0416	
			E228	CCD VRD1	D1	17,0335	
			E227	CCD VOG1	27	1,5093	
			E232	CCD VOD2	B8	27,9496	
			E231	CCD VRD2	D1	16,9917	
			E230	CCD VOG2	27	1,5093	
			E223	CCD VSS	41	2,5155	
			E225	CCD VGR	8C	16,94	
			E224	CCD VBB	15	2,5389	
			E226	CCD VID	A6	20,0528	
			5	E95	Set CCD5 Voltages	E233	
E234	CCD S	74				7,0412	
E235	CCD R	63				5,9994	
E237	CCD RESET1	95				9,0294	
E238	CCD RESET2	95				9,0294	
E236	CCD CCD IG	00				0	
E229	CCD VOD1	BE				28,956	
E228	CCD VRD1	D1				17,0335	
E227	CCD VOG1	1A				1,0062	
E232	CCD VOD2	BF				29,0129	
E231	CCD VRD2	D1				16,9917	
E230	CCD VOG2	1A				1,0062	
E223	CCD VSS	00				0	
E225	CCD VGR	7C				15,004	
E224	CCD VBB	00				0	
6	E96	Set CCD6 Voltages				E226	CCD VID
			E233	CCD I	74	7,018	
			E234	CCD S	74	7,0412	
			E235	CCD R	63	5,9994	
			E237	CCD RESET1	95	9,0294	
			E238	CCD RESET2	95	9,0294	
			E236	CCD CCD IG	00	0	
			E229	CCD VOD1	CB	30,9372	
			E228	CCD VRD1	DD	18,0115	
			E227	CCD VOG1	27	1,5093	
			E232	CCD VOD2	CC	30,9876	
			E231	CCD VRD2	DD	17,9673	
			E230	CCD VOG2	27	1,5093	
			E223	CCD VSS	00	0	
			E225	CCD VGR	7C	15,004	
			E224	CCD VBB	00	0	
E226	CCD VID	A6	20,0528				
E233	CCD I	74	7,018				
E234	CCD S	74	7,0412				
E235	CCD R	84	7,9992				
E237	CCD RESET1	95	9,0294				

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7	E97	Set CCD7 Voltages	E238	CCD RESET2	95	9,0294	This TC is used to set all the CCD7 voltages (bias and Set CCD7 Voltages clock) in the EMAE. Parameters are used to include the complete EMCR command foreseen for this function.
			E236	CCD CCD IG	00	0	
			E229	CCD VOD1	BE	28,956	
			E228	CCD VRD1	D1	17,0335	
			E227	CCD VOG1	27	1,5093	
			E232	CCD VOD2	BF	29,0129	
			E231	CCD VRD2	D1	16,9917	
			E230	CCD VOG2	27	1,5093	
			E223	CCD VSS	00	0	
			E225	CCD VGR	7C	15,004	
			E224	CCD VBB	00	0	
			E226	CCD VID	A6	20,0528	
			E233	CCD I	74	7,018	
			E234	CCD S	74	7,0412	
			E235	CCD R	74	7,0296	
			E237	CCD RESET1	84	7,9992	
			E238	CCD RESET2	84	7,9992	
E236	CCD CCD IG	00	0				

## FM2 normal

Step	Command Number	Command Name	Parameter Number	Parameter Name	Parameter Value (hex)	Parameter Value (engineering)	Value	NOTES (from TC reports)	Details (from Sequences dev.)		
1	K91	Set CCD1 Voltages	K229	CCD VOD1	B8	27,968	This TC is used to set all the CCD1 voltages (bias and Set CCD1 Voltages clock) in the EMAE. Parameters are used to include the complete EMCR command foreseen for this function.				
			K228	CCD VRD1	DE	17,982					
			K227	CCD VOG1	40	2,496					
			K232	CCD VOD2	B8	27,968					
			K231	CCD VRD2	DE	17,982					
			K230	CCD VOG2	40	2,496					
			K223	CCD VSS	00	0					
			K225	CCD VGR	7C	15,004					
			K224	CCD VBB	00	0					
			K226	CCD VID	A5	19,965					
			K233	CCD I	82	7,969					
			K234	CCD S	83	8,0172					
			K235	CCD R	93	8,9964					
			K237	CCD RESET1	99	9,486					
			K238	CCD RESET2	A9	10,478					
			2	K92	Set CCD2 Voltages	K236		CCD CCD IG	00	0	This TC is used to set all the CCD2 voltages (bias and Set CCD2 Voltages clock) in the EMAE. Parameters are used to include the complete EMCR command foreseen for this function.
						K229		CCD VOD1	BF	29,032	
K228	CCD VRD1	EA				18,954					
K227	CCD VOG1	40				2,496					
K232	CCD VOD2	BF				29,032					
K231	CCD VRD2	EA				18,954					
K230	CCD VOG2	40				2,496					
K223	CCD VSS	00				0					
K225	CCD VGR	7C				15,004					
K224	CCD VBB	00				0					
K226	CCD VID	A5				19,965					

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		K233	CCD I	82	7,969		
		K234	CCD S	83	8,0172		
		K235	CCD R	83	8,0172		
		K237	CCD RESET1	81	7,998		
		K238	CCD RESET2	81	7,998		
		K236	CCD CCD IG	00	0		
3	K93	Set CCD3 Voltages	K229	CCD VOD1	BF	29,032	This TC is used to set all the CCD3 voltages (bias and Set CCD3 Voltages clock) in the EMAE. Parameters are used to include the complete EMCR command foreseen for this function.
			K228	CCD VRD1	DE	17,982	
			K227	CCD VOG1	40	2,496	
			K232	CCD VOD2	BF	29,032	
			K231	CCD VRD2	DE	17,982	
			K230	CCD VOG2	40	2,496	
			K223	CCD VSS	03	0,117	
			K225	CCD VGR	7C	15,004	
			K224	CCD VBB	00	0	
			K226	CCD VID	A5	19,965	
			K233	CCD I	72	6,9882	
			K234	CCD S	72	6,9768	
			K235	CCD R	93	8,9964	
			K237	CCD RESET1	81	7,998	
			K238	CCD RESET2	81	7,998	
			K236	CCD CCD IG	00	0	
4	K94	Set CCD4 Voltages	K229	CCD VOD1	C5	29,944	This TC is used to set all the CCD4 voltages (bias and Set CCD4 Voltages clock) in the EMAE. Parameters are used to include the complete EMCR command foreseen for this function.
			K228	CCD VRD1	C6	16,038	
			K227	CCD VOG1	19	0,975	
			K232	CCD VOD2	C5	29,944	
			K231	CCD VRD2	C6	16,038	
			K230	CCD VOG2	19	0,975	
			K223	CCD VSS	00	0	
			K225	CCD VGR	74	14,036	
			K224	CCD VBB	00	0	
			K226	CCD VID	A5	19,965	
			K233	CCD I	93	9,0111	
			K234	CCD S	93	8,9964	
			K235	CCD R	72	6,9768	
			K237	CCD RESET1	92	9,052	
			K238	CCD RESET2	92	9,052	
			K236	CCD CCD IG	00	0	
5	K95	Set CCD5 Voltages	K229	CCD VOD1	C5	29,944	This TC is used to set all the CCD5 voltages (bias and Set CCD5 Voltages clock) in the EMAE. Parameters are used to include the complete EMCR command foreseen for this function.
			K228	CCD VRD1	D2	17,01	
			K227	CCD VOG1	26	1,482	
			K232	CCD VOD2	C5	29,944	
			K231	CCD VRD2	D2	17,01	
			K230	CCD VOG2	26	1,482	
			K223	CCD VSS	00	0	
			K225	CCD VGR	7C	15,004	
			K224	CCD VBB	00	0	
			K226	CCD VID	A5	19,965	
			K233	CCD I	82	7,969	
			K234	CCD S	83	8,0172	
			K235	CCD R	72	6,9768	

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6	K96	Set CCD6 Voltages	K237	CCD RESET1	92	9,052	This TC is used to set all the CCD6 voltages (bias and Set CCD6 Voltages clock) in the EMAE. Parameters are used to include the complete EMCR command foreseen for this function.
			K238	CCD RESET2	92	9,052	
			K236	CCD CCD IG	00	0	
			K229	CCD VOD1	BF	29,032	
			K228	CCD VRD1	EA	18,954	
			K227	CCD VOG1	40	2,496	
			K232	CCD VOD2	BF	29,032	
			K231	CCD VRD2	EA	18,954	
			K230	CCD VOG2	40	2,496	
			K223	CCD VSS	00	0	
			K225	CCD VGR	7C	15,004	
			K224	CCD VBB	00	0	
			K226	CCD VID	A5	19,965	
			K233	CCD I	82	7,969	
			K234	CCD S	83	8,0172	
			K235	CCD R	83	8,0172	
			7	K97	Set CCD7 Voltages	K237	
K238	CCD RESET2	92				9,052	
K236	CCD CCD IG	00				0	
K229	CCD VOD1	BF				29,032	
K228	CCD VRD1	EA				18,954	
K227	CCD VOG1	40				2,496	
K232	CCD VOD2	BF				29,032	
K231	CCD VRD2	EA				18,954	
K230	CCD VOG2	40				2,496	
K223	CCD VSS	00				0	
K225	CCD VGR	7C				15,004	
K224	CCD VBB	00				0	
K226	CCD VID	A5				19,965	
K233	CCD I	82				7,969	
K234	CCD S	83				8,0172	
K235	CCD R	83				8,0172	
K237	CCD RESET1	92				9,052	
K238	CCD RESET2	92	9,052				
K236	CCD CCD IG	00	0				

FS normal

Step	Command Number	Command Name	Parameter Number	Parameter Name	Parameter Value (hex)	Parameter Value (engineering)	Value	NOTES (from TC reports)	Details (from Sequences dev.)
1	E91	Set CCD1 Voltages	E229	CCD VOD1	C5	29,944	This TC is used to set all the CCD1 voltages (bias and Set CCD1 Voltages clock) in the EMAE. Parameters are used to include the complete EMCR command foreseen for this function.		
			E228	CCD VRD1	D2	17,01			
			E227	CCD VOG1	19	0,975			
			E232	CCD VOD2	C5	29,944			
			E231	CCD VRD2	D2	17,01			
			E230	CCD VOG2	19	0,975			
			E223	CCD VSS	00	0			
			E225	CCD VGR	7C	15,004			
			E224	CCD VBB	00	0			

# EMCS

		E226	CCD VID	A5	19,965	
		E233	CCD I	82	7,969	
		E234	CCD S	83	8,0172	
		E235	CCD R	72	6,9768	
		E237	CCD RESET1	92	9,052	
		E238	CCD RESET2	92	9,052	
		E236	CCD CCD IG	00	0	
2	E92	Set CCD2 Voltages	E229	CCD VOD1	BF	29,032
			E228	CCD VRD1	EA	18,954
			E227	CCD VOG1	40	2,496
			E232	CCD VOD2	BF	29,032
			E231	CCD VRD2	EA	18,954
			E230	CCD VOG2	40	2,496
			E223	CCD VSS	00	0
			E225	CCD VGR	7C	15,004
			E224	CCD VBB	00	0
			E226	CCD VID	A5	19,965
			E233	CCD I	93	9,0111
			E234	CCD S	93	8,9964
			E235	CCD R	93	8,9964
			E237	CCD RESET1	81	7,998
			E238	CCD RESET2	81	7,998
			E236	CCD CCD IG	00	0
3	E93	Set CCD3 Voltages	E229	CCD VOD1	D6	32,528
			E228	CCD VRD1	E4	18,468
			E227	CCD VOG1	33	1,989
			E232	CCD VOD2	D6	32,528
			E231	CCD VRD2	E4	18,468
			E230	CCD VOG2	33	1,989
			E223	CCD VSS	00	0
			E225	CCD VGR	7C	15,004
			E224	CCD VBB	00	0
			E226	CCD VID	A5	19,965
			E233	CCD I	93	9,0111
			E234	CCD S	93	8,9964
			E235	CCD R	83	8,0172
			E237	CCD RESET1	81	7,998
			E238	CCD RESET2	81	7,998
			E236	CCD CCD IG	00	0
4	E94	Set CCD4 Voltages	E229	CCD VOD1	C2	29,488
			E228	CCD VRD1	D2	17,01
			E227	CCD VOG1	26	1,482
			E232	CCD VOD2	C2	29,488
			E231	CCD VRD2	D2	17,01
			E230	CCD VOG2	26	1,482
			E223	CCD VSS	00	0
			E225	CCD VGR	7C	15,004
			E224	CCD VBB	00	0
			E226	CCD VID	A5	19,965
			E233	CCD I	93	9,0111
			E234	CCD S	93	8,9964

This TC is used to set all the CCD2 voltages (bias and Set CCD2 Voltages clock) in the EMAE. Parameters are used to include the complete EMCR command foreseen for this function.

This TC is used to set all the CCD3 voltages (bias and Set CCD3 Voltages clock) in the EMAE. Parameters are used to include the complete EMCR command foreseen for this function.

This TC is used to set all the CCD4 voltages (bias and Set CCD4 Voltages clock) in the EMAE. Parameters are used to include the complete EMCR command foreseen for this function.

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		E235	CCD R	62	5,9976		
		E237	CCD RESET1	A1	9,982		
		E238	CCD RESET2	A1	9,982		
5	E95	E236	CCD CCD IG	00	0		
	Set CCD5 Voltages	E229	CCD VOD1	D6	32,528	This TC is used to set all the CCD5 voltages (bias and Set CCD5 Voltages clock) in the EMAE. Parameters are used to include the complete EMCR command foreseen for this function.	
		E228	CCD VRD1	EA	18,954		
		E227	CCD VOG1	40	2,496		
		E232	CCD VOD2	D6	32,528		
		E231	CCD VRD2	EA	18,954		
		E230	CCD VOG2	40	2,496		
		E223	CCD VSS	00	0		
		E225	CCD VGR	7C	15,004		
		E224	CCD VBB	00	0		
		E226	CCD VID	A5	19,965		
		E233	CCD I	A3	9,9919		
		E234	CCD S	A3	9,9756		
		E235	CCD R	83	8,0172		
		E237	CCD RESET1	A1	9,982		
		E238	CCD RESET2	A1	9,982		
6	E96	E236	CCD CCD IG	00	0		
	Set CCD6 Voltages	E229	CCD VOD1	D6	32,528		This TC is used to set all the CCD6 voltages (bias and Set CCD6 Voltages clock) in the EMAE. Parameters are used to include the complete EMCR command foreseen for this function.
		E228	CCD VRD1	EA	18,954		
		E227	CCD VOG1	33	1,989		
		E232	CCD VOD2	D6	32,528		
		E231	CCD VRD2	EA	18,954		
		E230	CCD VOG2	33	1,989		
		E223	CCD VSS	00	0		
		E225	CCD VGR	53	10,043		
		E224	CCD VBB	00	0		
		E226	CCD VID	A5	19,965		
		E233	CCD I	AB	10,4823		
		E234	CCD S	AC	10,5264		
		E235	CCD R	8B	8,5068		
		E237	CCD RESET1	81	7,998		
		E238	CCD RESET2	81	7,998		
7	E97	E236	CCD CCD IG	00	0		
	Set CCD7 Voltages	E229	CCD VOD1	C2	29,488	This TC is used to set all the CCD7 voltages (bias and Set CCD7 Voltages clock) in the EMAE. Parameters are used to include the complete EMCR command foreseen for this function.	
		E228	CCD VRD1	C6	16,038		
		E227	CCD VOG1	19	0,975		
		E232	CCD VOD2	C2	29,488		
		E231	CCD VRD2	C6	16,038		
		E230	CCD VOG2	19	0,975		
		E223	CCD VSS	00	0		
		E225	CCD VGR	7C	15,004		
		E224	CCD VBB	00	0		
		E226	CCD VID	A5	19,965		
		E233	CCD I	72	6,9882		
		E234	CCD S	72	6,9768		
		E235	CCD R	93	8,9964		
		E237	CCD RESET1	92	9,052		
		E238	CCD RESET2	92	9,052		

E236 CCD CCD IG 00 0

## 4.3. Door operations i2

### Door

Step	Command Number	Command Name	Parameter Number	Parameter Name	Parameter Value (hex)	Parameter (engineering)	Value	NOTES (from TC Reports)	Details (from Sequences dev.)
1	k43	Arm PW Door HOP	k97	Activation Time		255		This TC is used by EMDH to arm the switch-on of the relay which allows to apply primary power to the HOP in charge to open the Door. This TC will be correctly executed only if the Filter Wheel is in Open position. In order to remove the arming condition, without operating the HOP, it will be necessary to send the Enter EMCS Idle Mode TC.	
2	k44	Fire PW Door HOP						This TC is used by EMDH to fire the switch-on of the relay which allows to apply primary power to the HOP in charge to open the Door. This TC is executed only if the Arm Power Door HOP is previously executed. Power will be automatically removed after the specified time or when Remove Power TC is received.	

### Venting valve

Step	Command Number	Command Name	Parameter Number	Parameter Name	Parameter Value (hex)	Parameter (engineering)	Value	NOTES (from TC Reports)	Details (from Sequences dev.)
1	k46	Arm PW VenValHOP	k97	Activation Time		255		TC used by the EMDH to arm the switch-on of the relay which allows to apply primary power to the HOP which opens the Venting Valve. In order to remove the arming condition, without operating the HOP, it will be necessary to send the Enter EMCS Idle Mode TC.	
2	k47	Fire PW VenValHOP						TC used by the EMDH to fire the switch-on of the relay which allows to apply primary power to the HOP which opens the Venting Valve. This TC is executed only if the Arm Venting Valve HOP is previously executed. Power will be automatically removed after the specified time or when Remove Power TC is received.	

## 4.4. EDU config i4

### EDU Imaging

Step	Command Number	Command Name	Parameter Number	Parameter Name	Parameter Value (hex)	Parameter (engineering)	Value	NOTES (from TC reports)	Details (from Sequences dev.)				
1	K77	Configure EDU	K112	EDU 0 OperMode	01	Run	This TC is used to set the operating mode (Transparent, Configure EDU in Imaging, Timing, Threshold) and status (Stop, Run or run image Alternate) of each EDU. Parameters are used to include except 1 the complete EMCR command foreseen for this function.						
			K120	EDU 0 Scien.Mode	03	Imaging							
			K113	EDU 1 OperMode	00	Stop							
			K121	EDU 1 Scien.Mode	00	Transparent							
			K114	EDU 2 OperMode	01	Run							
			K122	EDU 2 Scien.Mode	03	Imaging							
			K115	EDU 3 OperMode	01	Run							
			K123	EDU 3 Scien.Mode	03	Imaging							
			K116	EDU 4 OperMode	01	Run							
			K124	EDU 4 Scien.Mode	03	Imaging							
			K117	EDU 5 OperMode	01	Run							
			K125	EDU 5 Scien.Mode	03	Imaging							
			K118	EDU 6 OperMode	01	Run							
			K126	EDU 6 Scien.Mode	03	Imaging							
			2	K76	Set EMCR THR	K104			EDU Identifier	00	0	This TC is used to set the low threshold of the selected Set EMCR EDU0 Threshold EMCR EDU. In case of EDU alternate working mode, 35_35 both thresholds can be set. Parameters are used to include the complete EMCR command foreseen for this function. End-effect is verified via H/K parameters from E1398 to E1413.	
K110	EDU Low Thresh. 1	0023				35							
K111	EDU Low Thresh. 2	0023				35							
3	K76	Set EMCR THR				K104	EDU Identifier	02	2	This TC is used to set the low threshold of the selected Set EMCR EDU2 Threshold EMCR EDU. In case of EDU alternate working mode, 50_50 both thresholds can be set. Parameters are used to include the complete EMCR command foreseen for this function. End-effect is verified via H/K parameters from E1398 to E1413.			
						K110	EDU Low Thresh. 1	0032	50				
K111	EDU Low Thresh. 2	0032	50										
4	K76	Set EMCR THR	K104	EDU Identifier	03	3	This TC is used to set the low threshold of the selected Set EMCR EDU3 Threshold EMCR EDU. In case of EDU alternate working mode, 50_50 both thresholds can be set. Parameters are used to include the complete EMCR command foreseen for this function. End-effect is verified via H/K parameters from E1398 to E1413.						
			K110	EDU Low Thresh. 1	0032	50							
			K111	EDU Low Thresh. 2	0032	50							
5	K76	Set EMCR THR	K104	EDU Identifier	04	4	This TC is used to set the low threshold of the selected Set EMCR EDU4 Threshold EMCR EDU. In case of EDU alternate working mode, 50_50 both thresholds can be set. Parameters are used to include the complete EMCR command foreseen for this function. End-effect is verified via H/K parameters from E1398 to E1413.						
			K110	EDU Low Thresh. 1	0032	50							
			K111	EDU Low Thresh. 2	0032	50							
6	K76	Set EMCR THR	K104	EDU Identifier	05	5	This TC is used to set the low threshold of the selected Set EMCR EDU5 Threshold EMCR EDU. In case of EDU alternate working mode, 50_50 both thresholds can be set. Parameters are used to						
			K110	EDU Low Thresh. 1	0032	50							
			K111	EDU Low Thresh. 2	0032	50							

7	K76	Set THR	EMCR	EDU K104 K110 K111	EDU Identifier EDU Low Thresh. 1 EDU Low Thresh. 2	06 0032 0032	6 50 50	include the complete EMCR command foreseen for this function. End-effect is verified via H/K parameters from E1398 to E1413.  This TC is used to set the low threshold of the selected Set EMCR EDU6 Threshold EMCR EDU. In case of EDU alternate working mode, 50_50 both thresholds can be set. Parameters are used to include the complete EMCR command foreseen for this function. End-effect is verified via H/K parameters from E1398 to E1413.
8	K76	Set THR	EMCR	EDU K104 K110 K111	EDU Identifier EDU Low Thresh. 1 EDU Low Thresh. 2	07 0032 0032	7 50 50	This TC is used to set the low threshold of the selected Set EMCR EDU7 Threshold EMCR EDU. In case of EDU alternate working mode, 50_50 both thresholds can be set. Parameters are used to include the complete EMCR command foreseen for this function. End-effect is verified via H/K parameters from E1398 to E1413.

## EDU transparent single node

Step Number	Command Number	Command Name	Parameter Number	Parameter Name	Parameter Value (hex)	Parameter (engineering)	Value	NOTES (from TC reports)	Details (from Sequences dev.)
1	K77	Configure EDU	K112	EDU 0 OperMode	01	Run		This TC is used to set the operating mode (Transparent, Configure EDU in Imaging, Timing, Threshold) and status (Stop, Run or run transparent Alternate) of each EDU. Parameters are used to include except 1 the complete EMCR command foreseen for this function.	
			K120	EDU 0 Scien.Mode	00	Transparent			
			K113	EDU 1 OperMode	00	Stop			
			K121	EDU 1 Scien.Mode	00	Transparent			
			K114	EDU 2 OperMode	01	Run			
			K122	EDU 2 Scien.Mode	00	Transparent			
			K115	EDU 3 OperMode	01	Run			
			K123	EDU 3 Scien.Mode	00	Transparent			
			K116	EDU 4 OperMode	01	Run			
			K124	EDU 4 Scien.Mode	00	Transparent			
			K117	EDU 5 OperMode	01	Run			
			K125	EDU 5 Scien.Mode	00	Transparent			
			K118	EDU 6 OperMode	01	Run			
			K126	EDU 6 Scien.Mode	00	Transparent			
			K119	EDU 7 OperMode	01	Run			
			K127	EDU 7 Scien.Mode	00	Transparent			
2	K76	Set THR	EMCR	EDU K104 K110 K111	EDU Identifier EDU Low Thresh. 1 EDU Low Thresh. 2	00 0000 0000	0 0 0		This TC is used to set the low threshold of the selected Set EMCR EDU0 Threshold EMCR EDU. In case of EDU alternate working mode, 0_0 both thresholds can be set. Parameters are used to include the complete EMCR command foreseen for this function. End-effect is verified via H/K parameters from E1398 to E1413.
3	K76	Set THR	EMCR	EDU K104 K110 K111	EDU Identifier EDU Low Thresh. 1 EDU Low Thresh. 2	02 0000 0000	2 0 0	This TC is used to set the low threshold of the selected Set EMCR EDU2 Threshold EMCR EDU. In case of EDU alternate working mode, 0_0 both thresholds can be set. Parameters are used to include the complete EMCR command foreseen for this function. End-effect is verified via H/K parameters from E1398 to E1413.	
4	K76	Set	EMCR	EDU K104	EDU Identifier	03	3	This TC is used to set the low threshold of the selected Set EMCR EDU3 Threshold	

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		THR		K110	EDU Low Thresh. 1	0000	0	EMCR EDU. In case of EDU alternate working mode, 0_0 both thresholds can be set. Parameters are used to include the complete EMCR command foreseen for this function. End-effect is verified via H/K parameters from E1398 to E1413.
				K111	EDU Low Thresh. 2	0000	0	
5	K76	Set THR	EMCR	EDU K104 K110 K111	EDU Identifier EDU Low Thresh. 1 EDU Low Thresh. 2	04 0000 0000	4 0 0	This TC is used to set the low threshold of the selected Set EMCR EDU4 Threshold EMCR EDU. In case of EDU alternate working mode, 0_0 both thresholds can be set. Parameters are used to include the complete EMCR command foreseen for this function. End-effect is verified via H/K parameters from E1398 to E1413.
6	K76	Set THR	EMCR	EDU K104 K110 K111	EDU Identifier EDU Low Thresh. 1 EDU Low Thresh. 2	05 0000 0000	5 0 0	This TC is used to set the low threshold of the selected Set EMCR EDU5 Threshold EMCR EDU. In case of EDU alternate working mode, 0_0 both thresholds can be set. Parameters are used to include the complete EMCR command foreseen for this function. End-effect is verified via H/K parameters from E1398 to E1413.
7	K76	Set THR	EMCR	EDU K104 K110 K111	EDU Identifier EDU Low Thresh. 1 EDU Low Thresh. 2	06 0000 0000	6 0 0	This TC is used to set the low threshold of the selected Set EMCR EDU6 Threshold EMCR EDU. In case of EDU alternate working mode, 0_0 both thresholds can be set. Parameters are used to include the complete EMCR command foreseen for this function. End-effect is verified via H/K parameters from E1398 to E1413.
8	K76	Set THR	EMCR	EDU K104 K110 K111	EDU Identifier EDU Low Thresh. 1 EDU Low Thresh. 2	07 0000 0000	7 0 0	This TC is used to set the low threshold of the selected Set EMCR EDU7 Threshold EMCR EDU. In case of EDU alternate working mode, 0_0 both thresholds can be set. Parameters are used to include the complete EMCR command foreseen for this function. End-effect is verified via H/K parameters from E1398 to E1413.

## EDU threshold single node

Step	Command Number	Command Name	Parameter Number	Parameter Name	Parameter Value (hex)	Parameter (engineering)	Value	NOTES (from TC reports)	Details (from Sequences dev.)
1	K77	Configure EDU	K112	EDU 0 OperMode	01	Run	This TC is used to set the operating mode (Transparent, Configure EDU in run Imaging, Timing, Threshold) and status (Stop, Run or threshold except 1 Alternate) of each EDU. Parameters are used to include the complete EMCR command foreseen for this function.		
			K120	EDU 0 Scien.Mode	02	Threshold			
			K113	EDU 1 OperMode	00	Stop			
			K121	EDU 1 Scien.Mode	00	Transparent			
			K114	EDU 2 OperMode	01	Run			
			K122	EDU 2 Scien.Mode	02	Threshold			
			K115	EDU 3 OperMode	01	Run			
			K123	EDU 3 Scien.Mode	02	Threshold			
			K116	EDU 4 OperMode	01	Run			
			K124	EDU 4 Scien.Mode	02	Threshold			
			K117	EDU 5 OperMode	01	Run			
			K125	EDU 5 Scien.Mode	02	Threshold			
			K118	EDU 6 OperMode	01	Run			
			K126	EDU 6 Scien.Mode	02	Threshold			
			K119	EDU 7 OperMode	01	Run			

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Step	Command Number	Command Name	Parameter Number	Parameter Name	Parameter Value (hex)	Parameter Value (engineering)	Value	NOTES (from TC reports)	Details (from Sequences dev.)
2	K76	Set EMCR THR	K127 K104 K110 K111	EDU 7 Scien.Mode EDU Identifier EDU Low Thresh. 1 EDU Low Thresh. 2	02 00 0019 0019	Threshold 0 25 25		This TC is used to set the low threshold of the selected Set EMCR EDU0 Threshold EMCR EDU. In case of EDU alternate working mode, 25_25 both thresholds can be set. Parameters are used to include the complete EMCR command foreseen for this function. End-effect is verified via H/K parameters from E1398 to E1413.	
3	K76	Set EMCR THR	K104 K110 K111	EDU Identifier EDU Low Thresh. 1 EDU Low Thresh. 2	02 0019 0019	2 25 25		This TC is used to set the low threshold of the selected Set EMCR EDU2 Threshold EMCR EDU. In case of EDU alternate working mode, 25_25 both thresholds can be set. Parameters are used to include the complete EMCR command foreseen for this function. End-effect is verified via H/K parameters from E1398 to E1413.	
4	K76	Set EMCR THR	K104 K110 K111	EDU Identifier EDU Low Thresh. 1 EDU Low Thresh. 2	03 0019 0019	3 25 25		This TC is used to set the low threshold of the selected Set EMCR EDU3 Threshold EMCR EDU. In case of EDU alternate working mode, 25_25 both thresholds can be set. Parameters are used to include the complete EMCR command foreseen for this function. End-effect is verified via H/K parameters from E1398 to E1413.	
5	K76	Set EMCR THR	K104 K110 K111	EDU Identifier EDU Low Thresh. 1 EDU Low Thresh. 2	04 0019 0019	4 25 25		This TC is used to set the low threshold of the selected Set EMCR EDU4 Threshold EMCR EDU. In case of EDU alternate working mode, 25_25 both thresholds can be set. Parameters are used to include the complete EMCR command foreseen for this function. End-effect is verified via H/K parameters from E1398 to E1413.	
6	K76	Set EMCR THR	K104 K110 K111	EDU Identifier EDU Low Thresh. 1 EDU Low Thresh. 2	05 0019 0019	5 25 25		This TC is used to set the low threshold of the selected Set EMCR EDU5 Threshold EMCR EDU. In case of EDU alternate working mode, 25_25 both thresholds can be set. Parameters are used to include the complete EMCR command foreseen for this function. End-effect is verified via H/K parameters from E1398 to E1413.	
7	K76	Set EMCR THR	K104 K110 K111	EDU Identifier EDU Low Thresh. 1 EDU Low Thresh. 2	06 0019 0019	6 25 25		This TC is used to set the low threshold of the selected Set EMCR EDU6 Threshold EMCR EDU. In case of EDU alternate working mode, 25_25 both thresholds can be set. Parameters are used to include the complete EMCR command foreseen for this function. End-effect is verified via H/K parameters from E1398 to E1413.	
8	K76	Set EMCR THR	K104 K110 K111	EDU Identifier EDU Low Thresh. 1 EDU Low Thresh. 2	07 0019 0019	7 25 25		This TC is used to set the low threshold of the selected Set EMCR EDU7 Threshold EMCR EDU. In case of EDU alternate working mode, 25_25 both thresholds can be set. Parameters are used to include the complete EMCR command foreseen for this function. End-effect is verified via H/K parameters from E1398 to E1413.	

## EDU Timing

Step	Command Number	Command Name	Parameter Number	Parameter Name	Parameter Value (hex)	Parameter Value (engineering)	Value	NOTES (from TC reports)	Details (from Sequences dev.)
1	K77	Configure EDU	K112	EDU 0 OperMode	01	Run		This TC is used to set the operating mode (Transparent, Configure EDU 0 in run	

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				K120	EDU 0 Scien.Mode	01	Timing	Imaging, Timing, Threshold) and status (Stop, Run or Timing and EDU 2 to 7 in
				K113	EDU 1 OperMode	00	Stop	Alternate) of each EDU. Parameters are used to include Imaging mode
				K121	EDU 1 Scien.Mode	00	Transparent	the complete EMCR command foreseen for this
				K114	EDU 2 OperMode	01	Run	function.
				K122	EDU 2 Scien.Mode	03	Imaging	
				K115	EDU 3 OperMode	01	Run	
				K123	EDU 3 Scien.Mode	03	Imaging	
				K116	EDU 4 OperMode	01	Run	
				K124	EDU 4 Scien.Mode	03	Imaging	
				K117	EDU 5 OperMode	01	Run	
				K125	EDU 5 Scien.Mode	03	Imaging	
				K118	EDU 6 OperMode	01	Run	
				K126	EDU 6 Scien.Mode	03	Imaging	
				K119	EDU 7 OperMode	01	Run	
				K127	EDU 7 Scien.Mode	03	Imaging	
2	K76	Set THR	EMCR	EDU K104	EDU Identifier	00	0	This TC is used to set the low threshold of the selected Set EMCR EDU0 Threshold EMCR EDU. In case of EDU alternate working mode, 35_35 both thresholds can be set. Parameters are used to include the complete EMCR command foreseen for this function. End-effect is verified via H/K parameters from E1398 to E1413.
				K110	EDU Low Thresh. 1	0023	35	
				K111	EDU Low Thresh. 2	0023	35	
3	K76	Set THR	EMCR	EDU K104	EDU Identifier	02	2	This TC is used to set the low threshold of the selected Set EMCR EDU2 Threshold EMCR EDU. In case of EDU alternate working mode, 50_50 both thresholds can be set. Parameters are used to include the complete EMCR command foreseen for this function. End-effect is verified via H/K parameters from E1398 to E1413.
				K110	EDU Low Thresh. 1	0032	50	
				K111	EDU Low Thresh. 2	0032	50	
4	K76	Set THR	EMCR	EDU K104	EDU Identifier	03	3	This TC is used to set the low threshold of the selected Set EMCR EDU3 Threshold EMCR EDU. In case of EDU alternate working mode, 50_50 both thresholds can be set. Parameters are used to include the complete EMCR command foreseen for this function. End-effect is verified via H/K parameters from E1398 to E1413.
				K110	EDU Low Thresh. 1	0032	50	
				K111	EDU Low Thresh. 2	0032	50	
5	K76	Set THR	EMCR	EDU K104	EDU Identifier	04	4	This TC is used to set the low threshold of the selected Set EMCR EDU4 Threshold EMCR EDU. In case of EDU alternate working mode, 50_50 both thresholds can be set. Parameters are used to include the complete EMCR command foreseen for this function. End-effect is verified via H/K parameters from E1398 to E1413.
				K110	EDU Low Thresh. 1	0032	50	
				K111	EDU Low Thresh. 2	0032	50	
6	K76	Set THR	EMCR	EDU K104	EDU Identifier	05	5	This TC is used to set the low threshold of the selected Set EMCR EDU5 Threshold EMCR EDU. In case of EDU alternate working mode, 50_50 both thresholds can be set. Parameters are used to include the complete EMCR command foreseen for this function. End-effect is verified via H/K parameters from E1398 to E1413.
				K110	EDU Low Thresh. 1	0032	50	
				K111	EDU Low Thresh. 2	0032	50	
7	K76	Set THR	EMCR	EDU K104	EDU Identifier	06	6	This TC is used to set the low threshold of the selected Set EMCR EDU6 Threshold EMCR EDU. In case of EDU alternate working mode, 50_50 both thresholds can be set. Parameters are used to include the complete EMCR command foreseen for this function. End-effect is verified via H/K parameters from E1398 to E1413.
				K110	EDU Low Thresh. 1	0032	50	
				K111	EDU Low Thresh. 2	0032	50	

# EMCS

8	K76	Set THR	EMCR	EDU K104 K110 K111	EDU Identifier EDU Low Thresh. 1 EDU Low Thresh. 2	07 0032 0032	7 50 50	This TC is used to set the low threshold of the selected Set EMCR EDU7 Threshold EMCR EDU. In case of EDU alternate working mode, 50_50 both thresholds can be set. Parameters are used to include the complete EMCR command foreseen for this function. End-effect is verified via H/K parameters from E1398 to E1413.
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## EDU double node

Step	Command Number	Command Name	Parameter Number	Parameter Name	Parameter Value (hex)	Parameter (engineering)	Value	NOTES (from TC reports)	Details (from Sequences dev.)
1	K77	Configure EDU	K112 K120 K113 K121 K114 K122 K115 K123 K116 K124 K117 K125 K118 K126 K119 K127	EDU 0 OperMode EDU 0 Scien.Mode EDU 1 OperMode EDU 1 Scien.Mode EDU 2 OperMode EDU 2 Scien.Mode EDU 3 OperMode EDU 3 Scien.Mode EDU 4 OperMode EDU 4 Scien.Mode EDU 5 OperMode EDU 5 Scien.Mode EDU 6 OperMode EDU 6 Scien.Mode EDU 7 OperMode EDU 7 Scien.Mode	01 03 01 03 01 03 01 03 01 03 01 03 01 03 01 03	Run Imaging Run Imaging Run Imaging Run Imaging Run Imaging Run Imaging Run Imaging Run Imaging		This TC is used to set the operating mode (Transparent, Configure all EDUs in Imaging, Timing, Threshold) and status (Stop, Run or run imaging Alternate) of each EDU. Parameters are used to include the complete EMCR command foreseen for this function.	
2	K76	Set THR	EMCR	EDU K104 K110 K111	EDU Identifier EDU Low Thresh. 1 EDU Low Thresh. 2	00 0023 0023	0 35 35	This TC is used to set the low threshold of the selected Set EMCR EDU0 Threshold EMCR EDU. In case of EDU alternate working mode, 35_35 both thresholds can be set. Parameters are used to include the complete EMCR command foreseen for this function. End-effect is verified via H/K parameters from E1398 to E1413.	
3	K76	Set THR	EMCR	EDU K104 K110 K111	EDU Identifier EDU Low Thresh. 1 EDU Low Thresh. 2	01 0023 0023	1 35 35	This TC is used to set the low threshold of the selected Set EMCR EDU1 Threshold EMCR EDU. In case of EDU alternate working mode, 35_35 both thresholds can be set. Parameters are used to include the complete EMCR command foreseen for this function. End-effect is verified via H/K parameters from E1398 to E1413.	
4	K76	Set THR	EMCR	EDU K104 K110 K111	EDU Identifier EDU Low Thresh. 1 EDU Low Thresh. 2	02 0032 0032	2 50 50	This TC is used to set the low threshold of the selected Set EMCR EDU2 Threshold EMCR EDU. In case of EDU alternate working mode, 50_50 both thresholds can be set. Parameters are used to include the complete EMCR command foreseen for this function. End-effect is verified via H/K parameters from E1398 to E1413.	
5	K76	Set THR	EMCR	EDU K104 K110 K111	EDU Identifier EDU Low Thresh. 1 EDU Low Thresh. 2	03 0032 0032	3 50 50	This TC is used to set the low threshold of the selected Set EMCR EDU3 Threshold EMCR EDU. In case of EDU alternate working mode, 50_50 both thresholds can be set. Parameters are used to include the complete EMCR command foreseen for this	

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6	K76	Set THR	EMCR	EDU K104 K110 K111	EDU Identifier EDU Low Thresh. 1 EDU Low Thresh. 2	04 0032 0032	4 50 50	function. End-effect is verified via H/K parameters from E1398 to E1413. This TC is used to set the low threshold of the selected Set EMCR EDU4 Threshold EMCR EDU. In case of EDU alternate working mode, 50_50 both thresholds can be set. Parameters are used to include the complete EMCR command foreseen for this function. End-effect is verified via H/K parameters from E1398 to E1413.
7	K76	Set THR	EMCR	EDU K104 K110 K111	EDU Identifier EDU Low Thresh. 1 EDU Low Thresh. 2	05 0032 0032	5 50 50	This TC is used to set the low threshold of the selected Set EMCR EDU5 Threshold EMCR EDU. In case of EDU alternate working mode, 50_50 both thresholds can be set. Parameters are used to include the complete EMCR command foreseen for this function. End-effect is verified via H/K parameters from E1398 to E1413.
8	K76	Set THR	EMCR	EDU K104 K110 K111	EDU Identifier EDU Low Thresh. 1 EDU Low Thresh. 2	06 0032 0032	6 50 50	This TC is used to set the low threshold of the selected Set EMCR EDU6 Threshold EMCR EDU. In case of EDU alternate working mode, 50_50 both thresholds can be set. Parameters are used to include the complete EMCR command foreseen for this function. End-effect is verified via H/K parameters from E1398 to E1413.
9	K76	Set THR	EMCR	EDU K104 K110 K111	EDU Identifier EDU Low Thresh. 1 EDU Low Thresh. 2	07 0032 0032	7 50 50	This TC is used to set the low threshold of the selected Set EMCR EDU7 Threshold EMCR EDU. In case of EDU alternate working mode, 50_50 both thresholds can be set. Parameters are used to include the complete EMCR command foreseen for this function. End-effect is verified via H/K parameters from E1398 to E1413.

