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CHANGE RECORD

Issue	Date	Sheet	Description of Change	Release
1	June 99		First issue of the Document	
2	June 99		Intoduced 4 new Procedures: - Exposure (Double Node, Filter A) - Exposure (Small Window free run, Filter A) - Exposure (Large Window free run, Filter A) - Exposure (Refreshed Frame Store, Filter A) Error corrected: - Cancelled step relevant to Pattern Mask Table in procedure Exposure (Full Frame, Filter A), Exposure (Large Window, Filter A), Exposure (Small Window, Filter A) - Reference to ifw8rd_1 vs ifc8rd_1 in Exposure (Small Window, Filter A) - Reference to ifw8rd_3_1 vs ifc8rd_3_1 in Exposure (Small Window, Filter A) Chapter 5 added. It shows the TC execution times. NOTE: Changes in Building Blocks are reported in the Building Block List that now is included to allow hypertext pointing to the block set.	

3	Sept. 99		Procedures changed: - Switch-on (3.1): steps 3, 9, 13 - 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. - Full-Frame Double Node (3.9): new name, Turn FW removed, steps 5 and 14, note 1. Building Blocks Issue 4 is now applicable: - FW Operations I.3: Number of steps introduced for both MOS1 and MOS2. - Mode Switching I.3: New block for Fast Diagnostic; Blocks for FF O&V updated. - EMAE Sequences I.3: Two new blocks for rfscr3rpb200 and I33ci10rdp. - EDU Config. I.4: New thresholds for the Threshold Mode settings; New block for the Fast Full Frame Diagnostic. - Pattern Mask tables I.3: Two new blocks for threshold PMT for peripheral CCDs; New EMCR->EDU mapping for all EDU loading; patten and mask tables corrected. - Offset tables I.2: Two new blocks with a different EMCR-> EDU mapping. - EMCR Int-Time I.4: All blocks changed. - Door Operations I.2: Both blocks changed by deleting Remove PW TC. - EMDH Time-Synch. I.2: Block updated. - Bright Pixel Tables I.3: Pixel coordinates introduced. - Thernal I.3: New Decontamination blocks for 0 °C and +30 °C.	

TABLE OF CONTENTS

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
EST Documents			
	EMCS User Manual	EPIC-EST-OP-001	1
	Software Configuration for the EMAE Unit	EPIC-EST-LI-0005	3
LUX Documents			
	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
EST Documents			
	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	Ld EMCR Memory v14
3	Dump EMCR memory	Check that the memory content is in agreement with the EMCR SW V.14	Dump ECMR Memory
4	Go to Idle mode	1 TC block	Enter Idle
5	Time Synchronisation		On-board time management
6	Set Control Temperature to -100°C		Set FPA Nom -100
7	Load FW sequencer		ES ld FW
8	FW sequencer set-up		ES set-up FW
9	Synchronise FW		MOS1 Sync Nor 3step
10	Load Bright Pixel Tables	Chain dependent	Load BPT FM1
11	Load CCD voltages	Chain dependent	FM1 normal
12	Load HBR Buffer thresholds and sizes		Default HBR Threshold and Size
13	Load EDU window peripheral CCDs		EDU Peripheral CCDs
14	Load Peripheral CCD sequencers (Full Frame)	CCD pixel with reset on demand	ES ld ifc8rd_1 to EMAE per
15	Peripheral CCD sequencers set-up		ES set-up CCDs per

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 ld ifc8rp_1 to EMAE per , ES ld iffci10rpp to EMAE per , ES ld iffci10rdp 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)		ES ld ifc8rd_1 to EMAE cen
2	Central CCD sequencers set-up		ES set-up CCD cen
3	Load Pattern Mask tables	Although imaging are default ones, a different exposure may be occurred	PMT ld cen to EMCR+EDU imaging PMT ld per to EMCR+EDU imaging
4	Load EMAE configuration (Multiplexer, Analogue Chains, Preamp.)	The three activities are strictly connected	EMAE Standard node 0
5	Load Offset tables	Set to 0 all EDU Offset Tables	OT ld all EDU std (EDU1 alt)
6	Configure all EDUs for Offset & Variance	Set all EDUs mode (transparent) and thresholds (0)	EDU Transparent single node
7	Load central CCD EDU window		EDU Central CCD Full Frame
8	Set EMCR Integration time for Full Frame		Full Frame (Seq. I.8, 2.6 sec)
9	Configure HBR1 for Offset & Variance		HBR 1 transparent
10	Perform Offset & Variance CCD1 case		Enter OV CCD1 FS
11	Load calculated Offset & Variance table into relevant EDU		OT ld 0 to EMCR+EDU std for OV
12	Configure HBR3 for Offset & Variance		HBR 3 transparent
13	Perform Offset & Variance CCD2 case		Enter OV CCD2 FS
14	Load calculated Offset & Variance table into relevant EDU		OT ld 2 to EMCR+EDU std for OV
15	Configure HBR4 for Offset & Variance		HBR 4 transparent
16	Perform Offset & Variance CCD5 case		Enter OV CCD5 FS
17	Load calculated Offset & Variance table into relevant EDU		OT ld 3 to EMCR+EDU std for OV
18	Configure HBR5 for Offset & Variance		HBR 5 transparent
19	Perform Offset & Variance CCD4 case		Enter OV CCD4 FS
20	Load calculated Offset & Variance table into relevant EDU		OT ld 4 to EMCR+EDU std for OV
21	Configure HBR6 for Offset & Variance		HBR 6 transparent
22	Perform Offset & Variance CCD7 case		Enter OV CCD7 FS
23	Load calculated Offset & Variance table into relevant EDU		OT ld 5 to EMCR+EDU std for OV
24	Configure HBR7 for Offset & Variance		HBR 7 transparent
25	Perform Offset & Variance CCD3 case		Enter OV CCD3 FS
26	Load calculated Offset & Variance table into relevant EDU		OT ld 6 to EMCR+EDU std for OV
27	Configure HBR8 for Offset & Variance		HBR 8 transparent
28	Perform Offset & Variance CCD6 case		Enter OV CCD6 FS
29	Load calculated Offset & Variance table into relevant EDU		OT ld 7 to EMCR+EDU std for OV
30	Configure HBRs for exposure	Set all HBRs in Imaging mode	HBR Imaging
31	Configure EDUs for exposure	Set all EDU mode (imaging) and thresholds (35 for central CCD and 50 for peripheral CCDs)	EDU Imaging
32	Start exposure		Enter Prime
33	Stop exposure - Go to Idle mode		Observation to Idle