## EDU transparent double node

Step	Command Number	Command Name	Parameter Number	Parameter Name	Parameter Value (hex)	Parameter (engineering)	Value	NOTES (from TC reports)	Details (from Sequences dev.)
1	K77	Configure EDU	K112	EDU 0 OperMode	01	Run		This TC is used to set the operating mode (Transparent, Configure all EDUs in run Imaging, Timing, Threshold) and status (Stop, Run or transparent Alternate) of each EDU. Parameters are used to include the complete EMCR command foreseen for this function.	
			K120	EDU 0 Scien.Mode	00	Transparent			
			K113	EDU 1 OperMode	01	Run			
			K121	EDU 1 Scien.Mode	00	Transparent			
			K114	EDU 2 OperMode	01	Run			
			K122	EDU 2 Scien.Mode	00	Transparent			
			K115	EDU 3 OperMode	01	Run			
			K123	EDU 3 Scien.Mode	00	Transparent			
			K116	EDU 4 OperMode	01	Run			
			K124	EDU 4 Scien.Mode	00	Transparent			
			K117	EDU 5 OperMode	01	Run			
			K125	EDU 5 Scien.Mode	00	Transparent			
			K118	EDU 6 OperMode	01	Run			
			K126	EDU 6 Scien.Mode	00	Transparent			
			K119	EDU 7 OperMode	01	Run			
			K127	EDU 7 Scien.Mode	00	Transparent			
2	K76	Set THR	EMCR	EDU K104 K110	EDU Identifier EDU Low Thresh. 1	00 0000	0 0	This TC is used to set the low threshold of the selected Set EMCR EDU0 Threshold EMCR EDU. In case of EDU alternate working mode, 35_35	



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Step	Command Number	Command Name	Parameter Number	Parameter Name	Parameter Value (hex)	Parameter (engineering)	Value	NOTES (from TC reports)	Details (from Sequences dev.)
1	K77	Configure EDU	K112	EDU 0 OperMode	01	Run	This TC is used to set the operating mode (Transparent, Configure all EDUs in run Imaging, Timing, Threshold) and status (Stop, Run or threshold mode Alternate) of each EDU. Parameters are used to include the complete EMCR command foreseen for this function.		
			K120	EDU 0 Scien.Mode	02	Threshold			
			K113	EDU 1 OperMode	01	Run			
			K121	EDU 1 Scien.Mode	02	Threshold			
			K114	EDU 2 OperMode	01	Run			
			K122	EDU 2 Scien.Mode	02	Threshold			
			K115	EDU 3 OperMode	01	Run			
			K123	EDU 3 Scien.Mode	02	Threshold			
			K116	EDU 4 OperMode	01	Run			
			K124	EDU 4 Scien.Mode	02	Threshold			
			K117	EDU 5 OperMode	01	Run			
			K125	EDU 5 Scien.Mode	02	Threshold			
			K118	EDU 6 OperMode	01	Run			
			K126	EDU 6 Scien.Mode	02	Threshold			
2	K76	Set EMCR THR	EDU K104	EDU Identifier	00	0	This TC is used to set the low threshold of the selected Set EMCR EDU0 Threshold EMCR EDU. In case of EDU alternate working mode, 25_25 both thresholds can be set. Parameters are used to include the complete EMCR command foreseen for this function. End-effect is verified via H/K parameters from E1398 to E1413.		
			K110	EDU Low Thresh. 1	0019	25			
			K111	EDU Low Thresh. 2	0019	25			
3	K76	Set EMCR THR	EDU K104	EDU Identifier	01	1	This TC is used to set the low threshold of the selected Set EMCR EDU1 Threshold EMCR EDU. In case of EDU alternate working mode, 25_25 both thresholds can be set. Parameters are used to include the complete EMCR command foreseen for this function. End-effect is verified via H/K parameters from E1398 to E1413.		
			K110	EDU Low Thresh. 1	0019	25			
			K111	EDU Low Thresh. 2	0019	25			
4	K76	Set EMCR THR	EDU K104	EDU Identifier	02	2	This TC is used to set the low threshold of the selected Set EMCR EDU2 Threshold EMCR EDU. In case of EDU alternate working mode, 25_25 both thresholds can be set. Parameters are used to include the complete EMCR command foreseen for this function. End-effect is verified via H/K parameters from E1398 to E1413.		
			K110	EDU Low Thresh. 1	0019	25			
			K111	EDU Low Thresh. 2	0019	25			
5	K76	Set EMCR THR	EDU K104	EDU Identifier	03	3	This TC is used to set the low threshold of the selected Set EMCR EDU3 Threshold EMCR EDU. In case of EDU alternate working mode, 25_25 both thresholds can be set. Parameters are used to include the complete EMCR command foreseen for this function. End-effect is verified via H/K parameters from E1398 to E1413.		
			K110	EDU Low Thresh. 1	0019	25			
			K111	EDU Low Thresh. 2	0019	25			
6	K76	Set EMCR THR	EDU K104	EDU Identifier	04	4	This TC is used to set the low threshold of the selected Set EMCR EDU4 Threshold EMCR EDU. In case of EDU alternate working mode, 25_25 both thresholds can be set. Parameters are used to include the complete EMCR command foreseen for this function. End-effect is verified via H/K parameters from E1398 to E1413.		
			K110	EDU Low Thresh. 1	0019	25			
			K111	EDU Low Thresh. 2	0019	25			
7	K76	Set EMCR THR	EDU K104	EDU Identifier	05	5	This TC is used to set the low threshold of the selected Set EMCR EDU5 Threshold EMCR EDU. In case of EDU alternate working mode, 25_25 both thresholds can be set. Parameters are used to		
			K110	EDU Low Thresh. 1	0019	25			
			K111	EDU Low Thresh. 2	0019	25			

8	K76	Set THR	EMCR	EDU K104 K110 K111	EDU Identifier EDU Low Thresh. 1 EDU Low Thresh. 2	06 0019 0019	6 25 25	include the complete EMCR command foreseen for this function. End-effect is verified via H/K parameters from E1398 to E1413.  This TC is used to set the low threshold of the selected Set EMCR EDU6 Threshold EMCR EDU. In case of EDU alternate working mode, 25_25 both thresholds can be set. Parameters are used to include the complete EMCR command foreseen for this function. End-effect is verified via H/K parameters from E1398 to E1413.
9	K76	Set THR	EMCR	EDU K104 K110 K111	EDU Identifier EDU Low Thresh. 1 EDU Low Thresh. 2	07 0019 0019	7 25 25	This TC is used to set the low threshold of the selected Set EMCR EDU7 Threshold EMCR EDU. In case of EDU alternate working mode, 25_25 both thresholds can be set. Parameters are used to include the complete EMCR command foreseen for this function. End-effect is verified via H/K parameters from E1398 to E1413.

## EDU Central CCD Full Frame

Step Number	Command Number	Command Name	Parameter Number	Parameter Name	Parameter Value (hex)	Parameter (engineering)	Value	NOTES (from TC reports)	Details (from Sequences dev.)
1	K121	Load WP	EMCR EDU	k104 k139 k140 k141 k142	EDU Identifier Window X0 Window Y0 Window X Size Window Y Size	00 0000 0000 0262 025a	0 0 0 610 602	This TC is used to load in one of the 8 EMCR EDUs the observation window parameters to be used. Parameters are used to load the complete EMCR command foreseen for this function. Note that the 2 EDUs of the same group will have the same window parameters, therefore a single command for each group can be used.	Load EMCR EDU0 Window (610x602 centrata)

## EDU Central CCD Timing

Step Number	Command Number	Command Name	Parameter Number	Parameter Name	Parameter Value (hex)	Parameter (engineering)	Value	NOTES (from TC reports)	Details (from Sequences dev.)
1	K121	Load WP	EMCR EDU	k104 k139 k140 k141 k142	EDU Identifier Window X0 Window Y0 Window X Size Window Y Size	00 00ff 0000 0064 025a	0 255 0 100 602	This TC is used to load in one of the 8 EMCR EDUs the observation window parameters to be used. Parameters are used to load the complete EMCR command foreseen for this function. Note that the 2 EDUs of the same group will have the same window parameters, therefore a single command for each group can be used.	Load EMCR EDU0 Window (100x602 centrata)

## EDU Central CCD SW (110)

Step Number	Command Number	Command Name	Parameter Number	Parameter Name	Parameter Value (hex)	Parameter (engineering)	Value	NOTES (from TC reports)	Details (from Sequences dev.)
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1	K121	Load WP	EMCR	EDU	k104 k139 k140 k141 k142	EDU Identifier Window X0 Window Y0 Window X Size Window Y Size	00 00fa 00fb 006e 0064	0 250 251 110 100	This TC is used to load in one of the 8 EMCR EDUs the Load EMCR EDU0 observation window parameters to be used. Parameters Window (110x100 centrata) are used to load the complete EMCR command foreseen for this function. Note that the 2 EDUs of the same group will have the same window parameters, therefore a single command for each group can be used.
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## EDU Central CCD LW (310)

Step Number	Command Number	Command Name	Parameter Number	Parameter Name	Parameter Value (hex)	Parameter (engineering)	Value	NOTES (from TC reports)	Details (from Sequences dev.)
1	K121	Load WP	EMCR	EDU	k104 k139 k140 k141 k142	EDU Identifier Window X0 Window Y0 Window X Size Window Y Size	00 0096 0097 0136 012c	0 150 151 310 300	This TC is used to load in one of the 8 EMCR EDUs the Load EMCR EDU0 observation window parameters to be used. Parameters Window (310x300 centrata) are used to load the complete EMCR command foreseen for this function. Note that the 2 EDUs of the same group will have the same window parameters, therefore a single command for each group can be used.

## EDU Central CCD Double Node

Step Number	Command Number	Command Name	Parameter Number	Parameter Name	Parameter Value (hex)	Parameter (engineering)	Value	NOTES (from TC reports)	Details (from Sequences dev.)
1	K121	Load WP	EMCR	EDU	k104 k139 k140 k141 k142	EDU Identifier Window X0 Window Y0 Window X Size Window Y Size	00 0000 0000 0136 025a	0 0 0 310 602	This TC is used to load in one of the 8 EMCR EDUs the Load EMCR EDU0 Window observation window parameters to be used. Parameters (310x602 centrata) are used to load the complete EMCR command foreseen for this function. Note that the 2 EDUs of the same group will have the same window parameters, therefore a single command for each group can be used.
2	K121	Load WP	EMCR	EDU	k104 k139 k140 k141 k142	EDU Identifier Window X0 Window Y0 Window X Size Window Y Size	01 0000 0000 0136 025a	1 0 0 310 602	This TC is used to load in one of the 8 EMCR EDUs the Load EMCR EDU1 Window observation window parameters to be used. Parameters (310x602 centrata) are used to load the complete EMCR command foreseen for this function. Note that the 2 EDUs of the same group will have the same window parameters, therefore a single command for each group can be used.

## EDU Peripheral CCDs

# EMCS

Step	Command Number	Command Name	Parameter Number	Parameter Name	Parameter Value (hex)	Parameter (engineering)	Value	NOTES (from TC reports)	Details (from Sequences dev.)
1	K121	Load WP	EMCR EDU k104 k139 k140 k141 k142	EDU Identifier Window X0 Window Y0 Window X Size Window Y Size	02 0000 0000 0262 025a	2 0 0 610 602		This TC is used to load in one of the 8 EMCR EDUs the observation window parameters to be used. Parameters are used to load the complete EMCR command foreseen for this function. Note that the 2 EDUs of the same group will have the same window parameters, therefore a single command for each group can be used.	Load EMCR EDU2 Window (610x602 centrata)
2	K121	Load WP	EMCR EDU k104 k139 k140 k141 k142	EDU Identifier Window X0 Window Y0 Window X Size Window Y Size	03 0000 0000 0262 025a	3 0 0 610 602		This TC is used to load in one of the 8 EMCR EDUs the observation window parameters to be used. Parameters are used to load the complete EMCR command foreseen for this function. Note that the 2 EDUs of the same group will have the same window parameters, therefore a single command for each group can be used.	Load EMCR EDU3 Window (610x602 centrata)
3	K121	Load WP	EMCR EDU k104 k139 k140 k141 k142	EDU Identifier Window X0 Window Y0 Window X Size Window Y Size	04 0000 0000 0262 025a	4 0 0 610 602		This TC is used to load in one of the 8 EMCR EDUs the observation window parameters to be used. Parameters are used to load the complete EMCR command foreseen for this function. Note that the 2 EDUs of the same group will have the same window parameters, therefore a single command for each group can be used.	Load EMCR EDU4 Window (610x602 centrata)
4	K121	Load WP	EMCR EDU k104 k139 k140 k141 k142	EDU Identifier Window X0 Window Y0 Window X Size Window Y Size	05 0000 0000 0262 025a	5 0 0 610 602		This TC is used to load in one of the 8 EMCR EDUs the observation window parameters to be used. Parameters are used to load the complete EMCR command foreseen for this function. Note that the 2 EDUs of the same group will have the same window parameters, therefore a single command for each group can be used.	Load EMCR EDU5 Window (610x602 centrata)
5	K121	Load WP	EMCR EDU k104 k139 k140 k141 k142	EDU Identifier Window X0 Window Y0 Window X Size Window Y Size	06 0000 0000 0262 025a	6 0 0 610 602		This TC is used to load in one of the 8 EMCR EDUs the observation window parameters to be used. Parameters are used to load the complete EMCR command foreseen for this function. Note that the 2 EDUs of the same group will have the same window parameters, therefore a single command for each group can be used.	Load EMCR EDU6 Window (610x602 centrata)
6	K121	Load WP	EMCR EDU k104 k139 k140 k141 k142	EDU Identifier Window X0 Window Y0 Window X Size Window Y Size	07 0000 0000 0262 025a	7 0 0 610 602		This TC is used to load in one of the 8 EMCR EDUs the observation window parameters to be used. Parameters are used to load the complete EMCR command foreseen for this function. Note that the 2 EDUs of the same group will have the same window parameters, therefore a single command for each group can be used.	Load EMCR EDU7 Window (610x602 centrata)

EDU all CCDs Fast Diagnostic

Step	Command	Command Name	Parameter	Parameter Name	Parameter	Parameter	Value	NOTES	Details
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# EMCS

Number	Number	Value (hex)	(engineering)	(from TC reports)	(from Sequences dev.)					
1	K121	Load WP	EMCR	EDU	k104	EDU Identifier	00	0	This TC is used to load in one of the 8 EMCR EDUs the observation window parameters to be used. Parameters are used to load the complete EMCR command foreseen for this function. Note that the 2 EDUs of the same group will have the same window parameters, therefore a single command for each group can be used.	Load EMCR EDU0 Window (203x200 centrata)
					k139	Window X0	0000	0		
					k140	Window Y0	0000	0		
					k141	Window X Size	00cb	203		
					k142	Window Y Size	00c8	200		
2	K121	Load WP	EMCR	EDU	k104	EDU Identifier	02	2	This TC is used to load in one of the 8 EMCR EDUs the observation window parameters to be used. Parameters are used to load the complete EMCR command foreseen for this function. Note that the 2 EDUs of the same group will have the same window parameters, therefore a single command for each group can be used.	Load EMCR EDU2 Window (203x200 centrata)
					k139	Window X0	0000	0		
					k140	Window Y0	0000	0		
					k141	Window X Size	00cb	203		
					k142	Window Y Size	00c8	200		
3	K121	Load WP	EMCR	EDU	k104	EDU Identifier	03	3	This TC is used to load in one of the 8 EMCR EDUs the observation window parameters to be used. Parameters are used to load the complete EMCR command foreseen for this function. Note that the 2 EDUs of the same group will have the same window parameters, therefore a single command for each group can be used.	Load EMCR EDU3 Window (203x200 centrata)
					k139	Window X0	0000	0		
					k140	Window Y0	0000	0		
					k141	Window X Size	00cb	203		
					k142	Window Y Size	00c8	200		
4	K121	Load WP	EMCR	EDU	k104	EDU Identifier	04	4	This TC is used to load in one of the 8 EMCR EDUs the observation window parameters to be used. Parameters are used to load the complete EMCR command foreseen for this function. Note that the 2 EDUs of the same group will have the same window parameters, therefore a single command for each group can be used.	Load EMCR EDU4 Window (203x200 centrata)
					k139	Window X0	0000	0		
					k140	Window Y0	0000	0		
					k141	Window X Size	00cb	203		
					k142	Window Y Size	00c8	200		
5	K121	Load WP	EMCR	EDU	k104	EDU Identifier	05	5	This TC is used to load in one of the 8 EMCR EDUs the observation window parameters to be used. Parameters are used to load the complete EMCR command foreseen for this function. Note that the 2 EDUs of the same group will have the same window parameters, therefore a single command for each group can be used.	Load EMCR EDU5 Window (203x200 centrata)
					k139	Window X0	0000	0		
					k140	Window Y0	0000	0		
					k141	Window X Size	00cb	203		
					k142	Window Y Size	00c8	200		
6	K121	Load WP	EMCR	EDU	k104	EDU Identifier	06	6	This TC is used to load in one of the 8 EMCR EDUs the observation window parameters to be used. Parameters are used to load the complete EMCR command foreseen for this function. Note that the 2 EDUs of the same group will have the same window parameters, therefore a single command for each group can be used.	Load EMCR EDU6 Window (203x200 centrata)
					k139	Window X0	0000	0		
					k140	Window Y0	0000	0		
					k141	Window X Size	00cb	203		
					k142	Window Y Size	00c8	200		
7	K121	Load WP	EMCR	EDU	k104	EDU Identifier	07	7	This TC is used to load in one of the 8 EMCR EDUs the observation window parameters to be used. Parameters are used to load the complete EMCR command foreseen for this function. Note that the 2 EDUs of the same group will have the same window parameters, therefore a single command for each group can be used.	Load EMCR EDU7 Window (203x200 centrata)
					k139	Window X0	0000	0		
					k140	Window Y0	0000	0		
					k141	Window X Size	00cb	203		
					k142	Window Y Size	00c8	200		

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## 4.5. EMAE config i1

### EMAE Standard node 0

Step	Command Number	Command Name	Parameter Number	Parameter Name	Parameter Value (hex)	Parameter Value (engineering)	Value	NOTES (from TC reports)	Details (from Sequences dev.)
1	K80	Set EMAE MUX Pos	K179	AnCh 3/4 SeqRam	1	Run	This TC is used to configure Sequencers (including All groups in Run mode from setting of Multiplexers position) in the EMAE. This TC prime node allows to associate each CCD node to an EMCR EDU. Parameters are used to include the complete EMCR command foreseen for this function. The uploaded configuration is not applied till to the observation start.		
			K180	AnCh3/4 InbCtrlC	0	Off			
			K181	AnCh3/4 InbCtrlB	0	Off			
			K182	AnCh3/4 InbCtrlA	0	Off			
			K183	AnCh3/4 IntSimul	0	ChainNorNod0			
			K172	AnCh 1/2 SeqRam	1	Run			
			K173	AnCh 1/2 InbCtrlC	0	Off			
			K174	AnCh 1/2 InbCtrlB	0	Off			
			K175	AnCh 1/2 InbCtrlA	0	Off			
			K176	AnCh 1/2 IntSimul	1	ChainNorNod1			
			K193	AnCh 7/8 SeqRam	1	Run			
			K194	AnCh 7/8 InbCtrlC	0	Off			
			K195	AnCh 7/8 InbCtrlB	0	Off			
			K196	AnCh 7/8 InbCtrlA	0	Off			
			K197	AnCh 7/8 IntSimul	0	ChainNorNod0			
			K186	AnCh 5/6 SeqRam	1	Run			
			K187	AnCh 5/6 InbCtrlC	0	Off			
			K188	AnCh 5/6 InbCtrlB	0	Off			
			K189	AnCh 5/6 InbCtrlA	0	Off			
			K190	AnCh 5/6 IntSimul	0	ChainNorNod0			
2	K101	AnCha PW On/Off	K221	AnChainPW8On/Off	1	On	This TC is used to switch-on/off the analogue chains in Analogue Chain 1 3 4 5 6 7 the EMAE. Parameters are used to include the complete 8 Power On EMCR command foreseen for this function.		
			K220	AnChainPW7On/Off	1	On			
			K219	AnChainPW6On/Off	1	On			
			K218	AnChainPW5On/Off	1	On			
			K217	AnChainPW4On/Off	1	On			
			K216	AnChainPW3On/Off	1	On			
			K215	AnChainPW2On/Off	0	Off			
			K214	AnChainPW1On/Off	1	On			
3	K100	PreAmp PW On/Off	K200	Preamp1On/Off	1	On	This TC is used to switch-on/off the preamplifiers in the Pre-Amplifiers ODD Power EMCH. Parameters are used to include the complete On EMCR command foreseen for this function.		
			K201	Preamp2On/Off	0	Off			
			K202	Preamp3On/Off	1	On			
			K203	Preamp4On/Off	0	Off			
			K204	Preamp5On/Off	1	On			
			K205	Preamp6On/Off	0	Off			
			K206	Preamp7On/Off	1	On			
			K207	Preamp8On/Off	0	Off			
			K213	Preamp14On/Off	0	Off			
			K212	Preamp13On/Off	1	On			
			K211	Preamp12On/Off	0	Off			
			K210	Preamp11On/Off	1	On			
K209	Preamp10On/Off	0	Off						
K208	Preamp9On/Off	1	On						

### EMAE Standard node 1

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Step	Command Number	Command Name	Parameter Number	Parameter Name	Parameter Value (hex)	Parameter Value (engineering)	NOTES (from TC reports)	Details (from Sequences dev.)
1	K80	Set EMAE MUX Pos	K179	AnCh 3/4 SeqRam	1	Run	This TC is used to configure Sequencers (including All groups in Run mode from setting of Multiplexers position) in the EMAE. This TC redundant node allows to associate each CCD node to an EMCR EDU. Parameters are used to include the complete EMCR command foreseen for this function. The uploaded configuration is not applied till to the observation start.	
			K180	AnCh3/4 InbCtrlC	0	Off		
			K181	AnCh3/4 InbCtrlB	0	Off		
			K182	AnCh3/4 InbCtrlA	0	Off		
			K183	AnCh3/4 IntSimul	1	ChainNorNod1		
			K172	AnCh 1/2 SeqRam	1	Run		
			K173	AnCh 1/2 InbCtrlC	0	Off		
			K174	AnCh 1/2 InbCtrlB	0	Off		
			K175	AnCh 1/2 InbCtrlA	0	Off		
			K176	AnCh 1/2 IntSimul	0	ChainNorNod0		
			K193	AnCh 7/8 SeqRam	1	Run		
			K194	AnCh 7/8 InbCtrlC	0	Off		
			K195	AnCh 7/8 InbCtrlB	0	Off		
			K196	AnCh 7/8 InbCtrlA	0	Off		
			K197	AnCh 7/8 IntSimul	1	ChainNorNod1		
			K186	AnCh 5/6 SeqRam	1	Run		
			K187	AnCh 5/6 InbCtrlC	0	Off		
			K188	AnCh 5/6 InbCtrlB	0	Off		
			K189	AnCh 5/6 InbCtrlA	0	Off		
K190	AnCh 5/6 IntSimul	1	ChainNorNod1					
2	K101	AnCha PW On/Off	K221	AnChainPW8On/Off	1	On	This TC is used to switch-on/off the analogue chains in Analogue Chain 1 3 4 5 6 7 the EMAE. Parameters are used to include the complete 8 Power On EMCR command foreseen for this function.	
			K220	AnChainPW7On/Off	1	On		
			K219	AnChainPW6On/Off	1	On		
			K218	AnChainPW5On/Off	1	On		
			K217	AnChainPW4On/Off	1	On		
			K216	AnChainPW3On/Off	1	On		
			K215	AnChainPW2On/Off	1	On		
			K214	AnChainPW1On/Off	0	Off		
3	K100	PreAmp PW On/Off	K200	Preamp1On/Off	0	Off	This TC is used to switch-on/off the preamplifiers in the Pre-Amplifiers ODD Power EMCH. Parameters are used to include the complete On EMCR command foreseen for this function.	
			K201	Preamp2On/Off	1	On		
			K202	Preamp3On/Off	0	Off		
			K203	Preamp4On/Off	1	On		
			K204	Preamp5On/Off	0	Off		
			K205	Preamp6On/Off	1	On		
			K206	Preamp7On/Off	0	Off		
			K207	Preamp8On/Off	1	On		
			K213	Preamp14On/Off	1	On		
			K212	Preamp13On/Off	0	Off		
			K211	Preamp12On/Off	1	On		
			K210	Preamp11On/Off	0	Off		
			K209	Preamp10On/Off	1	On		
K208	Preamp9On/Off	0	Off					

EMAE Double node

# EMCS

Step	Command Number	Command Name	Parameter Number	Parameter Name	Parameter Value (hex)	Parameter Value (engineering)	Value	NOTES (from TC reports)	Details (from Sequences dev.)
1	K80	Set EMAE MUX Pos	K179	AnCh 3/4 SeqRam	1	Run		This TC is used to configure Sequencers (including All groups in Run mode from setting of Multiplexers position) in the EMAE. This TC prime node allows to associate each CCD node to an EMCR EDU. Parameters are used to include the complete EMCR command foreseen for this function. The uploaded configuration is not applied till to the observation start.	
			K180	AnCh3/4 InbCtrlC	0	Off			
			K181	AnCh3/4 InbCtrlB	0	Off			
			K182	AnCh3/4 InbCtrlA	0	Off			
			K183	AnCh3/4 IntSimul	0	ChainNorNod0			
			K172	AnCh 1/2 SeqRam	1	Run			
			K173	AnCh 1/2 InbCtrlC	0	Off			
			K174	AnCh 1/2 InbCtrlB	0	Off			
			K175	AnCh 1/2 InbCtrlA	0	Off			
			K176	AnCh 1/2 IntSimul	1	ChainNorNod1			
			K193	AnCh 7/8 SeqRam	1	Run			
			K194	AnCh 7/8 InbCtrlC	0	Off			
			K195	AnCh 7/8 InbCtrlB	0	Off			
			K196	AnCh 7/8 InbCtrlA	0	Off			
			K197	AnCh 7/8 IntSimul	0	ChainNorNod0			
			K186	AnCh 5/6 SeqRam	1	Run			
			K187	AnCh 5/6 InbCtrlC	0	Off			
			K188	AnCh 5/6 InbCtrlB	0	Off			
			K189	AnCh 5/6 InbCtrlA	0	Off			
K190	AnCh 5/6 IntSimul	0	ChainNorNod0						
2	K101	AnCha PW On/Off	K221	AnChainPW8On/Off	1	On		This TC is used to switch-on/off the analogue chains in All Analogue Chains On the EMAE. Parameters are used to include the complete EMCR command foreseen for this function.	
			K220	AnChainPW7On/Off	1	On			
			K219	AnChainPW6On/Off	1	On			
			K218	AnChainPW5On/Off	1	On			
			K217	AnChainPW4On/Off	1	On			
			K216	AnChainPW3On/Off	1	On			
			K215	AnChainPW2On/Off	1	On			
			K214	AnChainPW1On/Off	1	On			
3	K100	PreAmp PW On/Off	K200	Preamp1On/Off	1	On		This TC is used to switch-on/off the preamplifiers in the Pre-Amplifiers EMCH. Parameters are used to include the complete Power On EMCR command foreseen for this function.	ODD+2
			K201	Preamp2On/Off	1	On			
			K202	Preamp3On/Off	1	On			
			K203	Preamp4On/Off	0	Off			
			K204	Preamp5On/Off	1	On			
			K205	Preamp6On/Off	0	Off			
			K206	Preamp7On/Off	1	On			
			K207	Preamp8On/Off	0	Off			
			K213	Preamp14On/Off	0	Off			
			K212	Preamp13On/Off	1	On			
			K211	Preamp12On/Off	0	Off			
K210	Preamp11On/Off	1	On						
K209	Preamp10On/Off	0	Off						
K208	Preamp9On/Off	1	On						

## 4.6. EMAE Sequences i3

### ES set-up

Step	Command Number	Command Name	Parameter Number	Parameter Name	Parameter Value (hex)	Parameter Value (engineering)	Value	NOTES (from TC Reports)	Details (from Sequences dev.)
1	k81	Load Comman	EMA K133 K160	EMA CommandAddr. CommandDatum	23 0	35 0		This TC is used to send one low level command to EMAE, through EMCR. Parameters are used to include the complete EMCR command foreseen for this function.	seq.1 low address
2	k81	Load Comman	EMA K133 K160	EMA CommandAddr. CommandDatum	22 0	34 0			seq.1 high address
3	k81	Load Comman	EMA K133 K160	EMA CommandAddr. CommandDatum	63 0	99 0			seq.2 low address
4	k81	Load Comman	EMA K133 K160	EMA CommandAddr. CommandDatum	62 0	98 0			seq.2 high address
5	k81	Load Comman	EMA K133 K160	EMA CommandAddr. CommandDatum	a3 0	163 0			seq.3 low address
6	k81	Load Comman	EMA K133 K160	EMA CommandAddr. CommandDatum	a2 0	162 0			seq.3 high address
7	k81	Load Comman	EMA K133 K160	EMA CommandAddr. CommandDatum	e3 0	227 0			seq.4 low address
8	k81	Load Comman	EMA K133 K160	EMA CommandAddr. CommandDatum	e2 0	226 0			seq.4 high address
9	k81	Load Comman	EMA K133 K160	EMA CommandAddr. CommandDatum	33 0	51 0			seq.5 low address
10	k81	Load Comman	EMA K133 K160	EMA CommandAddr. CommandDatum	32 0	50 0			seq.5 high address
11	k81	Load Comman	EMA K133 K160	EMA CommandAddr. CommandDatum	21 81	33 129			seq.1 low gain node 0 run
12	k81	Load Comman	EMA K133 K160	EMA CommandAddr. CommandDatum	61 80	97 128			seq.2 low gain node 0 run
13	k81	Load Comman	EMA K133 K160	EMA CommandAddr. CommandDatum	a1 80	161 128			seq.3 low gain node 0 run
14	k81	Load Comman	EMA K133 K160	EMA CommandAddr. CommandDatum	e1 80	225 128			seq.4 low gain node 0 run
15	k81	Load Comman	EMA K133 K160	EMA CommandAddr. CommandDatum	3e ff	62 255			Start Sequencer

### ES set-up FW

Step	Command Number	Command Name	Parameter Number	Parameter Name	Parameter Value (hex)	Parameter Value (engineering)	Value	NOTES (from TC Reports)	Details (from Sequences dev.)
1	k81	Load Comman	EMA K133 K160	EMA CommandAddr. CommandDatum	33 0	51 0		This TC is used to send one low level command to EMAE, through EMCR. Parameters are used to include the complete EMCR command foreseen for this function.	seq.5 low address

# EMCS

2	k81	Load Comman	EMAE K133 K160	EMAE CommandAddr. 32 EMAE CommandDatum 0	50 0		seq.5 high address
3	k81	Load Comman	EMAE K133 K160	EMAE CommandAddr. 3e EMAE CommandDatum ff	62 255		Start Sequencer

## ES set-up CCDs per

Step	Command Number	Command Name	Parameter Number	Parameter Name	Parameter Value (hex)	Parameter Value (engineering)	Value	NOTES (from TC Reports)	Details (from Sequences dev.)
1	k81	Load Comman	EMAE K133 K160	EMAE CommandAddr. 63 EMAE CommandDatum 0	63 0	99 0		This TC is used to send one low level command to EMAE, through EMCR. Parameters are used to include the complete EMCR command foreseen for this function.	seq.2 low address
2	k81	Load Comman	EMAE K133 K160	EMAE CommandAddr. 62 EMAE CommandDatum 0	62 0	98 0			seq.2 high address
3	k81	Load Comman	EMAE K133 K160	EMAE CommandAddr. a3 EMAE CommandDatum 0	a3 0	163 0			seq.3 low address
4	k81	Load Comman	EMAE K133 K160	EMAE CommandAddr. a2 EMAE CommandDatum 0	a2 0	162 0			seq.3 high address
5	k81	Load Comman	EMAE K133 K160	EMAE CommandAddr. e3 EMAE CommandDatum 0	e3 0	227 0			seq.4 low address
6	k81	Load Comman	EMAE K133 K160	EMAE CommandAddr. e2 EMAE CommandDatum 0	e2 0	226 0			seq.4 high address
7	k81	Load Comman	EMAE K133 K160	EMAE CommandAddr. 61 EMAE CommandDatum 80	61 80	97 128			seq.2 low gain node 0 run
8	k81	Load Comman	EMAE K133 K160	EMAE CommandAddr. a1 EMAE CommandDatum 80	a1 80	161 128			seq.3 low gain node 0 run
9	k81	Load Comman	EMAE K133 K160	EMAE CommandAddr. e1 EMAE CommandDatum 80	e1 80	225 128			seq.4 low gain node 0 run
10	k81	Load Comman	EMAE K133 K160	EMAE CommandAddr. 3e EMAE CommandDatum ff	3e ff	62 255			Start Sequencer

## ES set-up CCD cen

Step	Command Number	Command Name	Parameter Number	Parameter Name	Parameter Value (hex)	Parameter Value (engineering)	Value	NOTES (from TC Reports)	Details (from Sequences dev.)
1	k81	Load Comman	EMAE K133 K160	EMAE CommandAddr. 23 EMAE CommandDatum 0	23 0	35 0		This TC is used to send one low level command to EMAE, through EMCR. Parameters are used to include the complete EMCR command foreseen for this function.	seq.1 low address
2	k81	Load Comman	EMAE K133 K160	EMAE CommandAddr. 22 EMAE CommandDatum 0	22 0	34 0			seq.1 high address
3	k81	Load Comman	EMAE K133 K160	EMAE CommandAddr. 21 EMAE CommandDatum 81	21 81	33 129			seq.1 low gain node 0 run
4	k81	Load Comman	EMAE K133 K160	EMAE CommandAddr. 3e EMAE CommandDatum ff	3e ff	62 255			Start Sequencer

# EMCS

## ES du all from EMCR

Step	Command Number	Command Name	Parameter Number	Parameter Name	Parameter Value (hex)	Parameter (engineering)	Value	NOTES (from TC Reports)	Details (from Sequences dev.)
1	k118	Dload EMCR M Seq	k109	Seq. Pro. Ident.		1	1	This TC is used to dump the Sequence Program stored in the selected EMCR memory area to a dedicated memory area in the EMDH. Parameters are used to include the complete EMCR command dedicated to this function.	EMCR ST1 central CCD
2	k54	Dump Tables	EMDH k300 k301		13A30 1212	80432 4626		This TC is used to dump a specific EMDH memory area where the Offset, Sequence, Pattern Mask tables and Test Image, are stored. This TC is used to dump a specific EMDH memory area where the Offset, Sequence and Pattern tables read from EMAE, EMCR EDU or EMCR Memory are stored. Start address will be fixed. One or more Memory Dump Reports (TM 6,2) will be sent by TM.	TM pkt for Sequence 1
3	k118	Dload EMCR M Seq	k109	Seq. Pro. Ident.		2	2		EMCR ST2
4	k54	Dump Tables	EMDH k300 k301		13A30 1212	80432 4626			TM pkt for Sequence 2
5	k118	Dload EMCR M Seq	k109	Seq. Pro. Ident.		3	3		EMCR ST3
6	k54	Dump Tables	EMDH k300 k301		13A30 1212	80432 4626			TM pkt for Sequence 3
7	k118	Dload EMCR M Seq	k109	Seq. Pro. Ident.		4	4		EMCR ST4
8	k54	Dump Tables	EMDH k300 k301		13A30 1212	80432 4626			TM pkt for Sequence 4
9	k118	Dload EMCR M Seq	k109	Seq. Pro. Ident.		5	5		EMCR ST5 filter wheel
10	k54	Dump Tables	EMDH k300 k301		13A30 1212	80432 4626			TM pkt for Sequence 5

## ES du all from EMAE

Step	Command Number	Command Name	Parameter Number	Parameter Name	Parameter Value (hex)	Parameter (engineering)	Value	NOTES (from TC Reports)	Details (from Sequences dev.)
1	k68	Download Sequen.	k106	EMAE Seq. Ident.		1	1	This TC is used to dump the Sequence Program stored in the selected EMAE Sequencer to a dedicated memory area in the EMDH. Parameters are used to include the complete EMCR command dedicated to this function.	EMAE ST1 central CCD
2	k54	Dump Tables	EMDH k300 k301		13A30 1212	80432 4626		This TC is used to dump a specific EMDH memory area where the Offset, Sequence, Pattern Mask tables and Test Image, are stored. This TC is used to dump a specific EMDH memory area where the Offset, Sequence and Pattern tables read from EMAE, EMCR EDU or EMCR Memory are stored. Start address will be	TM pkt for Sequence 1

# EMCS

fixed. One or more Memory Dump Reports (TM 6,2) will be sent by TM.

3	k68	Download Sequen.	k106	EMAE Seq. Ident.	2	2	EMAЕ ST2
4	k54	Dump EMDH	k300		13A30	80432	TM pkt for Sequence 2
		Tables	k301		1212	4626	
5	k68	Download Sequen.	k106	EMAE Seq. Ident.	3	3	EMAЕ ST3
6	k54	Dump EMDH	k300		13A30	80432	TM pkt for Sequence 3
		Tables	k301		1212	4626	
7	k68	Download Sequen.	k106	EMAE Seq. Ident.	4	4	EMAЕ ST4
8	k54	Dump EMDH	k300		13A30	80432	TM pkt for Sequence 4
		Tables	k301		1212	4626	
9	k68	Download Sequen.	k106	EMAE Seq. Ident.	5	5	EMAЕ ST5
10	k54	Dump EMDH	k300		13A30	80432	TM pkt for Sequence 5
		Tables	k301		1212	4626	

## ES Id FW

Step	Command Number	Command Name	Parameter Number	Parameter Name	Parameter Value (hex)	Parameter (engineering)	Value	NOTES (from TC Reports)	Details (from Sequences dev.)
1	K53	Load EMDH table	k300		13A30	80432		This TC is used to load in a specific EMDH memory filter3.seq area the Offset, Sequence, Pattern Mask tables or Test Image to be loaded in EMCR. More TC will be used to load the complete table in the EMDH, start address and length will be opportunely set.	
2	K74	Upload Seq	EMCRM k109	Seq.Pro.Ident.			0 0	This TC is used to load in the EMCR memory the SEQUENCE #0 complete Sequence Program previously stored in the EMDH Tables area. Parameters are used to include the first part of the command to be delivered from EMDH to EMCR.	
3	k82	Load Sequen	EMAЕ K109 K106 K132	Seq.Pro.Ident. EMAЕ Seq.Ident. EMAЕ Seq. Offset	4 5 0	4 5 0		This TC is used to load in one of the four EMAЕ Upload EMAЕ Sequencers one of the four Sequence Programs stored Seq4->Seq5 in the EMCR memory.	

## ES Id ifc8rd\_1 to EMAЕ cen

Step	Command Number	Command Name	Parameter Number	Parameter Name	Parameter Value (hex)	Parameter (engineering)	Value	NOTES (from TC Reports)	Details (from Sequences dev.)
1	K53	Load EMDH table	k300		13A30	80432		This TC is used to load in a specific EMDH memory ifc8rd_1_0.seq area the Offset, Sequence, Pattern Mask tables or Test Image to be loaded in EMCR. More TC will be used to load the complete table in the EMDH, start address and length will be opportunely set.	
2	K74	Upload Seq	EMCRM k109	Seq.Pro.Ident.			0 0	This TC is used to load in the EMCR memory the SEQUENCE #0 complete Sequence Program previously stored in the EMDH Tables area. Parameters are used to include the first part of the command to be delivered from EMDH to	

# EMCS

3	k82	Load Sequen	EMAE K109 K106 K132	Seq.Pro.Ident. EMAE Seq.Ident. EMAE Seq. Offset	0 1 0	0 1 0	EMCR. This TC is used to load in one of the four EMAE Upload EMAE Sequencer Sequencers one of the four Sequence Programs stored Seq0->Seq1 in the EMCR memory.
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## ES Id iffc10rdp to EMAE cen

Step	Command Number	Command Name	Parameter Number	Parameter Name	Parameter Value (hex)	Parameter (engineering)	Value	NOTES (from TC Reports)	Details (from Sequences dev.)
1	K53	Load EMDH table	k300		13A30	80432		This TC is used to load in a specific EMDH memory iffc10rdp_0.seq area the Offset, Sequence, Pattern Mask tables or Test Image to be loaded in EMCR. More TC will be used to load the complete table in the EMDH, start address and length will be opportunely set.	
2	K74	Upload Seq	EMCRM k109	Seq.Pro.Ident.			0 0	This TC is used to load in the EMCR memory the SEQUENCE #0 complete Sequence Program previously stored in the EMDH Tables area. Parameters are used to include the first part of the command to be delivered from EMDH to EMCR.	
3	k82	Load Sequen	EMAE K109 K106 K132	Seq.Pro.Ident. EMAE Seq.Ident. EMAE Seq. Offset	0 1 0	0 1 0		This TC is used to load in one of the four EMAE Upload EMAE Sequencer Sequencers one of the four Sequence Programs stored Seq0->Seq1 in the EMCR memory.	

## ES Id ifc8rd\_1 to EMAE per

Step	Command Number	Command Name	Parameter Number	Parameter Name	Parameter Value (hex)	Parameter (engineering)	Value	NOTES (from TC Reports)	Details (from Sequences dev.)
1	K53	Load EMDH table	k300		13A30	80432		This TC is used to load in a specific EMDH memory ifc8rd_1_1.seq area the Offset, Sequence, Pattern Mask tables or Test Image to be loaded in EMCR. More TC will be used to load the complete table in the EMDH, start address and length will be opportunely set.	
2	K74	Upload Seq	EMCRM k109	Seq.Pro.Ident.			1 1	This TC is used to load in the EMCR memory the SEQUENCE #1 complete Sequence Program previously stored in the EMDH Tables area. Parameters are used to include the first part of the command to be delivered from EMDH to EMCR.	
3	K53	Load EMDH table	k300		13A30	80432			ifc8rd_1_2.seq
4	K74	Upload Seq	EMCRM k109	Seq.Pro.Ident.			2 2		SEQUENCE #2
5	K53	Load EMDH table	k300		13A30	80432			ifc8rd_1_3.seq
6	K74	Upload Seq	EMCRM k109	Seq.Pro.Ident.			3 3		SEQUENCE #3
7	k82	Load Sequen	EMAE K109 K106 K132	Seq.Pro.Ident. EMAE Seq.Ident. EMAE Seq. Offset	1 2 0	1 2 0		This TC is used to load in one of the four EMAE Upload EMAE Sequencer Sequencers one of the four Sequence Programs stored Seq1->Seq2 in the EMCR memory.	

# EMCS

8	k82	Load Sequen	EMAE K109 K106 K132	Seq.Pro.Ident. EMAE Seq.Ident. EMAE Seq. Offset	2 3 0	2 3 0	Upload EMAE Sequencer Seq2->Seq3
9	k82	Load Sequen	EMAE K109 K106 K132	Seq.Pro.Ident. EMAE Seq.Ident. EMAE Seq. Offset	3 4 0	3 4 0	Upload EMAE Sequencer Seq3->Seq4

## ES Id iffci10rdp to EMAE per

Step	Command Number	Command Name	Parameter Number	Parameter Name	Parameter Value (hex)	Parameter (engineering)	Value	NOTES (from TC Reports)	Details (from Sequences dev.)
1	K53	Load EMDH table	k300		13A30	80432		This TC is used to load in a specific EMDH memory iffci10rdp_1.seq area the Offset, Sequence, Pattern Mask tables or Test Image to be loaded in EMCR. More TC will be used to load the complete table in the EMDH, start address and length will be opportunely set.	
2	K74	Upload Seq	EMCRM k109	Seq.Pro.Ident.		1 1		This TC is used to load in the EMCR memory the SEQUENCE #1 complete Sequence Program previously stored in the EMDH Tables area. Parameters are used to include the first part of the command to be delivered from EMDH to EMCR.	
3	K53	Load EMDH table	k300		13A30	80432			iffci10rdp_2.seq
4	K74	Upload Seq	EMCRM k109	Seq.Pro.Ident.		2 2			SEQUENCE #2
5	K53	Load EMDH table	k300		13A30	80432			iffci10rdp_3.seq
6	K74	Upload Seq	EMCRM k109	Seq.Pro.Ident.		3 3			SEQUENCE #3
7	k82	Load Sequen	EMAE K109 K106 K132	Seq.Pro.Ident. EMAE Seq.Ident. EMAE Seq. Offset	1 2 0	1 2 0		This TC is used to load in one of the four EMAE Upload Sequencers one of the four Sequence Programs stored in the EMCR memory.	Upload EMAE Sequencer Seq1->Seq2
8	k82	Load Sequen	EMAE K109 K106 K132	Seq.Pro.Ident. EMAE Seq.Ident. EMAE Seq. Offset	2 3 0	2 3 0			Upload EMAE Sequencer Seq2->Seq3
9	k82	Load Sequen	EMAE K109 K106 K132	Seq.Pro.Ident. EMAE Seq.Ident. EMAE Seq. Offset	3 4 0	3 4 0			Upload EMAE Sequencer Seq3->Seq4

## ES Id ifc8rd\_2 to EMAE cen

Step	Command Number	Command Name	Parameter Number	Parameter Name	Parameter Value (hex)	Parameter (engineering)	Value	NOTES (from TC Reports)	Details (from Sequences dev.)
1	K53	Load EMDH table	k300		13A30	80432		This TC is used to load in a specific EMDH memory ifc8rd_2_0.seq area the Offset, Sequence, Pattern Mask tables or Test Image to be loaded in EMCR. More TC will be used to load the complete table in the EMDH, start address and	

# EMCS

2	K74	Upload Seq	EMCRM k109	Seq.Pro.Ident.	0	0	length will be opportunely set. This TC is used to load in the EMCR memory the SEQUENCE #0 complete Sequence Program previously stored in the EMDH Tables area. Parameters are used to include the first part of the command to be delivered from EMDH to EMCR.
3	k82	Load Sequen	EMAE K109 K106 K132	Seq.Pro.Ident. EMAE Seq.Ident. EMAE Seq. Offset	0 1 0	0 1 0	This TC is used to load in one of the four EMAE Upload EMAE Sequencer Sequencers one of the four Sequence Programs stored Seq0->Seq1 in the EMCR memory.

## ES Id iffc10rdr to EMAE cen

Step	Command Number	Command Name	Parameter Number	Parameter Name	Parameter Value (hex)	Parameter (engineering)	Value	NOTES (from TC Reports)	Details (from Sequences dev.)
1	K53	Load EMDH table	k300		13A30	80432		This TC is used to load in a specific EMDH memory ifc8rd_2_0.seq area the Offset, Sequence, Pattern Mask tables or Test Image to be loaded in EMCR. More TC will be used to load the complete table in the EMDH, start address and length will be opportunely set.	
2	K74	Upload Seq	EMCRM k109	Seq.Pro.Ident.			0 0	This TC is used to load in the EMCR memory the SEQUENCE #0 complete Sequence Program previously stored in the EMDH Tables area. Parameters are used to include the first part of the command to be delivered from EMDH to EMCR.	
3	k82	Load Sequen	EMAE K109 K106 K132	Seq.Pro.Ident. EMAE Seq.Ident. EMAE Seq. Offset	0 1 0	0 1 0		This TC is used to load in one of the four EMAE Upload EMAE Sequencer Sequencers one of the four Sequence Programs stored Seq0->Seq1 in the EMCR memory.	

## ES Id ifc8rd\_2 to EMAE per

Step	Command Number	Command Name	Parameter Number	Parameter Name	Parameter Value (hex)	Parameter (engineering)	Value	NOTES (from TC Reports)	Details (from Sequences dev.)
1	K53	Load EMDH table	k300		13A30	80432		This TC is used to load in a specific EMDH memory ifc8rd_2_1.seq area the Offset, Sequence, Pattern Mask tables or Test Image to be loaded in EMCR. More TC will be used to load the complete table in the EMDH, start address and length will be opportunely set.	
2	K74	Upload Seq	EMCRM k109	Seq.Pro.Ident.			1 1	This TC is used to load in the EMCR memory the SEQUENCE #1 complete Sequence Program previously stored in the EMDH Tables area. Parameters are used to include the first part of the command to be delivered from EMDH to EMCR.	
3	K53	Load EMDH table	k300		13A30	80432			ifc8rd_2_2.seq
4	K74	Upload Seq	EMCRM k109	Seq.Pro.Ident.			2 2		SEQUENCE #2

# EMCS

5	K53	Load EMDH table	k300		13A30	80432			
6	K74	Upload Seq	EMCRM k109	Seq.Pro.Ident.		3 3			ifc8rd_2_3.seq SEQUENCE #3
7	k82	Load Sequen	EMAE K109 K106 K132	Seq.Pro.Ident. EMAE Seq.Ident. EMAE Seq. Offset	1 2 0	1 2 0			This TC is used to load in one of the four EMAE Upload EMAE Sequencers one of the four Sequence Programs stored in the EMCR memory.
8	k82	Load Sequen	EMAE K109 K106 K132	Seq.Pro.Ident. EMAE Seq.Ident. EMAE Seq. Offset	2 3 0	2 3 0			Upload EMAE Sequencer Seq2->Seq3
9	k82	Load Sequen	EMAE K109 K106 K132	Seq.Pro.Ident. EMAE Seq.Ident. EMAE Seq. Offset	3 4 0	3 4 0			Upload EMAE Sequencer Seq3->Seq4

## ES Id iffci10rdr to EMAE per

Step	Command Number	Command Name	Parameter Number	Parameter Name	Parameter Value (hex)	Parameter (engineering)	Value	NOTES (from TC Reports)	Details (from Sequences dev.)
1	K53	Load EMDH table	k300		13A30	80432		This TC is used to load in a specific EMDH memory area the Offset, Sequence, Pattern Mask tables or Test Image to be loaded in EMCR. More TC will be used to load the complete table in the EMDH, start address and length will be opportunely set.	iffci10rdr_1.seq
2	K74	Upload Seq	EMCRM k109	Seq.Pro.Ident.		1 1		This TC is used to load in the EMCR memory the complete Sequence Program previously stored in the EMDH Tables area. Parameters are used to include the first part of the command to be delivered from EMDH to EMCR.	SEQUENCE #1
3	K53	Load EMDH table	k300		13A30	80432			iffci10rdr_2.seq
4	K74	Upload Seq	EMCRM k109	Seq.Pro.Ident.		2 2			SEQUENCE #2
5	K53	Load EMDH table	k300		13A30	80432			iffci10rdr_3.seq
6	K74	Upload Seq	EMCRM k109	Seq.Pro.Ident.		3 3			SEQUENCE #3
7	k82	Load Sequen	EMAE K109 K106 K132	Seq.Pro.Ident. EMAE Seq.Ident. EMAE Seq. Offset	1 2 0	1 2 0		This TC is used to load in one of the four EMAE Upload EMAE Sequencers one of the four Sequence Programs stored in the EMCR memory.	Upload EMAE Sequencer Seq1->Seq2
8	k82	Load Sequen	EMAE K109 K106 K132	Seq.Pro.Ident. EMAE Seq.Ident. EMAE Seq. Offset	2 3 0	2 3 0			Upload EMAE Sequencer Seq2->Seq3
9	k82	Load Sequen	EMAE K109 K106 K132	Seq.Pro.Ident. EMAE Seq.Ident. EMAE Seq. Offset	3 4 0	3 4 0			Upload EMAE Sequencer Seq3->Seq4

## ES Id ifc8rp\_1 to EMAE cen

# EMCS

Step	Command Number	Command Name	Parameter Number	Parameter Name	Parameter Value (hex)	Parameter (engineering)	Value	NOTES (from TC Reports)	Details (from Sequences dev.)
1	K53	Load EMDH table	k300		13A30	80432		This TC is used to load in a specific EMDH memory ifc8rp_1_0.seq area the Offset, Sequence, Pattern Mask tables or Test Image to be loaded in EMCR. More TC will be used to load the complete table in the EMDH, start address and length will be opportunely set.	
2	K74	Upload Seq	EMCRM k109	Seq.Pro.Ident.			0 0	This TC is used to load in the EMCR memory the SEQUENCE #0 complete Sequence Program previously stored in the EMDH Tables area. Parameters are used to include the first part of the command to be delivered from EMDH to EMCR.	
3	k82	Load Sequen	EMAE K109 K106 K132	Seq.Pro.Ident. EMAE Seq.Ident. EMAE Seq. Offset	0 1 0	0 1 0		This TC is used to load in one of the four EMAE Upload EMAE Sequencers one of the four Sequence Programs stored Seq0->Seq1 in the EMCR memory.	

## ES Id iffc10rpp to EMAE cen

Step	Command Number	Command Name	Parameter Number	Parameter Name	Parameter Value (hex)	Parameter (engineering)	Value	NOTES (from TC Reports)	Details (from Sequences dev.)
1	K53	Load EMDH table	k300		13A30	80432		This TC is used to load in a specific EMDH memory iffc10rpp_0.seq area the Offset, Sequence, Pattern Mask tables or Test Image to be loaded in EMCR. More TC will be used to load the complete table in the EMDH, start address and length will be opportunely set.	
2	K74	Upload Seq	EMCRM k109	Seq.Pro.Ident.			0 0	This TC is used to load in the EMCR memory the SEQUENCE #0 complete Sequence Program previously stored in the EMDH Tables area. Parameters are used to include the first part of the command to be delivered from EMDH to EMCR.	
3	k82	Load Sequen	EMAE K109 K106 K132	Seq.Pro.Ident. EMAE Seq.Ident. EMAE Seq. Offset	0 1 0	0 1 0		This TC is used to load in one of the four EMAE Upload EMAE Sequencers one of the four Sequence Programs stored Seq0->Seq1 in the EMCR memory.	

## ES Id ifc8rp\_1 to EMAE per

Step	Command Number	Command Name	Parameter Number	Parameter Name	Parameter Value (hex)	Parameter (engineering)	Value	NOTES (from TC Reports)	Details (from Sequences dev.)
1	K53	Load EMDH table	k300		13A30	80432		This TC is used to load in a specific EMDH memory ifc8rp_1_1.seq area the Offset, Sequence, Pattern Mask tables or Test Image to be loaded in EMCR. More TC will be used to load the complete table in the EMDH, start address and length will be opportunely set.	
2	K74	Upload Seq	EMCRM k109	Seq.Pro.Ident.			1 1	This TC is used to load in the EMCR memory the SEQUENCE #1 complete Sequence Program previously stored in the	

# EMCS

EMDH Tables area. Parameters are used to include the first part of the command to be delivered from EMDH to EMCR.

3	K53	Load EMDH table	k300		13A30	80432			ifc8rp_1_2.seq
4	K74	Upload Seq	EMCRM k109	Seq.Pro.Ident.		2 2			SEQUENCE #2
5	K53	Load EMDH table	k300		13A30	80432			ifc8rp_1_3.seq
6	K74	Upload Seq	EMCRM k109	Seq.Pro.Ident.		3 3			SEQUENCE #3
7	k82	Load Sequen	EMAE K109 K106 K132	Seq.Pro.Ident. EMAE Seq.Ident. EMAE Seq. Offset	1 2 0	1 2 0		This TC is used to load in one of the four EMAE Upload EMAE Sequencers one of the four Sequence Programs stored in the EMCR memory.	Sequencer Seq1->Seq2
8	k82	Load Sequen	EMAE K109 K106 K132	Seq.Pro.Ident. EMAE Seq.Ident. EMAE Seq. Offset	2 3 0	2 3 0			Upload EMAE Sequencer Seq2->Seq3
9	k82	Load Sequen	EMAE K109 K106 K132	Seq.Pro.Ident. EMAE Seq.Ident. EMAE Seq. Offset	3 4 0	3 4 0			Upload EMAE Sequencer Seq3->Seq4

## ES Id iffci10rpp to EMAE per

Step	Command Number	Command Name	Parameter Number	Parameter Name	Parameter Value (hex)	Parameter Value (engineering)	Value	NOTES (from TC Reports)	Details (from Sequences dev.)
1	K53	Load EMDH table	k300		13A30	80432		This TC is used to load in a specific EMDH memory area the Offset, Sequence, Pattern Mask tables or Test Image to be loaded in EMCR. More TC will be used to load the complete table in the EMDH, start address and length will be opportunely set.	iffci10rpp_1.seq
2	K74	Upload Seq	EMCRM k109	Seq.Pro.Ident.		1 1		This TC is used to load in the EMCR memory the complete Sequence Program previously stored in the EMDH Tables area. Parameters are used to include the first part of the command to be delivered from EMDH to EMCR.	SEQUENCE #1
3	K53	Load EMDH table	k300		13A30	80432			iffci10rpp_2.seq
4	K74	Upload Seq	EMCRM k109	Seq.Pro.Ident.		2 2			SEQUENCE #2
5	K53	Load EMDH table	k300		13A30	80432			iffci10rpp_3.seq
6	K74	Upload Seq	EMCRM k109	Seq.Pro.Ident.		3 3			SEQUENCE #3
7	k82	Load Sequen	EMAE K109 K106 K132	Seq.Pro.Ident. EMAE Seq.Ident. EMAE Seq. Offset	1 2 0	1 2 0		This TC is used to load in one of the four EMAE Upload Sequencers one of the four Sequence Programs stored in the EMCR memory.	Sequencer Seq1->Seq2
8	k82	Load Sequen	EMAE K109 K106 K132	Seq.Pro.Ident. EMAE Seq.Ident. EMAE Seq. Offset	2 3 0	2 3 0			Upload EMAE Sequencer Seq2->Seq3
9	k82	Load Sequen	EMAE K109 K106	Seq.Pro.Ident. EMAE Seq.Ident.	3 4	3 4			Upload EMAE Sequencer Seq3->Seq4

# EMCS

K132 EMAE Seq. Offset 0 0

## ES Id ifc8rp\_2 to EMAE cen

Step	Command Number	Command Name	Parameter Number	Parameter Name	Parameter Value (hex)	Parameter (engineering)	Value	NOTES (from TC Reports)	Details (from Sequences dev.)	
1	K53	Load EMDH table	k300		13A30	80432		This TC is used to load in a specific EMDH memory ifc8rp_2_0.seq area the Offset, Sequence, Pattern Mask tables or Test Image to be loaded in EMCR. More TC will be used to load the complete table in the EMDH, start address and length will be opportunely set.		
2	K74	Upload Seq	EMCRM k109	Seq.Pro.Ident.		0 0	This TC is used to load in the EMCR memory the SEQUENCE #0 complete Sequence Program previously stored in the EMDH Tables area. Parameters are used to include the first part of the command to be delivered from EMDH to EMCR.			Sequencer
3	k82	Load Sequen	EMAE K109 K106 K132	Seq.Pro.Ident. EMAE Seq.Ident. EMAE Seq. Offset	0 1 0	0 1 0	This TC is used to load in one of the four EMAE Upload Sequencers one of the four Sequence Programs stored Seq0->Seq1 in the EMCR memory.			

## ES Id iffci10rpr to EMAE cen

Step	Command Number	Command Name	Parameter Number	Parameter Name	Parameter Value (hex)	Parameter (engineering)	Value	NOTES (from TC Reports)	Details (from Sequences dev.)	
1	K53	Load EMDH table	k300		13A30	80432		This TC is used to load in a specific EMDH memory iffci10rpr_0.seq area the Offset, Sequence, Pattern Mask tables or Test Image to be loaded in EMCR. More TC will be used to load the complete table in the EMDH, start address and length will be opportunely set.		
2	K74	Upload Seq	EMCRM k109	Seq.Pro.Ident.		0 0	This TC is used to load in the EMCR memory the SEQUENCE #0 complete Sequence Program previously stored in the EMDH Tables area. Parameters are used to include the first part of the command to be delivered from EMDH to EMCR.			Sequencer
3	k82	Load Sequen	EMAE K109 K106 K132	Seq.Pro.Ident. EMAE Seq.Ident. EMAE Seq. Offset	0 1 0	0 1 0	This TC is used to load in one of the four EMAE Upload Sequencers one of the four Sequence Programs stored Seq0->Seq1 in the EMCR memory.			

## ES Id ifc8rp\_2 to EMAE per

Step	Command Number	Command Name	Parameter Number	Parameter Name	Parameter Value (hex)	Parameter (engineering)	Value	NOTES (from TC Reports)	Details (from Sequences dev.)
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# EMCS

1	K53	Load EMDH table	k300		13A30	80432		This TC is used to load in a specific EMDH memory ifc8rp_2_1.seq area the Offset, Sequence, Pattern Mask tables or Test Image to be loaded in EMCR. More TC will be used to load the complete table in the EMDH, start address and length will be opportunely set.
2	K74	Upload Seq	EMCRM k109	Seq.Pro.Ident.		1 1		This TC is used to load in the EMCR memory the SEQUENCE #1 complete Sequence Program previously stored in the EMDH Tables area. Parameters are used to include the first part of the command to be delivered from EMDH to EMCR.
3	K53	Load EMDH table	k300		13A30	80432		ifc8rp_2_2.seq
4	K74	Upload Seq	EMCRM k109	Seq.Pro.Ident.		2 2		SEQUENCE #2
5	K53	Load EMDH table	k300		13A30	80432		ifc8rp_2_3.seq
6	K74	Upload Seq	EMCRM k109	Seq.Pro.Ident.		3 3		SEQUENCE #3
7	k82	Load Sequen	EMAE K109 K106 K132	Seq.Pro.Ident. EMAE Seq.Ident. EMAE Seq. Offset	1 2 0	1 2 0		This TC is used to load in one of the four EMAE Upload EMAE Sequencer Sequencers one of the four Sequence Programs stored Seq1->Seq2 in the EMCR memory.
8	k82	Load Sequen	EMAE K109 K106 K132	Seq.Pro.Ident. EMAE Seq.Ident. EMAE Seq. Offset	2 3 0	2 3 0		Upload EMAE Sequencer Seq2->Seq3
9	k82	Load Sequen	EMAE K109 K106 K132	Seq.Pro.Ident. EMAE Seq.Ident. EMAE Seq. Offset	3 4 0	3 4 0		Upload EMAE Sequencer Seq3->Seq4

## ES Id iffci10rpr to EMAE per

Step	Command Number	Command Name	Parameter Number	Parameter Name	Parameter Value (hex)	Parameter Value (engineering)	Value	NOTES (from TC Reports)	Details (from Sequences dev.)
1	K53	Load EMDH table	k300		13A30	80432		This TC is used to load in a specific EMDH memory iffci10rpr_1.seq area the Offset, Sequence, Pattern Mask tables or Test Image to be loaded in EMCR. More TC will be used to load the complete table in the EMDH, start address and length will be opportunely set.	
2	K74	Upload Seq	EMCRM k109	Seq.Pro.Ident.		1 1		This TC is used to load in the EMCR memory the SEQUENCE #1 complete Sequence Program previously stored in the EMDH Tables area. Parameters are used to include the first part of the command to be delivered from EMDH to EMCR.	
3	K53	Load EMDH table	k300		13A30	80432		iffci10rpr_2.seq	
4	K74	Upload Seq	EMCRM k109	Seq.Pro.Ident.		2 2		SEQUENCE #2	
5	K53	Load EMDH table	k300		13A30	80432		iffci10rpr_3.seq	
6	K74	Upload Seq	EMCRM k109	Seq.Pro.Ident.		3 3		SEQUENCE #3	
7	k82	Load	EMAE K109	Seq.Pro.Ident.	1	1		This TC is used to load in one of the four EMAE Upload EMAE Sequencer	

# EMCS

		Sequen	K106	EMAE Seq.Ident.	2	2	Sequencers one of the four Sequence Programs stored Seq1->Seq2 in the EMCR memory.
			K132	EMAE Seq. Offset	0	0	
8	k82	Load	EMAE K109	Seq.Pro.Ident.	2	2	Upload EMAE Sequencer Seq2->Seq3
		Sequen	K106	EMAE Seq.Ident.	3	3	
			K132	EMAE Seq. Offset	0	0	
9	k82	Load	EMAE K109	Seq.Pro.Ident.	3	3	Upload EMAE Sequencer Seq3->Seq4
		Sequen	K106	EMAE Seq.Ident.	4	4	
			K132	EMAE Seq. Offset	0	0	

## ES Id ifc8rd\_b to EMAE

Step	Command Number	Command Name	Parameter Number	Parameter Name	Parameter Value (hex)	Parameter (engineering)	Value	NOTES (from TC Reports)	Details (from Sequences dev.)
1	K53	Load EMDH table	k300		13A30	80432		This TC is used to load in a specific EMDH memory ifc8rd_b_0.seq area the Offset, Sequence, Pattern Mask tables or Test Image to be loaded in EMCR. More TC will be used to load the complete table in the EMDH, start address and length will be opportunely set.	
2	K74	Upload Seq	EMCRM k109	Seq.Pro.Ident.		0 0		This TC is used to load in the EMCR memory the SEQUENCE #0 complete Sequence Program previously stored in the EMDH Tables area. Parameters are used to include the first part of the command to be delivered from EMDH to EMCR.	
3	k82	Load Sequen	EMAE K109	Seq.Pro.Ident.	0	0		This TC is used to load in one of the four EMAE Upload EMAE Sequencers one of the four Sequence Programs stored Seq0->Seq1 in the EMCR memory.	Sequencer
			K106	EMAE Seq.Ident.	1	1			
			K132	EMAE Seq. Offset	0	0			

## ES Id iffci10rdb to EMAE

Step	Command Number	Command Name	Parameter Number	Parameter Name	Parameter Value (hex)	Parameter (engineering)	Value	NOTES (from TC Reports)	Details (from Sequences dev.)
1	K53	Load EMDH table	k300		13A30	80432		This TC is used to load in a specific EMDH memory iffci10rdb_0.seq area the Offset, Sequence, Pattern Mask tables or Test Image to be loaded in EMCR. More TC will be used to load the complete table in the EMDH, start address and length will be opportunely set.	
2	K74	Upload Seq	EMCRM k109	Seq.Pro.Ident.		0 0		This TC is used to load in the EMCR memory the SEQUENCE #0 complete Sequence Program previously stored in the EMDH Tables area. Parameters are used to include the first part of the command to be delivered from EMDH to EMCR.	
3	k82	Load Sequen	EMAE K109	Seq.Pro.Ident.	0	0		This TC is used to load in one of the four EMAE Upload EMAE Sequencers one of the four Sequence Programs stored Seq0->Seq1 in the EMCR memory.	Sequencer
			K106	EMAE Seq.Ident.	1	1			
			K132	EMAE Seq. Offset	0	0			

## ES Id ifc8rp\_b to EMAE

Step	Command Number	Command Name	Parameter Number	Parameter Name	Parameter Value (hex)	Parameter (engineering)	Value	NOTES (from TC Reports)	Details (from Sequences dev.)
1	K53	Load EMDH table	k300		13A30	80432		This TC is used to load in a specific EMDH memory ifc8rp_b_0.seq area the Offset, Sequence, Pattern Mask tables or Test Image to be loaded in EMCR. More TC will be used to load the complete table in the EMDH, start address and length will be opportunely set.	
2	K74	Upload Seq	EMCRM k109	Seq.Pro.Ident.			0 0	This TC is used to load in the EMCR memory the SEQUENCE #0 complete Sequence Program previously stored in the EMDH Tables area. Parameters are used to include the first part of the command to be delivered from EMDH to EMCR.	
3	k82	Load Sequen	EMAE K109 K106 K132	Seq.Pro.Ident. EMAE Seq.Ident. EMAE Seq. Offset	0 1 0	0 1 0		This TC is used to load in one of the four EMAE Upload EMAE Sequencers one of the four Sequence Programs stored Seq0->Seq1 in the EMCR memory.	

## ES Id iffc10rpb to EMAE

Step	Command Number	Command Name	Parameter Number	Parameter Name	Parameter Value (hex)	Parameter (engineering)	Value	NOTES (from TC Reports)	Details (from Sequences dev.)
1	K53	Load EMDH table	k300		13A30	80432		This TC is used to load in a specific EMDH memory iffc10rpb_0.seq area the Offset, Sequence, Pattern Mask tables or Test Image to be loaded in EMCR. More TC will be used to load the complete table in the EMDH, start address and length will be opportunely set.	
2	K74	Upload Seq	EMCRM k109	Seq.Pro.Ident.			0 0	This TC is used to load in the EMCR memory the SEQUENCE #0 complete Sequence Program previously stored in the EMDH Tables area. Parameters are used to include the first part of the command to be delivered from EMDH to EMCR.	
3	k82	Load Sequen	EMAE K109 K106 K132	Seq.Pro.Ident. EMAE Seq.Ident. EMAE Seq. Offset	0 1 0	0 1 0		This TC is used to load in one of the four EMAE Upload EMAE Sequencers one of the four Sequence Programs stored Seq0->Seq1 in the EMCR memory.	

## ES Id ifw5\_n1 to EMAE

Step	Command Number	Command Name	Parameter Number	Parameter Name	Parameter Value (hex)	Parameter (engineering)	Value	NOTES (from TC Reports)	Details (from Sequences dev.)
1	K53	Load EMDH table	k300		13A30	80432		This TC is used to load in a specific EMDH memory ifw5_n1_0.seq area the Offset, Sequence, Pattern Mask tables or Test Image to be loaded in EMCR. More TC will be used to	

# EMCS

2	K74	Upload Seq	EMCRM k109	Seq.Pro.Ident.	0	0	load the complete table in the EMDH, start address and length will be opportunely set. This TC is used to load in the EMCR memory the SEQUENCE #0 complete Sequence Program previously stored in the EMDH Tables area. Parameters are used to include the first part of the command to be delivered from EMDH to EMCR.
3	K53	Load EMDH table	k300		13A30	80432	ifw5_n1_0.seq
4	K74	Upload Seq	EMCRM k109	Seq.Pro.Ident.	1	1	SEQUENCE #1
5	K53	Load EMDH table	k300		13A30	80432	ifw5_n1_0.seq
6	K74	Upload Seq	EMCRM k109	Seq.Pro.Ident.	2	2	SEQUENCE #2
7	K53	Load EMDH table	k300		13A30	80432	ifw5_n1_0.seq
8	K74	Upload Seq	EMCRM k109	Seq.Pro.Ident.	3	3	SEQUENCE #3
9	k82	Load Sequen	EMAE K109 K106 K132	Seq.Pro.Ident. EMAE Seq.Ident. EMAE Seq. Offset	0 1 0	0 1 0	This TC is used to load in one of the four EMAE Upload EMAE Sequencer Sequencers one of the four Sequence Programs stored Seq0->Seq1 in the EMCR memory.
10	k82	Load Sequen	EMAE K109 K106 K132	Seq.Pro.Ident. EMAE Seq.Ident. EMAE Seq. Offset	1 2 0	1 2 0	Upload EMAE Sequencer Seq1->Seq2
11	k82	Load Sequen	EMAE K109 K106 K132	Seq.Pro.Ident. EMAE Seq.Ident. EMAE Seq. Offset	2 3 0	2 3 0	Upload EMAE Sequencer Seq2->Seq3
12	k82	Load Sequen	EMAE K109 K106 K132	Seq.Pro.Ident. EMAE Seq.Ident. EMAE Seq. Offset	3 4 0	3 4 0	Upload EMAE Sequencer Seq3->Seq4

## ES Id ifw8rd\_1 to EMAE

Step	Command Number	Command Name	Parameter Number	Parameter Name	Parameter Value (hex)	Parameter Value (engineering)	Value	NOTES (from TC Reports)	Details (from Sequences dev.)
1	K53	Load EMDH table	k300		13A30	80432		This TC is used to load in a specific EMDH memory ifw8rd_1_0.seq area the Offset, Sequence, Pattern Mask tables or Test Image to be loaded in EMCR. More TC will be used to load the complete table in the EMDH, start address and length will be opportunely set.	
2	K74	Upload Seq	EMCRM k109	Seq.Pro.Ident.			0 0	This TC is used to load in the EMCR memory the SEQUENCE #0 complete Sequence Program previously stored in the EMDH Tables area. Parameters are used to include the first part of the command to be delivered from EMDH to EMCR.	
3	k82	Load Sequen	EMAE K109 K106 K132	Seq.Pro.Ident. EMAE Seq.Ident. EMAE Seq. Offset	0 1 0	0 1 0		This TC is used to load in one of the four EMAE Upload EMAE Sequencers one of the four Sequence Programs stored Seq0->Seq1 in the EMCR memory.	Sequencer

## ES Id iswci10rdp to EMAE

Step	Command Number	Command Name	Parameter Number	Parameter Name	Parameter Value (hex)	Parameter (engineering)	Value	NOTES (from TC Reports)	Details (from Sequences dev.)
1	K53	Load EMDH table	k300		13A30	80432		This TC is used to load in a specific EMDH memory iswci10rdp_0.seq area the Offset, Sequence, Pattern Mask tables or Test Image to be loaded in EMCR. More TC will be used to load the complete table in the EMDH, start address and length will be opportunely set.	
2	K74	Upload Seq	EMCRM k109	Seq.Pro.Ident.			0 0	This TC is used to load in the EMCR memory the SEQUENCE #0 complete Sequence Program previously stored in the EMDH Tables area. Parameters are used to include the first part of the command to be delivered from EMDH to EMCR.	
3	k82	Load Sequen	EMAE K109 K106 K132	Seq.Pro.Ident. EMAE Seq.Ident. EMAE Seq. Offset	0 1 0	0 1 0		This TC is used to load in one of the four EMAE Upload EMAE Sequencers one of the four Sequence Programs stored Seq0->Seq1 in the EMCR memory.	Sequencer

## ES Id ifw8rd\_2 to EMAE

Step	Command Number	Command Name	Parameter Number	Parameter Name	Parameter Value (hex)	Parameter (engineering)	Value	NOTES (from TC Reports)	Details (from Sequences dev.)
1	K53	Load EMDH table	k300		13A30	80432		This TC is used to load in a specific EMDH memory ifw8rd_2_0.seq area the Offset, Sequence, Pattern Mask tables or Test Image to be loaded in EMCR. More TC will be used to load the complete table in the EMDH, start address and length will be opportunely set.	
2	K74	Upload Seq	EMCRM k109	Seq.Pro.Ident.			0 0	This TC is used to load in the EMCR memory the SEQUENCE #0 complete Sequence Program previously stored in the EMDH Tables area. Parameters are used to include the first part of the command to be delivered from EMDH to EMCR.	
3	k82	Load Sequen	EMAE K109 K106 K132	Seq.Pro.Ident. EMAE Seq.Ident. EMAE Seq. Offset	0 1 0	0 1 0		This TC is used to load in one of the four EMAE Upload EMAE Sequencers one of the four Sequence Programs stored Seq0->Seq1 in the EMCR memory.	Sequencer

## ES Id iswci10rdr to EMAE

Step	Command Number	Command Name	Parameter Number	Parameter Name	Parameter Value (hex)	Parameter (engineering)	Value	NOTES (from TC Reports)	Details (from Sequences dev.)
1	K53	Load EMDH table	k300		13A30	80432		This TC is used to load in a specific EMDH memory iswci10rdr_0.seq area the Offset, Sequence, Pattern Mask tables or Test Image to be loaded in EMCR. More TC will be used to load the complete table in the EMDH, start address and length will be opportunely set.	

# EMCS

2	K74	Upload Seq	EMCRM k109	Seq.Pro.Ident.	0	0		This TC is used to load in the EMCR memory the SEQUENCE #0 complete Sequence Program previously stored in the EMDH Tables area. Parameters are used to include the first part of the command to be delivered from EMDH to EMCR.
3	k82	Load Sequen	EMAE K109 K106 K132	Seq.Pro.Ident. EMAE Seq.Ident. EMAE Seq. Offset	0 1 0	0 1 0		This TC is used to load in one of the four EMAE Upload EMAE Sequencer Sequencers one of the four Sequence Programs stored Seq0->Seq1 in the EMCR memory.

## ES Id ifw8rd\_b to EMAE

Step	Command Number	Command Name	Parameter Number	Parameter Name	Parameter Value (hex)	Parameter (engineering)	Value	NOTES (from TC Reports)	Details (from Sequences dev.)
1	K53	Load EMDH table	k300		13A30	80432		This TC is used to load in a specific EMDH memory ifw8rd_b_0.seq area the Offset, Sequence, Pattern Mask tables or Test Image to be loaded in EMCR. More TC will be used to load the complete table in the EMDH, start address and length will be opportunely set.	
2	K74	Upload Seq	EMCRM k109	Seq.Pro.Ident.	0	0		This TC is used to load in the EMCR memory the SEQUENCE #0 complete Sequence Program previously stored in the EMDH Tables area. Parameters are used to include the first part of the command to be delivered from EMDH to EMCR.	
3	k82	Load Sequen	EMAE K109 K106 K132	Seq.Pro.Ident. EMAE Seq.Ident. EMAE Seq. Offset	0 1 0	0 1 0		This TC is used to load in one of the four EMAE Upload EMAE Sequencer Sequencers one of the four Sequence Programs stored Seq0->Seq1 in the EMCR memory.	

## ES Id iswci10rdb to EMAE

Step	Command Number	Command Name	Parameter Number	Parameter Name	Parameter Value (hex)	Parameter (engineering)	Value	NOTES (from TC Reports)	Details (from Sequences dev.)
1	K53	Load EMDH table	k300		13A30	80432		This TC is used to load in a specific EMDH memory iswci10rdb_0.seq area the Offset, Sequence, Pattern Mask tables or Test Image to be loaded in EMCR. More TC will be used to load the complete table in the EMDH, start address and length will be opportunely set.	
2	K74	Upload Seq	EMCRM k109	Seq.Pro.Ident.	0	0		This TC is used to load in the EMCR memory the SEQUENCE #0 complete Sequence Program previously stored in the EMDH Tables area. Parameters are used to include the first part of the command to be delivered from EMDH to EMCR.	
3	k82	Load Sequen	EMAE K109 K106 K132	Seq.Pro.Ident. EMAE Seq.Ident. EMAE Seq. Offset	0 1 0	0 1 0		This TC is used to load in one of the four EMAE Upload EMAE Sequencer Sequencers one of the four Sequence Programs stored Seq0->Seq1 in the EMCR memory.	

## ES Id ifw8rd\_3\_1 to EMAE

Step	Command Number	Command Name	Parameter Number	Parameter Name	Parameter Value (hex)	Parameter (engineering)	Value	NOTES (from TC Reports)	Details (from Sequences dev.)
1	K53	Load EMDH table	k300		13A30	80432		This TC is used to load in a specific EMDH memory ifw8rd_3_1_0.seq area the Offset, Sequence, Pattern Mask tables or Test Image to be loaded in EMCR. More TC will be used to load the complete table in the EMDH, start address and length will be opportunely set.	
2	K74	Upload Seq	EMCRM k109	Seq.Pro.Ident.			0 0	This TC is used to load in the EMCR memory the SEQUENCE #0 complete Sequence Program previously stored in the EMDH Tables area. Parameters are used to include the first part of the command to be delivered from EMDH to EMCR.	
3	k82	Load Sequen	EMAE K109 K106 K132	Seq.Pro.Ident. EMAE Seq.Ident. EMAE Seq. Offset	0 1 0	0 1 0		This TC is used to load in one of the four EMAE Upload EMAE Sequencers one of the four Sequence Programs stored Seq0->Seq1 in the EMCR memory.	Sequencer

## ES Id ilwci10rdp to EMAE

Step	Command Number	Command Name	Parameter Number	Parameter Name	Parameter Value (hex)	Parameter (engineering)	Value	NOTES (from TC Reports)	Details (from Sequences dev.)
1	K53	Load EMDH table	k300		13A30	80432		This TC is used to load in a specific EMDH memory ilwci10rdp_0.seq area the Offset, Sequence, Pattern Mask tables or Test Image to be loaded in EMCR. More TC will be used to load the complete table in the EMDH, start address and length will be opportunely set.	
2	K74	Upload Seq	EMCRM k109	Seq.Pro.Ident.			0 0	This TC is used to load in the EMCR memory the SEQUENCE #0 complete Sequence Program previously stored in the EMDH Tables area. Parameters are used to include the first part of the command to be delivered from EMDH to EMCR.	
3	k82	Load Sequen	EMAE K109 K106 K132	Seq.Pro.Ident. EMAE Seq.Ident. EMAE Seq. Offset	0 1 0	0 1 0		This TC is used to load in one of the four EMAE Upload EMAE Sequencers one of the four Sequence Programs stored Seq0->Seq1 in the EMCR memory.	Sequencer

## ES Id ifw8rd\_3\_2 to EMAE

Step	Command Number	Command Name	Parameter Number	Parameter Name	Parameter Value (hex)	Parameter (engineering)	Value	NOTES (from TC Reports)	Details (from Sequences dev.)
1	K53	Load EMDH table	k300		13A30	80432		This TC is used to load in a specific EMDH memory ifw8rd_3_2_0.seq	

2	K74	Upload Seq	EMCRM k109	Seq.Pro.Ident.	0	0	area the Offset, Sequence, Pattern Mask tables or Test Image to be loaded in EMCR. More TC will be used to load the complete table in the EMDH, start address and length will be opportunely set. This TC is used to load in the EMCR memory the SEQUENCE #0 complete Sequence Program previously stored in the EMDH Tables area. Parameters are used to include the first part of the command to be delivered from EMDH to EMCR.
3	k82	Load Sequen	EMAE K109 K106 K132	Seq.Pro.Ident. EMAE Seq.Ident. EMAE Seq. Offset	0 1 0	0 1 0	This TC is used to load in one of the four EMAE Upload EMAE Sequencer Sequencers one of the four Sequence Programs stored Seq0->Seq1 in the EMCR memory.

### ES Id ilwci10rdr to EMAE

Step	Command Number	Command Name	Parameter Number	Parameter Name	Parameter Value (hex)	Parameter (engineering)	Value	NOTES (from TC Reports)	Details (from Sequences dev.)
1	K53	Load EMDH table	k300		13A30	80432		This TC is used to load in a specific EMDH memory ilwci10rdr_0.seq area the Offset, Sequence, Pattern Mask tables or Test Image to be loaded in EMCR. More TC will be used to load the complete table in the EMDH, start address and length will be opportunely set.	
2	K74	Upload Seq	EMCRM k109	Seq.Pro.Ident.	0	0		This TC is used to load in the EMCR memory the SEQUENCE #0 complete Sequence Program previously stored in the EMDH Tables area. Parameters are used to include the first part of the command to be delivered from EMDH to EMCR.	
3	k82	Load Sequen	EMAE K109 K106 K132	Seq.Pro.Ident. EMAE Seq.Ident. EMAE Seq. Offset	0 1 0	0 1 0		This TC is used to load in one of the four EMAE Upload EMAE Sequencer Sequencers one of the four Sequence Programs stored Seq0->Seq1 in the EMCR memory.	

### ES Id ifw8rd\_3\_b to EMAE

Step	Command Number	Command Name	Parameter Number	Parameter Name	Parameter Value (hex)	Parameter (engineering)	Value	NOTES (from TC Reports)	Details (from Sequences dev.)
1	K53	Load EMDH table	k300		13A30	80432		This TC is used to load in a specific EMDH memory ifw8rd_3_b_0.seq area the Offset, Sequence, Pattern Mask tables or Test Image to be loaded in EMCR. More TC will be used to load the complete table in the EMDH, start address and length will be opportunely set.	
2	K74	Upload Seq	EMCRM k109	Seq.Pro.Ident.	0	0		This TC is used to load in the EMCR memory the SEQUENCE #0 complete Sequence Program previously stored in the EMDH Tables area. Parameters are used to include the first part of the command to be delivered from EMDH to EMCR.	
3	k82	Load	EMAE K109	Seq.Pro.Ident.	0	0		This TC is used to load in one of the four EMAE Upload EMAE Sequencer	

# EMCS

Sequen	K106	EMAE Seq.Ident.	1	1	Sequencers one of the four Sequence Programs stored Seq0->Seq1 in the EMCR memory.
	K132	EMAE Seq. Offset	0	0	

## ES Id ilwci10rdb to EMAE

Step	Command Number	Command Name	Parameter Number	Parameter Name	Parameter Value (hex)	Parameter (engineering)	Value	NOTES (from TC Reports)	Details (from Sequences dev.)
1	K53	Load EMDH table	k300		13A30	80432		This TC is used to load in a specific EMDH memory ilwci10rdb_0.seq area the Offset, Sequence, Pattern Mask tables or Test Image to be loaded in EMCR. More TC will be used to load the complete table in the EMDH, start address and length will be opportunely set.	
2	K74	Upload Seq	EMCRM k109	Seq.Pro.Ident.			0 0	This TC is used to load in the EMCR memory the SEQUENCE #0 complete Sequence Program previously stored in the EMDH Tables area. Parameters are used to include the first part of the command to be delivered from EMDH to EMCR.	
3	k82	Load Sequen	EMAE K109 K106 K132	Seq.Pro.Ident. EMAE Seq.Ident. EMAE Seq. Offset	0 1 0	0 1 0		This TC is used to load in one of the four EMAE Upload Sequencer Sequencers one of the four Sequence Programs stored Seq0->Seq1 in the EMCR memory.	