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 ld cen to EMCR+EDU threshold and PMT ld 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 ld ifc8rp_1 to EMAE cen , ES ld iffci10rpp to EMAE cen , ES ld 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	ES ld timage3 to EMAE
2	Central CCD sequencers set-up		ES set-up CCD cen
3	Load Pattern Mask tables		PMT ld cen to EMCR+EDU timing PMT ld per to EMCR+EDU imaging
4	Load EMAE configuration (Multiplexer, Analogue Chains, Preamp.)	The three activities are strictly connected	EMAE Standard node 0
5	Load Offset tables	Set to 0 all EDU Offset Tables	OT ld all EDU std (EDU1 alt)
6	Configure all EDUs for Offset & Variance	Set all EDUs mode (transparent) and thresholds (0)	EDU Transparent single node
7	Load central CCD EDU window		EDU Central CCD Timing
8	Set EMCR Integration time for Timing		Free-run (Seq. I.8, 2.6 s per. CCD)
9	Configure HBR1 for Offset & Variance		HBR 1 transparent
10	Perform Offset & Variance CCD1 case		Enter OV CCD1 FS
11	Load calculated Offset & Variance table into relevant EDU		OT ld 0 to EMCR+EDU std for OV
12	Configure HBR3 for Offset & Variance		HBR 3 transparent
13	Perform Offset & Variance CCD2 case		Enter OV CCD2 FS
14	Load calculated Offset & Variance table into relevant EDU		OT ld 2 to EMCR+EDU std for OV
15	Configure HBR4 for Offset & Variance		HBR 4 transparent
16	Perform Offset & Variance CCD5 case		Enter OV CCD5 FS
17	Load calculated Offset & Variance table into relevant EDU		OT ld 3 to EMCR+EDU std for OV
18	Configure HBR5 for Offset & Variance		HBR 5 transparent
19	Perform Offset & Variance CCD4 case		Enter OV CCD4 FS
20	Load calculated Offset & Variance table into relevant EDU		OT ld 4 to EMCR+EDU std for OV
21	Configure HBR6 for Offset & Variance		HBR 6 transparent
22	Perform Offset & Variance CCD7 case		Enter OV CCD7 FS
23	Load calculated Offset & Variance table into relevant EDU		OT ld 5 to EMCR+EDU std for OV
24	Configure HBR7 for Offset & Variance		HBR 7 transparent
25	Perform Offset & Variance CCD3 case		Enter OV CCD3 FS
26	Load calculated Offset & Variance table into relevant EDU		OT ld 6 to EMCR+EDU std for OV
27	Configure HBR8 for Offset & Variance		HBR 8 transparent
28	Perform Offset & Variance CCD6 case		Enter OV CCD6 FS
29	Load calculated Offset & Variance table into relevant EDU		OT ld 7 to EMCR+EDU std for OV
30	Load sequencer (CCD 1) for exposure (i.e. Timing)	Timing normal	ES ld tnc1_n1 to EMAE
31	Central CCD sequencers set-up		ES set-up CCD cen
32	Configure HBRs for exposure	Set all HBRs in Imaging mode	HBR Timing
33	Configure EDUs for exposure	Set all EDU mode (imaging) and thresholds (35 for central CCD and 50 for peripheral CCDs)	EDU Timing
34	Start exposure		Enter Fast
35	Stop exposure – Go to Idle mode		Observation to Idle