## ES Id rfc3rd\_1\_200 to EMAE

Step	Command Number	Command Name	Parameter Number	Parameter Name	Parameter Value (hex)	Parameter (engineering)	Value	NOTES (from TC Reports)	Details (from Sequences dev.)
1	K53	Load EMDH table	k300		13A30	80432		This TC is used to load in a specific EMDH memory rfc3rd_1_200.seq area the Offset, Sequence, Pattern Mask tables or Test Image to be loaded in EMCR. More TC will be used to load the complete table in the EMDH, start address and length will be opportunely set.	
2	K74	Upload Seq	EMCRM k109	Seq.Pro.Ident.			0 0	This TC is used to load in the EMCR memory the SEQUENCE #0 complete Sequence Program previously stored in the EMDH Tables area. Parameters are used to include the first part of the command to be delivered from EMDH to EMCR.	
3	k82	Load Sequen	EMAE K109 K106 K132	Seq.Pro.Ident. EMAE Seq.Ident. EMAE Seq. Offset	0 1 0	0 1 0		This TC is used to load in one of the four EMAE Upload Sequencer Sequencers one of the four Sequence Programs stored Seq0->Seq1 in the EMCR memory.	

## ES Id rfscr3rdp200 to EMAE

# EMCS

Step	Command Number	Command Name	Parameter Number	Parameter Name	Parameter Value (hex)	Parameter (engineering)	Value	NOTES (from TC Reports)	Details (from Sequences dev.)
1	K53	Load EMDH table	k300		13A30	80432		This TC is used to load in a specific EMDH memory rfscr3rdp200.seq area the Offset, Sequence, Pattern Mask tables or Test Image to be loaded in EMCR. More TC will be used to load the complete table in the EMDH, start address and length will be opportunely set.	
2	K74	Upload Seq	EMCRM k109	Seq.Pro.Ident.			0 0	This TC is used to load in the EMCR memory the SEQUENCE #0 complete Sequence Program previously stored in the EMDH Tables area. Parameters are used to include the first part of the command to be delivered from EMDH to EMCR.	
3	k82	Load Sequen	EMAE K109 K106 K132	Seq.Pro.Ident. EMAE Seq.Ident. EMAE Seq. Offset	0 1 0	0 1 0		This TC is used to load in one of the four EMAE Upload EMAE Sequencers one of the four Sequence Programs stored Seq0->Seq1 in the EMCR memory.	

## ES Id rfc3rd\_2\_200 to EMAE

Step	Command Number	Command Name	Parameter Number	Parameter Name	Parameter Value (hex)	Parameter (engineering)	Value	NOTES (from TC Reports)	Details (from Sequences dev.)
1	K53	Load EMDH table	k300		13A30	80432		This TC is used to load in a specific EMDH memory rfc3rd_2_200.seq area the Offset, Sequence, Pattern Mask tables or Test Image to be loaded in EMCR. More TC will be used to load the complete table in the EMDH, start address and length will be opportunely set.	
2	K74	Upload Seq	EMCRM k109	Seq.Pro.Ident.			0 0	This TC is used to load in the EMCR memory the SEQUENCE #0 complete Sequence Program previously stored in the EMDH Tables area. Parameters are used to include the first part of the command to be delivered from EMDH to EMCR.	
3	k82	Load Sequen	EMAE K109 K106 K132	Seq.Pro.Ident. EMAE Seq.Ident. EMAE Seq. Offset	0 1 0	0 1 0		This TC is used to load in one of the four EMAE Upload EMAE Sequencers one of the four Sequence Programs stored Seq0->Seq1 in the EMCR memory.	

## ES Id rfscr3rdr200 to EMAE

Step	Command Number	Command Name	Parameter Number	Parameter Name	Parameter Value (hex)	Parameter (engineering)	Value	NOTES (from TC Reports)	Details (from Sequences dev.)
1	K53	Load EMDH table	k300		13A30	80432		This TC is used to load in a specific EMDH memory rfscr3rdr200.seq area the Offset, Sequence, Pattern Mask tables or Test Image to be loaded in EMCR. More TC will be used to load the complete table in the EMDH, start address and length will be opportunely set.	
2	K74	Upload Seq	EMCRM k109	Seq.Pro.Ident.			0 0	This TC is used to load in the EMCR memory the SEQUENCE #0 complete Sequence Program previously stored in the EMDH Tables area. Parameters are used to include the	

# EMCS

3	k82	Load Sequen	EMAE K109 K106 K132	Seq.Pro.Ident. EMAE Seq.Ident. EMAE Seq. Offset	0 1 0	0 1 0	first part of the command to be delivered from EMDH to EMCR. This TC is used to load in one of the four EMAE Upload EMAE Sequencer Sequencers one of the four Sequence Programs stored Seq0->Seq1 in the EMCR memory.
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## ES Id rfc3rd\_b\_200 to EMAE

Step	Command Number	Command Name	Parameter Number	Parameter Name	Parameter Value (hex)	Parameter (engineering)	Value	NOTES (from TC Reports)	Details (from Sequences dev.)
1	K53	Load EMDH table	k300		13A30	80432		This TC is used to load in a specific EMDH memory rfc3rd_b_200.seq area the Offset, Sequence, Pattern Mask tables or Test Image to be loaded in EMCR. More TC will be used to load the complete table in the EMDH, start address and length will be opportunely set.	
2	K74	Upload Seq	EMCRM k109	Seq.Pro.Ident.		0 0		This TC is used to load in the EMCR memory the SEQUENCE #0 complete Sequence Program previously stored in the EMDH Tables area. Parameters are used to include the first part of the command to be delivered from EMDH to EMCR.	
3	k82	Load Sequen	EMAE K109 K106 K132	Seq.Pro.Ident. EMAE Seq.Ident. EMAE Seq. Offset	0 1 0	0 1 0		This TC is used to load in one of the four EMAE Upload EMAE Sequencer Sequencers one of the four Sequence Programs stored Seq0->Seq1 in the EMCR memory.	

## ES Id rfscr3rdb200 to EMAE

Step	Command Number	Command Name	Parameter Number	Parameter Name	Parameter Value (hex)	Parameter (engineering)	Value	NOTES (from TC Reports)	Details (from Sequences dev.)
1	K53	Load EMDH table	k300		13A30	80432		This TC is used to load in a specific EMDH memory rfscr3rdb200.seq area the Offset, Sequence, Pattern Mask tables or Test Image to be loaded in EMCR. More TC will be used to load the complete table in the EMDH, start address and length will be opportunely set.	
2	K74	Upload Seq	EMCRM k109	Seq.Pro.Ident.		0 0		This TC is used to load in the EMCR memory the SEQUENCE #0 complete Sequence Program previously stored in the EMDH Tables area. Parameters are used to include the first part of the command to be delivered from EMDH to EMCR.	
3	k82	Load Sequen	EMAE K109 K106 K132	Seq.Pro.Ident. EMAE Seq.Ident. EMAE Seq. Offset	0 1 0	0 1 0		This TC is used to load in one of the four EMAE Upload EMAE Sequencer Sequencers one of the four Sequence Programs stored Seq0->Seq1 in the EMCR memory.	

## ES Id rfscr3rpp200 to EMAE

Step	Command Number	Command Name	Parameter Number	Parameter Name	Parameter Value (hex)	Parameter (engineering)	Value	NOTES (from TC Reports)	Details (from Sequences dev.)
1	K53	Load EMDH table	k300		13A30	80432		This TC is used to load in a specific EMDH memory rfscr3rpp200.seq area the Offset, Sequence, Pattern Mask tables or Test Image to be loaded in EMCR. More TC will be used to load the complete table in the EMDH, start address and length will be opportunely set.	
2	K74	Upload Seq	EMCRM k109	Seq.Pro.Ident.			0 0	This TC is used to load in the EMCR memory the SEQUENCE #0 complete Sequence Program previously stored in the EMDH Tables area. Parameters are used to include the first part of the command to be delivered from EMDH to EMCR.	
3	k82	Load Sequen	EMAE K109 K106 K132	Seq.Pro.Ident. EMAE Seq.Ident. EMAE Seq. Offset	0 1 0	0 1 0		This TC is used to load in one of the four EMAE Upload EMAE Sequencers one of the four Sequence Programs stored Seq0->Seq1 in the EMCR memory.	Sequencer

## ES Id rfscr3rpr200 to EMAE

Step	Command Number	Command Name	Parameter Number	Parameter Name	Parameter Value (hex)	Parameter (engineering)	Value	NOTES (from TC Reports)	Details (from Sequences dev.)
1	K53	Load EMDH table	k300		13A30	80432		This TC is used to load in a specific EMDH memory rfscr3rpr200.seq area the Offset, Sequence, Pattern Mask tables or Test Image to be loaded in EMCR. More TC will be used to load the complete table in the EMDH, start address and length will be opportunely set.	
2	K74	Upload Seq	EMCRM k109	Seq.Pro.Ident.			0 0	This TC is used to load in the EMCR memory the SEQUENCE #0 complete Sequence Program previously stored in the EMDH Tables area. Parameters are used to include the first part of the command to be delivered from EMDH to EMCR.	
3	k82	Load Sequen	EMAE K109 K106 K132	Seq.Pro.Ident. EMAE Seq.Ident. EMAE Seq. Offset	0 1 0	0 1 0		This TC is used to load in one of the four EMAE Upload EMAE Sequencers one of the four Sequence Programs stored Seq0->Seq1 in the EMCR memory.	Sequencer

## ES Id rfscr3rpb200 to EMAE

Step	Command Number	Command Name	Parameter Number	Parameter Name	Parameter Value (hex)	Parameter (engineering)	Value	NOTES (from TC Reports)	Details (from Sequences dev.)
1	K53	Load EMDH table	k300		13A30	80432		This TC is used to load in a specific EMDH memory rfscr3rpb200.seq area the Offset, Sequence, Pattern Mask tables or Test Image to be loaded in EMCR. More TC will be used to load the complete table in the EMDH, start address and length will be opportunely set.	

# EMCS

2	K74	Upload Seq	EMCRM k109	Seq.Pro.Ident.	0	0		This TC is used to load in the EMCR memory the SEQUENCE #0 complete Sequence Program previously stored in the EMDH Tables area. Parameters are used to include the first part of the command to be delivered from EMDH to EMCR.
3	k82	Load Sequen	EMAE K109 K106 K132	Seq.Pro.Ident. EMAE Seq.Ident. EMAE Seq. Offset	0 1 0	0 1 0		This TC is used to load in one of the four EMAE Upload EMAE Sequencer Sequencers one of the four Sequence Programs stored Seq0->Seq1 in the EMCR memory.

## ES Id tnc1\_n1 to EMAE

Step	Command Number	Command Name	Parameter Number	Parameter Name	Parameter Value (hex)	Parameter (engineering)	Value	NOTES (from TC Reports)	Details (from Sequences dev.)
1	K53	Load EMDH table	k300		13A30	80432		This TC is used to load in a specific EMDH memory tnc1_n1_0.seq area the Offset, Sequence, Pattern Mask tables or Test Image to be loaded in EMCR. More TC will be used to load the complete table in the EMDH, start address and length will be opportunely set.	
2	K74	Upload Seq	EMCRM k109	Seq.Pro.Ident.	0	0		This TC is used to load in the EMCR memory the SEQUENCE #0 complete Sequence Program previously stored in the EMDH Tables area. Parameters are used to include the first part of the command to be delivered from EMDH to EMCR.	
3	k82	Load Sequen	EMAE K109 K106 K132	Seq.Pro.Ident. EMAE Seq.Ident. EMAE Seq. Offset	0 1 0	0 1 0		This TC is used to load in one of the four EMAE Upload EMAE Sequencer Sequencers one of the four Sequence Programs stored Seq0->Seq1 in the EMCR memory.	

## ES Id tnc1\_n2 to EMAE

Step	Command Number	Command Name	Parameter Number	Parameter Name	Parameter Value (hex)	Parameter (engineering)	Value	NOTES (from TC Reports)	Details (from Sequences dev.)
1	K53	Load EMDH table	k300		13A30	80432		This TC is used to load in a specific EMDH memory tnc1_n2_0.seq area the Offset, Sequence, Pattern Mask tables or Test Image to be loaded in EMCR. More TC will be used to load the complete table in the EMDH, start address and length will be opportunely set.	
2	K74	Upload Seq	EMCRM k109	Seq.Pro.Ident.	0	0		This TC is used to load in the EMCR memory the SEQUENCE #0 complete Sequence Program previously stored in the EMDH Tables area. Parameters are used to include the first part of the command to be delivered from EMDH to EMCR.	
3	k82	Load Sequen	EMAE K109 K106 K132	Seq.Pro.Ident. EMAE Seq.Ident. EMAE Seq. Offset	0 1 0	0 1 0		This TC is used to load in one of the four EMAE Upload EMAE Sequencer Sequencers one of the four Sequence Programs stored Seq0->Seq1 in the EMCR memory.	

## ES Id tdc2\_n1 to EMAE

Step	Command Number	Command Name	Parameter Number	Parameter Name	Parameter Value (hex)	Parameter (engineering)	Value	NOTES (from TC Reports)	Details (from Sequences dev.)
1	K53	Load EMDH table	k300		13A30	80432		This TC is used to load in a specific EMDH memory tdc2_n1_0.seq area the Offset, Sequence, Pattern Mask tables or Test Image to be loaded in EMCR. More TC will be used to load the complete table in the EMDH, start address and length will be opportunely set.	
2	K74	Upload Seq	EMCRM k109	Seq.Pro.Ident.		0	0	This TC is used to load in the EMCR memory the SEQUENCE #0 complete Sequence Program previously stored in the EMDH Tables area. Parameters are used to include the first part of the command to be delivered from EMDH to EMCR.	
3	k82	Load Sequen	EMAE K109 K106 K132	Seq.Pro.Ident. EMAE Seq.Ident. EMAE Seq. Offset	0 1 0	0 1 0		This TC is used to load in one of the four EMAE Upload EMAE Sequencers one of the four Sequence Programs stored Seq0->Seq1 in the EMCR memory.	

## ES Id tdiovctge05p to EMAE

Step	Command Number	Command Name	Parameter Number	Parameter Name	Parameter Value (hex)	Parameter (engineering)	Value	NOTES (from TC Reports)	Details (from Sequences dev.)
1	K53	Load EMDH table	k300		13A30	80432		This TC is used to load in a specific EMDH memory tdiovctge05p.seq area the Offset, Sequence, Pattern Mask tables or Test Image to be loaded in EMCR. More TC will be used to load the complete table in the EMDH, start address and length will be opportunely set.	
2	K74	Upload Seq	EMCRM k109	Seq.Pro.Ident.		0	0	This TC is used to load in the EMCR memory the SEQUENCE #0 complete Sequence Program previously stored in the EMDH Tables area. Parameters are used to include the first part of the command to be delivered from EMDH to EMCR.	
3	k82	Load Sequen	EMAE K109 K106 K132	Seq.Pro.Ident. EMAE Seq.Ident. EMAE Seq. Offset	0 1 0	0 1 0		This TC is used to load in one of the four EMAE Upload EMAE Sequencers one of the four Sequence Programs stored Seq0->Seq1 in the EMCR memory.	

## ES Id tdc2\_n2 to EMAE

Step	Command Number	Command Name	Parameter Number	Parameter Name	Parameter Value (hex)	Parameter (engineering)	Value	NOTES (from TC Reports)	Details (from Sequences dev.)
1	K53	Load EMDH table	k300		13A30	80432		This TC is used to load in a specific EMDH memory tdc2_n2_0.seq	

2	K74	Upload Seq	EMCRM k109	Seq.Pro.Ident.	0	0	area the Offset, Sequence, Pattern Mask tables or Test Image to be loaded in EMCR. More TC will be used to load the complete table in the EMDH, start address and length will be opportunely set. This TC is used to load in the EMCR memory the SEQUENCE #0 complete Sequence Program previously stored in the EMDH Tables area. Parameters are used to include the first part of the command to be delivered from EMDH to EMCR.
3	k82	Load Sequen	EMAE K109 K106 K132	Seq.Pro.Ident. EMAE Seq.Ident. EMAE Seq. Offset	0 1 0	0 1 0	This TC is used to load in one of the four EMAE Upload EMAE Sequencer Sequencers one of the four Sequence Programs stored Seq0->Seq1 in the EMCR memory.

### ES Id tdiovctge05r to EMAE

Step	Command Number	Command Name	Parameter Number	Parameter Name	Parameter Value (hex)	Parameter (engineering)	Value	NOTES (from TC Reports)	Details (from Sequences dev.)
1	K53	Load EMDH table	k300		13A30	80432		This TC is used to load in a specific EMDH memory tdiovctge05r.seq area the Offset, Sequence, Pattern Mask tables or Test Image to be loaded in EMCR. More TC will be used to load the complete table in the EMDH, start address and length will be opportunely set.	
2	K74	Upload Seq	EMCRM k109	Seq.Pro.Ident.	0	0		This TC is used to load in the EMCR memory the SEQUENCE #0 complete Sequence Program previously stored in the EMDH Tables area. Parameters are used to include the first part of the command to be delivered from EMDH to EMCR.	
3	k82	Load Sequen	EMAE K109 K106 K132	Seq.Pro.Ident. EMAE Seq.Ident. EMAE Seq. Offset	0 1 0	0 1 0		This TC is used to load in one of the four EMAE Upload EMAE Sequencer Sequencers one of the four Sequence Programs stored Seq0->Seq1 in the EMCR memory.	

### ES Id timage3 to EMAE

Step	Command Number	Command Name	Parameter Number	Parameter Name	Parameter Value (hex)	Parameter (engineering)	Value	NOTES (from TC Reports)	Details (from Sequences dev.)
1	K53	Load EMDH table	k300		13A30	80432		This TC is used to load in a specific EMDH memory timage3.seq area the Offset, Sequence, Pattern Mask tables or Test Image to be loaded in EMCR. More TC will be used to load the complete table in the EMDH, start address and length will be opportunely set.	
2	K74	Upload Seq	EMCRM k109	Seq.Pro.Ident.	0	0		This TC is used to load in the EMCR memory the SEQUENCE #0 complete Sequence Program previously stored in the EMDH Tables area. Parameters are used to include the first part of the command to be delivered from EMDH to EMCR.	
3	k82	Load	EMAE K109	Seq.Pro.Ident.	0	0		This TC is used to load in one of the four EMAE Upload EMAE Sequencer	

# EMCS

Sequen K106 EMAE Seq.Ident. 1 1 Sequencers one of the four Sequence Programs stored Seq0->Seq1  
 K132 EMAE Seq. Offset 0 0 in the EMCR memory.

## ES Id timnctng03p to EMAE

Step	Command Number	Command Name	Parameter Number	Parameter Name	Parameter Value (hex)	Parameter (engineering)	Value	NOTES (from TC Reports)	Details (from Sequences dev.)
1	K53	Load EMDH table	k300		13A30	80432		This TC is used to load in a specific EMDH memory timnctng03p.seq area the Offset, Sequence, Pattern Mask tables or Test Image to be loaded in EMCR. More TC will be used to load the complete table in the EMDH, start address and length will be opportunely set.	
2	K74	Upload Seq	EMCRM k109	Seq.Pro.Ident.		0 0		This TC is used to load in the EMCR memory the SEQUENCE #0 complete Sequence Program previously stored in the EMDH Tables area. Parameters are used to include the first part of the command to be delivered from EMDH to EMCR.	
3	k82	Load Sequen	EMAE K109 K106 K132	Seq.Pro.Ident. EMAE Seq.Ident. EMAE Seq. Offset	0 1 0	0 1 0		This TC is used to load in one of the four EMAE Upload EMAE Sequencer Sequencers one of the four Sequence Programs stored Seq0->Seq1 in the EMCR memory.	

## ES Id timnctng03r to EMAE

Step	Command Number	Command Name	Parameter Number	Parameter Name	Parameter Value (hex)	Parameter (engineering)	Value	NOTES (from TC Reports)	Details (from Sequences dev.)
1	K53	Load EMDH table	k300		13A30	80432		This TC is used to load in a specific EMDH memory timnctng03r.seq area the Offset, Sequence, Pattern Mask tables or Test Image to be loaded in EMCR. More TC will be used to load the complete table in the EMDH, start address and length will be opportunely set.	
2	K74	Upload Seq	EMCRM k109	Seq.Pro.Ident.		0 0		This TC is used to load in the EMCR memory the SEQUENCE #0 complete Sequence Program previously stored in the EMDH Tables area. Parameters are used to include the first part of the command to be delivered from EMDH to EMCR.	
3	k82	Load Sequen	EMAE K109 K106 K132	Seq.Pro.Ident. EMAE Seq.Ident. EMAE Seq. Offset	0 1 0	0 1 0		This TC is used to load in one of the four EMAE Upload EMAE Sequencer Sequencers one of the four Sequence Programs stored Seq0->Seq1 in the EMCR memory.	

## ES Id+setup I33ci10rdp to EMAE

Step	Command Number	Command Name	Parameter Number	Parameter Name	Parameter Value (hex)	Parameter (engineering)	Value	NOTES (from TC Reports)	Details (from Sequences dev.)
1	K53	Load EMDH table	k300		13A30	80432		This TC is used to load in a specific EMDH memory I33ci10rdp_0.seq area the Offset, Sequence, Pattern Mask tables or Test Image to be loaded in EMCR. More TC will be used to load the complete table in the EMDH, start address and length will be opportunely set.	

# EMCS

2	K74	Upload Seq	EMCRM k109	Seq.Pro.Ident.	0 0				This TC is used to load in the EMCR memory the SEQUENCE #0 complete Sequence Program previously stored in the EMDH Tables area. Parameters are used to include the first part of the command to be delivered from EMDH to EMCR.
3	K53	Load EMDH table	k300		13A30	80432			This TC is used to load in a specific EMDH memory I33ci10rdp_1.seq area the Offset, Sequence, Pattern Mask tables or Test Image to be loaded in EMCR. More TC will be used to load the complete table in the EMDH, start address and length will be opportunely set.
4	K74	Upload Seq	EMCRM k109	Seq.Pro.Ident.	1 1				This TC is used to load in the EMCR memory the SEQUENCE #1 complete Sequence Program previously stored in the EMDH Tables area. Parameters are used to include the first part of the command to be delivered from EMDH to EMCR.
5	K53	Load EMDH table	k300		13A30	80432			I33ci10rdp_2.seq
6	K74	Upload Seq	EMCRM k109	Seq.Pro.Ident.	2 2				SEQUENCE #2
7	K53	Load EMDH table	k300		13A30	80432			I33ci10rdp_3.seq
8	K74	Upload Seq	EMCRM k109	Seq.Pro.Ident.	3 3				SEQUENCE #3
9	k82	Load Sequen	EMAE K109 K106 K132	Seq.Pro.Ident. EMAE Seq.Ident. EMAE Seq. Offset	0 1 0	0 1 0			This TC is used to load in one of the four EMAE Upload EMAE Sequencer one of the four Sequence Programs stored Seq0->Seq1 in the EMCR memory.
10	k82	Load Sequen	EMAE K109 K106 K132	Seq.Pro.Ident. EMAE Seq.Ident. EMAE Seq. Offset	1 2 0	1 2 0			This TC is used to load in one of the four EMAE Upload EMAE Sequencer one of the four Sequence Programs stored Seq1->Seq2 in the EMCR memory.
11	k82	Load Sequen	EMAE K109 K106 K132	Seq.Pro.Ident. EMAE Seq.Ident. EMAE Seq. Offset	2 3 0	2 3 0			Upload EMAE Sequencer Seq2->Seq3
12	k82	Load Sequen	EMAE K109 K106 K132	Seq.Pro.Ident. EMAE Seq.Ident. EMAE Seq. Offset	3 4 0	3 4 0			Upload EMAE Sequencer Seq3->Seq4
13	k81	Load Comman	EMAE K133 K160	EMAE CommandAddr. EMAE CommandDatum	23 0	35 0			This TC is used to send one low level command to EMAE, through EMCR. Parameters are used to include the complete EMCR command foreseen for this function.
14	k81	Load Comman	EMAE K133 K160	EMAE CommandAddr. EMAE CommandDatum	22 0	34 0			seq.1 hight address
15	k81	Load Comman	EMAE K133 K160	EMAE CommandAddr. EMAE CommandDatum	63 0	99 0			seq.2 low address
16	k81	Load Comman	EMAE K133 K160	EMAE CommandAddr. EMAE CommandDatum	62 0	98 0			seq.2 hight address
17	k81	Load Comman	EMAE K133 K160	EMAE CommandAddr. EMAE CommandDatum	a3 0	163 0			seq.3 low address
18	k81	Load Comman	EMAE K133 K160	EMAE CommandAddr. EMAE CommandDatum	a2 0	162 0			seq.3 hight address
19	k81	Load Comman	EMAE K133 K160	EMAE CommandAddr. EMAE CommandDatum	e3 0	227 0			seq.4 low address
20	k81	Load Comman	EMAE K133 K160	EMAE CommandAddr. EMAE CommandDatum	e2 0	226 0			seq.4 high address

# EMCS

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21	k81	Load	EMAE K133	EMAE CommandAddr.	21	33	seq.1 low gain node 0 run
		Comman	K160	EMAE CommandDatum	81	129	
22	k81	Load	EMAE K133	EMAE CommandAddr.	61	97	seq.2 low gain node 0 run
		Comman	K160	EMAE CommandDatum	80	128	
23	k81	Load	EMAE K133	EMAE CommandAddr.	a1	161	seq.3 low gain node 0 run
		Comman	K160	EMAE CommandDatum	80	128	
24	k81	Load	EMAE K133	EMAE CommandAddr.	e1	225	seq.4 low gain node 0 run
		Comman	K160	EMAE CommandDatum	80	128	
25	k81	Load	EMAE K133	EMAE CommandAddr.	3e	62	Start Sequencer
		Comman	K160	EMAE CommandDatum	ff	255	

## 4.7. EMCR int-time i4

Full Frame - Refreshed Frame Store (EMAE Seq. I.8, 2.6 sec)

Step	Command Number	Command Name	Parameter Number	Parameter Name	Parameter Value (hex)	Parameter Value (engineering)	Value	NOTES (from TC reports)	Details (from Sequences dev.)
1	K83	Set EMCR Obs. T.	K148	EMCRGroup1IntTim	001a	2,6 sec	This TC is used to set all the timings (integration time, Set readout delay time, etc.) needed for a correct timing at 2.8 sec for all observation cycle. Parameters are used to include the CCDs complete EMCR command foreseen for this function.	EMCR Observation	
			K149	EMCRGroup2IntTim	001a	2,6 sec			
			K150	EMCRGroup3IntTim	001a	2,6 sec			
			K151	EMCRGroup4IntTim	001a	2,6 sec			
			K152	EMCR2FirstCycDel	00	0 sec			
			K153	EMCR1FirstCycDel	00	0 sec			
			K154	EMCR4FirstCycDel	00	0 sec			
			K155	EMCR3FirstCycDel	00	0 sec			
			K156	EMCR2ReadoutDel.	01	0,1 sec			
			K157	EMCR1ReadoutDel.	01	0,1 sec			
			K158	EMCR4ReadoutDel.	01	0,1 sec			
			K159	EMCR3ReadoutDel.	01	0,1 sec			

Full Frame - Refreshed Frame Store (EMAE Seq. I.10, 2.5 sec)

Step	Command Number	Command Name	Parameter Number	Parameter Name	Parameter Value (hex)	Parameter Value (engineering)	Value	NOTES (from TC reports)	Details (from Sequences dev.)
1	K83	Set EMCR Obs. T.	K148	EMCRGroup1IntTim	0019	2,5 sec	This TC is used to set all the timings (integration time, Set readout delay time, etc.) needed for a correct timing at 2.8 sec for all observation cycle. Parameters are used to include the CCDs complete EMCR command foreseen for this function.	EMCR Observation	
			K149	EMCRGroup2IntTim	0019	2,5 sec			
			K150	EMCRGroup3IntTim	0019	2,5 sec			
			K151	EMCRGroup4IntTim	0019	2,5 sec			
			K152	EMCR2FirstCycDel	00	0 sec			
			K153	EMCR1FirstCycDel	00	0 sec			
			K154	EMCR4FirstCycDel	00	0 sec			
			K155	EMCR3FirstCycDel	00	0 sec			
			K156	EMCR2ReadoutDel.	01	0,1 sec			
			K157	EMCR1ReadoutDel.	01	0,1 sec			
			K158	EMCR4ReadoutDel.	01	0,1 sec			
			K159	EMCR3ReadoutDel.	01	0,1 sec			

Double Node (EMAE Seq. I.8, 310, 1.5 - 3 sec)

Step	Command Number	Command Name	Parameter Number	Parameter Name	Parameter Value (hex)	Parameter Value (engineering)	Value	NOTES (from TC reports)	Details (from Sequences dev.)
1	K83	Set EMCR Obs. T.	K148	EMCRGroup1IntTim	000f	1,5 sec	This TC is used to set all the timings (integration time, Set readout delay time, etc.) needed for a correct timing at 1.4 sec for central observation cycle. Parameters are used to include the CCD and 2.8 sec for	EMCR Observation	
			K149	EMCRGroup2IntTim	001e	3 sec			
			K150	EMCRGroup3IntTim	001e	3 sec			

# EMCS

K151	EMCRGroup4IntTim	001e	3 sec	complete EMCR command foreseen for this function. peripheral CCDs
K152	EMCR2FirstCycDel	00	0 sec	
K153	EMCR1FirstCycDel	00	0 sec	
K154	EMCR4FirstCycDel	00	0 sec	
K155	EMCR3FirstCycDel	00	0 sec	
K156	EMCR2ReadoutDel.	01	0,1 sec	
K157	EMCR1ReadoutDel.	01	0,1 sec	
K158	EMCR4ReadoutDel.	01	0,1 sec	
K159	EMCR3ReadoutDel.	01	0,1 sec	

## Double Node (EMAE Seq. I.10, 310, 1.4 - 2.8 sec)

Step	Command Number	Command Name	Parameter Number	Parameter Name	Parameter Value (hex)	Parameter Value (engineering)	Value	NOTES (from TC reports)	Details (from Sequences dev.)
1	K83	Set EMCR Obs. T.	K148	EMCRGroup1IntTim	000e	1,4 sec	This TC is used to set all the timings (integration time, Set EMCR Observation readout delay time, etc.) needed for a correct timing at 1.4 sec for central observation cycle. Parameters are used to include the CCD and 2.8 sec for complete EMCR command foreseen for this function. peripheral CCDs		
			K149	EMCRGroup2IntTim	001c	2,8 sec			
			K150	EMCRGroup3IntTim	001c	2,8 sec			
			K151	EMCRGroup4IntTim	001c	2,8 sec			
			K152	EMCR2FirstCycDel	00	0 sec			
			K153	EMCR1FirstCycDel	00	0 sec			
			K154	EMCR4FirstCycDel	00	0 sec			
			K155	EMCR3FirstCycDel	00	0 sec			
			K156	EMCR2ReadoutDel.	01	0,1 sec			
			K157	EMCR1ReadoutDel.	01	0,1 sec			
			K158	EMCR4ReadoutDel.	01	0,1 sec			
			K159	EMCR3ReadoutDel.	01	0,1 sec			

## Small Window (EMAE Seq. I.8, 110, 0.4 - 2.8 sec)

Step	Command Number	Command Name	Parameter Number	Parameter Name	Parameter Value (hex)	Parameter Value (engineering)	Value	NOTES (from TC reports)	Details (from Sequences dev.)
1	K83	Set EMCR Obs. T.	K148	EMCRGroup1IntTim	0004	0,4 sec	This TC is used to set all the timings (integration time, Set EMCR Observation readout delay time, etc.) needed for a correct timing at 0.4 sec for central observation cycle. Parameters are used to include the CCD and 2.8 sec for complete EMCR command foreseen for this function. peripheral CCDs		
			K149	EMCRGroup2IntTim	001c	2,8 sec			
			K150	EMCRGroup3IntTim	001c	2,8 sec			
			K151	EMCRGroup4IntTim	001c	2,8 sec			
			K152	EMCR2FirstCycDel	00	0 sec			
			K153	EMCR1FirstCycDel	00	0 sec			
			K154	EMCR4FirstCycDel	00	0 sec			
			K155	EMCR3FirstCycDel	00	0 sec			
			K156	EMCR2ReadoutDel.	01	0,1 sec			
			K157	EMCR1ReadoutDel.	01	0,1 sec			
			K158	EMCR4ReadoutDel.	01	0,1 sec			
			K159	EMCR3ReadoutDel.	01	0,1 sec			

## Small Window (EMAE Seq. I.10, 110, 0.3 - 2.7sec)

Step	Command Number	Command Name	Parameter Number	Parameter Name	Parameter Value (hex)	Parameter Value (engineering)	Value	NOTES (from TC reports)	Details (from Sequences dev.)
1	K83	Set EMCR Obs. T.	K148	EMCRGroup1IntTim	0003	0,3 sec	This TC is used to set all the timings (integration time, Set EMCR Observation readout delay time, etc.) needed for a correct timing at 0.4 sec for central observation cycle. Parameters are used to include the CCD and 2.8 sec for complete EMCR command foreseen for this function. peripheral CCDs	EMCR Observation	
			K149	EMCRGroup2IntTim	001b	2,7 sec			
			K150	EMCRGroup3IntTim	001b	2,7 sec			
			K151	EMCRGroup4IntTim	001b	2,7 sec			
			K152	EMCR2FirstCycDel	00	0 sec			
			K153	EMCR1FirstCycDel	00	0 sec			
			K154	EMCR4FirstCycDel	00	0 sec			
			K155	EMCR3FirstCycDel	00	0 sec			
			K156	EMCR2ReadoutDel.	01	0,1 sec			
			K157	EMCR1ReadoutDel.	01	0,1 sec			
			K158	EMCR4ReadoutDel.	01	0,1 sec			
			K159	EMCR3ReadoutDel.	01	0,1 sec			

Large Window (EMAE Seq. I.8, 310, 1 - 3 sec)

Step	Command Number	Command Name	Parameter Number	Parameter Name	Parameter Value (hex)	Parameter Value (engineering)	Value	NOTES (from TC reports)	Details (from Sequences dev.)
1	K83	Set EMCR Obs. T.	K148	EMCRGroup1IntTim	000a	1 sec	This TC is used to set all the timings (integration time, Set EMCR Observation readout delay time, etc.) needed for a correct timing at 0.9 sec for central observation cycle. Parameters are used to include the CCD and 2.8 sec for complete EMCR command foreseen for this function. peripheral CCDs	EMCR Observation	
			K149	EMCRGroup2IntTim	001e	3 sec			
			K150	EMCRGroup3IntTim	001e	3 sec			
			K151	EMCRGroup4IntTim	001e	3 sec			
			K152	EMCR2FirstCycDel	00	0 sec			
			K153	EMCR1FirstCycDel	00	0 sec			
			K154	EMCR4FirstCycDel	00	0 sec			
			K155	EMCR3FirstCycDel	00	0 sec			
			K156	EMCR2ReadoutDel.	01	0,1 sec			
			K157	EMCR1ReadoutDel.	01	0,1 sec			
			K158	EMCR4ReadoutDel.	01	0,1 sec			
			K159	EMCR3ReadoutDel.	01	0,1 sec			

Large Window (EMAE Seq. I.10, 310, 0.9 - 2.7 sec)

Step	Command Number	Command Name	Parameter Number	Parameter Name	Parameter Value (hex)	Parameter Value (engineering)	Value	NOTES (from TC reports)	Details (from Sequences dev.)
1	K83	Set EMCR Obs. T.	K148	EMCRGroup1IntTim	0009	0,9 sec	This TC is used to set all the timings (integration time, Set EMCR Observation readout delay time, etc.) needed for a correct timing at 0.9 sec for central observation cycle. Parameters are used to include the CCD and 2.8 sec for complete EMCR command foreseen for this function. peripheral CCDs	EMCR Observation	
			K149	EMCRGroup2IntTim	001b	2,7 sec			
			K150	EMCRGroup3IntTim	001b	2,7 sec			
			K151	EMCRGroup4IntTim	001b	2,7 sec			
			K152	EMCR2FirstCycDel	00	0 sec			
			K153	EMCR1FirstCycDel	00	0 sec			
			K154	EMCR4FirstCycDel	00	0 sec			
			K155	EMCR3FirstCycDel	00	0 sec			
			K156	EMCR2ReadoutDel.	01	0,1 sec			

K157	EMCR1ReadoutDel.	01	0,1 sec
K158	EMCR4ReadoutDel.	01	0,1 sec
K159	EMCR3ReadoutDel.	01	0,1 sec

Free-run (EMAE Seq. I.8, 2.6 sec for peripheral CCDs)

Step Number	Command Number	Command Name	Parameter Number	Parameter Name	Parameter Value (hex)	Parameter Value (engineering)	Value	NOTES (from TC reports)	Details (from Sequences dev.)
1	K83	Set EMCR Obs. T.	K148	EMCRGroup1IntTim	0400	Continuous readout		This TC is used to set all the timings (integration time, Set readout delay time, etc.) needed for a correct timing in Free Run for observation cycle. Parameters are used to include the central CCD and 2,8 sec for complete EMCR command foreseen for this function. peripheral CCDs	EMCR Observation
			K149	EMCRGroup2IntTim	001a	2,6 sec			
			K150	EMCRGroup3IntTim	001a	2,6 sec			
			K151	EMCRGroup4IntTim	001a	2,6 sec			
			K152	EMCR2FirstCycDel	00	0 sec			
			K153	EMCR1FirstCycDel	00	0 sec			
			K154	EMCR4FirstCycDel	00	0 sec			
			K155	EMCR3FirstCycDel	00	0 sec			
			K156	EMCR2ReadoutDel.	01	0,1 sec			
			K157	EMCR1ReadoutDel.	01	0,1 sec			
			K158	EMCR4ReadoutDel.	01	0,1 sec			
			K159	EMCR3ReadoutDel.	01	0,1 sec			

Free-run (EMAE Seq. I.10, 2.5 sec for peripheral CCDs)

Step Number	Command Number	Command Name	Parameter Number	Parameter Name	Parameter Value (hex)	Parameter Value (engineering)	Value	NOTES (from TC reports)	Details (from Sequences dev.)
1	K83	Set EMCR Obs. T.	K148	EMCRGroup1IntTim	0400	Continuous readout		This TC is used to set all the timings (integration time, Set readout delay time, etc.) needed for a correct timing in Free Run for observation cycle. Parameters are used to include the central CCD and 2,8 sec for complete EMCR command foreseen for this function. peripheral CCDs	EMCR Observation
			K149	EMCRGroup2IntTim	0019	2,5 sec			
			K150	EMCRGroup3IntTim	0019	2,5 sec			
			K151	EMCRGroup4IntTim	0019	2,5 sec			
			K152	EMCR2FirstCycDel	00	0 sec			
			K153	EMCR1FirstCycDel	00	0 sec			
			K154	EMCR4FirstCycDel	00	0 sec			
			K155	EMCR3FirstCycDel	00	0 sec			
			K156	EMCR2ReadoutDel.	01	0,1 sec			
			K157	EMCR1ReadoutDel.	01	0,1 sec			
			K158	EMCR4ReadoutDel.	01	0,1 sec			
			K159	EMCR3ReadoutDel.	01	0,1 sec			

## 4.8. EMDH time-synch i2

### On-board time management

Step	Command Number	Command Name	Parameter Number	Parameter Name	Parameter Value (hex)	Parameter (engineering)	Value	NOTES (from TC reports)	Details (from Sequences dev.)
1	K30	Test Command						This TC is used to check the TC/TM link between ground and on-board EMDH.	
2	K62	Enable OBT Veri.						This TC is used to trigger the generation of the Time Verification Report (TM 10,5).	
3	K60	Enable OBT Sync.						This TC is used to arm the time synchronization function in the EMDH.	
4	K61	Add Time Code						This TC is used to add the received Time Code to the actual EMDH on-board time.	
5	K62	Enable OBT Veri.						This TC is used to trigger the generation of the Time Verification Report (TM 10,5).	

## 4.9. FW operations i3

### MOS1 Sync Nor 3Step

Step	Command Number	Command Name	Parameter Number	Parameter Name	Parameter Value (hex)	Parameter (engineering)	Value	NOTES (from TC Reports)	Details (from Sequences dev.)
1	E49	Apply Power F.W.	E98	FW PW CoilSelec	1	Nominal Coil		This TC is used, by the EMDH, to switch-on the relay which allows to apply primary power to the Filter Wheel. The parameter allows to select which coil of the Filter Wheel shall be powered. End-effect is verified with H/K parameters E1012-13.	
2	E84	Synchronise F.W.	E99	FW T Coil Sel.	1	Nominal On		This TC is used to synchronize the Filter Wheel. The FW will be moved in the closed position (stop sensors aligned to hall sensors). Parameters are used to include the complete EMCR command foreseen for this function. In worst case, the synchronization can take up to 20 minutes.	
			E134	Rotation Direct	0	Forward			
			E146	Stop Nominal	0	In Position			
			E135	FW Exp. Abs. Pos.	5	Closed			
			E147	Stop Redundant	0	In Position			
3	E85	Turn Filt. Wheel	E99	FW T Coil Sel.	1	Nominal On		This TC is used to turn the Filter Wheel in one defined position. Parameters are used to include the complete EMCR command foreseen for this function.	
			E134	Rotation Direct	0	Forward			
			E136	FW Running Mode	0	Normal			
			E146	Stop Nominal	0	In Position			
			E135	FW Exp. Abs. Pos.	5	Closed			
			E147	Stop Redundant	0	In Position			
			E137	New Address	3	Steps			
4	E84	Synchronise F.W.	E99	FW T Coil Sel.	1	Nominal On			
			E134	Rotation Direct	0	Forward			
			E146	Stop Nominal	0	In Position			
			E135	FW Exp. Abs. Pos.	5	Closed			
			E147	Stop Redundant	0	In Position			
5	E50	Remove PW F.W.	E147	Stop Redundant	0	In Position		This TC is used, by the EMDH, to switch-off the relay which allows to apply primary power to the Filter Wheel. End-effect is verified with H/K parameters E1012-13.	

### MOS1 FW to Filter A position

Step	Command Number	Command Name	Parameter Number	Parameter Name	Parameter Value (hex)	Parameter (engineering)	Value	NOTES (from TC Reports)	Details (from Sequences dev.)
1	E49	Apply Power F.W.	E98	FW PW CoilSelec	1	Nominal Coil		This TC is used, by the EMDH, to switch-on the relay which allows to apply primary power to the Filter Wheel. The parameter allows to select which coil of the Filter Wheel shall be powered. End-effect is verified with H/K parameters E1012-13.	
2	E85	Turn Filt. Wheel	E99	FW T Coil Sel.	1	Nominal On		This TC is used to turn the Filter Wheel in one defined position. Parameters are used to include the complete EMCR command foreseen for this function.	
			E134	Rotation Direct	0	Forward			
			E136	FW Running Mode	0	Normal			
			E146	Stop Nominal	0	In Position			
			E135	FW Exp. Abs. Pos.	4	Filter A			
			E147	Stop Redundant	0	In Position			
			E137	New Address	267	Steps			
3	E50	Remove PW F.W.						This TC is used, by the EMDH, to switch-off the relay which allows to apply primary power to the Filter Wheel. End-effect is verified with H/K parameters E1012-13.	

## MOS1 FW to Filter A Calibration position

Step	Command Number	Command Name	Parameter Number	Parameter Name	Parameter Value (hex)	Parameter (engineering)	Value	NOTES (from TC Reports)	Details (from Sequences dev.)
1	E49	Apply Power F.W.	E98	FW PW CoilSelec	1	Nominal Coil		This TC is used, by the EMDH, to switch-on the relay which allows to apply primary power to the Filter Wheel. The parameter allows to select which coil of the Filter Wheel shall be powered. End-effect is verified with H/K parameters E1012-13.	This TC is used to turn the Filter Wheel in one defined position. Parameters are used to include the complete EMCR command foreseen for this function.
2	E85	Turn Filt. Wheel	E99	FW T Coil Sel.	1	Nominal On			
			E134	Rotation Direct	0	Forward			
			E136	FW Running Mode	0	Normal			
			E146	Stop Nominal	1	Out Position			
			E135	FW Exp. Abs. Pos.	7	Not Valid CS			
			E147	Stop Redundant	1	Out Position			
			E137	New Address	247	Steps			
3	E50	Remove PW F.W.						This TC is used, by the EMDH, to switch-off the relay which allows to apply primary power to the Filter Wheel. End-effect is verified with H/K parameters E1012-13.	

## MOS1 FW to Filter B position

Step	Command Number	Command Name	Parameter Number	Parameter Name	Parameter Value (hex)	Parameter (engineering)	Value	NOTES (from TC Reports)	Details (from Sequences dev.)
1	E49	Apply Power F.W.	E98	FW PW CoilSelec	1	Nominal Coil		This TC is used, by the EMDH, to switch-on the relay which allows to apply primary power to the Filter Wheel. The parameter allows to select which coil of the Filter Wheel shall be powered. End-effect is verified with H/K parameters E1012-13.	This TC is used to turn the Filter Wheel in one defined position. Parameters are used to include the complete EMCR command foreseen for this function.
2	E85	Turn Filt. Wheel	E99	FW T Coil Sel.	1	Nominal On			
			E134	Rotation Direct	0	Forward			
			E136	FW Running Mode	0	Normal			
			E146	Stop Nominal	0	In Position			
			E135	FW Exp. Abs. Pos.	3	Filter B			
			E147	Stop Redundant	0	In Position			
			E137	New Address	534	Steps			
3	E50	Remove PW F.W.						This TC is used, by the EMDH, to switch-off the relay which allows to apply primary power to the Filter Wheel. End-effect is verified with H/K parameters E1012-13.	

## MOS1 FW to Filter B Calibration position

Step	Command Number	Command Name	Parameter Number	Parameter Name	Parameter Value (hex)	Parameter (engineering)	Value	NOTES (from TC Reports)	Details (from Sequences dev.)
1	E49	Apply Power F.W.	E98	FW PW CoilSelec	1	Nominal Coil		This TC is used, by the EMDH, to switch-on the relay which allows to apply primary power to the Filter Wheel. The parameter allows to select which coil of the Filter Wheel shall be powered. End-effect is verified with H/K parameters E1012-13.	This TC is used to turn the Filter Wheel in one defined position. Parameters are used to include the complete EMCR command foreseen for this function.
2	E85	Turn Filt. Wheel	E99	FW T Coil Sel.	1	Nominal On			
			E134	Rotation Direct	0	Forward			
			E136	FW Running Mode	0	Normal			
			E146	Stop Nominal	1	Out Position			

3	E50	Remove PW F.W.	E135	FW Exp. Abs. Pos.	7	Not Valid CS Out Position Steps
			E147	Stop Redundant	1	
			E137	New Address	514	

This TC is used, by the EMDH, to switch-off the relay which allows to apply primary power to the Filter Wheel. End-effect is verified with H/K parameters E1012-13.

## MOS1 FW to Filter C position

Step	Command Number	Command Name	Parameter Number	Parameter Name	Parameter Value (hex)	Parameter (engineering)	Value	NOTES (from TC Reports)	Details (from Sequences dev.)
1	E49	Apply Power F.W.	E98	FW PW CoilSelec	1	Nominal Coil		This TC is used, by the EMDH, to switch-on the relay which allows to apply primary power to the Filter Wheel. The parameter allows to select which coil of the Filter Wheel shall be powered. End-effect is verified with H/K parameters E1012-13.	
2	E85	Turn Filt. Wheel	E99	FW T Coil Sel.	1	Nominal On			
			E134	Rotation Direct	0	Forward		This TC is used to turn the Filter Wheel in one defined position. Parameters are used to include the complete EMCR command foreseen for this function.	
			E136	FW Running Mode	0	Normal			
			E146	Stop Nominal	0	In Position			
			E135	FW Exp. Abs. Pos.	2	Filter C			
			E147	Stop Redundant	0	In Position			
			E137	New Address	801	Steps			
3	E50	Remove PW F.W.						This TC is used, by the EMDH, to switch-off the relay which allows to apply primary power to the Filter Wheel. End-effect is verified with H/K parameters E1012-13.	

## MOS1 FW to Filter C Calibration position

Step	Command Number	Command Name	Parameter Number	Parameter Name	Parameter Value (hex)	Parameter (engineering)	Value	NOTES (from TC Reports)	Details (from Sequences dev.)
1	E49	Apply Power F.W.	E98	FW PW CoilSelec	1	Nominal Coil		This TC is used, by the EMDH, to switch-on the relay which allows to apply primary power to the Filter Wheel. The parameter allows to select which coil of the Filter Wheel shall be powered. End-effect is verified with H/K parameters E1012-13.	
2	E85	Turn Filt. Wheel	E99	FW T Coil Sel.	1	Nominal On			
			E134	Rotation Direct	0	Forward		This TC is used to turn the Filter Wheel in one defined position. Parameters are used to include the complete EMCR command foreseen for this function.	
			E136	FW Running Mode	0	Normal			
			E146	Stop Nominal	1	Out Position			
			E135	FW Exp. Abs. Pos.	7	Not Valid CS			
			E147	Stop Redundant	1	Out Position			
			E137	New Address	781	Steps			
3	E50	Remove PW F.W.						This TC is used, by the EMDH, to switch-off the relay which allows to apply primary power to the Filter Wheel. End-effect is verified with H/K parameters E1012-13.	

## MOS1 FW to Filter D position

Step	Command Number	Command Name	Parameter Number	Parameter Name	Parameter Value (hex)	Parameter (engineering)	Value	NOTES (from TC Reports)	Details (from Sequences dev.)
1	E49	Apply Power F.W.	E98	FW PW CoilSelec	1	Nominal Coil		This TC is used, by the EMDH, to switch-on the relay which allows to apply primary power to the Filter Wheel. The parameter allows to select which coil of the Filter Wheel shall be powered. End-effect is verified with H/K parameters E1012-13.	This TC is used to turn the Filter Wheel in one defined position. Parameters are used to include the complete EMCR command foreseen for this function.
2	E85	Turn Filt. Wheel	E99	FW T Coil Sel.	1	Nominal On			
			E134	Rotation Direct	0	Forward			
			E136	FW Running Mode	0	Normal			
			E146	Stop Nominal	0	In Position			
			E135	FW Exp. Abs. Pos.	1	Filter D			
			E147	Stop Redundant	0	In Position			
			E137	New Address	1067	Steps			
3	E50	Remove PW F.W.						This TC is used, by the EMDH, to switch-off the relay which allows to apply primary power to the Filter Wheel. End-effect is verified with H/K parameters E1012-13.	

## MOS1 FW to Filter D Calibration position

Step	Command Number	Command Name	Parameter Number	Parameter Name	Parameter Value (hex)	Parameter (engineering)	Value	NOTES (from TC Reports)	Details (from Sequences dev.)
1	E49	Apply Power F.W.	E98	FW PW CoilSelec	1	Nominal Coil		This TC is used, by the EMDH, to switch-on the relay which allows to apply primary power to the Filter Wheel. The parameter allows to select which coil of the Filter Wheel shall be powered. End-effect is verified with H/K parameters E1012-13.	This TC is used to turn the Filter Wheel in one defined position. Parameters are used to include the complete EMCR command foreseen for this function.
2	E85	Turn Filt. Wheel	E99	FW T Coil Sel.	1	Nominal On			
			E134	Rotation Direct	0	Forward			
			E136	FW Running Mode	0	Normal			
			E146	Stop Nominal	1	Out Position			
			E135	FW Exp. Abs. Pos.	7	Not Valid CS			
			E147	Stop Redundant	1	Out Position			
			E137	New Address	1047	Steps			
3	E50	Remove PW F.W.						This TC is used, by the EMDH, to switch-off the relay which allows to apply primary power to the Filter Wheel. End-effect is verified with H/K parameters E1012-13.	

## MOS1 FW to Open position

Step	Command Number	Command Name	Parameter Number	Parameter Name	Parameter Value (hex)	Parameter (engineering)	Value	NOTES (from TC Reports)	Details (from Sequences dev.)
1	E49	Apply Power F.W.	E98	FW PW CoilSelec	1	Nominal Coil		This TC is used, by the EMDH, to switch-on the relay which allows to apply primary power to the Filter Wheel. The parameter allows to select which coil of the Filter Wheel shall be powered. End-effect is verified with H/K parameters E1012-13.	This TC is used to turn the Filter Wheel in one defined position. Parameters are used to include the complete EMCR command foreseen for this function.
2	E85	Turn Filt. Wheel	E99	FW T Coil Sel.	1	Nominal On			
			E134	Rotation Direct	0	Forward			
			E136	FW Running Mode	0	Normal			
			E146	Stop Nominal	0	In Position			
			E135	FW Exp. Abs. Pos.	0	Open			
			E147	Stop Redundant	0	In Position			

3 E50 Remove PW F.W. E137 New Address 1334 Steps

This TC is used, by the EMDH, to switch-off the relay which allows to apply primary power to the Filter Wheel. End-effect is verified with H/K parameters E1012-13.

## MOS1 FW to Open Calibration position

Step	Command Number	Command Name	Parameter Number	Parameter Name	Parameter Value (hex)	Parameter (engineering)	Value	NOTES (from TC Reports)	Details (from Sequences dev.)
1	E49	Apply Power F.W.	E98	FW PW CoilSelec	1	Nominal Coil		This TC is used, by the EMDH, to switch-on the relay which allows to apply primary power to the Filter Wheel. The parameter allows to select which coil of the Filter Wheel shall be powered. End-effect is verified with H/K parameters E1012-13.	
2	E85	Turn Filt. Wheel	E99	FW T Coil Sel.	1	Nominal On			
			E134	Rotation Direct	0	Forward		This TC is used to turn the Filter Wheel in one defined position. Parameters are used to include the complete EMCR command foreseen for this function.	
			E136	FW Running Mode	0	Normal			
			E146	Stop Nominal	1	Out Position			
			E135	FW Exp. Abs. Pos.	7	Not Valid CS			
			E147	Stop Redundant	1	Out Position			
			E137	New Address	1314	Steps			
3	E50	Remove PW F.W.						This TC is used, by the EMDH, to switch-off the relay which allows to apply primary power to the Filter Wheel. End-effect is verified with H/K parameters E1012-13.	

## MOS1 FW to Close position

Step	Command Number	Command Name	Parameter Number	Parameter Name	Parameter Value (hex)	Parameter (engineering)	Value	NOTES (from TC Reports)	Details (from Sequences dev.)
1	E49	Apply Power F.W.	E98	FW PW CoilSelec	1	Nominal Coil		This TC is used, by the EMDH, to switch-on the relay which allows to apply primary power to the Filter Wheel. The parameter allows to select which coil of the Filter Wheel shall be powered. End-effect is verified with H/K parameters E1012-13.	
2	E85	Turn Filt. Wheel	E99	FW T Coil Sel.	1	Nominal On			
			E134	Rotation Direct	0	Forward		This TC is used to turn the Filter Wheel in one defined position. Parameters are used to include the complete EMCR command foreseen for this function.	
			E136	FW Running Mode	0	Normal			
			E146	Stop Nominal	0	In Position			
			E135	FW Exp. Abs. Pos.	5	Close			
			E147	Stop Redundant	0	In Position			
			E137	New Address	0	Steps			
3	E50	Remove PW F.W.						This TC is used, by the EMDH, to switch-off the relay which allows to apply primary power to the Filter Wheel. End-effect is verified with H/K parameters E1012-13.	

## MOS1 FW to Close Calibration position

Step	Command	Command Name	Parameter	Parameter Name	Parameter	Parameter	Value	NOTES	Details
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# EMCS

Number	Number	Value (hex)	(engineering)	(from TC Reports)	(from Sequences dev.)
1	E49 Apply Power F.W.	E98 FW PW CoilSelec	1	Nominal Coil	This TC is used, by the EMDH, to switch-on the relay which allows to apply primary power to the Filter Wheel. The parameter allows to select which coil of the Filter Wheel shall be powered. End-effect is verified with H/K parameters E1012-13.
2	E85 Turn Filt. Wheel	E99 FW T Coil Sel. E134 Rotation Direct E136 FW Running Mode E146 Stop Nominal E135 FW Exp. Abs. Pos. E147 Stop Redundant E137 New Address	1 0 0 1 7 1 1580	Nominal On Forward Normal Out of Position Not Valid CS Out of Position Steps	This TC is used to turn the Filter Wheel in one defined position. Parameters are used to include the complete EMCR command foreseen for this function.
3	E50 Remove PW F.W.				This TC is used, by the EMDH, to switch-off the relay which allows to apply primary power to the Filter Wheel. End-effect is verified with H/K parameters E1012-13.

## MOS2 Sync Nor 4Step

Step	Command Number	Command Name	Parameter Number	Parameter Name	Parameter Value (hex)	Parameter (engineering)	Value	NOTES (from TC Reports)	Details (from Sequences dev.)
1	E49	Apply Power F.W.	E98	FW PW CoilSelec	1	Nominal Coil		This TC is used, by the EMDH, to switch-on the relay which allows to apply primary power to the Filter Wheel. The parameter allows to select which coil of the Filter Wheel shall be powered. End-effect is verified with H/K parameters E1012-13.	
2	E84	Synchronise F.W.	E99 E134 E146 E135 E147	FW T Coil Sel. Rotation Direct Stop Nominal FW Exp. Abs. Pos. Stop Redundant	1 0 0 5 0	Nominal On Forward In Position Closed In Position		This TC is used to synchronize the Filter Wheel. The FW will be moved in the closed position (stop sensors aligned to hall sensors). Parameters are used to include the complete EMCR command foreseen for this function. In worst case, the synchronization can take up to 20 minutes.	
3	E85	Turn Filt. Wheel	E99 E134 E136 E146 E135 E147 E137	FW T Coil Sel. Rotation Direct FW Running Mode Stop Nominal FW Exp. Abs. Pos. Stop Redundant New Address	1 0 0 0 5 0 4	Nominal On Forward Normal In Position Closed In Position Steps		This TC is used to turn the Filter Wheel in one defined position. Parameters are used to include the complete EMCR command foreseen for this function.	
4	E84	Synchronise F.W.	E99 E134 E146 E135 E147	FW T Coil Sel. Rotation Direct Stop Nominal FW Exp. Abs. Pos. Stop Redundant	1 0 0 5 0	Nominal On Forward In Position Closed In Position			
5	E50	Remove PW F.W.						This TC is used, by the EMDH, to switch-off the relay which allows to apply primary power to the Filter Wheel. End-effect is verified with H/K parameters E1012-13.	

## MOS2 FW to Filter A position

Step	Command Number	Command Name	Parameter Number	Parameter Name	Parameter Value (hex)	Parameter (engineering)	Value	NOTES (from TC Reports)	Details (from Sequences dev.)
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1	K49	Apply Power F.W.	K98	FW PW CoilSelec	1	Nominal Coil	This TC is used, by the EMDH, to switch-on the relay which allows to apply primary power to the Filter Wheel. The parameter allows to select which coil of the Filter Wheel shall be powered. End-effect is verified with H/K parameters E1012-13.
2	K85	Turn Filt. Wheel	K99 K134 K136 K146 K135 K147 K137	FW T Coil Sel. Rotation Direct FW Running Mode Stop Nominal FW Exp. Abs. Pos. Stop Redundant New Address	1 0 0 0 4 0 266	Nominal On Forward Normal In Position Filter A In Position Steps	This TC is used to turn the Filter Wheel in one defined position. Parameters are used to include the complete EMCR command foreseen for this function.
3	K50	Remove PW F.W.					This TC is used, by the EMDH, to switch-off the relay which allows to apply primary power to the Filter Wheel. End-effect is verified with H/K parameters E1012-13.

### MOS2 FW to Filter A Calibration position

Step	Command Number	Command Name	Parameter Number	Parameter Name	Parameter Value (hex)	Parameter (engineering)	Value	NOTES (from TC Reports)	Details (from Sequences dev.)
1	K49	Apply Power F.W.	K98	FW PW CoilSelec	1	Nominal Coil		This TC is used, by the EMDH, to switch-on the relay which allows to apply primary power to the Filter Wheel. The parameter allows to select which coil of the Filter Wheel shall be powered. End-effect is verified with H/K parameters E1012-13.	
2	K85	Turn Filt. Wheel	K99 K134 K136 K146 K135 K147 K137	FW T Coil Sel. Rotation Direct FW Running Mode Stop Nominal FW Exp. Abs. Pos. Stop Redundant New Address	1 0 0 1 7 1 246	Nominal On Forward Normal Out Position Not Valid CS Out Position Steps		This TC is used to turn the Filter Wheel in one defined position. Parameters are used to include the complete EMCR command foreseen for this function.	
3	K50	Remove PW F.W.						This TC is used, by the EMDH, to switch-off the relay which allows to apply primary power to the Filter Wheel. End-effect is verified with H/K parameters E1012-13.	

### MOS2 FW to Filter B position

Step	Command Number	Command Name	Parameter Number	Parameter Name	Parameter Value (hex)	Parameter (engineering)	Value	NOTES (from TC Reports)	Details (from Sequences dev.)
1	K49	Apply Power F.W.	K98	FW PW CoilSelec	1	Nominal Coil		This TC is used, by the EMDH, to switch-on the relay which allows to apply primary power to the Filter Wheel. The parameter allows to select which coil of the Filter Wheel shall be powered. End-effect is verified with H/K parameters E1012-13.	
2	K85	Turn Filt. Wheel	K99 K134 K136 K146 K135 K147 K137	FW T Coil Sel. Rotation Direct FW Running Mode Stop Nominal FW Exp. Abs. Pos. Stop Redundant New Address	1 0 0 0 3 0 533	Nominal On Forward Normal In Position Filter B In Position Steps		This TC is used to turn the Filter Wheel in one defined position. Parameters are used to include the complete EMCR command foreseen for this function.	
3	K50	Remove PW F.W.						This TC is used, by the EMDH, to switch-off the relay which allows to apply primary power to the Filter Wheel. End-effect is verified with H/K parameters E1012-13.	

## MOS2 FW to Filter B Calibration position

Step	Command Number	Command Name	Parameter Number	Parameter Name	Parameter Value (hex)	Parameter (engineering)	Value	NOTES (from TC Reports)	Details (from Sequences dev.)
1	K49	Apply Power F.W.	K98	FW PW CoilSelec	1	Nominal Coil		This TC is used, by the EMDH, to switch-on the relay which allows to apply primary power to the Filter Wheel. The parameter allows to select which coil of the Filter Wheel shall be powered. End-effect is verified with H/K parameters E1012-13.	
2	K85	Turn Filt. Wheel	K99	FW T Coil Sel.	1	Nominal On			
			K134	Rotation Direct	0	Forward		This TC is used to turn the Filter Wheel in one defined position. Parameters are used to include the complete EMCR command foreseen for this function.	
			K136	FW Running Mode	0	Normal			
			K146	Stop Nominal	1	Out Position			
			K135	FW Exp. Abs. Pos.	7	Not Valid CS			
			K147	Stop Redundant	1	Out Position			
			K137	New Address	513	Steps			
3	K50	Remove PW F.W.						This TC is used, by the EMDH, to switch-off the relay which allows to apply primary power to the Filter Wheel. End-effect is verified with H/K parameters E1012-13.	

## MOS2 FW to Filter C position

Step	Command Number	Command Name	Parameter Number	Parameter Name	Parameter Value (hex)	Parameter (engineering)	Value	NOTES (from TC Reports)	Details (from Sequences dev.)
1	K49	Apply Power F.W.	K98	FW PW CoilSelec	1	Nominal Coil		This TC is used, by the EMDH, to switch-on the relay which allows to apply primary power to the Filter Wheel. The parameter allows to select which coil of the Filter Wheel shall be powered. End-effect is verified with H/K parameters E1012-13.	
2	K85	Turn Filt. Wheel	K99	FW T Coil Sel.	1	Nominal On			
			K134	Rotation Direct	0	Forward		This TC is used to turn the Filter Wheel in one defined position. Parameters are used to include the complete EMCR command foreseen for this function.	
			K136	FW Running Mode	0	Normal			
			K146	Stop Nominal	0	In Position			
			K135	FW Exp. Abs. Pos.	2	Filter C			
			K147	Stop Redundant	0	In Position			
			K137	New Address	799	Steps			
3	K50	Remove PW F.W.						This TC is used, by the EMDH, to switch-off the relay which allows to apply primary power to the Filter Wheel. End-effect is verified with H/K parameters E1012-13.	

## MOS2 FW to Filter C Calibration position

Step	Command Number	Command Name	Parameter Number	Parameter Name	Parameter Value (hex)	Parameter (engineering)	Value	NOTES (from TC Reports)	Details (from Sequences dev.)
1	K49	Apply Power F.W.	K98	FW PW CoilSelec	1	Nominal Coil		This TC is used, by the EMDH, to switch-on the relay which allows to apply primary power to the Filter Wheel. The parameter allows to select which coil of the Filter	

2	K85	Turn Filt. Wheel	K99 K134 K136 K146 K135 K147 K137	FW T Coil Sel. Rotation Direct FW Running Mode Stop Nominal FW Exp. Abs. Pos. Stop Redundant New Address	1 0 0 1 7 1 779	Nominal On Forward Normal Out Position Not Valid CS Out Position Steps	Wheel shall be powered. End-effect is verified with H/K parameters E1012-13. This TC is used to turn the Filter Wheel in one defined position. Parameters are used to include the complete EMCR command foreseen for this function.
3	K50	Remove PW F.W.					This TC is used, by the EMDH, to switch-off the relay which allows to apply primary power to the Filter Wheel. End-effect is verified with H/K parameters E1012-13.

### MOS2 FW to Filter D position

Step	Command Number	Command Name	Parameter Number	Parameter Name	Parameter Value (hex)	Parameter (engineering)	Value	NOTES (from TC Reports)	Details (from Sequences dev.)
1	K49	Apply Power F.W.	K98	FW PW CoilSelec	1	Nominal Coil		This TC is used, by the EMDH, to switch-on the relay which allows to apply primary power to the Filter Wheel. The parameter allows to select which coil of the Filter Wheel shall be powered. End-effect is verified with H/K parameters E1012-13.	
2	K85	Turn Filt. Wheel	K99 K134 K136 K146 K135 K147 K137	FW T Coil Sel. Rotation Direct FW Running Mode Stop Nominal FW Exp. Abs. Pos. Stop Redundant New Address	1 0 0 0 1 0 1066	Nominal On Forward Normal In Position Filter D In Position Steps		This TC is used to turn the Filter Wheel in one defined position. Parameters are used to include the complete EMCR command foreseen for this function.	
3	K50	Remove PW F.W.						This TC is used, by the EMDH, to switch-off the relay which allows to apply primary power to the Filter Wheel. End-effect is verified with H/K parameters E1012-13.	

### MOS2 FW to Filter D Calibration position

Step	Command Number	Command Name	Parameter Number	Parameter Name	Parameter Value (hex)	Parameter (engineering)	Value	NOTES (from TC Reports)	Details (from Sequences dev.)
1	K49	Apply Power F.W.	K98	FW PW CoilSelec	1	Nominal Coil		This TC is used, by the EMDH, to switch-on the relay which allows to apply primary power to the Filter Wheel. The parameter allows to select which coil of the Filter Wheel shall be powered. End-effect is verified with H/K parameters E1012-13.	
2	K85	Turn Filt. Wheel	K99 K134 K136 K146 K135 K147 K137	FW T Coil Sel. Rotation Direct FW Running Mode Stop Nominal FW Exp. Abs. Pos. Stop Redundant New Address	1 0 0 1 7 1 1046	Nominal On Forward Normal Out Position Not Valid CS Out Position Steps		This TC is used to turn the Filter Wheel in one defined position. Parameters are used to include the complete EMCR command foreseen for this function.	
3	K50	Remove PW F.W.						This TC is used, by the EMDH, to switch-off the relay which allows to apply primary power to the Filter Wheel. End-effect is verified with H/K parameters E1012-13.	

## MOS2 FW to Open position

Step	Command Number	Command Name	Parameter Number	Parameter Name	Parameter Value (hex)	Parameter (engineering)	Value	NOTES (from TC Reports)	Details (from Sequences dev.)
1	K49	Apply Power F.W.	K98	FW PW CoilSelec	1	Nominal Coil		This TC is used, by the EMDH, to switch-on the relay which allows to apply primary power to the Filter Wheel. The parameter allows to select which coil of the Filter Wheel shall be powered. End-effect is verified with H/K parameters E1012-13.	
2	K85	Turn Filt. Wheel	K99 K134 K136 K146 K135 K147 K137	FW T Coil Sel. Rotation Direct FW Running Mode Stop Nominal FW Exp. Abs. Pos. Stop Redundant New Address	1 0 0 0 0 0 1332	Nominal On Forward Normal In Position Open In Position Steps	This TC is used to turn the Filter Wheel in one defined position. Parameters are used to include the complete EMCR command foreseen for this function.		
3	K50	Remove PW F.W.						This TC is used, by the EMDH, to switch-off the relay which allows to apply primary power to the Filter Wheel. End-effect is verified with H/K parameters E1012-13.	

## MOS2 FW to Open Calibration position

Step	Command NumbKr	Command Name	ParamKtKr NumbKr	Parameter Name	Parameter Value (hex)	Parameter (engineering)	Value	NOTES (from TC Reports)	Details (from Sequences dev.)
1	K49	Apply Power F.W.	K98	FW PW CoilSelec	1	Nominal Coil		This TC is used, by the EMDH, to switch-on the relay which allows to apply primary power to the Filter Wheel. The parameter allows to select which coil of the Filter Wheel shall be powered. End-effect is verified with H/K parameters E1012-13.	
2	K85	Turn Filt. Wheel	K99 K134 K136 K146 K135 K147 K137	FW T Coil Sel. Rotation Direct FW Running Mode Stop Nominal FW Exp. Abs. Pos. Stop Redundant New Address	1 0 0 1 7 1 1312	Nominal On Forward Normal Out Position Not Valid CS Out Position Steps	This TC is used to turn the Filter Wheel in one defined position. Parameters are used to include the complete EMCR command foreseen for this function.		
3	K50	Remove PW F.W.						This TC is used, by the EMDH, to switch-off the relay which allows to apply primary power to the Filter Wheel. End-effect is verified with H/K parameters E1012-13.	

## MOS2 FW to Close position

Step	Command Number	Command Name	Parameter Number	Parameter Name	Parameter Value (hex)	Parameter (engineering)	Value	NOTES (from TC Reports)	Details (from Sequences dev.)
1	K49	Apply Power F.W.	K98	FW PW CoilSelec	1	Nominal Coil		This TC is used, by the EMDH, to switch-on the relay which allows to apply primary power to the Filter Wheel. The parameter allows to select which coil of the Filter Wheel shall be powered. End-effect is verified with H/K parameters E1012-13.	

# EMCS

2	K85	Turn Filt. Wheel	K99	FW T Coil Sel.	1	Nominal On	This TC is used to turn the Filter Wheel in one defined position. Parameters are used to include the complete EMCR command foreseen for this function.
			K134	Rotation Direct	0	Forward	
			K136	FW Running Mode	0	Normal	
			K146	Stop Nominal	0	In Position	
			K135	FW Exp. Abs. Pos.	5	Close	
			K147	Stop Redundant	0	In Position	
			K137	New Address	0	Steps	
3	K50	Remove PW F.W.					This TC is used, by the EMDH, to switch-off the relay which allows to apply primary power to the Filter Wheel. End-effect is verified with H/K parameters E1012-13.

## MOS2 FW to Close Calibration position

Step	Command Number	Command Name	Parameter Number	Parameter Name	Parameter Value (hex)	Parameter Value (engineering)	Value	NOTES (from TC Reports)	Details (from Sequences dev.)
1	K49	Apply Power F.W.	K98	FW PW CoilSelec	1	Nominal Coil		This TC is used, by the EMDH, to switch-on the relay which allows to apply primary power to the Filter Wheel. The parameter allows to select which coil of the Filter Wheel shall be powered. End-effect is verified with H/K parameters E1012-13.	
2	K85	Turn Filt. Wheel	K99	FW T Coil Sel.	1	Nominal On	This TC is used to turn the Filter Wheel in one defined position. Parameters are used to include the complete EMCR command foreseen for this function.		
			K134	Rotation Direct	0	Forward			
			K136	FW Running Mode	0	Normal			
			K146	Stop Nominal	1	Out of Position			
			K135	FW Exp. Abs. Pos.	7	Not Valid CS			
			K147	Stop Redundant	1	Out of Position			
			K137	New Address	1580	Steps			
3	K50	Remove PW F.W.					This TC is used, by the EMDH, to switch-off the relay which allows to apply primary power to the Filter Wheel. End-effect is verified with H/K parameters E1012-13.		

## 4.10. HBR config i2

### HBR Imaging

Step	Command Number	Command Name	Parameter Number	Parameter Name	Parameter Value (hex)	Parameter (engineering)	Value	NOTES (from TC reports)	Details (from Sequences dev.)
1	K31	Load HBR Config.	K30	HBR8Selection	1	Selected		This TC is used to load in the EMDH the enable/disable Set status and the processing. End-effect is verified with imaging mode H/K parameters from E1028 to E1035.	HBR 1,3,4,5,6,7,8 in
			K29	HBR7Selection	1	Selected			
			K28	HBR6Selection	1	Selected			
			K27	HBR5Selection	1	Selected			
			K26	HBR4Selection	1	Selected			
			K25	HBR3Selection	1	Selected			
			K24	HBR2Selection	1	Selected			
			K23	HBR1Selection	1	Selected			
			K39	HBR 1 Processing	0001	Imag. Proc.			
			K40	HBR 2 Processing	0000	Disabled			
			K41	HBR 3 Processing	0001	Imag. Proc.			
			K42	HBR 4 Processing	0001	Imag. Proc.			
			K43	HBR 5 Processing	0001	Imag. Proc.			
			K44	HBR 6 Processing	0001	Imag. Proc.			
			K45	HBR 7 Processing	0001	Imag. Proc.			
			K46	HBR 8 Processing	0001	Imag. Proc.			

### HBR threshold

Step	Command Number	Command Name	Parameter Number	Parameter Name	Parameter Value (hex)	Parameter (engineering)	Value	NOTES (from TC reports)	Details (from Sequences dev.)
1	K31	Load HBR Config.	K30	HBR8Selection	1	Selected		This TC is used to load in the EMDH the enable/disable Set status and the processing. End-effect is verified with EDU threshold mode H/K parameters from E1028 to E1035.	HBR 1,3,4,5,6,7,8 in
			K29	HBR7Selection	1	Selected			
			K28	HBR6Selection	1	Selected			
			K27	HBR5Selection	1	Selected			
			K26	HBR4Selection	1	Selected			
			K25	HBR3Selection	1	Selected			
			K24	HBR2Selection	1	Selected			
			K23	HBR1Selection	1	Selected			
			K39	HBR 1 Processing	0005	EDU Thresh.			
			K40	HBR 2 Processing	0000	Disabled			
			K41	HBR 3 Processing	0005	EDU Thresh.			
			K42	HBR 4 Processing	0005	EDU Thresh.			
			K43	HBR 5 Processing	0005	EDU Thresh.			
			K44	HBR 6 Processing	0005	EDU Thresh.			
			K45	HBR 7 Processing	0005	EDU Thresh.			
			K46	HBR 8 Processing	0005	EDU Thresh.			

### HBR double node

Step	Command Number	Command Name	Parameter Number	Parameter Name	Parameter Value (hex)	Parameter (engineering)	Value	NOTES (from TC reports)	Details (from Sequences dev.)
1	K31	Load HBR Config.	K30	HBR8Selection	1	Selected		This TC is used to load in the EMDH the enable/disable Set all HBRs in imaging status and the processing. End-effect is verified with mode H/K parameters from E1028 to E1035.	
			K29	HBR7Selection	1	Selected			
			K28	HBR6Selection	1	Selected			
			K27	HBR5Selection	1	Selected			
			K26	HBR4Selection	1	Selected			
			K25	HBR3Selection	1	Selected			
			K24	HBR2Selection	1	Selected			
			K23	HBR1Selection	1	Selected			
			K39	HBR 1 Processing	0001	Imag. Proc.			
			K40	HBR 2 Processing	0001	Imag. Proc.			
			K41	HBR 3 Processing	0001	Imag. Proc.			
			K42	HBR 4 Processing	0001	Imag. Proc.			
			K43	HBR 5 Processing	0001	Imag. Proc.			
			K44	HBR 6 Processing	0001	Imag. Proc.			
			K45	HBR 7 Processing	0001	Imag. Proc.			
			K46	HBR 8 Processing	0001	Imag. Proc.			

## HBR double node threshold

Step	Command Number	Command Name	Parameter Number	Parameter Name	Parameter Value (hex)	Parameter (engineering)	Value	NOTES (from TC reports)	Details (from Sequences dev.)
1	K31	Load HBR Config.	K30	HBR8Selection	1	Selected		This TC is used to load in the EMDH the enable/disable Set all HBRs in EDU status and the processing. End-effect is verified with threshold mode H/K parameters from E1028 to E1035.	
			K29	HBR7Selection	1	Selected			
			K28	HBR6Selection	1	Selected			
			K27	HBR5Selection	1	Selected			
			K26	HBR4Selection	1	Selected			
			K25	HBR3Selection	1	Selected			
			K24	HBR2Selection	1	Selected			
			K23	HBR1Selection	1	Selected			
			K39	HBR 1 Processing	0005	EDU Thresh.			
			K40	HBR 2 Processing	0005	EDU Thresh.			
			K41	HBR 3 Processing	0005	EDU Thresh.			
			K42	HBR 4 Processing	0005	EDU Thresh.			
			K43	HBR 5 Processing	0005	EDU Thresh.			
			K44	HBR 6 Processing	0005	EDU Thresh.			
			K45	HBR 7 Processing	0005	EDU Thresh.			
			K46	HBR 8 Processing	0005	EDU Thresh.			

## HBR timing

# EMCS

Step	Command Number	Command Name	Parameter Number	Parameter Name	Parameter Value (hex)	Parameter (engineering)	Value	NOTES (from TC reports)	Details (from Sequences dev.)
1	K31	Load HBR Config.	K30	HBR8Selection	1	Selected		This TC is used to load in the EMDH the enable/disable Set HBR 1 in Timing mode, status and the processing. End-effect is verified with HBRs 3,4,5,6,7,8 in imaging mode	
			K29	HBR7Selection	1	Selected			
			K28	HBR6Selection	1	Selected			
			K27	HBR5Selection	1	Selected			
			K26	HBR4Selection	1	Selected			
			K25	HBR3Selection	1	Selected			
			K24	HBR2Selection	1	Selected			
			K23	HBR1Selection	1	Selected			
			K39	HBR 1 Processing	0006	Tim. Proces.			
			K40	HBR 2 Processing	0000	Disabled			
			K41	HBR 3 Processing	0001	Imag. Proc.			
			K42	HBR 4 Processing	0001	Imag. Proc.			
			K43	HBR 5 Processing	0001	Imag. Proc.			
			K44	HBR 6 Processing	0001	Imag. Proc.			
			K45	HBR 7 Processing	0001	Imag. Proc.			
			K46	HBR 8 Processing	0001	Imag. Proc.			