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 ld cen to EMCR+EDU threshold and PMT ld 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 ld tdiovctge05p to EMAE at step 1 and ES ld timnctng03p to EMAE at step 30. In this case, the relevant integration time (Free-run (Seq. I.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)		ES ld ifw8rd_1 to EMAE
2	Central CCD sequencers set-up		ES set-up CCD cen
3	Load Pattern Mask tables	Although imaging are default ones, a different exposure may be occurred	PMT ld cen to EMCR+EDU imaging PMT ld per to EMCR+EDU imaging
4	Load EMAE configuration (Multiplexer, Analogue Chains, Preamp.)	The three activities are strictly connected	EMAE Standard node 0
5	Load Offset tables	Set to 0 all EDU Offset Tables	OT ld all EDU std (EDU1 alt)
6	Configure all EDUs for Offset & Variance	Set all EDUs mode (transparent) and thresholds (0)	EDU Transparent single node
7	Load central CCD EDU window		EDU Central CCD SW (110)
8	Set EMCR Integration time for Small Window		Small Window (Seq. I.8, 110, 0.4-2.8 sec)
9	Configure HBR1 for Offset & Variance		HBR 1 transparent
10	Perform Offset & Variance CCD1 case		Enter OV CCD1 FS
11	Load calculated Offset & Variance table into relevant EDU		OT ld 0 to EMCR+EDU std for OV
12	Configure HBR3 for Offset & Variance		HBR 3 transparent
13	Perform Offset & Variance CCD2 case		Enter OV CCD2 FS
14	Load calculated Offset & Variance table into relevant EDU		OT ld 2 to EMCR+EDU std for OV
15	Configure HBR4 for Offset & Variance		HBR 4 transparent
16	Perform Offset & Variance CCD5 case		Enter OV CCD5 FS
17	Load calculated Offset & Variance table into relevant EDU		OT ld 3 to EMCR+EDU std for OV
18	Configure HBR5 for Offset & Variance		HBR 5 transparent
19	Perform Offset & Variance CCD4 case		Enter OV CCD4 FS
20	Load calculated Offset & Variance table into relevant EDU		OT ld 4 to EMCR+EDU std for OV
21	Configure HBR6 for Offset & Variance		HBR 6 transparent
22	Perform Offset & Variance CCD7 case		Enter OV CCD7 FS
23	Load calculated Offset & Variance table into relevant EDU		OT ld 5 to EMCR+EDU std for OV
24	Configure HBR7 for Offset & Variance		HBR 7 transparent
25	Perform Offset & Variance CCD3 case		Enter OV CCD3 FS
26	Load calculated Offset & Variance table into relevant EDU		OT ld 6 to EMCR+EDU std for OV
27	Configure HBR8 for Offset & Variance		HBR 8 transparent
28	Perform Offset & Variance CCD6 case		Enter OV CCD6 FS
29	Load calculated Offset & Variance table into relevant EDU		OT ld 7 to EMCR+EDU std for OV
30	Configure HBRs for exposure	Set all HBRs in Imaging mode	HBR Imaging
31	Configure EDUs for exposure	Set all EDU mode (imaging) and thresholds (35 for central CCD and 50 for peripheral CCDs)	EDU Imaging
32	Start exposure		Enter Prime
33	Stop exposure - Go to Idle mode		Observation to Idle

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 ld cen to EMCR+EDU threshold and PMT ld 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 ld 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)		ES ld ifw8rd_3_1 to EMAE
2	Central CCD sequencers set-up		ES set-up CCD cen
3	Load Pattern Mask tables	Although imaging are default ones, a different exposure may be occurred	PMT ld cen to EMCR+EDU imaging PMT ld per to EMCR+EDU imaging
4	Load EMAE configuration (Multiplexer, Analogue Chains, Preamp.)	The three activities are strictly connected	EMAE Standard node 0
5	Load Offset tables	Set to 0 all EDU Offset Tables	OT ld all EDU std (EDU1 alt)
6	Configure all EDUs for Offset & Variance	Set all EDUs mode (transparent) and thresholds (0)	EDU Transparent single node
7	Load central CCD EDU window		EDU Central CCD LW (310)
8	Set EMCR Integration time for Large Window		Large Window (Seq. I.8, 310, 1-3 sec)
9	Configure HBR1 for Offset & Variance		HBR 1 transparent
10	Perform Offset & Variance CCD1 case		Enter OV CCD1 FS
11	Load calculated Offset & Variance table into relevant EDU		OT ld 0 to EMCR+EDU std for OV
12	Configure HBR3 for Offset & Variance		HBR 3 transparent
13	Perform Offset & Variance CCD2 case		Enter OV CCD2 FS
14	Load calculated Offset & Variance table into relevant EDU		OT ld 2 to EMCR+EDU std for OV
15	Configure HBR4 for Offset & Variance		HBR 4 transparent
16	Perform Offset & Variance CCD5 case		Enter OV CCD5 FS
17	Load calculated Offset & Variance table into relevant EDU		OT ld 3 to EMCR+EDU std for OV
18	Configure HBR5 for Offset & Variance		HBR 5 transparent
19	Perform Offset & Variance CCD4 case		Enter OV CCD4 FS
20	Load calculated Offset & Variance table into relevant EDU		OT ld 4 to EMCR+EDU std for OV
21	Configure HBR6 for Offset & Variance		HBR 6 transparent
22	Perform Offset & Variance CCD7 case		Enter OV CCD7 FS
23	Load calculated Offset & Variance table into relevant EDU		OT ld 5 to EMCR+EDU std for OV
24	Configure HBR7 for Offset & Variance		HBR 7 transparent
25	Perform Offset & Variance CCD3 case		Enter OV CCD3 FS
26	Load calculated Offset & Variance table into relevant EDU		OT ld 6 to EMCR+EDU std for OV
27	Configure HBR8 for Offset & Variance		HBR 8 transparent
28	Perform Offset & Variance CCD6 case		Enter OV CCD6 FS
29	Load calculated Offset & Variance table into relevant EDU		OT ld 7 to EMCR+EDU std for OV
30	Configure HBRs for exposure	Set all HBRs in Imaging mode	HBR Imaging
31	Configure EDUs for exposure	Set all EDU mode (imaging) and thresholds (35 for central CCD and 50 for peripheral CCDs)	EDU Imaging
32	Start exposure		Enter Prime
33	Stop exposure - Go to Idle mode		Observation to Idle