## HBR 1 transparent

Step	Command Number	Command Name	Parameter Number	Parameter Name	Parameter Value (hex)	Parameter (engineering)	Value	NOTES (from TC reports)	Details (from Sequences dev.)
1	K31	Load HBR Config.	K30	HBR8Selection	1	Selected		This TC is used to load in the EMDH the enable/disable Set HBR 1 in Transparent status and the processing. End-effect is verified with mode H/K parameters from E1028 to E1035.	
			K29	HBR7Selection	1	Selected			
			K28	HBR6Selection	1	Selected			
			K27	HBR5Selection	1	Selected			
			K26	HBR4Selection	1	Selected			
			K25	HBR3Selection	1	Selected			
			K24	HBR2Selection	1	Selected			
			K23	HBR1Selection	1	Selected			
			K39	HBR 1 Processing	000A	Transparent			
			K40	HBR 2 Processing	0000	Disabled			
			K41	HBR 3 Processing	0000	Disabled			
			K42	HBR 4 Processing	0000	Disabled			
			K43	HBR 5 Processing	0000	Disabled			
			K44	HBR 6 Processing	0000	Disabled			
			K45	HBR 7 Processing	0000	Disabled			
			K46	HBR 8 Processing	0000	Disabled			

## HBR 2 transparent

Step	Command	Command Name	Parameter	Parameter Name	Parameter	Parameter	Value	NOTES	Details
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# EMCS

Number	Number	Value (hex)	(engineering)	(from TC reports)	(from Sequences dev.)		
1	K31	Load HBR Config.	K30	HBR8Selection	1	Selected	This TC is used to load in the EMDH the enable/disable Set HBR 2 in Transparent status and the processing. End-effect is verified with mode H/K parameters from E1028 to E1035.
			K29	HBR7Selection	1	Selected	
			K28	HBR6Selection	1	Selected	
			K27	HBR5Selection	1	Selected	
			K26	HBR4Selection	1	Selected	
			K25	HBR3Selection	1	Selected	
			K24	HBR2Selection	1	Selected	
			K23	HBR1Selection	1	Selected	
			K39	HBR 1 Processing	0000	Disabled	
			K40	HBR 2 Processing	000A	Transparent	
			K41	HBR 3 Processing	0000	Disabled	
			K42	HBR 4 Processing	0000	Disabled	
			K43	HBR 5 Processing	0000	Disabled	
			K44	HBR 6 Processing	0000	Disabled	
			K45	HBR 7 Processing	0000	Disabled	
			K46	HBR 8 Processing	0000	Disabled	

## HBR 3 transparent

Step	Command Number	Command Name	Parameter Number	Parameter Name	Parameter Value (hex)	Parameter (engineering)	Value	NOTES (from TC reports)	Details (from Sequences dev.)
1	K31	Load HBR Config.	K30	HBR8Selection	1	Selected	This TC is used to load in the EMDH the enable/disable Set HBR 3 in Transparent status and the processing. End-effect is verified with mode H/K parameters from E1028 to E1035.		
			K29	HBR7Selection	1	Selected			
			K28	HBR6Selection	1	Selected			
			K27	HBR5Selection	1	Selected			
			K26	HBR4Selection	1	Selected			
			K25	HBR3Selection	1	Selected			
			K24	HBR2Selection	1	Selected			
			K23	HBR1Selection	1	Selected			
			K39	HBR 1 Processing	0000	Disabled			
			K40	HBR 2 Processing	0000	Disabled			
			K41	HBR 3 Processing	000A	Transparent			
			K42	HBR 4 Processing	0000	Disabled			
			K43	HBR 5 Processing	0000	Disabled			
			K44	HBR 6 Processing	0000	Disabled			
			K45	HBR 7 Processing	0000	Disabled			
			K46	HBR 8 Processing	0000	Disabled			

## HBR 4 transparent

Step	Command Number	Command Name	Parameter Number	Parameter Name	Parameter Value (hex)	Parameter (engineering)	Value	NOTES (from TC reports)	Details (from Sequences dev.)
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# EMCS

1	K31	Load HBR Config.	K30	HBR8Selection	1	Selected	This TC is used to load in the EMDH the enable/disable Set HBR 4 in Transparent status and the processing. End-effect is verified with mode H/K parameters from E1028 to E1035.
			K29	HBR7Selection	1	Selected	
			K28	HBR6Selection	1	Selected	
			K27	HBR5Selection	1	Selected	
			K26	HBR4Selection	1	Selected	
			K25	HBR3Selection	1	Selected	
			K24	HBR2Selection	1	Selected	
			K23	HBR1Selection	1	Selected	
			K39	HBR 1 Processing	0000	Disabled	
			K40	HBR 2 Processing	0000	Disabled	
			K41	HBR 3 Processing	0000	Disabled	
			K42	HBR 4 Processing	000A	Transparent	
			K43	HBR 5 Processing	0000	Disabled	
			K44	HBR 6 Processing	0000	Disabled	
			K45	HBR 7 Processing	0000	Disabled	
			K46	HBR 8 Processing	0000	Disabled	

## HBR 5 transparent

Step Number	Command Number	Command Name	Parameter Number	Parameter Name	Parameter Value (hex)	Parameter (engineering)	Value	NOTES (from TC reports)	Details (from Sequences dev.)
1	K31	Load HBR Config.	K30	HBR8Selection	1	Selected	This TC is used to load in the EMDH the enable/disable Set HBR 5 in Transparent status and the processing. End-effect is verified with mode H/K parameters from E1028 to E1035.		
			K29	HBR7Selection	1	Selected			
			K28	HBR6Selection	1	Selected			
			K27	HBR5Selection	1	Selected			
			K26	HBR4Selection	1	Selected			
			K25	HBR3Selection	1	Selected			
			K24	HBR2Selection	1	Selected			
			K23	HBR1Selection	1	Selected			
			K39	HBR 1 Processing	0000	Disabled			
			K40	HBR 2 Processing	0000	Disabled			
			K41	HBR 3 Processing	0000	Disabled			
			K42	HBR 4 Processing	0000	Disabled			
			K43	HBR 5 Processing	000A	Transparent			
			K44	HBR 6 Processing	0000	Disabled			
			K45	HBR 7 Processing	0000	Disabled			
			K46	HBR 8 Processing	0000	Disabled			

## HBR 6 transparent

Step Number	Command Number	Command Name	Parameter Number	Parameter Name	Parameter Value (hex)	Parameter (engineering)	Value	NOTES (from TC reports)	Details (from Sequences dev.)
1	K31	Load HBR Config.	K30	HBR8Selection	1	Selected	This TC is used to load in the EMDH the enable/disable Set HBR 6 in Transparent		

K29	HBR7Selection	1	Selected	status and the processing. End-effect is verified with mode H/K parameters from E1028 to E1035.
K28	HBR6Selection	1	Selected	
K27	HBR5Selection	1	Selected	
K26	HBR4Selection	1	Selected	
K25	HBR3Selection	1	Selected	
K24	HBR2Selection	1	Selected	
K23	HBR1Selection	1	Selected	
K39	HBR 1 Processing	0000	Disabled	
K40	HBR 2 Processing	0000	Disabled	
K41	HBR 3 Processing	0000	Disabled	
K42	HBR 4 Processing	0000	Disabled	
K43	HBR 5 Processing	0000	Disabled	
K44	HBR 6 Processing	000A	Transparent	
K45	HBR 7 Processing	0000	Disabled	
K46	HBR 8 Processing	0000	Disabled	

## HBR 7 transparent

Step	Command Number	Command Name	Parameter Number	Parameter Name	Parameter Value (hex)	Parameter (engineering)	Value	NOTES (from TC reports)	Details (from Sequences dev.)
1	K31	Load HBR Config.	K30	HBR8Selection	1	Selected	This TC is used to load in the EMDH the enable/disable Set HBR 7 in Transparent status and the processing. End-effect is verified with mode H/K parameters from E1028 to E1035.		
			K29	HBR7Selection	1	Selected			
			K28	HBR6Selection	1	Selected			
			K27	HBR5Selection	1	Selected			
			K26	HBR4Selection	1	Selected			
			K25	HBR3Selection	1	Selected			
			K24	HBR2Selection	1	Selected			
			K23	HBR1Selection	1	Selected			
			K39	HBR 1 Processing	0000	Disabled			
			K40	HBR 2 Processing	0000	Disabled			
			K41	HBR 3 Processing	0000	Disabled			
			K42	HBR 4 Processing	0000	Disabled			
			K43	HBR 5 Processing	0000	Disabled			
			K44	HBR 6 Processing	0000	Disabled			
			K45	HBR 7 Processing	000A	Transparent			
			K46	HBR 8 Processing	0000	Disabled			

## HBR 8 transparent

Step	Command Number	Command Name	Parameter Number	Parameter Name	Parameter Value (hex)	Parameter (engineering)	Value	NOTES (from TC reports)	Details (from Sequences dev.)
1	K31	Load HBR Config.	K30	HBR8Selection	1	Selected	This TC is used to load in the EMDH the enable/disable Set HBR 8 in Transparent status and the processing. End-effect is verified with mode		
			K29	HBR7Selection	1	Selected			

K28	HBR6Selection	1	Selected	H/K parameters from E1028 to E1035.
K27	HBR5Selection	1	Selected	
K26	HBR4Selection	1	Selected	
K25	HBR3Selection	1	Selected	
K24	HBR2Selection	1	Selected	
K23	HBR1Selection	1	Selected	
K39	HBR 1 Processing	0000	Disabled	
K40	HBR 2 Processing	0000	Disabled	
K41	HBR 3 Processing	0000	Disabled	
K42	HBR 4 Processing	0000	Disabled	
K43	HBR 5 Processing	0000	Disabled	
K44	HBR 6 Processing	0000	Disabled	
K45	HBR 7 Processing	0000	Disabled	
K46	HBR 8 Processing	000A	Transparent	

## Default HBR Threshold and Size

Step	Command Number	Command Name	Parameter Number	Parameter Name	Parameter Value (hex)	Parameter Value (engineering)	Value	NOTES (from TC reports)	Details (from Sequences dev.)
1	K32	LoadHBR BuffSize	K30	HBR8Selection	1	Selected	Load HBR Buffer Size This TC is used to load in the Set all HBRs at standard EMDH the buffer allocation for each HBR channel to be size used in the scientific processing of the incoming events.		
			K29	HBR7Selection	1	Selected			
			K28	HBR6Selection	1	Selected			
			K27	HBR5Selection	1	Selected			
			K26	HBR4Selection	1	Selected			
			K25	HBR3Selection	1	Selected			
			K24	HBR2Selection	1	Selected			
			K23	HBR1Selection	1	Selected			
			K47	HBR1StartAddress	A0000	655360			
			K48	HBR1EndAddress	A5FFF	679935			
			K49	HBR2StartAddress	A6000	679936			
			K50	HBR2EndAddress	ABFFF	704511			
			K51	HBR3StartAddress	AC000	704512			
			K52	HBR3EndAddress	B1FFF	729087			
			K53	HBR4StartAddress	B2000	729088			
			K54	HBR4EndAddress	B7FFF	753663			
			K55	HBR5StartAddress	B8000	753664			
			K56	HBR5EndAddress	BDFFF	778239			
			K57	HBR6StartAddress	BE000	778240			
			K58	HBR6EndAddress	C3FFF	802815			
K59	HBR7StartAddress	C4000	802816						
K60	HBR7EndAddress	C9FFF	827391						
K61	HBR8StartAddress	CA000	827392						
K62	HBR8EndAddress	CFFFF	851967						
2	K34	LoadHBR Thr.Val.	K30	HBR8Selection	1	Selected	Load HBR Threshold Values. This TC is used to load in Set all HBRs at maximum the EMDH the low/high threshold values for each HBR thresholds channel to be applied in the scientific processing of the incoming events. Even the pattern reference used in the pattern discrimination process will be loaded.		
			K29	HBR7Selection	1	Selected			
			K28	HBR6Selection	1	Selected			
			K27	HBR5Selection	1	Selected			
			K26	HBR4Selection	1	Selected			
			K25	HBR3Selection	1	Selected			

# EMCS

K24	HBR2Selection	1	Selected
K23	HBR1Selection	1	Selected
K63	HBR1LowThresh	0000	0
K64	HBR1UppThresh	0FFF	4095
K65	HBR2LowThresh	0000	0
K66	HBR2UppThresh	0FFF	4095
K67	HBR3LowThresh	0000	0
K68	HBR3UppThresh	0FFF	4095
K69	HBR4LowThresh	0000	0
K70	HBR4UppThresh	0FFF	4095
K71	HBR5LowThresh	0000	0
K72	HBR5UppThresh	0FFF	4095
K73	HBR6LowThresh	0000	0
K74	HBR6UppThresh	0FFF	4095
K75	HBR7LowThresh	0000	0
K76	HBR7UppThresh	0FFF	4095
K77	HBR8LowThresh	0000	0
K78	HBR8UppThresh	0FFF	4095
K79	Pattern Reference	0000	0

## 4.11. Maintenance i2

### Ld EMDH Memory

Step	Command Number	Command Name	Parameter Number	Parameter Name	Parameter Value (hex)	Parameter (engineering)	Value	NOTES (from TC Reports)	Details (from Sequences dev.)
1	k9	Enter BSW Mode						This TC is used to enter the EMDH Basic Software Maintenance Mode. This mode allows to load, dump and calculate checksum only. Furthermore any other EMDH activity will be stopped (including H/K generation).	
2	k11	LOAD EMDH MEMORY						This TC is used to load part of the EMDH RAM memory area. The parameters are used to specify respectively the start address and data to be loaded. This TC will be executed just in Safe Stand-By Mode with EMDH in Maintenance Mode.	
3	k10	Exit BSW Mode						This TC is used to exit the EMDH Basic Software Maintenance Mode. EMDH will perform the a warm start and it will automatically enter the SAFE STAND-BY Mode.	

### EMDH Memory cks rep

Step	Command Number	Command Name	Parameter Number	Parameter Name	Parameter Value (hex)	Parameter (engineering)	Value	NOTES (from TC Reports)	Details (from Sequences dev.)
1	k52	Cal. EMDH M. CES.						This TC is used to calculate checksum of the specified part of the EMDH PROM/RAM. The parameters are used to specify respectively the start address and length of the area to be checked.	

### EMDH Memory dmp rep

Step	Command Number	Command Name	Parameter Number	Parameter Name	Parameter Value (hex)	Parameter (engineering)	Value	NOTES (from TC Reports)	Details (from Sequences dev.)
1	k51	Dump EMDH Memory						This TC is used to dump some EMDH memory area (RAM + PROM). The parameters are used to specify respectively the start address and the length of the memory area to be dumped. One or more Memory Dump Reports (TM 6.2) will be sent by TM link.	

### Ld EMCR Memory

Step	Command Number	Command Name	Parameter Number	Parameter Name	Parameter Value (hex)	Parameter (engineering)	Value	NOTES (from TC Reports)	Details (from Sequences dev.)
1	k69	Stop EMCR RAM Pr						This TC is used, by EMCR, to stop execution of the program stored in RAM Memory and start execution of Boot program. Parameters are used to include the complete EMCR command foreseen for this function.	
2	k70	LOAD EMCR MEMORY		Start address			0 0	This TC is used to load part of the EMCR RAM memory code file name : area. The parameters are used to specify respectively	

3	k71	Start EMCR RAM P							<p>the start address and data to be loaded. Command will be executed only in Safe Stand-by mode with EMCR running the Boot program.</p> <p>This TC is used, by EMCR, to start execution of the program stored in RAM Memory. Parameters are used to include the complete EMCR command foreseen for this function.</p>
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## Ld EMCR Memory v14

Step	Command Number	Command Name	Parameter Number	Parameter Name	Parameter Value (hex)	Parameter (engineering)	Value	NOTES (from TC Reports)	Details (from Sequences dev.)
1	k69	Stop EMCR RAM Pr						This TC is used, by EMCR, to stop execution of the program stored in RAM Memory and start execution of Boot program. Parameters are used to include the complete EMCR command foreseen for this function.	
2	k70	LOAD EMCR MEMORY		Start address			0 0	This TC is used to load part of the EMCR RAM memory code file name :EMCR_v14 area. The parameters are used to specify respectively the start address and data to be loaded. Command will be executed only in Safe Stand-by mode with EMCR running the Boot program.	
3	k71	Start EMCR RAM P						This TC is used, by EMCR, to start execution of the program stored in RAM Memory. Parameters are used to include the complete EMCR command foreseen for this function.	

## EMCR Memory cks rep

Step	Command Number	Command Name	Parameter Number	Parameter Name	Parameter Value (hex)	Parameter (engineering)	Value	NOTES (from TC Reports)	Details (from Sequences dev.)
1	k65	Cal. EMCR M CES						This TC is used to calculate checksum of the specified part of EMCR PROM/RAM memory area. The parameters are used to specify, respectively, the start address and length of the area to be checked.	

## EMCR Memory dmp rep

Step	Command Number	Command Name	Parameter Number	Parameter Name	Parameter Value (hex)	Parameter (engineering)	Value	NOTES (from TC Reports)	Details (from Sequences dev.)
1	k64	Dump EMCR Memory						This TC is used to dump some EMCR memory area (RAM+PROM). The parameters are used to specify, respectively, the start address and the length of the memory area to be dumped. One or more Memory Dump Reports (TM 6,2) will be sent by TM link.	

## EMCR cold restart

Step	Command Number	Command Name	Parameter Number	Parameter Name	Parameter Value (hex)	Parameter (engineering)	Value	NOTES (from TC Reports)	Details (from Sequences dev.)
1	k69	Stop EMCR RAM Pr						This TC is used, by EMCR, to stop execution of the program stored in RAM Memory and start execution of Boot program. Parameters are used to include the complete EMCR command foreseen for this function.	
2	k120	Reboot EMCR RAMP						This TC is used, by EMCR, to perform a complete bootstrap of the EMCR S/W as performed at the EMCR switch-on. Parameters are used to load the complete EMCR command foreseen for this function	

## 4.12. Mode Switching i3

Enter OV CCD1 DN

Step	Command Number	Command Name	Parameter Number	Parameter Name	Parameter Value (hex)	Parameter (engineering)	Value	NOTES (from TC Reports)	Details (from Sequences dev.)
1	k81	Load Comman	EMA E K133 K160	EMA E CommandAddr. EMA E CommandDatum	3e f0	62 240		This TC is used to send one low level command to EMAE, through EMCR. Parameters are used to include the complete EMCR command foreseen for this function.	Stop Sequencer
2	k5	Enter O Mode	K1 K139 K140 K141 K142 K241 K242  K243 K244 K245 K246 K247 K248 K249  K250 K251 K252 K253 K254 K255 K256 K257	Rejected Frames Window Xo Window Yo Window X size Window Y size CCD Identifier Readout node  CCD Mode SmoothUpThreshold SmoothLowThreshold Initial Median Initial Sigma Sigma factor Instance Number  Field of View P1 Field of View P2 Field of View P3 Field of View P4 Field of View P5 Field of View P6 Field of View P7 Field of View P8	0005 0000 0000 0136 025a 0001 0000 0000 0000 0001 0096 0001 0064 0014 000a 0001  0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000	5 0 0 310 602 1 0 0 1 150 1 100 20 10 1  0 0 0 0 0 0 0		This TC is used to perform transition to OFFSET and VARIANCE Mode. In this mode, EMCS will start the CCD readout of 1 frame in transparent mode. EMCS will reject the specified number of frames before to store the last one, compute the Offset and Variance, send to ground the result, update the EMDH Table.	
3	k81	Load Comman	EMA E K133 K160	EMA E CommandAddr. EMA E CommandDatum	3e ff	62 255			Start Sequencer

Enter OV CCD1 LW

Step	Command Number	Command Name	Parameter Number	Parameter Name	Parameter Value (hex)	Parameter (engineering)	Value	NOTES (from TC Reports)	Details (from Sequences dev.)
1	k81	Load Comman	EMA E K133 K160	EMA E CommandAddr. EMA E CommandDatum	3e f0	62 240		This TC is used to send one low level command to EMAE, through EMCR. Parameters are used to include	Stop Sequencer

# EMCS

2	k5	Enter O Mode	K1	Rejected Frames	000a	10
			K139	Window Xo	0096	150
			K140	Window Yo	0097	151
			K141	Window X size	0136	310
			K142	Window Y size	012c	300
			K241	CCD Identifier	0001	1
			K242	Readout node	0000	0
					0000	0
					0000	0
			K243	CCD Mode	0001	1
			K244	SmoothUpThreshold	0096	150
			K245	SmoothLowThreshold	0001	1
			K246	Initial Median	0064	100
			K247	Initial Sigma	0014	20
			K248	Sigma factor	000a	10
			K249	Instance Number	0002	2
					0000	0
					0000	0
			K250	Field of View P1	0000	0
			K251	Field of View P2	0000	0
			K252	Field of View P3	0000	0
			K253	Field of View P4	0000	0
			K254	Field of View P5	0000	0
			K255	Field of View P6	0000	0
			K256	Field of View P7	0000	0
			K257	Field of View P8	0000	0
3	k81	Load Comman	EMA E K133	EMA E CommandAddr.	3e	62
			K160	EMA E CommandDatum	ff	255

the complete EMCR command foreseen for this function.

This TC is used to perform transition to OFFSET and VARIANCE Mode. In this mode, EMCS will start the CCD readout of 1 frame in transparent mode. EMCS will reject the specified number of frames before to store the last one, compute the Offset and Variance, send to ground the result, update the EMDH Table.

Start Sequencer

## Enter OV CCD1 SW

Step	Command Number	Command Name	Parameter Number	Parameter Name	Parameter Value (hex)	Parameter Value (engineering)	Value	NOTES (from TC Reports)	Details (from Sequences dev.)
1	k81	Load Comman	EMA E K133	EMA E CommandAddr.	3e	62		This TC is used to send one low level command to EMAE, through EMCR. Parameters are used to include the complete EMCR command foreseen for this function.	Stop Sequencer
			K160	EMA E CommandDatum	f0	240			
2	k5	Enter O Mode	K1	Rejected Frames	0064	100		This TC is used to perform transition to OFFSET and VARIANCE Mode. In this mode, EMCS will start the CCD readout of 1 frame in transparent mode. EMCS will reject the specified number of frames before to store the last one, compute the Offset and Variance, send to ground the result, update the EMDH Table.	
			K139	Window Xo	00fa	250			
			K140	Window Yo	00fb	251			
			K141	Window X size	006e	110			
			K142	Window Y size	0064	100			
			K241	CCD Identifier	0001	1			
			K242	Readout node	0000	0			
					0000	0			
					0000	0			
					0000	0			
			K243	CCD Mode	0001	1			

# EMCS

K244	SmoothUpThreshold	0096	150
K245	SmoothLowThreshold	0001	1
K246	Initial Median	0064	100
K247	Initial Sigma	0014	20
K248	Sigma factor	000a	10
K249	Instance Number	001e	30
		0000	0
		0000	0
K250	Field of View P1	0000	0
K251	Field of View P2	0000	0
K252	Field of View P3	0000	0
K253	Field of View P4	0000	0
K254	Field of View P5	0000	0
K255	Field of View P6	0000	0
K256	Field of View P7	0000	0
K257	Field of View P8	0000	0
3 k81 Load EMAE K133	EMA CommandAddr.	3e	62
Comman K160	EMA CommandDatum	ff	255

Start Sequencer

## Enter OV CCD1 FS

Step	Command Number	Command Name	Parameter Number	Parameter Name	Parameter Value (hex)	Parameter Value (engineering)	Value	NOTES (from TC Reports)	Details (from Sequences dev.)
1	k81	Load Comman	EMA K133 K160	EMA CommandAddr. EMA CommandDatum	3e f0	62 240		This TC is used to send one low level command to Stop Sequencer EMAE, through EMCR. Parameters are used to include the complete EMCR command foreseen for this function.	
2	k5	Enter O Mode	K1 K139 K140 K141 K142 K241 K242  K243 K244 K245 K246 K247 K248 K249  K250 K251 K252 K253	Rejected Frames Window Xo Window Yo Window X size Window Y size CCD Identifier Readout node  CCD Mode SmoothUpThreshold SmoothLowThreshold Initial Median Initial Sigma Sigma factor Instance Number  Field of View P1 Field of View P2 Field of View P3 Field of View P4	0005 0000 0000 0262 025a 0001 0000 0000 0000 0000 0096 0001 0064 0014 000a 0001 0000 0000 012c 0000	5 0 0 610 602 1 0 0 0 0 150 1 100 20 10 1 0 0 300 0		This TC is used to perform transition to OFFSET and VARIANCE Mode. In this mode, EMCS will start the CCD readout of 1 frame in transparent mode. EMCS will reject the specified number of frames before to store the last one, compute the Offset and Variance, send to ground the result, update the EMDH Table.	

# EMCS

3	k81	Load Comman	EMAE	K254	Field of View P5	0261	609	Start Sequencer
				K255	Field of View P6	0000	0	
				K256	Field of View P7	0259	601	
				K257	Field of View P8	0259	601	
				K133	EMAE CommandAddr.	3e	62	
				K160	EMAE CommandDatum	ff	255	

## Enter OV CCD2 FS

Step	Command Number	Command Name	Parameter Number	Parameter Name	Parameter Value (hex)	Parameter Value (engineering)	Value	NOTES (from TC Reports)	Details (from Sequences dev.)
1	k81	Load Comman	EMAE K133 K160	EMAE CommandAddr. EMAE CommandDatum	3e f0	62 240		This TC is used to send one low level command to Stop Sequencer EMAE, through EMCR. Parameters are used to include the complete EMCR command foreseen for this function.	
2	k5	Enter O Mode	K1 K139 K140 K141 K142 K241 K242  K243 K244 K245 K246 K247 K248 K249  K250 K251 K252 K253 K254 K255 K256 K257	Rejected Frames Window Xo Window Yo Window X size Window Y size CCD Identifier Readout node  CCD Mode SmoothUppThreshold SmoothLowThreshold Initial Median Initial Sigma Sigma factor Instance Number  Field of View P1 Field of View P2 Field of View P3 Field of View P4 Field of View P5 Field of View P6 Field of View P7 Field of View P8	0005 0000 0000 0262 025a 0002 0000 0000 0000 0000 0096 0001 0064 0014 000a 0001  00c8 0032 0063 015f 0046 0258 0258 0261	5 0 0 610 602 2 0 0 0 0 150 1 100 20 10 1 0 0 200 50 99 351 70 600 600 609	This TC is used to perform transition to OFFSET and VARIANCE Mode. In this mode, EMCS will start the CCD readout of 1 frame in transparent mode. EMCS will reject the specified number of frames before to store the last one, compute the Offset and Variance, send to ground the result, update the EMDH Table.		
3	k81	Load Comman	EMAE K133 K160	EMAE CommandAddr. EMAE CommandDatum	3e ff	62 255		Start Sequencer	

## Enter OV CCD3 FS

Step	Command Number	Command Name	Parameter Number	Parameter Name	Parameter Value (hex)	Parameter Value (engineering)	Value	NOTES (from TC Reports)	Details (from Sequences dev.)
1	k81	Load Comman	EMA E K133 K160	EMA E CommandAddr. EMA E CommandDatum	3e f0	62 240		This TC is used to send one low level command to Stop Sequencer EMAE, through EMCR. Parameters are used to include the complete EMCR command foreseen for this function.	
2	k5	Enter O Mode	K1 K139 K140 K141 K142 K241 K242  K243 K244 K245 K246 K247 K248 K249  K250 K251 K252 K253 K254 K255 K256 K257	Rejected Frames Window Xo Window Yo Window X size Window Y size CCD Identifier Readout node  CCD Mode SmoothUppThreshold SmoothLowThreshold Initial Median Initial Sigma Sigma factor Instance Number  Field of View P1 Field of View P2 Field of View P3 Field of View P4 Field of View P5 Field of View P6 Field of View P7 Field of View P8	0005 0000 0000 0262 025a 0003 0000 0000 0000 0000 0096 0001 0064 0014 000a 0001 0000 0000 0000 0064 012b 0033 0256 0064 024e 0258	5 0 0 610 602 3 0 0 0 0 150 1 100 20 10 1 0 0 0 100 299 51 598 100 590 600		This TC is used to perform transition to OFFSET and VARIANCE Mode. In this mode, EMCS will start the CCD readout of 1 frame in transparent mode. EMCS will reject the specified number of frames before to store the last one, compute the Offset and Variance, send to ground the result, update the EMDH Table.	
3	k81	Load Comman	EMA E K133 K160	EMA E CommandAddr. EMA E CommandDatum	3e ff	62 255			Start Sequencer

## Enter OV CCD4 FS

Step	Command Number	Command Name	Parameter Number	Parameter Name	Parameter Value (hex)	Parameter Value (engineering)	Value	NOTES (from TC Reports)	Details (from Sequences dev.)
1	k81	Load Comman	EMA E K133 K160	EMA E CommandAddr. EMA E CommandDatum	3e f0	62 240		This TC is used to send one low level command to Stop Sequencer EMAE, through EMCR. Parameters are used to include the complete EMCR command foreseen for this function.	
2	k5	Enter O Mode	K1	Rejected Frames	0005	5		This TC is used to perform transition to OFFSET and VARIANCE Mode. In this mode,	

# EMCS

K139	Window Xo	0000	0
K140	Window Yo	0000	0
K141	Window X size	0262	610
K142	Window Y size	025a	602
K241	CCD Identifier	0004	4
K242	Readout node	0000	0
		0000	0
		0000	0
K243	CCD Mode	0000	0
K244	SmoothUpThreshold	0096	150
K245	SmoothLowThreshold	0001	1
K246	Initial Median	0064	100
K247	Initial Sigma	0014	20
K248	Sigma factor	000a	10
K249	Instance Number	0001	1
		0000	0
		0000	0
K250	Field of View P1	01c2	450
K251	Field of View P2	0033	51
K252	Field of View P3	01f3	499
K253	Field of View P4	015e	350
K254	Field of View P5	0260	608
K255	Field of View P6	0257	599
K256	Field of View P7	000a	10
K257	Field of View P8	0005	5
3 k81 Load EMAE K133	EMA CommandAddr.	3e	62
Comman K160	EMA CommandDatum	ff	255

EMCS will start the CCD readout of 1 frame in transparent mode. EMCS will reject the specified number of frames before to store the last one, compute the Offset and Variance, send to ground the result, update the EMDH Table.

Start Sequencer

Enter OV CCD5 FS

Step	Command Number	Command Name	Parameter Number	Parameter Name	Parameter Value (hex)	Parameter Value (engineering)	Value	NOTES (from TC Reports)	Details (from Sequences dev.)
1	k81	Load Comman	EMA K133 K160	EMA CommandAddr. EMA CommandDatum	3e ff	62 240		This TC is used to send one low level command to Stop Sequencer EMAE, through EMCR. Parameters are used to include the complete EMCR command foreseen for this function.	
2	k5	Enter O Mode	K1 K139 K140 K141 K142 K241 K242  K243 K244 K245 K246	Rejected Frames Window Xo Window Yo Window X size Window Y size CCD Identifier Readout node  CCD Mode SmoothUpThreshold SmoothLowThreshold Initial Median	0005 0000 0000 0262 025a 0005 0000  0000 0096 0001 0064	5 0 0 610 602 5 0  0 150 1 100		This TC is used to perform transition to OFFSET and VARIANCE Mode. In this mode, EMCS will start the CCD readout of 1 frame in transparent mode. EMCS will reject the specified number of frames before to store the last one, compute the Offset and Variance, send to ground the result, update the EMDH Table.	

# EMCS

			K247	Initial Sigma	0014	20	
			K248	Sigma factor	000a	10	
			K249	Instance Number	0001	1	
					0000	0	
					0000	0	
			K250	Field of View P1	00c8	200	
			K251	Field of View P2	0032	50	
			K252	Field of View P3	0063	99	
			K253	Field of View P4	015f	351	
			K254	Field of View P5	0046	70	
			K255	Field of View P6	0258	600	
			K256	Field of View P7	0258	500	
			K257	Field of View P8	0261	609	
3	k81	Load Comman	EMAE K133	EMAE CommandAddr.	3e	62	Start Sequencer
			K160	EMAE CommandDatum	ff	255	

Enter OV CCD6 FS

Step	Command Number	Command Name	Parameter Number	Parameter Name	Parameter Value (hex)	Parameter Value (engineering)	Value	NOTES (from TC Reports)	Details (from Sequences dev.)
1	k81	Load Comman	EMAE K133 K160	EMAE CommandAddr. EMAE CommandDatum	3e f0	62 240		This TC is used to send one low level command to Stop Sequencer EMAE, through EMCR. Parameters are used to include the complete EMCR command foreseen for this function.	
2	k5	Enter O Mode	K1 K139 K140 K141 K142 K241 K242  K243 K244 K245 K246 K247 K248 K249  K250 K251 K252 K253 K254 K255 K256	Rejected Frames Window Xo Window Yo Window X size Window Y size CCD Identifier Readout node  CCD Mode SmoothUpThreshold SmoothLowThreshold Initial Median Initial Sigma Sigma factor Instance Number  Field of View P1 Field of View P2 Field of View P3 Field of View P4 Field of View P5 Field of View P6 Field of View P7	0005 0000 0000 0262 025a 0006 0000  0000 0000 0096 0001 0064 0014 000a 0001  0000 0064 012b 0033 0256 0064 024e	5 0 0 610 602 6 0  0 0 150 1 100 20 10 1  0 100 299 51 598 100 590		This TC is used to perform transition to OFFSET and VARIANCE Mode. In this mode, EMCS will start the CCD readout of 1 frame in transparent mode. EMCS will reject the specified number of frames before to store the last one, compute the Offset and Variance, send to ground the result, update the EMDH Table.	

# EMCS

3	k81	Load Comman	EMAE K133 K160	Field of View P8 EMA CommandAddr. EMA CommandDatum	0258 3e ff	600 62 255		Start Sequencer
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Enter OV CCD7 FS

Step	Command Number	Command Name	Parameter Number	Parameter Name	Parameter Value (hex)	Parameter Value (engineering)	Value	NOTES (from TC Reports)	Details (from Sequences dev.)
1	k81	Load Comman	EMAE K133 K160	Field of View P8 EMA CommandAddr. EMA CommandDatum	0258 3e ff	600 62 255		This TC is used to send one low level command to EMAE, through EMCR. Parameters are used to include the complete EMCR command foreseen for this function.	Stop Sequencer
2	k5	Enter O Mode	K1 K139 K140 K141 K142 K241 K242  K243 K244 K245 K246 K247 K248 K249  K250 K251 K252 K253 K254 K255 K256 K257	Rejected Frames Window Xo Window Yo Window X size Window Y size CCD Identifier Readout node  CCD Mode SmoothUppThreshold SmoothLowThreshold Initial Median Initial Sigma Sigma factor Instance Number  Field of View P1 Field of View P2 Field of View P3 Field of View P4 Field of View P5 Field of View P6 Field of View P7 Field of View P8	0005 0000 0000 0262 025a 0007 0000 0000 0000 0096 0001 0064 0014 000a 0001 0000 0000 01c2 0033 01f3 015e 0260 0257 000a 0005	5 0 0 610 602 7 0 0 0 150 1 100 20 10 1 0 0 450 51 499 350 608 599 10 5		This TC is used to perform transition to OFFSET and VARIANCE Mode. In this mode, EMCS will start the CCD readout of 1 frame in transparent mode. EMCS will reject the specified number of frames before to store the last one, compute the Offset and Variance, send to ground the result, update the EMDH Table.	
3	k81	Load Comman	EMAE K133 K160	Field of View P8 EMA CommandAddr. EMA CommandDatum	0258 3e ff	600 62 255			Start Sequencer

Enter OV Timing FS

Step	Command Number	Command Name	Parameter Number	Parameter Name	Parameter Value (hex)	Parameter Value (engineering)	Value	NOTES (from TC Reports)	Details (from Sequences dev.)
1	k81	Load Comman	EMAE K133 K160	Field of View P8 EMA CommandAddr. EMA CommandDatum	0258 3e ff	600 62 240		This TC is used to send one low level command to EMAE, through EMCR. Parameters are used to include the complete EMCR command foreseen for this function.	Stop Sequencer

# EMCS

2	k5	Enter O Mode	K1	Rejected Frames	0bc2	3010	
				Window Xo	00ff	256	
				Window Yo	0000	0	
				Window X size	0064	100	
				Window Y size	0001	1	
				CCD Identifier	0004	4	
				Readout node	0000	0	
					0000	0	
					0000	0	
				K243	CCD Mode	0002	2
				K244	SmoothUppThreshold	7fff	32767
				K245	SmoothLowThreshold	0000	0
				K246	Initial Median	0000	0
				K247	Initial Sigma	0000	0
				K248	Sigma factor	000a	10
				K249	Instance Number	025a	602
						0000	0
						0000	0
				K250	Field of View P1	0000	0
				K251	Field of View P2	0000	0
				K252	Field of View P3	0000	0
				K253	Field of View P4	0000	0
				K254	Field of View P5	0000	0
				K255	Field of View P6	0000	0
K256	Field of View P7	0000	0				
K257	Field of View P8	0000	0				
3	k81	Load Comman	EMAE	K133	EMAE CommandAddr.	3e	62
				K160	EMAE CommandDatum	ff	255

This TC is used to perform transition to OFFSET and VARIANCE Mode. In this mode, EMCS will start the CCD readout of 1 frame in transparent mode. EMCS will reject the specified number of frames before to store the last one, compute the Offset and Variance, send to ground the result, update the EMDH Table.

Start Sequencer

## Enter Prime

Step	Command Number	Command Name	Parameter Number	Parameter Name	Parameter Value (hex)	Parameter Value (engineering)	Value	NOTES (from TC Reports)	Details (from Sequences dev.)
1	k81	Load Comman	EMAE K133 K160	EMAE CommandAddr. EMAE CommandDatum	3e f0	62 240		This TC is used to send one low level command to EMAE, through EMCR. Parameters are used to include the complete EMCR command foreseen for this function.	Stop Sequencer
2	k3	Enter PRIME Mode						This TC is used to perform transition to PRIME Mode. In this mode, EMCS will start the CCD readout depending on the instrument configuration performed in IDLE Mode. Scientific TM packets will be generated with information regarding the incoming events.	

## Enter Fast

Step	Command Number	Command Name	Parameter Number	Parameter Name	Parameter Value (hex)	Parameter Value (engineering)	Value	NOTES (from TC Reports)	Details (from Sequences dev.)
1	k81	Load	EMAE K133	EMAE CommandAddr.	3e	62		This TC is used to send one low level command to	Stop Sequencer

Comman K160 EMAE CommandDatum f0 240

2 k4 Enter FAST Mode

EMAЕ, through EMCR. Parameters are used to include the complete EMCR command foreseen for this function.

This TC is used to perform transition to FAST Mode. In this mode, EMCS will start the CCD readout depending on the instrument configuration performed in IDLE Mode. Scientific TM packets will be generated with information regarding the incoming events.

## Enter In Flight Test

Step	Command Number	Command Name	Parameter Number	Parameter Name	Parameter Value (hex)	Parameter (engineering)	Value	NOTES (from TC Reports)	Details (from Sequences dev.)
1	k81	Load Comman	EMAЕ K133 K160	EMAЕ CommandAddr. EMAЕ CommandDatum	3e f0	62 240		This TC is used to send one low level command to EMAЕ, through EMCR. Parameters are used to include the complete EMCR command foreseen for this function.	Stop Sequencer
2	k8	Enter IFT Mode						This TC is used to perform transition to IN-FLIGHT TEST Mode. EMCS or EMDH In-Flight Test will be activated depending on the parameter value. EMCS selection will allow to execute almost all the existing TCs without any on-board filtering or control..	

## Enter Diagnostic FF or RFS

Step	Command Number	Command Name	Parameter Number	Parameter Name	Parameter Value (hex)	Parameter (engineering)	Value	NOTES (from TC Reports)	Details (from Sequences dev.)
1	k81	Load Comman	EMAЕ K133 K160	EMAЕ CommandAddr. EMAЕ CommandDatum	3e f0	62 240		This TC is used to send one low level command to EMAЕ, through EMCR. Parameters are used to include the complete EMCR command foreseen for this function.	Stop Sequencer
2	k6	Enter CCD Mode	Diagn. K1 K2	Rejected Frames Exp. Frame Pixel	5 59a74	5 367220		This TC is used to perform transition to Diagnostic Mode. EMCS will start the CCD readout of 1 frame in transparent mode. Scientific TM packets will be generated with the relevant pixel information. EMCS will reject the specified number of frames before to store the last one, send it to Ground and go to Idle mode.	
3	k81	Load Comman	EMAЕ K133 K160	EMAЕ CommandAddr. EMAЕ CommandDatum	3e ff	62 255			Start Sequencer

## Enter Fast Diagnostic FF

Step	Command Number	Command Name	Parameter Number	Parameter Name	Parameter Value (hex)	Parameter (engineering)	Value	NOTES (from TC Reports)	Details (from Sequences dev.)
1	k81	Load Comman	EMAЕ K133 K160	EMAЕ CommandAddr. EMAЕ CommandDatum	3e f0	62 240		This TC is used to send one low level command to EMAЕ, through EMCR. Parameters are used to include the complete EMCR command foreseen for this function.	Stop Sequencer
2	k6	Enter CCD Mode	Diagn. K1 K2	Rejected Frames Exp. Frame Pixel	5 9e98	5 40600		This TC is used to perform transition to Fast Diagnostic Mode. EMCS will start the CCD readout of 1 frame in transparent mode. Scientific TM packets will be generated with the relevant pixel information. EMCS will reject the specified number of frames	

# EMCS

3	k81	Load Comman	EMAE K133 K160	EMAE CommandAddr. 3e EMAE CommandDatum ff	62 255	before to store the last one, send it to Ground and go to Idle mode. Start Sequencer
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## Enter Diagnostic LW

Step	Command Number	Command Name	Parameter Number	Parameter Name	Parameter Value (hex)	Parameter Value (engineering)	Value	NOTES (from TC Reports)	Details (from Sequences dev.)
1	k81	Load Comman	EMAE K133 K160	EMAE CommandAddr. 3e EMAE CommandDatum f0	62 240			This TC is used to send one low level command to EMAE, through EMCR. Parameters are used to include the complete EMCR command foreseen for this function.	Stop Sequencer
2	k6	Enter Mode	CCD Diagn. K1 K2	Rejected Frames Exp. Frame Pixel	5 16b48	5	93000	This TC is used to perform transition to Diagnostic Mode. EMCS will start the CCD readout of 1 frame in transparent mode. Scientific TM packets will be generated with the relevant pixel information. EMCS will reject the specified number of frames before to store the last one, send it to Ground and go to Idle mode.	
3	k81	Load Comman	EMAE K133 K160	EMAE CommandAddr. 3e EMAE CommandDatum ff	62 255				Start Sequencer

## Enter Diagnostic SW

Step	Command Number	Command Name	Parameter Number	Parameter Name	Parameter Value (hex)	Parameter Value (engineering)	Value	NOTES (from TC Reports)	Details (from Sequences dev.)
1	k81	Load Comman	EMAE K133 K160	EMAE CommandAddr. 3e EMAE CommandDatum f0	62 240			This TC is used to send one low level command to EMAE, through EMCR. Parameters are used to include the complete EMCR command foreseen for this function.	Stop Sequencer
2	k6	Enter Mode	CCD Diagn. K1 K2	Rejected Frames Exp. Frame Pixel	5 2af8	5	11000	This TC is used to perform transition to Diagnostic Mode. EMCS will start the CCD readout of 1 frame in transparent mode. Scientific TM packets will be generated with the relevant pixel information. EMCS will reject the specified number of frames before to store the last one, send it to Ground and go to Idle mode.	
3	k81	Load Comman	EMAE K133 K160	EMAE CommandAddr. 3e EMAE CommandDatum ff	62 255				Start Sequencer

## Enter Diagnostic Timing

Step	Command Number	Command Name	Parameter Number	Parameter Name	Parameter Value (hex)	Parameter Value (engineering)	Value	NOTES (from TC Reports)	Details (from Sequences dev.)
1	k81	Load	EMAE K133	EMAE CommandAddr. 3e	62			This TC is used to send one low level command to	Stop Sequencer

# EMCS

		Comman	K160	EMAЕ CommandDatum f0	240				EMAЕ, through EMCR. Parameters are used to include the complete EMCR command foreseen for this function.
2	k6	Enter CCD Mode	Diagn. K1 K2	Rejected Frames Exp. Frame Pixel	5 eb28	5	60200		This TC is used to perform transition to Diagnostic Mode. EMCS will start the CCD readout of 1 frame in transparent mode. Scientific TM packets will be generated with the relevant pixel information. EMCS will reject the specified number of frames before to store the last one, send it to Ground and go to Idle mode.
3	k81	Load Comman	EMAЕ K133 K160	EMAЕ CommandAddr. EMAЕ CommandDatum ff	3e	62	255		Start Sequencer

## Enter Diagnostic DN

Step	Command Number	Command Name	Parameter Number	Parameter Name	Parameter Value (hex)	Parameter (engineering)	Value	NOTES (from TC Reports)	Details (from Sequences dev.)
1	k81	Load Comman	EMAЕ K133 K160	EMAЕ CommandAddr. EMAЕ CommandDatum f0	3e	62	240	This TC is used to send one low level command to EMAЕ, through EMCR. Parameters are used to include the complete EMCR command foreseen for this function.	Stop Sequencer
2	k6	Enter CCD Mode	Diagn. K1 K2	Rejected Frames Exp. Frame Pixel	5 2d8fc	5	186620	This TC is used to perform transition to Diagnostic Mode. EMCS will start the CCD readout of 1 frame in transparent mode. Scientific TM packets will be generated with the relevant pixel information. EMCS will reject the specified number of frames before to store the last one, send it to Ground and go to Idle mode.	
3	k81	Load Comman	EMAЕ K133 K160	EMAЕ CommandAddr. EMAЕ CommandDatum ff	3e	62	255		Start Sequencer

## Enter Idle

Step	Command Number	Command Name	Parameter Number	Parameter Name	Parameter Value (hex)	Parameter (engineering)	Value	NOTES (from TC Reports)	Details (from Sequences dev.)
1	k2	Enter IDLE Mode						This TC is used to perform transition to Idle Mode. In this Mode all the configuration commands can be executed (except the EMDH and EMCR critical operations as memory loading and testing) and transition to other modes can be performed	

## Observation to idle

Step	Command Number	Command Name	Parameter Number	Parameter Name	Parameter Value (hex)	Parameter (engineering)	Value	NOTES (from TC Reports)	Details (from Sequences dev.)
1	k2	Enter IDLE Mode						This TC is used to perform transition to Idle Mode. In this Mode all the configuration commands can be executed (except the EMDH and EMCR critical operations as memory loading and testing) and transition to other modes can be performed	
2	k81	Load Comman	EMAЕ K133 K160	EMAЕ CommandAddr. EMAЕ CommandDatum ff	3e	62	255	This TC is used to send one low level command to EMAЕ, through EMCR. Parameters are used to include	Start Sequencer

the complete EMCR command foreseen for this function.

## 4.13. Offset tables i2

OT Id all to EMCR

Step	Command Number	Command Name	Parameter Number	Parameter Name	Parameter Value (hex)	Parameter Value (engineering)	Value	NOTES (from TC Reports)	Details (from Sequences dev.)
1	k53	LOAD TABLES	EMDH k300		13A30	80432		This TC is used to load in a specific EMDH memory file-name for table 0 area the Offset, Sequence, Pattern Mask tables or Test Image to be loaded in EMCR. More TC will be used to load the complete table in the EMDH, start address and length will be opportunely set.	
2	k73	Upload OST	EMCRM k108	OST Identifier		0 0			This TC is used to load in the EMCR memory the complete Offset Table previously stored in the EMDH Tables area. Parameters are used to include the first part of the command to be delivered from EMDH to EMCR.
3	k53	LOAD TABLES	EMDH k300		13A30	80432			file-name for table 1
4	k73	Upload OST	EMCRM k108	OST Identifier		1 1			EMCR OT1
5	k53	LOAD TABLES	EMDH k300		13A30	80432			file-name for table 2
6	k73	Upload OST	EMCRM k108	OST Identifier		2 2			EMCR OT2
7	k53	LOAD TABLES	EMDH k300		13A30	80432			file-name for table 3
8	k73	Upload OST	EMCRM k108	OST Identifier		3 3			EMCR OT3
9	k53	LOAD TABLES	EMDH k300		13A30	80432			file-name for table 4
10	k73	Upload OST	EMCRM k108	OST Identifier		4 4			EMCR OT4
11	k53	LOAD TABLES	EMDH k300		13A30	80432			file-name for table 5
12	k73	Upload OST	EMCRM k108	OST Identifier		5 5			EMCR OT5
13	k53	LOAD TABLES	EMDH k300		13A30	80432			file-name for table 6
14	k73	Upload OST	EMCRM k108	OST Identifier		6 6			EMCR OT6
15	k53	LOAD TABLES	EMDH k300		13A30	80432			file-name for table 7
16	k73	Upload OST	EMCRM k108	OST Identifier		7 7			EMCR OT7

## OT Id all EDU std (EDU1 alt)

Step	Command Number	Command Name	Parameter Number	Parameter Name	Parameter Value (hex)	Parameter (engineering)	Value	NOTES (from TC Reports)	Details (from Sequences dev.)
1	k53	LOAD TABLES	EMDH k300		13A30	80432		This TC is used to load in a specific EMDH memory file-name for table 0 area the Offset, Sequence, Pattern Mask tables or Test Image to be loaded in EMCR. More TC will be used to load the complete table in the EMDH, start address and length will be opportunely set.	
2	k73	Upload OST	EMCRM k108	OST Identifier			0 0	This TC is used to load in the EMCR memory the EMCR OT0 complete Offset Table previously stored in the EMDH Tables area. Parameters are used to include the first part of the command to be delivered from EMDH to EMCR.	
3	k78	Load EDU OffsetT	k104	EDU Identifier	0	0		This TC is used to load one of the eight Offset Tables stored in the EMCR memory in one of the eight EMCR EDUs. Parameters are used to include the complete EMCR command dedicated to this function. For EDU 1, the Alternate area is used as default, since it receives CCD data from Node 1 (redundant) in standard Double Node configuration.	
			k108	OST Identifier	0	0			
			k105	EDU Zone	0	Normal area			
4	k78	Load EDU OffsetT	k104	EDU Identifier	1	1			
			k108	OST Identifier	0	0			
			k105	EDU Zone	1	Alternate area			
5	k78	Load EDU OffsetT	k104	EDU Identifier	2	2			
			k108	OST Identifier	0	0			
			k105	EDU Zone	0	Normal area			
6	k78	Load EDU OffsetT	k104	EDU Identifier	3	3			
			k108	OST Identifier	0	0			
			k105	EDU Zone	0	Normal area			
7	k78	Load EDU OffsetT	k104	EDU Identifier	4	4			
			k108	OST Identifier	0	0			
			k105	EDU Zone	0	Normal area			
8	k78	Load EDU OffsetT	k104	EDU Identifier	5	5			
			k108	OST Identifier	0	0			
			k105	EDU Zone	0	Normal area			
9	k78	Load EDU OffsetT	k104	EDU Identifier	6	6			
			k108	OST Identifier	0	0			
			k105	EDU Zone	0	Normal area			
10	k78	Load EDU OffsetT	k104	EDU Identifier	7	7			
			k108	OST Identifier	0	0			
			k105	EDU Zone	0	Normal area			

## OT Id all EDU alt (EDU1 nor)

Step	Command Number	Command Name	Parameter Number	Parameter Name	Parameter Value (hex)	Parameter (engineering)	Value	NOTES (from TC Reports)	Details (from Sequences dev.)
1	k53	LOAD TABLES	EMDH k300		13A30	80432		This TC is used to load in a specific EMDH memory file-name for table 0 area the Offset, Sequence, Pattern Mask tables or Test Image to be loaded in EMCR. More TC will be used to load the complete table in the EMDH, start address and length will be opportunely set.	

# EMCS

2	k73	Upload OST	EMCRM k108	OST Identifier	0	0		This TC is used to load in the EMCR memory the EMCR OT0 complete Offset Table previously stored in the EMDH Tables area. Parameters are used to include the first part of the command to be delivered from EMDH to EMCR.
3	k78	Load EDU OffsetT	k104	EDU Identifier	0	0		This TC is used to load one of the eight Offset Tables stored in the EMCR memory in one of the eight EMCR EDUs. Parameters are used to include the complete EMCR command dedicated to this function. For EDU 1, the Alternate area is used as default, since it receives CCD data from Node 1 (redundant) in standard Double Node configuration.
			k108	OST Identifier	0	0		
			k105	EDU Zone	1	Alternate area		
4	k78	Load EDU OffsetT	k104	EDU Identifier	1	1		
			k108	OST Identifier	0	0		
			k105	EDU Zone	0	Normal area		
5	k78	Load EDU OffsetT	k104	EDU Identifier	2	2		
			k108	OST Identifier	0	0		
			k105	EDU Zone	1	Alternate area		
6	k78	Load EDU OffsetT	k104	EDU Identifier	3	3		
			k108	OST Identifier	0	0		
			k105	EDU Zone	1	Alternate area		
7	k78	Load EDU OffsetT	k104	EDU Identifier	4	4		
			k108	OST Identifier	0	0		
			k105	EDU Zone	1	Alternate area		
8	k78	Load EDU OffsetT	k104	EDU Identifier	5	5		
			k108	OST Identifier	0	0		
			k105	EDU Zone	1	Alternate area		
9	k78	Load EDU OffsetT	k104	EDU Identifier	6	6		
			k108	OST Identifier	0	0		
			k105	EDU Zone	1	Alternate area		
10	k78	Load EDU OffsetT	k104	EDU Identifier	7	7		
			k108	OST Identifier	0	0		
			k105	EDU Zone	1	Alternate area		

## OT Id 0 to EMCR for OV

Step	Command Number	Command Name	Parameter Number	Parameter Name	Parameter Value (hex)	Parameter (engineering)	Value	NOTES (from TC Reports)	Details (from Sequences dev.)
1	k53	LOAD TABLES	EMDH k300		13A30	80432		This TC is used to load in a specific EMDH memory patch of the first 4 words area the Offset, Sequence, Pattern Mask tables or Test 0FFF 0FFF 0FFF 0FFF Image to be loaded in EMCR. More TC will be used to load the complete table in the EMDH, start address and length will be opportunely set.	
2	k53	LOAD TABLES	EMDH k300		13C8E	81038			patch of the last 4 words 0FFF 0FFF 0FFF 0FFF
3	k73	Upload OST	EMCRM k108	OST Identifier			0 0	This TC is used to load in the EMCR memory the complete Offset Table previously stored in the EMDH Tables area. Parameters are used to include the first part of the command to be delivered from EMDH to EMCR.	

## OT Id 1 to EMCR for OV

Step	Command Number	Command Name	Parameter Number	Parameter Name	Parameter Value (hex)	Parameter (engineering)	Value	NOTES (from TC Reports)	Details (from Sequences dev.)
1	k53	LOAD TABLES	EMDH k300		13A30	80432		This TC is used to load in a specific EMDH memory patch of the first 4 words area the Offset, Sequence, Pattern Mask tables or Test 0FFF 0FFF 0FFF 0FFF Image to be loaded in EMCR. More TC will be used to load the complete table in the EMDH, start address and length will be opportunely set.	
2	k53	LOAD TABLES	EMDH k300		13C8E	81038			patch of the last 4 words 0FFF 0FFF 0FFF 0FFF
3	k73	Upload OST	EMCRM k108	OST Identifier		1 1		This TC is used to load in the EMCR memory the complete Offset Table previously stored in the EMDH Tables area. Parameters are used to include the first part of the command to be delivered from EMDH to EMCR.	

## OT Id 2 to EMCR for OV

Step	Command Number	Command Name	Parameter Number	Parameter Name	Parameter Value (hex)	Parameter (engineering)	Value	NOTES (from TC Reports)	Details (from Sequences dev.)
1	k53	LOAD TABLES	EMDH k300		13A30	80432		This TC is used to load in a specific EMDH memory patch of the first 4 words area the Offset, Sequence, Pattern Mask tables or Test 0FFF 0FFF 0FFF 0FFF Image to be loaded in EMCR. More TC will be used to load the complete table in the EMDH, start address and length will be opportunely set.	
2	k53	LOAD TABLES	EMDH k300		13C8E	81038			patch of the last 4 words 0FFF 0FFF 0FFF 0FFF
3	k73	Upload OST	EMCRM k108	OST Identifier		2 2		This TC is used to load in the EMCR memory the complete Offset Table previously stored in the EMDH Tables area. Parameters are used to include the first part of the command to be delivered from EMDH to EMCR.	

## OT Id 3 to EMCR for OV

Step	Command Number	Command Name	Parameter Number	Parameter Name	Parameter Value (hex)	Parameter (engineering)	Value	NOTES (from TC Reports)	Details (from Sequences dev.)
1	k53	LOAD TABLES	EMDH k300		13A30	80432		This TC is used to load in a specific EMDH memory patch of the first 4 words area the Offset, Sequence, Pattern Mask tables or Test 0FFF 0FFF 0FFF 0FFF Image to be loaded in EMCR. More TC will be used to load the complete table in the EMDH, start address and length will be opportunely set.	
2	k53	LOAD TABLES	EMDH k300		13C8E	81038			patch of the last 4 words 0FFF 0FFF 0FFF 0FFF
3	k73	Upload OST	EMCRM k108	OST Identifier		3 3		This TC is used to load in the EMCR memory the complete Offset Table previously stored in the EMDH Tables area. Parameters are used to include the first part of the command to be delivered from EMDH to EMCR.	

## OT Id 4 to EMCR for OV

# EMCS

Step	Command Number	Command Name	Parameter Number	Parameter Name	Parameter Value (hex)	Parameter (engineering)	Value	NOTES (from TC Reports)	Details (from Sequences dev.)
1	k53	LOAD TABLES	EMDH k300		13A30	80432		This TC is used to load in a specific EMDH memory patch of the first 4 words area the Offset, Sequence, Pattern Mask tables or Test 0FFF 0FFF 0FFF 0FFF Image to be loaded in EMCR. More TC will be used to load the complete table in the EMDH, start address and length will be opportunely set.	
2	k53	LOAD TABLES	EMDH k300		13C8E	81038			patch of the last 4 words 0FFF 0FFF 0FFF 0FFF
3	k73	Upload OST	EMCRM k108	OST Identifier		4 4		This TC is used to load in the EMCR memory the complete Offset Table previously stored in the EMDH Tables area. Parameters are used to include the first part of the command to be delivered from EMDH to EMCR.	

## OT Id 5 to EMCR for OV

Step	Command Number	Command Name	Parameter Number	Parameter Name	Parameter Value (hex)	Parameter (engineering)	Value	NOTES (from TC Reports)	Details (from Sequences dev.)
1	k53	LOAD TABLES	EMDH k300		13A30	80432		This TC is used to load in a specific EMDH memory patch of the first 4 words area the Offset, Sequence, Pattern Mask tables or Test 0FFF 0FFF 0FFF 0FFF Image to be loaded in EMCR. More TC will be used to load the complete table in the EMDH, start address and length will be opportunely set.	
2	k53	LOAD TABLES	EMDH k300		13C8E	81038			patch of the last 4 words 0FFF 0FFF 0FFF 0FFF
3	k73	Upload OST	EMCRM k108	OST Identifier		5 5		This TC is used to load in the EMCR memory the complete Offset Table previously stored in the EMDH Tables area. Parameters are used to include the first part of the command to be delivered from EMDH to EMCR.	

## OT Id 6 to EMCR for OV

Step	Command Number	Command Name	Parameter Number	Parameter Name	Parameter Value (hex)	Parameter (engineering)	Value	NOTES (from TC Reports)	Details (from Sequences dev.)
1	k53	LOAD TABLES	EMDH k300		13A30	80432		This TC is used to load in a specific EMDH memory patch of the first 4 words area the Offset, Sequence, Pattern Mask tables or Test 0FFF 0FFF 0FFF 0FFF Image to be loaded in EMCR. More TC will be used to load the complete table in the EMDH, start address and length will be opportunely set.	
2	k53	LOAD TABLES	EMDH k300		13C8E	81038			patch of the last 4 words 0FFF 0FFF 0FFF 0FFF
3	k73	Upload OST	EMCRM k108	OST Identifier		6 6		This TC is used to load in the EMCR memory the complete Offset Table previously stored in the EMDH Tables area. Parameters are used to include the first part of the command to be delivered from EMDH to EMCR.	

## OT Id 7 to EMCR for OV

# EMCS

Step	Command Number	Command Name	Parameter Number	Parameter Name	Parameter Value (hex)	Parameter (engineering)	Value	NOTES (from TC Reports)	Details (from Sequences dev.)
1	k53	LOAD TABLES	EMDH k300		13A30	80432		This TC is used to load in a specific EMDH memory patch of the first 4 words area the Offset, Sequence, Pattern Mask tables or Test Image to be loaded in EMCR. More TC will be used to load the complete table in the EMDH, start address and length will be opportunely set.	
2	k53	LOAD TABLES	EMDH k300		13C8E	81038			patch of the last 4 words 0FFF 0FFF 0FFF 0FFF
3	k73	Upload OST	EMCRM k108	OST Identifier		7 7		This TC is used to load in the EMCR memory the complete Offset Table previously stored in the EMDH Tables area. Parameters are used to include the first part of the command to be delivered from EMDH to EMCR.	

## OT Id 0 to EMCR+EDU std for OV

Step	Command Number	Command Name	Parameter Number	Parameter Name	Parameter Value (hex)	Parameter (engineering)	Value	NOTES (from TC Reports)	Details (from Sequences dev.)
1	k53	LOAD TABLES	EMDH k300		13A30	80432		This TC is used to load in a specific EMDH memory patch of the first 4 words area the Offset, Sequence, Pattern Mask tables or Test Image to be loaded in EMCR. More TC will be used to load the complete table in the EMDH, start address and length will be opportunely set.	
2	k53	LOAD TABLES	EMDH k300		13C8E	81038			patch of the last 4 words 0FFF 0FFF 0FFF 0FFF
3	k73	Upload OST	EMCRM k108	OST Identifier		0 0		This TC is used to load in the EMCR memory the complete Offset Table previously stored in the EMDH Tables area. Parameters are used to include the first part of the command to be delivered from EMDH to EMCR.	
4	k78	Load EDU OffsetT	k104 k108 k105	EDU Identifier OST Identifier EDU Zone	0 0 0	0 0 Normal area		This TC is used to load one of the eight Offset Tables stored in the EMCR memory in one of the eight EMCR EDUs. Parameters are used to include the complete EMCR command dedicated to this function.	

## OT Id 1 to EMCR+EDU std for OV

Step	Command Number	Command Name	Parameter Number	Parameter Name	Parameter Value (hex)	Parameter (engineering)	Value	NOTES (from TC Reports)	Details (from Sequences dev.)
1	k53	LOAD TABLES	EMDH k300		13A30	80432		This TC is used to load in a specific EMDH memory patch of the first 4 words area the Offset, Sequence, Pattern Mask tables or Test Image to be loaded in EMCR. More TC will be used to load the complete table in the EMDH, start address and length will be opportunely set.	
2	k53	LOAD TABLES	EMDH k300		13C8E	81038			patch of the last 4 words 0FFF 0FFF 0FFF 0FFF
3	k73	Upload OST	EMCRM k108	OST Identifier		1 1		This TC is used to load in the EMCR memory the complete Offset Table previously stored in the EMDH Tables area. Parameters are used to include the first part of the command to be delivered from EMDH to EMCR.	
4	k78	Load EDU OffsetT	k104	EDU Identifier	1	1		This TC is used to load one of the eight Offset Tables stored in the EMCR memory in	

# EMCS

k108 OST Identifier 1 1 one of the eight EMCR EDUs. Parameters are used to include the complete EMCR  
 k105 EDU Zone 0 Normal area command dedicated to this function.

## OT Id 2 to EMCR+EDU std for OV

Step	Command Number	Command Name	Parameter Number	Parameter Name	Parameter Value (hex)	Parameter (engineering)	Value	NOTES (from TC Reports)	Details (from Sequences dev.)
1	k53	LOAD TABLES	EMDH k300		13A30	80432		This TC is used to load in a specific EMDH memory patch of the first 4 words area the Offset, Sequence, Pattern Mask tables or Test 0FFF 0FFF 0FFF 0FFF Image to be loaded in EMCR. More TC will be used to load the complete table in the EMDH, start address and length will be opportunely set.	
2	k53	LOAD TABLES	EMDH k300		13C8E	81038			patch of the last 4 words 0FFF 0FFF 0FFF 0FFF
3	k73	Upload OST	EMCRM k108	OST Identifier		2 2		This TC is used to load in the EMCR memory the complete Offset Table previously stored in the EMDH Tables area. Parameters are used to include the first part of the command to be delivered from EMDH to EMCR.	
4	k78	Load EDU OffsetT	k104 k108 k105	EDU Identifier OST Identifier EDU Zone	2 2 0	2 2 Normal area		This TC is used to load one of the eight Offset Tables stored in the EMCR memory in one of the eight EMCR EDUs. Parameters are used to include the complete EMCR command dedicated to this function.	

## OT Id 3 to EMCR+EDU std for OV

Step	Command Number	Command Name	Parameter Number	Parameter Name	Parameter Value (hex)	Parameter (engineering)	Value	NOTES (from TC Reports)	Details (from Sequences dev.)
1	k53	LOAD TABLES	EMDH k300		13A30	80432		This TC is used to load in a specific EMDH memory patch of the first 4 words area the Offset, Sequence, Pattern Mask tables or Test 0FFF 0FFF 0FFF 0FFF Image to be loaded in EMCR. More TC will be used to load the complete table in the EMDH, start address and length will be opportunely set.	
2	k53	LOAD TABLES	EMDH k300		13C8E	81038			patch of the last 4 words 0FFF 0FFF 0FFF 0FFF
3	k73	Upload OST	EMCRM k108	OST Identifier		3 3		This TC is used to load in the EMCR memory the complete Offset Table previously stored in the EMDH Tables area. Parameters are used to include the first part of the command to be delivered from EMDH to EMCR.	
4	k78	Load EDU OffsetT	k104 k108 k105	EDU Identifier OST Identifier EDU Zone	3 3 0	3 3 Normal area		This TC is used to load one of the eight Offset Tables stored in the EMCR memory in one of the eight EMCR EDUs. Parameters are used to include the complete EMCR command dedicated to this function.	

## OT Id 4 to EMCR+EDU std for OV

Step	Command	Command Name	Parameter	Parameter Name	Parameter	Parameter	Value	NOTES	Details
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# EMCS

Number	Number	Value (hex)	(engineering)	(from TC Reports)	(from Sequences dev.)	
1	k53 LOAD TABLES EMDH k300	13A30	80432		This TC is used to load in a specific EMDH memory patch of the first 4 words area the Offset, Sequence, Pattern Mask tables or Test 0FFF 0FFF 0FFF 0FFF Image to be loaded in EMCR. More TC will be used to load the complete table in the EMDH, start address and length will be opportunely set.	
2	k53 LOAD TABLES EMDH k300	13C8E	81038		patch of the last 4 words 0FFF 0FFF 0FFF 0FFF	
3	k73 Upload OST EMCRM k108		4 4		This TC is used to load in the EMCR memory the complete Offset Table previously stored in the EMDH Tables area. Parameters are used to include the first part of the command to be delivered from EMDH to EMCR.	
4	k78 Load EDU OffsetT k104 k108 k105		EDU Identifier OST Identifier EDU Zone	4 4 0	4 4 Normal area	This TC is used to load one of the eight Offset Tables stored in the EMCR memory in one of the eight EMCR EDUs. Parameters are used to include the complete EMCR command dedicated to this function.

## OT Id 5 to EMCR+EDU std for OV

Step	Command Number	Command Name	Parameter Number	Parameter Name	Parameter Value (hex)	Parameter (engineering)	Value	NOTES (from TC Reports)	Details (from Sequences dev.)
1	k53	LOAD TABLES	EMDH k300		13A30	80432		This TC is used to load in a specific EMDH memory patch of the first 4 words area the Offset, Sequence, Pattern Mask tables or Test 0FFF 0FFF 0FFF 0FFF Image to be loaded in EMCR. More TC will be used to load the complete table in the EMDH, start address and length will be opportunely set.	
2	k53	LOAD TABLES	EMDH k300		13C8E	81038			patch of the last 4 words 0FFF 0FFF 0FFF 0FFF
3	k73	Upload OST	EMCRM k108	OST Identifier			5 5	This TC is used to load in the EMCR memory the complete Offset Table previously stored in the EMDH Tables area. Parameters are used to include the first part of the command to be delivered from EMDH to EMCR.	
4	k78	Load EDU OffsetT	k104 k108 k105	EDU Identifier OST Identifier EDU Zone	5 5 0	5 5 Normal area		This TC is used to load one of the eight Offset Tables stored in the EMCR memory in one of the eight EMCR EDUs. Parameters are used to include the complete EMCR command dedicated to this function.	

## OT Id 6 to EMCR+EDU std for OV

Step	Command Number	Command Name	Parameter Number	Parameter Name	Parameter Value (hex)	Parameter (engineering)	Value	NOTES (from TC Reports)	Details (from Sequences dev.)
1	k53	LOAD TABLES	EMDH k300		13A30	80432		This TC is used to load in a specific EMDH memory patch of the first 4 words area the Offset, Sequence, Pattern Mask tables or Test 0FFF 0FFF 0FFF 0FFF Image to be loaded in EMCR. More TC will be used to load the complete table in the EMDH, start address and length will be opportunely set.	
2	k53	LOAD TABLES	EMDH k300		13C8E	81038			patch of the last 4 words 0FFF 0FFF 0FFF 0FFF
3	k73	Upload OST	EMCRM k108	OST Identifier			6 6	This TC is used to load in the EMCR memory the complete Offset Table previously stored in the EMDH Tables area. Parameters are used to include the first part of the	

# EMCS

4	k78	Load EDU OffsetT	k104	EDU Identifier	6	6	command to be delivered from EMDH to EMCR. This TC is used to load one of the eight Offset Tables stored in the EMCR memory in one of the eight EMCR EDUs. Parameters are used to include the complete EMCR command dedicated to this function.
			k108	OST Identifier	6	6	
			k105	EDU Zone	0	Normal area	

## OT Id 7 to EMCR+EDU std for OV

Step	Command Number	Command Name	Parameter Number	Parameter Name	Parameter Value (hex)	Parameter (engineering)	Value	NOTES (from TC Reports)	Details (from Sequences dev.)
1	k53	LOAD TABLES	EMDH k300		13A30	80432		This TC is used to load in a specific EMDH memory patch of the first 4 words area the Offset, Sequence, Pattern Mask tables or Test Image to be loaded in EMCR. More TC will be used to load the complete table in the EMDH, start address and length will be opportunely set.	
2	k53	LOAD TABLES	EMDH k300		13C8E	81038			patch of the last 4 words OFFF OFFF OFFF OFFF
3	k73	Upload OST	EMCRM k108	OST Identifier		7 7		This TC is used to load in the EMCR memory the complete Offset Table previously stored in the EMDH Tables area. Parameters are used to include the first part of the command to be delivered from EMDH to EMCR. This TC is used to load one of the eight Offset Tables stored in the EMCR memory in one of the eight EMCR EDUs. Parameters are used to include the complete EMCR command dedicated to this function.	
4	k78	Load EDU OffsetT	k104	EDU Identifier	7	7			
			k108	OST Identifier	7	7			
			k105	EDU Zone	0	Normal area			

## OT Id 0 to EMCR+EDU alt for OV

Step	Command Number	Command Name	Parameter Number	Parameter Name	Parameter Value (hex)	Parameter (engineering)	Value	NOTES (from TC Reports)	Details (from Sequences dev.)
1	k53	LOAD TABLES	EMDH k300		13A30	80432		This TC is used to load in a specific EMDH memory patch of the first 4 words area the Offset, Sequence, Pattern Mask tables or Test Image to be loaded in EMCR. More TC will be used to load the complete table in the EMDH, start address and length will be opportunely set.	
2	k53	LOAD TABLES	EMDH k300		13C8E	81038			patch of the last 4 words OFFF OFFF OFFF OFFF
3	k73	Upload OST	EMCRM k108	OST Identifier		0 0		This TC is used to load in the EMCR memory the complete Offset Table previously stored in the EMDH Tables area. Parameters are used to include the first part of the command to be delivered from EMDH to EMCR. This TC is used to load one of the eight Offset Tables stored in the EMCR memory in one of the eight EMCR EDUs. Parameters are used to include the complete EMCR command dedicated to this function.	
4	k78	Load EDU OffsetT	k104	EDU Identifier	0	0			
			k108	OST Identifier	0	0			
			k105	EDU Zone	1	Alternate area			

## OT Id 1 to EMCR+EDU alt for OV

Step	Command Number	Command Name	Parameter Number	Parameter Name	Parameter Value (hex)	Parameter (engineering)	Value	NOTES (from TC Reports)	Details (from Sequences dev.)
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# EMCS

1	k53	LOAD TABLES	EMDH k300		13A30	80432			This TC is used to load in a specific EMDH memory patch of the first 4 words area the Offset, Sequence, Pattern Mask tables or Test 0FFF 0FFF 0FFF 0FFF Image to be loaded in EMCR. More TC will be used to load the complete table in the EMDH, start address and length will be opportunely set.
2	k53	LOAD TABLES	EMDH k300 k301		13C8E 4	81038 4			patch of the last 4 words 0FFF 0FFF 0FFF 0FFF
3	k73	Upload OST	EMCRM k108	OST Identifier		1 1			This TC is used to load in the EMCR memory the complete Offset Table previously stored in the EMDH Tables area. Parameters are used to include the first part of the command to be delivered from EMDH to EMCR.
4	k78	Load EDU OffsetT	k104 k108 k105	EDU Identifier OST Identifier EDU Zone	1 1 1	1 1 Alternate area			This TC is used to load one of the eight Offset Tables stored in the EMCR memory in one of the eight EMCR EDUs. Parameters are used to include the complete EMCR command dedicated to this function.

## OT Id 2 to EMCR+EDU alt for OV

Step	Command Number	Command Name	Parameter Number	Parameter Name	Parameter Value (hex)	Parameter (engineering)	Value	NOTES (from TC Reports)	Details (from Sequences dev.)
1	k53	LOAD TABLES	EMDH k300		13A30	80432		This TC is used to load in a specific EMDH memory patch of the first 4 words area the Offset, Sequence, Pattern Mask tables or Test 0FFF 0FFF 0FFF 0FFF Image to be loaded in EMCR. More TC will be used to load the complete table in the EMDH, start address and length will be opportunely set.	
2	k53	LOAD TABLES	EMDH k300		13C8E	81038			patch of the last 4 words 0FFF 0FFF 0FFF 0FFF
3	k73	Upload OST	EMCRM k108	OST Identifier		2 2		This TC is used to load in the EMCR memory the complete Offset Table previously stored in the EMDH Tables area. Parameters are used to include the first part of the command to be delivered from EMDH to EMCR.	
4	k78	Load EDU OffsetT	k104 k108 k105	EDU Identifier OST Identifier EDU Zone	2 2 1	2 2 Alternate area		This TC is used to load one of the eight Offset Tables stored in the EMCR memory in one of the eight EMCR EDUs. Parameters are used to include the complete EMCR command dedicated to this function.	

## OT Id 3 to EMCR+EDU alt for OV

Step	Command Number	Command Name	Parameter Number	Parameter Name	Parameter Value (hex)	Parameter (engineering)	Value	NOTES (from TC Reports)	Details (from Sequences dev.)
1	k53	LOAD TABLES	EMDH k300		13A30	80432		This TC is used to load in a specific EMDH memory patch of the first 4 words area the Offset, Sequence, Pattern Mask tables or Test 0FFF 0FFF 0FFF 0FFF Image to be loaded in EMCR. More TC will be used to load the complete table in the EMDH, start address and length will be opportunely set.	
2	k53	LOAD TABLES	EMDH k300		13C8E	81038			patch of the last 4 words 0FFF 0FFF 0FFF 0FFF
3	k73	Upload OST	EMCRM k108	OST Identifier		3 3		This TC is used to load in the EMCR memory the complete Offset Table previously stored in the EMDH Tables area. Parameters are used to include the first part of the command to be delivered from EMDH to EMCR.	

# EMCS

4	k78	Load EDU OffsetT	k104	EDU Identifier	3	3	This TC is used to load one of the eight Offset Tables stored in the EMCR memory in one of the eight EMCR EDUs. Parameters are used to include the complete EMCR command dedicated to this function.
			k108	OST Identifier	3	3	
			k105	EDU Zone	1	Alternate area	

## OT Id 4 to EMCR+EDU alt for OV

Step	Command Number	Command Name	Parameter Number	Parameter Name	Parameter Value (hex)	Parameter (engineering)	Value	NOTES (from TC Reports)	Details (from Sequences dev.)
1	k53	LOAD TABLES	EMDH k300		13A30	80432		This TC is used to load in a specific EMDH memory patch of the first 4 words area the Offset, Sequence, Pattern Mask tables or Test 0FFF 0FFF 0FFF 0FFF Image to be loaded in EMCR. More TC will be used to load the complete table in the EMDH, start address and length will be opportunely set.	
2	k53	LOAD TABLES	EMDH k300		13C8E	81038			patch of the last 4 words 0FFF 0FFF 0FFF 0FFF
3	k73	Upload OST	EMCRM k108	OST Identifier		4 4		This TC is used to load in the EMCR memory the complete Offset Table previously stored in the EMDH Tables area. Parameters are used to include the first part of the command to be delivered from EMDH to EMCR.	
4	k78	Load EDU OffsetT	k104	EDU Identifier	4	4	This TC is used to load one of the eight Offset Tables stored in the EMCR memory in one of the eight EMCR EDUs. Parameters are used to include the complete EMCR command dedicated to this function.		
			k108	OST Identifier	4	4			
			k105	EDU Zone	1	Alternate area			

## OT Id 5 to EMCR+EDU alt for OV

Step	Command Number	Command Name	Parameter Number	Parameter Name	Parameter Value (hex)	Parameter (engineering)	Value	NOTES (from TC Reports)	Details (from Sequences dev.)
1	k53	LOAD TABLES	EMDH k300		13A30	80432		This TC is used to load in a specific EMDH memory patch of the first 4 words area the Offset, Sequence, Pattern Mask tables or Test 0FFF 0FFF 0FFF 0FFF Image to be loaded in EMCR. More TC will be used to load the complete table in the EMDH, start address and length will be opportunely set.	
2	k53	LOAD TABLES	EMDH k300		13C8E	81038			patch of the last 4 words 0FFF 0FFF 0FFF 0FFF
3	k73	Upload OST	EMCRM k108	OST Identifier		5 5		This TC is used to load in the EMCR memory the complete Offset Table previously stored in the EMDH Tables area. Parameters are used to include the first part of the command to be delivered from EMDH to EMCR.	
4	k78	Load EDU OffsetT	k104	EDU Identifier	5	5	This TC is used to load one of the eight Offset Tables stored in the EMCR memory in one of the eight EMCR EDUs. Parameters are used to include the complete EMCR command dedicated to this function.		
			k108	OST Identifier	5	5			
			k105	EDU Zone	1	Alternate area			

## OT Id 6 to EMCR+EDU alt for OV

Step	Command Number	Command Name	Parameter Number	Parameter Name	Parameter Value (hex)	Parameter (engineering)	Value	NOTES (from TC Reports)	Details (from Sequences dev.)
1	k53	LOAD	EMDH k300		13A30	80432		This TC is used to load in a specific EMDH memory patch of the first 4 words	

# EMCS

## TABLES

2	k53	LOAD TABLES	EMDH k300		13C8E	81038		area the Offset, Sequence, Pattern Mask tables or Test Image to be loaded in EMCR. More TC will be used to load the complete table in the EMDH, start address and length will be opportunely set.
3	k73	Upload OST	EMCRM k108	OST Identifier		6 6		patch of the last 4 words OFFF OFFF OFFF OFFF
4	k78	Load EDU OffsetT	k104 k108 k105	EDU Identifier OST Identifier EDU Zone	6 6 1	6 6 Alternate area		This TC is used to load one of the eight Offset Tables stored in the EMCR memory in one of the eight EMCR EDUs. Parameters are used to include the complete EMCR command dedicated to this function.

## OT Id 7 to EMCR+EDU alt for OV

Step	Command Number	Command Name	Parameter Number	Parameter Name	Parameter Value (hex)	Parameter (engineering)	Value	NOTES (from TC Reports)	Details (from Sequences dev.)
1	k53	LOAD TABLES	EMDH k300		13A30	80432		This TC is used to load in a specific EMDH memory patch of the first 4 words area the Offset, Sequence, Pattern Mask tables or Test Image to be loaded in EMCR. More TC will be used to load the complete table in the EMDH, start address and length will be opportunely set.	
2	k53	LOAD TABLES	EMDH k300		13C8E	81038			patch of the last 4 words OFFF OFFF OFFF OFFF
3	k73	Upload OST	EMCRM k108	OST Identifier		7 7		This TC is used to load in the EMCR memory the complete Offset Table previously stored in the EMDH Tables area. Parameters are used to include the first part of the command to be delivered from EMDH to EMCR.	
4	k78	Load EDU OffsetT	k104 k108 k105	EDU Identifier OST Identifier EDU Zone	7 7 1	7 7 Alternate area		This TC is used to load one of the eight Offset Tables stored in the EMCR memory in one of the eight EMCR EDUs. Parameters are used to include the complete EMCR command dedicated to this function.	