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

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

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

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 ld cen to EMCR+EDU threshold and PMT ld 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 ld rfscr3rpp200 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)		ES ld iffci10rdb to EMAE
2	Central CCD sequencers set-up		ES set-up CCD cen
3	Load Pattern Mask tables	Although imaging are default ones, a different exposure may be occurred	PMT ld cen to EMCR+EDU imaging PMT ld per to EMCR+EDU imaging
4	Load EMAE configuration (Multiplexer, Analogue Chains, Preamp.)	The three activities are strictly connected	EMAE Double node
5	Load Offset tables	Set to 0 all EDU Offset Tables	OT ld all EDU std (EDU1 alt)
6	Configure all EDUs for Offset & Variance	Set all EDUs mode (transparent) and thresholds (0)	EDU transparent double node
7	Load central CCD EDU window		EDU Central CCD Double Node
8	Set EMCR Integration time for Double Node	IFFci10rdp for peripheral CCDs is required	Double Node (Seq. I.10, 1.4 - 2.8 sec)
9	Configure HBR1 for Offset & Variance		HBR 1 transparent
10	Perform Offset & Variance CCD1 case		Enter OV CCD1 FS
11	Load calculated Offset & Variance table into relevant EDU		OT ld 0 to EMCR+EDU std for OV
12	Configure HBR2 for Offset & Variance		HBR 2 transparent
13	Perform Offset & Variance CCD1 case		Enter OV CCD1 FS
14	Load calculated Offset & Variance table into relevant EDU		OT ld 1 to EMCR+EDU alt for OV
15	Configure HBR3 for Offset & Variance		HBR 3 transparent
16	Perform Offset & Variance CCD2 case		Enter OV CCD2 FS
17	Load calculated Offset & Variance table into relevant EDU		OT ld 2 to EMCR+EDU std for OV
18	Configure HBR4 for Offset & Variance		HBR 4 transparent
19	Perform Offset & Variance CCD5 case		Enter OV CCD5 FS
20	Load calculated Offset & Variance table into relevant EDU		OT ld 3 to EMCR+EDU std for OV
21	Configure HBR5 for Offset & Variance		HBR 5 transparent
22	Perform Offset & Variance CCD4 case		Enter OV CCD4 FS
23	Load calculated Offset & Variance table into relevant EDU		OT ld 4 to EMCR+EDU std for OV
24	Configure HBR6 for Offset & Variance		HBR 6 transparent
25	Perform Offset & Variance CCD7 case		Enter OV CCD7 FS
26	Load calculated Offset & Variance table into relevant EDU		OT ld 5 to EMCR+EDU std for OV
27	Configure HBR7 for Offset & Variance		HBR 7 transparent
28	Perform Offset & Variance CCD3 case		Enter OV CCD3 FS
29	Load calculated Offset & Variance table into relevant EDU		OT ld 6 to EMCR+EDU std for OV
30	Configure HBR8 for Offset & Variance		HBR 8 transparent
31	Perform Offset & Variance CCD6 case		Enter OV CCD6 FS
32	Load calculated Offset & Variance table into relevant EDU		OT ld 7 to EMCR+EDU std for OV
33	Configure HBRs for exposure	Set all HBRs in Imaging mode	HBR Double Node
34	Configure EDUs for exposure	Set all EDU mode (imaging) and thresholds (35 for central CCD and 50 for peripheral CCDs)	EDU Double node
35	Start exposure		Enter Prime
36	Stop exposure - Go to Idle mode		Observation to Idle

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 ld cen to EMCR+EDU threshold and PMT ld 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
Load BPT FM1	Load Bright Pixel Tables for all the HBRs	Idle mode	none		Bright Pixels tables	3	Pixel coordinates inserted
Load BPT FM2	Load Bright Pixel Tables for all the HBRs	Idle mode	none		Bright Pixels tables	2	Pixel coordinates inserted
Load BPT FS	Load Bright Pixel Tables for all the HBRs	Idle mode	none		Bright Pixels tables	2	Pixel coordinates inserted
FM1 normal	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
FM2 normal	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
FS normal	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
Door	Opening door				Door operations	2	Deleted Remove PW
Venting valve	Venting valve operations				Door operations	2	Deleted Remove PW
EDU Imaging	Setting of EDU modes and thresholds for readout of all CCDs in Full Frame mode	Idle mode	none		EDU config	2	
EDU Transparent single node	Setting of EDU modes and thresholds for transparent readout of all CCDs in Full Frame mode	Idle mode	none		EDU config	2	
EDU threshold single node	Setting of EDU modes and thresholds for threshold readout of all CCDs in Full Frame mode	Idle mode	none		EDU config	3	Thresholds changed
EDU Timing	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	
EDU Double node	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	
EDU transparent double node	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	
EDU threshold double node	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
EDU Central CCD Full Frame	Window set up for central CCDs Full frame	Idle mode	none		EDU config	1	
EDU Central CCD Timing	Window set up for central CCDs Timing	Idle mode	none		EDU config	1	
EDU Central CCD SW (110)	Window set up for central CCDs Small Window	Idle mode	none		EDU config	1	
EDU Central CCD LW (310)	Window set up for central CCDs Large Wimdow	Idle mode	none		EDU config	1	
EDU Central CCD Double Node	Window set up for central CCDs Double Node	Idle mode	none		EDU config	1	
EDU Peripheral CCDs	Window set up for peripheral CCDs in Full Frame	Idle mode	none		EDU config	1	

EDU all CCDs Fast Diagnostic	Window set up for all CCDs in Fast Diagnostic FF or RFS	Idle mode	none	EDU config	1	New
EMAE Standard node 0	Setting of Multiplexers, Preamplifiers and Analogue Chains for the CCD readout from primary nodes	Idle mode	none	EMAE config	1	
EMAE Standard node 1	Setting of Multiplexers, Preamplifiers and Analogue Chains for the CCD readout from redundant nodes	Idle mode	none	EMAE config	1	
EMAE Double node	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	
ES set-up	Set up of the low and hight addesses of the sequencers and sequencers low gain node 0 then run then start sequencer for FW			Emae Sequences	1	
ES set-up FW	Set up of the low and hight addesses of the sequencer relevant to FW then start sequencer for FW			Emae Sequences	1	
ES set-up CCDs per	Set up of the low and hight addesses of the sequencer relevant to peripheral CCDs sequencers low gain node 0 set up then start sequencers			Emae Sequences	1	
ES set-up CCD cen	Set up of the low and hight addesses of the sequencer relevant to central CCDs sequencers low gain node 0 set up then start sequencers			Emae Sequences	1	
ES du all from EMCR	Dump all EMAE Sequences stored in the EMCR. A Sequence from each table is in a TM pkt.	none	none	Emae Sequences	1	
ES du all from EMAE	Dump all EMAE Sequences stored in the EMAE. A Sequence from each table is in a TM pkt. Map EMAE-> EMCR is : 1->1, 2->2, ….			Emae Sequences	1	
ES ld FW	Load FW sequence (#4) Map EMCR-> EMAE is : 4->5		a building block with sequence for central and peripheral CCDs	Emae Sequences	2	
ES ld ifc8rd_1 to EMAE cen	Load Imaging Full Frame Cold reset on demand Sequence central CCD node 1 (#0) Map EMCR-> EMAE is : 0->1		a building block with sequence for peripheral CCDs	Emae Sequences	1	
ES ld iffci10rdp to EMAE cen	Load Imaging Full Frame Cold reset on demand Sequence central CCD node 1 (#0) Map EMCR-> EMAE is : 0->1		a building block with sequence for peripheral CCDs	Emae Sequences	1	
ES ld ifc8rd_1 to EMAE per	Load Imaging Full Frame Cold reset on demand 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	
ES ld iffci10rdp to EMAE per	Load Imaging Full Frame Cold reset on demand 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	
ES ld ifc8rd_2 to EMAE cen	Load Imaging Full Frame Cold reset on demand Sequence central CCD node 2 (#0) Map EMCR-> EMAE is : 0->1		a building block with sequence for peripheral CCDs	Emae Sequences	1	
ES ld iffci10rdr to EMAE cen	Load Imaging Full Frame Cold reset on demand Sequence central CCD node 2 (#0)		a building block with sequence for	Emae Sequences	1	

	Map EMCR-> EMAE is : 0->1		peripheral CCDs		
ES ld ifc8rd_2 to EMAE per	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
ES ld iffci10rdr to EMAE per	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
ES ld ifc8rp_1 to EMAE cen	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
ES ld iffci10rpp to EMAE cen	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
ES ld ifc8rp_1 to EMAE per	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
ES ld iffci10rpp to EMAE per	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
ES ld ifc8rp_2 to EMAE cen	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
ES ld iffci10rpr to EMAE cen	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
ES ld ifc8rp_2 to EMAE per	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
ES ld iffci10rpr to EMAE per	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
ES ld ifc8rd_b to EMAE	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
ES ld iffci10rdb to EMAE	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
ES ld ifc8rp_b to EMAE	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