## OT du all from EMCR

Step	Command Number	Command Name	Parameter Number	Parameter Name	Parameter Value (hex)	Parameter (engineering)	Value	NOTES (from TC Reports)	Details (from Sequences dev.)
1	k117	Dload OST	EMCR M k108	OST Identifier		0 0		This TC is used to dump the Offset table stored in the selected EMCR memory area to a dedicated memory area in the EMDH. Parameters are used to include the complete EMCR command dedicated to this function.	EMCR OT0
2	k54	Dump Tables	EMDH k300 k301		13A30 1212	80432 4626		This TC is used to dump a specific EMDH memory area where the Offset, Sequence, Pattern Mask tables and Test Image, are stored. This TC is used to dump a specific EMDH memory area where the Offset, Sequence and Pattern tables read from EMAE, EMCR EDU or EMCR Memory are stored. Start address will be fixed. One or more Memory Dump Reports (TM 6,2) will	TM pkts for table 0

# EMCS

3	k117	Dload OST	EMCR M	k108	OST Identifier	1	1	be sent by TM.	EMCR OT1
4	k54	Dump Tables	EMDH	k300 k301		13A30 1212	80432 4626		TM pkts for table 1
5	k117	Dload OST	EMCR M	k108	OST Identifier	2	2		EMCR OT2
6	k54	Dump Tables	EMDH	k300 k301		13A30 1212	80432 4626		TM pkts for table 2
7	k117	Dload OST	EMCR M	k108	OST Identifier	3	3		EMCR OT3
8	k54	Dump Tables	EMDH	k300 k301		13A30 1212	80432 4626		TM pkts for table 3
9	k117	Dload OST	EMCR M	k108	OST Identifier	4	4		EMCR OT4
10	k54	Dump Tables	EMDH	k300 k301		13A30 1212	80432 4626		TM pkts for table 4
11	k117	Dload OST	EMCR M	k108	OST Identifier	5	5		EMCR OT5
12	k54	Dump Tables	EMDH	k300 k301		13A30 1212	80432 4626		TM pkts for table 5
13	k117	Dload OST	EMCR M	k108	OST Identifier	6	6		EMCR OT6
14	k54	Dump Tables	EMDH	k300 k301		13A30 1212	80432 4626		TM pkts for table 6
15	k117	Dload OST	EMCR M	k108	OST Identifier	7	7		EMCR OT7
16	k54	Dump Tables	EMDH	k300 k301		13A30 1212	80432 4626		TM pkts for table 7

## OT du all from EDU std

Step	Command Number	Command Name	Parameter Number	Parameter Name	Parameter Value (hex)	Parameter Value (engineering)	Value	NOTES (from TC Reports)	Details (from Sequences dev.)
1	k67	Download OST	EDU k104 k105	EDU Identifier EDU Zone	0 0	0 Normal area		This TC is used to dump the Offset table stored in the EDU0 selected EMCR EDU to a dedicated memory area in the EMDH. Parameters are used to include the complete EMCR command dedicated to this function.	
2	k54	Dump Tables	EMDH k300 k301		13A30 1212	80432 4626		This TC is used to dump a specific EMDH memory area where the Offset, Sequence, Pattern Mask tables and Test Image, are stored. This TC is used to dump a specific EMDH memory area where the Offset, Sequence and Pattern tables read from EMAE, EMCR EDU or EMCR Memory are stored. Start address will be fixed. One or more Memory Dump Reports (TM 6,2) will be sent by TM.	TM pkts for table 0
3	k67	Download OST	EDU k104 k105	EDU Identifier EDU Zone	1 0	1 Normal area			EDU1
4	k54	Dump	EMDH k300		13A30	80432			TM pkts for table 1

# EMCS

5	k67	Tables Download OST	EDU k104 k105	EDU Identifier EDU Zone	1212 2 0	4626 2 Normal area	EDU2
6	k54	Dump Tables	EMDH k300 k301		13A30 1212	80432 4626	TM pkts for table 2
7	k67	Download OST	EDU k104 k105	EDU Identifier EDU Zone	3 0	3 Normal area	EDU3
8	k54	Dump Tables	EMDH k300 k301		13A30 1212	80432 4626	TM pkts for table 3
9	k67	Download OST	EDU k104 k105	EDU Identifier EDU Zone	4 0	4 Normal area	EDU4
10	k54	Dump Tables	EMDH k300 k301		13A30 1212	80432 4626	TM pkts for table 4
11	k67	Download OST	EDU k104 k105	EDU Identifier EDU Zone	5 0	5 Normal area	EDU5
12	k54	Dump Tables	EMDH k300 k301		13A30 1212	80432 4626	TM pkts for table 5
13	k67	Download OST	EDU k104 k105	EDU Identifier EDU Zone	6 0	6 Normal area	EDU6
14	k54	Dump Tables	EMDH k300 k301		13A30 1212	80432 4626	TM pkts for table 6
15	k67	Download OST	EDU k104 k105	EDU Identifier EDU Zone	7 0	7 Normal area	EDU7
16	k54	Dump Tables	EMDH k300 k301		13A30 1212	80432 4626	TM pkts for table 7

## OT du all from EDU alt

Step	Command Number	Command Name	Parameter Number	Parameter Name	Parameter Value (hex)	Parameter (engineering)	Value	NOTES (from TC Reports)	Details (from Sequences dev.)
1	k67	Download OST	EDU k104 k105	EDU Identifier EDU Zone	0 0	0 Alternate area		This TC is used to dump the Offset table stored in the selected EMCR EDU to a dedicated memory area in the EMDH. Parameters are used to include the complete EMCR command dedicated to this function.	EDU0
2	k54	Dump Tables	EMDH k300 k301		13A30 1212	80432 4626		This TC is used to dump a specific EMDH memory area where the Offset, Sequence, Pattern Mask tables and Test Image, are stored. This TC is used to dump a specific EMDH memory area where the Offset, Sequence and Pattern tables read from EMAE, EMCR EDU or EMCR Memory are stored. Start address will be fixed. One or more Memory Dump Reports (TM 6,2) will be sent by TM.	TM pkts for table 0
3	k67	Download OST	EDU k104 k105	EDU Identifier EDU Zone	1 1	1 Alternate area			EDU1
4	k54	Dump Tables	EMDH k300 k301		13A30 1212	80432 4626			TM pkts for table 1
5	k67	Download OST	EDU k104 k105	EDU Identifier EDU Zone	2 1	2 Alternate area			EDU2
6	k54	Dump	EMDH k300		13A30	80432			TM pkts for table 2

# EMCS

7	k67	Tables	k301		EDU Identifier	1212	4626	
		Download	EDU k104		EDU Zone	3	3	EDU3
		OST	k105			1	Alternate area	
8	k54	Dump	EMDH k300			13A30	80432	TM pkts for table 3
		Tables	k301			1212	4626	
9	k67	Download	EDU k104		EDU Identifier	4	4	EDU4
		OST	k105		EDU Zone	1	Alternate area	
10	k54	Dump	EMDH k300			13A30	80432	TM pkts for table 4
		Tables	k301			1212	4626	
11	k67	Download	EDU k104		EDU Identifier	5	5	EDU5
		OST	k105		EDU Zone	1	Alternate area	
12	k54	Dump	EMDH k300			13A30	80432	TM pkts for table 5
		Tables	k301			1212	4626	
13	k67	Download	EDU k104		EDU Identifier	6	6	EDU6
		OST	k105		EDU Zone	1	Alternate area	
14	k54	Dump	EMDH k300			13A30	80432	TM pkts for table 6
		Tables	k301			1212	4626	
15	k67	Download	EDU k104		EDU Identifier	7	7	EDU7
		OST	k105		EDU Zone	1	Alternate area	
16	k54	Dump	EMDH k300			13A30	80432	TM pkts for table 7
		Tables	k301			1212	4626	

## 4.14. Pattern Mask tables i3

PMT Id cen to EMCR imaging

Step	Command Number	Command Name	Parameter Number	Parameter Name	Parameter Value (hex)	Parameter Value (engineering)	NOTES (from TC Reports)	Details (from Sequences dev.)
1	k72	Load PMT	EMCR M. k107	PMT Identifier	0	0	This TC is used to load the Pattern/Masks Table in the addressed EMCR memory areas available for this scope. Parameters are used to load the complete EMCR command foreseen for this function.	
					0000 0000 0000			
					0200 e664 0400			
					0000 0000 f322			
					fff acc8 0000			
					0000 1000 7990			
					0800 0000 0000			
					0000 0000 0000			
					0000 0000 0000			
					0000 0000 0000			
					0000 8484 81dd			
					a108 0000 0000			
					82ee ffff 83bb			
					0000 0000 8860			
					8377 9210 0000			
					0000 0000 0000			
					0000 0000 0200			
					e664 e664 e664			
					0400 f322 fff fff			
					fff acc8 f322 fff			
					fff fff acc8 f322			
					fff fff fff acc8			
					1000 7990 7990			
					7990 0800 0484			
					05dd 25dd 21dd			
					2108 06ee bff fff			
					bff 23bb 0eee fff			
					fff fff 33bb 0aee			
					bff fff bff 13bb			
					0860 0b77 1b77			
					1377 1210			
2	k72	Load PMT	EMCR M. k107	PMT Identifier	1	1		
					0000 0000 0000			
					0200 e664 0400			
					0000 0000 f322			
					fff acc8 0000			
					0000 1000 7990			
					0800 0000 0000			
					0000 0000 0000			
					0000 0000 0000			
					0000 0000 0000			
					0000 8484 81dd			

# EMCS

```

a108 0000 0000
82ee ffff 83bb
0000 0000 8860
8377 9210 0000
0000 0000 0000
0000 0000 0200
e664 e664 e664
0400 f322 ffff ffff
ffff acc8 f322 ffff
fff ffff acc8 f322
fff ffff ffff acc8
1000 7990 7990
7990 0800 0484
05dd 25dd 21dd
2108 06ee bfff ffff
bfff 23bb 0eee ffff
fff ffff 33bb 0aee
bfff ffff bfff 13bb
0860 0b77 1b77
1377 1210
    
```

## PMT Id cen to EMCR timing

Step	Command Number	Command Name	Parameter Number	Parameter Name	Parameter Value (hex)	Parameter Value (engineering)	NOTES (from TC Reports)	Details (from Sequences dev.)
1	k72	Load PMT	M. k107	PMT Identifier	0	0	This TC is used to load the Pattern/Masks Table in the addressed EMCR memory areas available for this scope. Parameters are used to load the complete EMCR command foreseen for this function.	
					0000 0000 0004			
					0000 0000 0000			
					0000 0006 0000			
					0000 0000 0000			
					ffff 0000 0000			
					0000 0000 0008			
					0000 0000 0000			
					0000 0008 0000			
					0000 0000 0000			
					0000 0000 0000			
					0000 0000 0000			
					0000 0000 0000			
					0000 0000 0000			
					0000 0000 0000			
					0000 0000 0000			
					0000 0006 0000			
					0000 0000 fff0 ffff			
					fff0 0000 0000 fff0			
					ffff fff0 0000 0000			
					fff0 ffff fff0 0000			
					0000 0000 0008			

# EMCS

						0000 0000 0000	
						0000 0000 0000	
						0000 0000 ffff ffff	
						ffff 0000 0000 ffff	
						ffff ffff 0000 0000	
						ffff ffff ffff 0000	
						0000 0000 0000	
						0000 0000	
2	k72	Load PMT	EMCR	M. k107	PMT Identifier	1	1
						0000 0000 0004	
						0000 0000 0000	
						0000 0006 0000	
						0000 0000 0000	
						ffff 0000 0000	
						0000 0000 0008	
						0000 0000 0000	
						0000 0008 0000	
						0000 0000 0000	
						0000 0000 0000	
						0000 0000 0000	
						0000 0000 0000	
						0000 0000 0000	
						0000 ffff 0000	
						0000 0000 0000	
						0000 0000 0000	
						0000 0000 0000	
						0000 0000 0000	
						0000 0006 0000	
						0000 0000 fff0 ffff	
						ffff 0000 0000 fff0	
						ffff fff0 0000 0000	
						ffff ffff fff0 0000	
						0000 0000 0008	
						0000 0000 0000	
						0000 0000 0000	
						0000 0000 ffff ffff	
						ffff 0000 0000 ffff	
						ffff ffff 0000 0000	
						ffff ffff ffff 0000	
						0000 0000 0000	
						0000 0000	

PMT Id cen to EMCR threshold



# EMCS

```

0000 0000 0000
0000 0000 0000
0000 0000 0000
0000 0000 0000
0000 0000 0000
0000 0000 0000
0000 0000 0000
0000 0000 0000
0000 0000 0000
0000 0000 0000
0000 0000 0000
0000 0000 0000
0000 0000 0000
0000 0000 0000
000000 0000 0000
0000 0000 0000
fff 0000 0000
0000 0000 0000
0000 0000 0000
0000 0000 0000
0000
    
```

PMT Id cen to EMCR+EDU imaging

Step	Command Number	Command Name	Parameter Number	Parameter Name	Parameter Value (hex)	Parameter Value (engineering)	NOTES (from TC Reports)	Details (from Sequences dev.)
1	k72	Load PMT	M. k107	PMT Identifier	0	0	This TC is used to load the Pattern/Masks Table in the addressed EMCR memory areas available for this scope. Parameters are used to load the complete EMCR command foreseen for this function.	
					0000 0000 0000			
					0200 e664 0400			
					0000 0000 f322			
					fff acc8 0000			
					0000 1000 7990			
					0800 0000 0000			
					0000 0000 0000			
					0000 0000 0000			
					0000 0000 0000			
					0000 0000 0000			
					0000 8484 81dd			
					a108 0000 0000			
					82ee ffff 83bb			
					0000 0000 8860			
					8377 9210 0000			
					0000 0000 0000			
					0000 0000 0200			
					e664 e664 e664			
					0400 f322 fff ffff			
					fff acc8 f322 ffff			
					fff ffff acc8 f322			
					fff ffff ffff acc8			
					1000 7990 7990			

# EMCS

					7990 0800 0484		
					05dd 25dd 21dd		
					2108 06ee bfff ffff		
					bfff 23bb 0eee ffff		
					ffff ffff 33bb 0aee		
					bfff ffff bfff 13bb		
					0860 0b77 1b77		
					1377 1210		
2	k79	Load EDU PMTable	k104	EDU Identifier	0	0	
			k107	PMT Identifier	0	0	
3	k79	Load EDU PMTable	k104	EDU Identifier	1	1	
			k107	PMT Identifier	0	0	

This TC is used to load one of the eight Pattern/Masks tables stored in the EMCR EDUs. Parameters are used to include the complete EMCR command dedicated to this function.

## PMT Id cen to EMCR+EDU timing

Step	Command Number	Command Name	Parameter Number	Parameter Name	Parameter Value (hex)	Parameter Value (engineering)	Value	NOTES (from TC Reports)	Details (from Sequences dev.)
1	k72	Load PMT	M. k107	PMT Identifier	0	0		This TC is used to load the Pattern/Masks Table in the addressed EMCR memory areas available for this scope. Parameters are used to load the complete EMCR command foreseen for this function.	
					0000 0000 0004				
					0000 0000 0000				
					0000 0006 0000				
					0000 0000 0000				
					fff 0000 0000				
					0000 0000 0008				
					0000 0000 0000				
					0000 0008 0000				
					0000 0000 0000				
					0000 0000 0000				
					0000 0000 0000				
					0000 0000 0000				
					0000 0000 0000				
					0000 0000 0000				
					0000 ffff 0000				
					0000 0000 0000				
					0000 0000 0000				
					0000 0000 0000				
					0000 0000 0000				
					0000 0000 0000				
					0000 0006 0000				
					0000 0000 fff0 ffff				
					fff0 0000 0000 fff0				
					ffff fff0 0000 0000				
					fff0 ffff fff0 0000				
					0000 0000 0008				
					0000 0000 0000				
					0000 0000 0000				
					0000 0000 0000				
					0000 0000 fff ffff				
					fff 0000 0000 fff				
					fff ffff 0000 0000				
					fff ffff ffff 0000				
					0000 0000 0000				



# EMCS

3	k79	Load EDU PMTable	k104	EDU Identifier	1	1
		PMT	k107	PMT Identifier	0	0

## PMT Id per to EMCR imaging

Step	Command Number	Command Name	Parameter Number	Parameter Name	Parameter Value (hex)	Parameter Value (engineering)	NOTES (from TC Reports)	Details (from Sequences dev.)
1	k72	Load PMT	M. k107	PMT Identifier	2	2	This TC is used to load the Pattern/Masks Table in the addressed EMCR memory areas available for this scope. Parameters are used to load the complete EMCR command foreseen for this function.	
					0000 0000 0000			
					0200 e664 0400			
					0000 0000 f322			
					ffff acc8 0000			
					0000 1000 7990			
					0800 0000 0000			
					0000 0000 0000			
					0000 0000 0000			
					0000 0000 0000			
					0000 0000 0000			
					0000 8484 81dd			
					a108 0000 0000			
					82ee ffff 83bb			
					0000 0000 8860			
					8377 9210 0000			
					0000 0000 0000			
					0000 0000 0200			
					e664 e664 e664			
					0400 f322 ffff ffff			
					ffff acc8 f322 ffff			
					ffff ffff acc8 f322			
					ffff ffff ffff acc8			
					1000 7990 7990			
					7990 0800 0484			
					05dd 25dd 21dd			
					2108 06ee bfff ffff			
					bfff 23bb 0eee ffff			
					ffff ffff 33bb 0aee			
					bfff ffff bfff 13bb			
					0860 0b77 1b77			
					1377 1210			
2	k72	Load PMT	M. k107	PMT Identifier	3	3		
					0000 0000 0000			
					0200 e664 0400			
					0000 0000 f322			
					ffff acc8 0000			
					0000 1000 7990			
					0800 0000 0000			
					0000 0000 0000			
					0000 0000 0000			
					0000 0000 0000			
					0000 0000 0000			
					0000 8484 81dd			

# EMCS

a108 0000 0000  
82ee ffff 83bb  
0000 0000 8860  
8377 9210 0000  
0000 0000 0000  
0000 0000 0200  
e664 e664 e664  
0400 f322 ffff ffff  
ffff acc8 f322 ffff  
ffff ffff acc8 f322  
ffff ffff ffff acc8  
1000 7990 7990  
7990 0800 0484  
05dd 25dd 21dd  
2108 06ee bfff ffff  
bfff 23bb 0eee ffff  
ffff ffff 33bb 0aee  
bfff ffff bfff 13bb  
0860 0b77 1b77  
1377 1210

3 k72 Load EMCR M. k107 PMT Identifier

4 4  
0000 0000 0000  
0200 e664 0400  
0000 0000 f322  
ffff acc8 0000  
0000 1000 7990  
0800 0000 0000  
0000 0000 0000  
0000 0000 0000  
0000 0000 0000  
0000 8484 81dd  
a108 0000 0000  
82ee ffff 83bb  
0000 0000 8860  
8377 9210 0000  
0000 0000 0000  
0000 0000 0200  
e664 e664 e664  
0400 f322 ffff ffff  
ffff acc8 f322 ffff  
ffff ffff acc8 f322  
ffff ffff ffff acc8  
1000 7990 7990  
7990 0800 0484  
05dd 25dd 21dd  
2108 06ee bfff ffff  
bfff 23bb 0eee ffff  
ffff ffff 33bb 0aee  
bfff ffff bfff 13bb  
0860 0b77 1b77  
1377 1210

# EMCS

---

4	k72	Load PMT	EMCR	M. k107	PMT Identifier	5	5
						0000 0000 0000	
						0200 e664 0400	
						0000 0000 f322	
						fff acc8 0000	
						0000 1000 7990	
						0800 0000 0000	
						0000 0000 0000	
						0000 0000 0000	
						0000 0000 0000	
						0000 8484 81dd	
						a108 0000 0000	
						82ee ffff 83bb	
						0000 0000 8860	
						8377 9210 0000	
						0000 0000 0000	
						0000 0000 0200	
						e664 e664 e664	
						0400 f322 fff fff	
						fff acc8 f322 fff	
						fff fff acc8 f322	
						fff fff fff acc8	
						1000 7990 7990	
						7990 0800 0484	
						05dd 25dd 21dd	
						2108 06ee bff fff	
						bff 23bb 0eee fff	
						fff fff 33bb 0aee	
						bff fff bff 13bb	
						0860 0b77 1b77	
						1377 1210	
5	k72	Load PMT	EMCR	M. k107	PMT Identifier	6	6
						0000 0000 0000	
						0200 e664 0400	
						0000 0000 f322	
						fff acc8 0000	
						0000 1000 7990	
						0800 0000 0000	
						0000 0000 0000	
						0000 0000 0000	
						0000 0000 0000	
						0000 8484 81dd	
						a108 0000 0000	
						82ee ffff 83bb	
						0000 0000 8860	
						8377 9210 0000	
						0000 0000 0000	
						0000 0000 0200	
						e664 e664 e664	
						0400 f322 fff fff	
						fff acc8 f322 fff	

---

# EMCS

```

fff fff acc8 f322
fff fff fff acc8
1000 7990 7990
7990 0800 0484
05dd 25dd 21dd
2108 06ee bff fff
bff 23bb 0eee fff
fff fff 33bb 0aee
bff fff bff 13bb
0860 0b77 1b77
1377 1210
6      k72      Load  EMCR  M. k107      PMT Identifier  7      7
PMT
0000 0000 0000
0200 e664 0400
0000 0000 f322
fff acc8 0000
0000 1000 7990
0800 0000 0000
0000 0000 0000
0000 0000 0000
0000 0000 0000
0000 8484 81dd
a108 0000 0000
82ee fff 83bb
0000 0000 8860
8377 9210 0000
0000 0000 0000
0000 0000 0200
e664 e664 e664
0400 f322 fff fff
fff acc8 f322 fff
fff fff acc8 f322
fff fff fff acc8
1000 7990 7990
7990 0800 0484
05dd 25dd 21dd
2108 06ee bff fff
bff 23bb 0eee fff
fff fff 33bb 0aee
bff fff bff 13bb
0860 0b77 1b77
1377 1210
    
```

PMT Id per to EMCR threshold

Step	Command Number	Command Name	Parameter Number	Parameter Name	Parameter Value (hex)	Parameter Value (engineering)	NOTES (from TC Reports)	Details (from Sequences dev.)
1	k72	Load PMT	EMCR	M. k107	PMT Identifier	2 0000 0000 0000 0000 0000 0000	2 This TC is used to load the Pattern/Masks Table in the addressed EMCR memory areas available for this scope. Parameters are used to load the complete EMCR command foreseen for this function.	



# EMCS

0000 0000 0000  
0000 0000 0000  
0000 0000 ffff  
0000 0000 0000  
0000 0000 0000  
0000 0000 0000  
0000 0000 0000  
0000 0000 0000  
0000 0000 0000  
00000 0000 0000  
0000 0000 0000  
fff 0000 0000  
0000 0000 0000  
0000 0000 0000  
0000 0000 0000  
0000

3 k72 Load EMCR M. k107 PMT Identifier  
PMT

4 4  
0000 0000 0000  
0000 0000 0000  
0000 0000 0000  
0000 0000 0000  
fff 0000 0000  
0000 0000 0000  
0000 0000 0000  
0000 0000 0000  
0000 0000 0000  
0000 0000 0000  
0000 0000 0000  
0000 0000 0000  
0000 0000 0000  
0000 0000 0000  
0000 ffff 0000  
0000 0000 0000  
0000 0000 0000  
0000 0000 0000  
0000 0000 0000  
0000 0000 0000  
0000 0000 0000  
0000 0000 0000  
0000 0000 0000  
00000 0000 0000  
0000 0000 0000  
fff 0000 0000  
0000 0000 0000  
0000 0000 0000  
0000 0000 0000  
0000 0000 0000  
0000





# EMCS

0000 0000 0000  
 0000 0000 0000  
 0000

## PMT Id per to EMCR+EDU imaging

Step	Command Number	Command Name	Parameter Number	Parameter Name	Parameter Value (hex)	Parameter Value (engineering)	NOTES (from TC Reports)	Details (from Sequences dev.)
1	k72	Load EMCR PMT	M. k107	PMT Identifier	2 0 0 0 0 0 2 64e6 4 0 0 22f3 ffff c8ac 0 0 10 9079 8 0 0 0 0 0 0 0 0 0 0 0 8484 dd81 8a1 0 0 ee82 ffff bb83 0 0 6088 7783 1092 0 0 0 0 0 0 2 64e6 64e6 64e6 4 22f3 ffff ffff ffff c8ac 22f3 ffff ffff ffff c8ac 22f3 ffff ffff ffff c8ac 10 9079 9079 9079 8 8404 dd05 dd25 dd21 821 ee06 ffbf ffff ffbf bb23 ee0e ffff ffff ffff bb33 ee0a ffbf ffff ffbf bb13 6008 770b 771b 7713 1012	2	This TC is used to load the Pattern/Masks Table in the addressed EMCR memory areas available for this scope. Parameters are used to load the complete EMCR command foreseen for this function.	
2	k79	Load EDU PMTable	k104 k107	EDU Identifier PMT Identifier	2 2	2 2	This TC is used to load one of the eight Pattern/Masks tables stored in the EMCR EDUs. Parameters are used to include the complete EMCR command dedicated to this function.	
3	k79	Load EDU PMTable	k104 k107	EDU Identifier PMT Identifier	3 2	3 2		
4	k79	Load EDU PMTable	k104 k107	EDU Identifier PMT Identifier	4 2	4 2		
5	k79	Load EDU PMTable	k104 k107	EDU Identifier PMT Identifier	5 2	5 2		
6	k79	Load EDU PMTable	k104 k107	EDU Identifier PMT Identifier	6 2	6 2		
7	k79	Load EDU PMTable	k104 k107	EDU Identifier PMT Identifier	7 2	7 2		

## PMT Id per to EMCR+EDU threshold



# EMCS

## PMT du all from EMCR

Step	Command Number	Command Name	Parameter Number	Parameter Name	Parameter Value (hex)	Parameter Value (engineering)	Value	NOTES (from TC Reports)	Details (from Sequences dev.)
1	k116	Dload PMT	EMCR M k107	PMT Identifier	0	0		This TC is used to dump the Pattern/Masks table stored in the selected EMCR memory area to a dedicated memory area in the EMDH. Parameters are used to include the complete EMCR command dedicated to this function.	EMCR PMT0
2	k54	Dump Tables	EMDH k300 k301		13A30 1212	80432 4626		This TC is used to dump a specific EMDH memory area where the Offset, Sequence, Pattern Mask tables and Test Image, are stored. This TC is used to dump a specific EMDH memory area where the Offset, Sequence and Pattern tables read from EMAE, EMCR EDU or EMCR Memory are stored. Start address will be fixed. One or more Memory Dump Reports (TM 6,2) will be sent by TM.	TM pkts for table 0
3	k116	Dload PMT	EMCR M k107	PMT Identifier	1	1			EMCR PMT1
4	k54	Dump Tables	EMDH k300 k301		13A30 1212	80432 4626			TM pkts for table 1
5	k116	Dload PMT	EMCR M k107	PMT Identifier	2	2			EMCR PMT2
6	k54	Dump Tables	EMDH k300 k301		13A30 1212	80432 4626			TM pkts for table 2
7	k116	Dload PMT	EMCR M k107	PMT Identifier	3	3			EMCR PMT3
8	k54	Dump Tables	EMDH k300 k301		13A30 1212	80432 4626			TM pkts for table 3
9	k116	Dload PMT	EMCR M k107	PMT Identifier	4	4			EMCR PMT4
10	k54	Dump Tables	EMDH k300 k301		13A30 1212	80432 4626			TM pkts for table 4
11	k116	Dload PMT	EMCR M k107	PMT Identifier	5	5			EMCR PMT5
12	k54	Dump Tables	EMDH k300 k301		13A30 1212	80432 4626			TM pkts for table 5
13	k116	Dload PMT	EMCR M k107	PMT Identifier	6	6			EMCR PMT6
14	k54	Dump Tables	EMDH k300 k301		13A30 1212	80432 4626			TM pkts for table 6
15	k116	Dload PMT	EMCR M k107	PMT Identifier	7	7			EMCR PMT7
16	k54	Dump Tables	EMDH k300 k301		13A30 1212	80432 4626			TM pkts for table 7

## PMT du all from EDU

Step	Command Number	Command Name	Parameter Number	Parameter Name	Parameter Value (hex)	Parameter Value (engineering)	NOTES (from TC Reports)	Details (from Sequences dev.)
1	k66	Download PMT	EDU k104	EDU Identifier	0	0	This TC is used to dump the Pattern/Masks table stored in the selected EMCR EDU to a dedicated memory area in the EMDH. Parameters are used to include the complete EMCR command dedicated to this function.	EDU0
2	k54	Dump Tables	EMDH k300 k301		13A30 1212	80432 4626		This TC is used to dump a specific EMDH memory area where the Offset, Sequence, Pattern Mask tables and Test Image, are stored. This TC is used to dump a specific EMDH memory area where the Offset, Sequence and Pattern tables read from EMAE, EMCR EDU or EMCR Memory are stored. Start address will be fixed. One or more Memory Dump Reports (TM 6,2) will be sent by TM.
3	k66	Download PMT	EDU k104	EDU Identifier	1	1		EDU1
4	k54	Dump Tables	EMDH k300 k301		13A30 1212	80432 4626		TM pkt for table 1
5	k66	Download PMT	EDU k104	EDU Identifier	2	2		EDU2
6	k54	Dump Tables	EMDH k300 k301		13A30 1212	80432 4626		TM pkt for table 2
7	k66	Download PMT	EDU k104	EDU Identifier	3	3		EDU3
8	k54	Dump Tables	EMDH k300 k301		13A30 1212	80432 4626		TM pkt for table 3
9	k66	Download PMT	EDU k104	EDU Identifier	4	4		EDU4
10	k54	Dump Tables	EMDH k300 k301		13A30 1212	80432 4626		TM pkt for table 4
11	k66	Download PMT	EDU k104	EDU Identifier	5	5		EDU5
12	k54	Dump Tables	EMDH k300 k301		13A30 1212	80432 4626		TM pkt for table 5
13	k66	Download PMT	EDU k104	EDU Identifier	6	6		EDU6
14	k54	Dump Tables	EMDH k300 k301		13A30 1212	80432 4626		TM pkt for table 6
15	k66	Download PMT	EDU k104	EDU Identifier	7	7		EDU7
16	k54	Dump Tables	EMDH k300 k301		13A30 1212	80432 4626		TM pkt for table 7

## 4.15. Reports i1

HBR conf, buff\_sz, thres\_v

Step	Command Number	Command Name	Parameter Number	Parameter Name	Parameter Value (hex)	Parameter (engineering)	Value	NOTES (from TC Reports)	Details (from Sequences dev.)
1	k37	Report HBR Conf.						This TC is used to report, from the EMDH, the parameters loaded with the Load HBR Channel Configuration TC	
2	k38	Rep. HBR Buff Size						This TC is used to report, from the EMDH, the parameters loaded with the Load HBR Buffer Size TC	
3	k40	Report HBR Thr Val						This TC is used to report, from the EMDH, the parameters loaded with the Load Scientific Threshold Values TC.	

Extr conf + Thermal limits

Step	Command Number	Command Name	Parameter Number	Parameter Name	Parameter Value (hex)	Parameter (engineering)	Value	NOTES (from TC Reports)	Details (from Sequences dev.)
1	k41	Report EXTH Conf.						This TC is used to report, from the EMDH, the parameters loaded with the Load Extraheating Configuration TC	
2	k42	Report Term Mon Lim						This TC is used to report, from the EMDH, the parameters loaded with the Load Thermal Monitoring Limits TC.	

Pkt generation

Step	Command Number	Command Name	Parameter Number	Parameter Name	Parameter Value (hex)	Parameter (engineering)	Value	NOTES (from TC Reports)	Details (from Sequences dev.)
1	k55	Rep. TMP Gen. S.						This TC is used to trigger the report of the TM Packets Generation Status (TM 9,1).	

HBR BPT

Step	Command Number	Command Name	Parameter Number	Parameter Name	Parameter Value (hex)	Parameter (engineering)	Value	NOTES (from TC Reports)	Details (from Sequences dev.)
1	k39	Report HBR 1 BPT						This TC is used to report, from the EMDH, the parameters loaded with the Load HBR 1 Bright Pixel Table	
2	k108	Report HBR2 BPT						This TC is used to report from the EMDH the parameters loaded with the Load HBR2 Bright Pixel Table TC.	
3	k109	Report HBR3 BPT						This TC is used to report from the EMDH the parameters loaded with the Load HBR3 Bright Pixel Table TC.	
4	k110	Report HBR4 BPT						This TC is used to report from the EMDH the parameters loaded with the Load HBR4 Bright Pixel Table TC.	

5	k111	Report HBR5 BPT	This TC is used to report from the EMDH the parameters loaded with the Load HBR5 Bright Pixel Table TC.
6	k112	Report HBR6 BPT	This TC is used to report from the EMDH the parameters loaded with the Load HBR6 Bright Pixel Table TC.
7	k113	Report HBR7 BPT	This TC is used to report from the EMDH the parameters loaded with the Load HBR7 Bright Pixel Table TC.
8	k114	Report HBR8 BPT	This TC is used to report from the EMDH the parameters loaded with the Load HBR8 Bright Pixel Table TC.

## Global report

Step	Command Number	Command Name	Parameter Number	Parameter Name	Parameter Value (hex)	Parameter Value (engineering)	Value	NOTES (from TC Reports)	Details (from Sequences dev.)
1	k37	Report HBR Conf.						This TC is used to report, from the EMDH, the parameters loaded with the Load HBR Channel Configuration TC	
2	k38	Rep. HBR Buff Size						This TC is used to report, from the EMDH, the parameters loaded with the Load HBR Buffer Size TC	
3	k40	Report HBR Thr Val						This TC is used to report, from the EMDH, the parameters loaded with the Load Scientific Threshold Values TC.	
4	k41	Report EXTH Conf.						This TC is used to report, from the EMDH, the parameters loaded with the Load Extraheating Configuration TC	
5	k42	Report Term Mon Lim						This TC is used to report, from the EMDH, the parameters loaded with the Load Thermal Monitoring Limits TC.	
6	k55	Rep. TMP Gen. S.						This TC is used to trigger the report of the TM Packets Generation Status (TM 9,1).	
7	k39	Report HBR 1 BPT						This TC is used to report, from the EMDH, the parameters loaded with the Load HBR 1 Bright Pixel Table	
8	k108	Report HBR2 BPT						This TC is used to report from the EMDH the parameters loaded with the Load HBR2 Bright Pixel Table TC.	
9	k109	Report HBR3 BPT						This TC is used to report from the EMDH the parameters loaded with the Load HBR3 Bright Pixel Table TC.	
10	k110	Report HBR4 BPT						This TC is used to report from the EMDH the parameters loaded with the Load HBR4 Bright Pixel Table TC.	
11	k111	Report HBR5 BPT						This TC is used to report from the EMDH the parameters loaded with the Load HBR5 Bright Pixel Table TC.	
12	k112	Report HBR6 BPT						This TC is used to report from the EMDH the parameters loaded with the Load HBR6 Bright Pixel Table TC.	
13	k113	Report HBR7 BPT						This TC is used to report from the EMDH the parameters loaded with the Load HBR7 Bright Pixel Table TC.	
14	k114	Report HBR8 BPT						This TC is used to report from the EMDH the parameters loaded with the Load HBR8 Bright Pixel Table TC.	

## 4.16. Test image i1

### Du test image

Step	Command Number	Command Name	Parameter Number	Parameter Name	Parameter Value (hex)	Parameter (engineering)	Value	NOTES (from TC Reports)	Details (from Sequences dev.)
1	k119	Dload EMCR M TI						This TC is used to dump the Test Image stored in the Dump Test Image from selected EMCR memory area to a dedicated memory EMCR to EMDH area in the EMDH. Parameters are used to include the complete EMCR command dedicated to this function.	

### Ld test image

Step	Command Number	Command Name	Parameter Number	Parameter Name	Parameter Value (hex)	Parameter (engineering)	Value	NOTES (from TC Reports)	Details (from Sequences dev.)
1	k75	Upload EMCR M TI						This TC is used to load in the EMCR memory the Load Test Image from complete Test Image previously stored in a dedicated EMDH to EMCR EMDH memory area. Parameters are used to include the first part of the EMCR command foreseen for this function	

## 4.17. Thermal i3

### Annealing

Step	Command Number	Command Name	Parameter Number	Parameter Name	Parameter Value (hex)	Parameter Value (engineering)	Value	NOTES (from TC Reports)	Details (from Sequences dev.)
1	k35	Load EXTH Conf	k80	DeicingLowTempLim		-90°C		Load Extraheating Configuration. This TC is used to load in the EMDH the configuration of the relays to be used in the different extraheating submodes. Also the safety temperature limits checked by the EMDH during the different extraheating submodes are loaded.	
			k81	DeicingUppTempLim		-50°C			
			k82	DeconLowTempLim		-40°C			
			k83	DeconUppTempLim		0°C			
			k84	AnnealLowTempLim		+100°C			
			k85	AnnealUppTempLim		+150°C			
			k86	DeicingConfThCont	1	1			
			k87	DeicingConfShroud	1	1			
			k88	DeicingConfAnneal	0	0			
			k89	DecontConfThCont	0	0			
			k90	DecontConfShroud	1	1			
			k91	DecontConfAnneal	1	1			
			k92	AnnealConfThCont	0	0			
			k93	AnnealConfShroud	1	1			
			k94	AnnealConfAnneal	1	1			
2	k7	Enter EXTH Mode	k3	ExtraheatingMode		2 2		This TC is used to perform transition to Extraheating Mode. The requested extraheating submode will be applied. The specified EMCR Thermal Control temperature setting will be applied (meaningful only when Annealing heater is used). This mode can be entered only if the Filter Wheel is in Open position.	
			k4	MinTempSetValue		+125°C			
			k5	MaxTempSetValue		+130°C			

### Decontamination

Step	Command Number	Command Name	Parameter Number	Parameter Name	Parameter Value (hex)	Parameter Value (engineering)	Value	NOTES (from TC Reports)	Details (from Sequences dev.)
1	k35	Load EXTH Conf	k80	DeicingLowTempLim		-90°C		Load Extraheating Configuration. This TC is used to load in the EMDH the configuration of the relays to be used in the different extraheating submodes. Also the safety temperature limits checked by the EMDH during the different extraheating submodes are loaded.	
			k81	DeicingUppTempLim		-50°C			
			k82	DeconLowTempLim		-40°C			
			k83	DeconUppTempLim		0°C			
			k84	AnnealLowTempLim		+100°C			
			k85	AnnealUppTempLim		+150°C			
			k86	DeicingConfThCont	1	1			
			k87	DeicingConfShroud	1	1			
			k88	DeicingConfAnneal	0	0			
			k89	DecontConfThCont	0	0			
			k90	DecontConfShroud	1	1			
			k91	DecontConfAnneal	1	1			
			k92	AnnealConfThCont	0	0			
			k93	AnnealConfShroud	1	1			
			k94	AnnealConfAnneal	1	1			

2	k7	Enter EXTH Mode	k3	ExtraheatingMode	1 1	This TC is used to perform transition to Extraheating Mode. The requested extraheating submode will be applied. The specified EMCR Thermal Control temperature setting will be applied (meaningful only when Annealing heater is used). This mode can be entered only if the Filter Wheel is in Open position.
			k4	MinTempSetValue	-20°C	
			k5	MaxTempSetValue	-15°C	

## Decontamination 0 °C

Step	Command Number	Command Name	Parameter Number	Parameter Name	Parameter Value (hex)	Parameter Value (engineering)	Value	NOTES (from TC Reports)	Details (from Sequences dev.)
1	k35	Load EXTH Conf	k80	DeicingLowTempLim		-90°C	Load Extraheating Configuration. This TC is used to load in the EMDH the configuration of the relays to be used in the different extraheating submodes. Also the safety temperature limits checked by the EMDH during the different extraheating submodes are loaded.		
			k81	DeicingUppTempLim		-50°C			
			k82	DeconLowTempLim		-20°C			
			k83	DeconUppTempLim		+20°C			
			k84	AnnealLowTempLim		+100°C			
			k85	AnnealUppTempLim		+150°C			
			k86	DeicingConfThCont	1	1			
			k87	DeicingConfShroud	1	1			
			k88	DeicingConfAnneal	0	0			
			k89	DecontConfThCont	0	0			
			k90	DecontConfShroud	1	1			
			k91	DecontConfAnneal	1	1			
			k92	AnnealConfThCont	0	0			
			k93	AnnealConfShroud	1	1			
			k94	AnnealConfAnneal	1	1			
2	k7	Enter EXTH Mode	k3	ExtraheatingMode	1 1	This TC is used to perform transition to Extraheating Mode. The requested extraheating submode will be applied. The specified EMCR Thermal Control temperature setting will be applied (meaningful only when Annealing heater is used). This mode can be entered only if the Filter Wheel is in Open position.			
			k4	MinTempSetValue			-5°C		
			k5	MaxTempSetValue			+5°C		

## Decontamination +30 °C

Step	Command Number	Command Name	Parameter Number	Parameter Name	Parameter Value (hex)	Parameter Value (engineering)	Value	NOTES (from TC Reports)	Details (from Sequences dev.)
1	k35	Load EXTH Conf	k80	DeicingLowTempLim		-90°C	Load Extraheating Configuration. This TC is used to load in the EMDH the configuration of the relays to be used in the different extraheating submodes. Also the safety temperature limits checked by the EMDH during the different extraheating submodes are loaded.		
			k81	DeicingUppTempLim		-50°C			
			k82	DeconLowTempLim		+10°C			
			k83	DeconUppTempLim		+50°C			
			k84	AnnealLowTempLim		+100°C			
			k85	AnnealUppTempLim		+150°C			
			k86	DeicingConfThCont	1	1			
			k87	DeicingConfShroud	1	1			
			k88	DeicingConfAnneal	0	0			
			k89	DecontConfThCont	0	0			
			k90	DecontConfShroud	1	1			
			k91	DecontConfAnneal	1	1			
			k92	AnnealConfThCont	0	0			

# EMCS

2	k7	Enter EXTH Mode	k93	AnnealConfShroud	1	1	This TC is used to perform transition to Extraheating Mode. The requested extraheating submode will be applied. The specified EMCR Thermal Control temperature setting will be applied (meaningful only when Annealing heater is used). This mode can be entered only if the Filter Wheel is in Open position.
			k94	AnnealConfAnneal	1	1	
			k3	ExtraheatingMode	1	1	
			k4	MinTempSetValue		+25°C	
			k5	MaxTempSetValue		+35°C	

## Deicing

Step	Command Number	Command Name	Parameter Number	Parameter Name	Parameter Value (hex)	Parameter Value (engineering)	Value	NOTES (from TC Reports)	Details (from Sequences dev.)
1	k35	Load EXTH Conf	k80	DeicingLowTempLim		-90°C	Load Extraheating Configuration. This TC is used to load in the EMDH the configuration of the relays to be used in the different extraheating submodes. Also the safety temperature limits checked by the EMDH during the different extraheating submodes are loaded.		
			k81	DeicingUppTempLim		-50°C			
			k82	DeconLowTempLim		-40°C			
			k83	DeconUppTempLim		0°C			
			k84	AnnealLowTempLim		+100°C			
			k85	AnnealUppTempLim		+150°C			
			k86	DeicingConfThCont	1	1			
			k87	DeicingConfShroud	1	1			
			k88	DeicingConfAnneal	0	0			
			k89	DecontConfThCont	0	0			
			k90	DecontConfShroud	1	1			
			k91	DecontConfAnneal	1	1			
			k92	AnnealConfThCont	0	0			
			k93	AnnealConfShroud	1	1			
k94	AnnealConfAnneal	1	1						
2	k7	Enter EXTH Mode	k3	ExtraheatingMode		0 0	This TC is used to perform transition to Extraheating Mode. The requested extraheating submode will be applied. The specified EMCR Thermal Control temperature setting will be applied (meaningful only when Annealing heater is used). This mode can be entered only if the Filter Wheel is in Open position.		
			k4	MinTempSetValue		-70°C			
			k5	MaxTempSetValue		-65°C			

## Set FPA Nom -70

Step	Command Number	Command Name	Parameter Number	Parameter Name	Parameter Value (hex)	Parameter Value (engineering)	Value	NOTES (from TC Reports)	Details (from Sequences dev.)
1	K102	SensorOn/Off	k128	AnnHeaterRelaySt	0	Off			
			k129	VacuumSensorStat	1	On			
			k130	RedThermContrSt	0	Off			
			k131	NomThermContrSt	1	On			
2	k98	Set FPT Nom. Con	k239	FP TempNomContr		-70°C			
3	k36	Load Therm Mon Lim	k96	UppMonTempLimits		-60°C			
			k95	LowMonTempLimits		-80°C			

## Set FPA Nom -100

# EMCS

Step	Command Number	Command Name	Parameter Number	Parameter Name	Parameter Value (hex)	Parameter (engineering)	Value	NOTES (from TC Reports)	Details (from Sequences dev.)
1	K102	SensorOn/Off	k128	AnnHeaterRelaySt	0	Off			
			k129	VacuumSensorStat	1	On			
			k130	RedThermContrSt	0	Off			
			k131	NomThermContrSt	1	On			
2	k98	Set FPT Nom. Con	k239	FP TempNomContr		-100°C			
3	k36	Load Therm Mon Lim	k96	UppMonTempLimits		-90°C			
			k95	LowMonTempLimits		-110°C			

## Set FPA Red -70

Step	Command Number	Command Name	Parameter Number	Parameter Name	Parameter Value (hex)	Parameter (engineering)	Value	NOTES (from TC Reports)	Details (from Sequences dev.)
1	K102	SensorOn/Off	k128	AnnHeaterRelaySt	0	Off			
			k129	VacuumSensorStat	1	On			
			k130	RedThermContrSt	1	On			
			k131	NomThermContrSt	0	Off			
2	k99	Set FPT Red. Con	k240	FP TempRedContr		-70°C			
3	k36	Load Therm Mon Lim	k96	UppMonTempLimits		-60°C			
			k95	LowMonTempLimits		-80°C			

## Set FPA Red -100

Step	Command Number	Command Name	Parameter Number	Parameter Name	Parameter Value (hex)	Parameter (engineering)	Value	NOTES (from TC Reports)	Details (from Sequences dev.)
1	K102	SensorOn/Off	k128	AnnHeaterRelaySt	0	Off			
			k129	VacuumSensorStat	1	On			
			k130	RedThermContrSt	1	On			
			k131	NomThermContrSt	0	Off			
2	k99	Set FPT Red. Con	k240	FP TempRedContr		-100°C			
3	k36	Load Therm Mon Lim	k96	UppMonTempLimits		-90°C			
			k95	LowMonTempLimits		-110°C			