	Map EMCR-> EMAE is : 0->1, 4->5			
ES ld iffci10rpb to EMAE	Load Imaging Full Frame Cold reset per pixel 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
ES ld ifw5_n1 to EMAE	Load Imaging Full Frame Warm Sequence central and peripheral CCDs node 1 (#0, #1, #2,#3) Map EMCR-> EMAE is : 0->1, 1->2, 2->3, 3->4		Emae Sequences	1
ES ld ifw8rd_1 to EMAE	Load Imaging Window Cold reset on demand Sequence 110x100 central CCD node 1 (#0) Map EMCR-> EMAE is : 0->1	a building block with sequence for peripheral CCDs	Emae Sequences	1
ES ld iswci10rdp to EMAE	Load Imaging Window Cold reset on demand Sequence 110x100 central CCD node 1 (#0) Map EMCR-> EMAE is : 0->1	a building block with sequence for peripheral CCDs	Emae Sequences	1
ES ld ifw8rd_2 to EMAE	Load Imaging Window Cold reset on demand Sequence 110x100 central CCD node 2 (#0) Map EMCR-> EMAE is : 0->1	a building block with sequence for peripheral CCDs	Emae Sequences	1
ES ld iswci10rdr to EMAE	Load Imaging Window Cold reset on demand Sequence 110x100 central CCD node 2 (#0) Map EMCR-> EMAE is : 0->1	a building block with sequence for peripheral CCDs	Emae Sequences	1
ES ld ifw8rd_b to EMAE	Load Imaging Window Cold reset on demand Sequence 110x100 central CCD node both (#0) Map EMCR-> EMAE is : 0->1	a building block with sequence for peripheral CCDs	Emae Sequences	1
ES ld iswci10rdb to EMAE	Load Imaging Window Cold reset on demand Sequence 110x100 central CCD node both (#0) Map EMCR-> EMAE is : 0->1	a building block with sequence for peripheral CCDs	Emae Sequences	1
ES ld ifw8rd_3_1 to EMAE	Load Imaging Window Cold reset on demand Sequence 310x300 central CCD node 1 (#0) Map EMCR-> EMAE is : 0->1	a building block with sequence for peripheral CCDs	Emae Sequences	1
ES ld ilwci10rdp to EMAE	Load Imaging Window Cold reset on demand Sequence 310x300 central CCD node 1 (#0) Map EMCR-> EMAE is : 0->1	a building block with sequence for peripheral CCDs	Emae Sequences	1
ES ld ifw8_3_2 to EMAE	Load Imaging Window Cold reset on demand Sequence 310x300 central CCD node 2 (#0) Map EMCR-> EMAE is : 0->1	a building block with sequence for peripheral CCDs	Emae Sequences	1
ES ld ilwci10rdr to EMAE	Load Imaging Window Cold reset on demand Sequence 310x300 central CCD node 2 (#0) Map EMCR-> EMAE is : 0->1	a building block with sequence for peripheral CCDs	Emae Sequences	1
ES ld ifw8rd_b to EMAE	Load Imaging Window Cold reset on demand Sequence 110x100 central CCD node both (#0) Map EMCR-> EMAE is : 0->1	a building block with sequence for peripheral CCDs	Emae Sequences	1
ES ld ilwci10rdb to EMAE	Load Imaging Window Cold reset on demand Sequence	a building block with	Emae Sequences	1

	110x100 central CCD node both (#0) Map EMCR-> EMAE is : 0->1	sequence for peripheral CCDs				
ES ld rfc3rd_1_200 to EMAE	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	
ES ld rfscr3rdp200 to EMAE	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	
ES ld rfc3rd_2_200 to EMAE	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	
ES ld rfscr3rdr200 to EMAE	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	
ES ld rfc3rd_b_200 to EMAE	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	
ES ld rfscr3rdb200 to EMAE	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	
ES ld rfscr3rpp200 to EMAE	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	
ES ld rfscr3rpr200 to EMAE	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	
ES ld rfscr3rpb200 to EMAE	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
ES ld tnc1_n1 to EMAE	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	
ES ld tnc1_n2 to EMAE	Load Timing Imaging Sequence on central CCD	a building block with		Emae Sequences	1	

	node 2 (#0) - timing normal cold Map EMCR-> EMAE is : 0->1	sequence for peripheral CCDs			
ES ld tdc2_n1 to EMAE	Load Transparent Timing Imaging Sequence on central CCD node 1 (#0) - timing diagnostic cold Map EMCR-> EMAE is : 0->1	a building block with sequence for peripheral CCDs	Emae Sequences	1	
ES ld tdiovctge05p to EMAE	Load Transparent Timing Imaging Sequence on central CCD node 1 (#0) - timing diagnostic cold Map EMCR-> EMAE is : 0->1	a building block with sequence for peripheral CCDs	Emae Sequences	1	
ES ld tdc2_n2 to EMAE	Load Transparent Timing Imaging Sequence on central CCD node 2 (#0) - timing diagnostic cold Map EMCR-> EMAE is : 0->1	a building block with sequence for peripheral CCDs	Emae Sequences	1	
ES ld tdiovctge05r to EMAE	Load Transparent Timing Imaging Sequence on central CCD node 2 (#0) - timing diagnostic cold Map EMCR-> EMAE is : 0->1	a building block with sequence for peripheral CCDs	Emae Sequences	1	
ES ld timage3 to EMAE	Load Timing Imaging Sequence on central CCD node 1 (#0) Map EMCR-> EMAE is : 0->1	a building block with sequence for peripheral CCDs	Emae Sequences	1	
ES ld timnctng03p to EMAE	Load Timing Imaging Sequence on central CCD node 1 (#0) Map EMCR-> EMAE is : 0->1	a building block with sequence for peripheral CCDs	Emae Sequences	1	
ES ld timnctng03r to EMAE	Load Timing Imaging Sequence on central CCD node 2 (#0) Map EMCR-> EMAE is : 0->1	a building block with sequence for peripheral CCDs	Emae Sequences	1	
ES ld+setup I33ci10rdp to EMAE	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
Full Frame - Refreshed Frame Store (EMAESeq. I.8, 2.6 sec)	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
Full Frame - Refreshed Frame Store (EMAESeq. I.10, 2.5 sec)	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
Double Node (EMAESeq. I.8, 1.5-3 sec)	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
Double Node (EMAESeq. I.10, 1.4 – 2.8 sec)	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
Small Window (EMAESeq. I.8, 110, 0.4 - 2.8 sec)	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
Small Window (EMAESeq. I.10, 110, 0.3 - 2.7 sec)	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
Large Window (EMAESeq.I.8, 310, 1 - 3 sec)	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
Large Window (EMAESeq. I.10, 310, 0.9 - 2.7 sec)	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
Free-run (EMAESeq. I.8, 2.6 sec for per. CCD)	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
Free-run (EMAESeq. I.10, 2.5 sec for	Setting of EMCR integration time for Free-run readout of Idle mode	none	EMCR int-time	1	New

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

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

						updated
Enter OV CCD4 FS	Enter Offset and Variance Mode CCD4 FS camera			Mode Switching	2	Parameter values updated
Enter OV CCD5 FS	Enter Offset and Variance Mode CCD5 FS camera			Mode Switching	2	Parameter values updated
Enter OV CCD6 FS	Enter Offset and Variance Mode CCD6 FS camera			Mode Switching	2	Parameter values updated
Enter OV CCD7 FS	Enter Offset and Variance Mode CCD7 FS camera			Mode Switching	2	Parameter values updated
Enter OV Timing FS	Enter Offset and Variance Mode for Timing CCD1 FS camera			Mode Switching	1	
Enter Prime	Enter Prime Mode			Mode Switching	1	
Enter Fast	Enter Fast Mode			Mode Switching	1	
Enter in Flight Test	Enter In Flight Test Mode			Mode Switching	1	
Enter Diagnostic FF-RFS	Enter CCD Diagnostic Mode Full frame or Refreshed Frame Store			Mode Switching	1	
Enter Fast Diagnostic FF	Enter CCD Fast Diagnostic Mode Full frame			Mode Switching	1	New
Enter Diagnostic LW	Enter CCD Diagnostic Mode LW			Mode Switching	1	
Enter Diagnostic SW	Enter CCD Diagnostic Mode SW			Mode Switching	1	
Enter Diagnostic Timing	Enter CCD Diagnostic Mode Timing			Mode Switching	1	
Enter Diagnostic DN	Enter CCD Diagnostic Mode Double Node			Mode Switching	1	
Enter Idle	Enter Idle Mode				1	
Observation to Idle	Prime or Fast Mode to Idle Mode			Mode Switching	1	
OT ld all to EMCR	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	
OT ld all EDU std (EDU1 alt)	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
OT ld all EDU alt (EDU1 nor)	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
OT ld 0 to EMCR for OV	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	
OT ld 1 to EMCR for OV	Load Offset table from EMDH to EMCR tab #1. after Offset and variance computation. Full frame case.	offset and variance computation		Offset tables	1	

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

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

	Map EMCR->EDU is : 3->3.					
OT ld 4 to EMCR+EDU alt for OV	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	
OT ld 5 to EMCR+EDU alt for OV	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	
OT ld 6 to EMCR+EDU alt for OV	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	
OT ld 7 to EMCR+EDU alt for OV	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	
OT du all from EMCR	Dump all Offset tables from EMCR. An Offset Table for each table is in TM pkts.	none	none	Offset tables	1	
OT du all from EDU std	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	
OT du all from EDU alt	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	
PMT ld cen to EMCR imaging	Load Pattern Mask tables to EMCR for CCD1. Imaging case	none	none	Pattern mask tables	3	
PMT ld cen to EMCR timing	Load Pattern Mask tables to EMCR for CCD1. Timing case	none	none	Pattern mask tables	3	
PMT ld cen to EMCR threshold	Load Pattern Mask tables to EMCR for CCD1. Threshold case	none	none	Pattern mask tables	3	
PMT ld cen to EMCR+EDU imaging	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
PMT ld cen to EMCR+EDU timing	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
PMT ld cen to EMCR+EDU threshold	Load Pattern Mask tables to EDU for CCD1.	none	none	Pattern mask tables	3	Mapping changed

	Threshold case Map EMCR->EDU is : 0->0, 0->1					
PMT ld per to EMCR imaging	Load all peripheral Pattern Mask tables to EMCR. Imaging case	none	none	Pattern mask tables	2	
PMT ld per to EMCR threshold	Load all peripheral Pattern Mask tables to EMCR. Threshold case	none	none	Pattern mask tables	1	New
PMT ld per to EMCR+EDU imaging	Load all peripheral Pattern Mask tables to EMCR then to EDU. Imaging case Map EMCR->EDU is : 2->2, 2->3, 2->4, 2->5, 2->6, 2->7	none	none	Pattern mask tables	2	Mapping changed
PMT ld per to EMCR+EDU threshold	Load all peripheral Pattern Mask tables to EMCR then to EDU. Threshold case Map EMCR->EDU is : 2->2, 2->3, 2->4, 2->5, 2->6, 2->7	none	none	Pattern mask tables	1	New
PMT du all from EMCR	Dump all Patten Mask tables from EMCR.	none	none	Pattern mask tables	1	
PMT du all from EDU	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	
HBR conf, buff_sz, thres_v	Generate report about current HBR configuration, HBR buffer size, HBR thrshold values	none	none	Reports	1	
Extr conf + Thermal limits	Generate report about current Extraheating configuration, thermal limits	none	none	Reports	1	
Pkt generation	Generate report about current packet generation	none	none	Reports	1	
HBR BPT	Generate report about current HBR BPT	none	none	Reports	1	
Global report	Generate report about current HBR configuration, HBR buffer size, HBR thrshold values, Extraheting configuration, thermal limits, packet generation, HBR BPT	none	none	Reports	1	
Du test image	Dump Test Image from EMCR to EMDH			Test image	1	
Ld test image	Load Test Image from EMDH to EMCR			Test image	1	
Annealing	Annealing			Thermal	1	
Decontamination	Decontamination			Thermal	1	
Decontamination 0 °C	Decontamination			Thermal	1	New
Decontamination +30 °C	Decontamination			Thermal	1	New
Deicing	Deicing			Thermal	1	
Set FPA Nom -70	Set Focal Plane temperature Nominal at -70			Thermal	1	
Set FPA Nom -100	Set Focal Plane temperature Nominal at -100			Thermal	1	
Set FPA Red -70	Set Focal Plane temperature Redundant at -70			Thermal	1	
Set FPA Red -100	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)	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	Command Number	Command Name	Parameter Number	Parameter Name	Parameter Value (hex)	Parameter Value (engineering)	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	Command Number	Command Name	Parameter Number	Parameter Name	Parameter Value (hex)	Parameter Value (engineering)	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.	

					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)	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 clock) in the EMAE. Parameters are used to include the complete EMCR command foreseen for this function.	Set CCD1 Voltages
			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	CB	30,9372	This TC is used to set all the CCD2 voltages (bias and clock) in the EMAE. Parameters are used to include the complete EMCR command foreseen for this function.	Set CCD2 Voltages
			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	This TC is used to set all the CCD3 voltages (bias and clock) in the EMAE. Parameters are used to include the complete EMCR command foreseen for this function.	Set CCD3 Voltages
			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		

			E234	CCD S	74	7,0412	
			E235	CCD R	84	7,9992	
			E237	CCD RESET1	95	9,0294	
			E238	CCD RESET2	95	9,0294	
			E236	CCD CCD IG	00	0	
4	E94	Set CCD4 Voltages	E229	CCD VOD1	B8	28,0416	This TC is used to set all the CCD4 voltages (bias and Set CCD4 Voltages
			E228	CCD VRD1	D1	17,0335	clock) in the EMAE. Parameters are used to include the
			E227	CCD VOG1	27	1,5093	complete EMCR command foreseen for this function.
			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	
			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	
5	E95	Set CCD5 Voltages	E229	CCD VOD1	BE	28,956	This TC is used to set all the CCD5 voltages (bias and Set CCD5 Voltages
			E228	CCD VRD1	D1	17,0335	clock) in the EMAE. Parameters are used to include the
			E227	CCD VOG1	1A	1,0062	complete EMCR command foreseen for this function.
			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	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	
6	E96	Set CCD6 Voltages	E229	CCD VOD1	CB	30,9372	This TC is used to set all the CCD6 voltages (bias and Set CCD6 Voltages
			E228	CCD VRD1	DD	18,0115	clock) in the EMAE. Parameters are used to include the
			E227	CCD VOG1	27	1,5093	complete EMCR command foreseen for this function.
			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	

			E238	CCD RESET2	95	9,0294	
			E236	CCD CCD IG	00	0	
7	E97	Set CCD7 Voltages	E229	CCD VOD1	BE	28,956	This TC is used to set all the CCD7 voltages (bias and Set CCD7 Voltages
			E228	CCD VRD1	D1	17,0335	clock) in the EMAE. Parameters are used to include the
			E227	CCD VOG1	27	1,5093	complete EMCR command foreseen for this function.
			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)	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
			K228	CCD VRD1	DE	17,982	clock) in the EMAE. Parameters are used to include the	
			K227	CCD VOG1	40	2,496	complete EMCR command foreseen for this function.	
			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		
			K236	CCD CCD IG	00	0		
2	K92	Set CCD2 Voltages	K229	CCD VOD1	BF	29,032	This TC is used to set all the CCD2 voltages (bias and	Set CCD2 Voltages
			K228	CCD VRD1	EA	18,954	clock) in the EMAE. Parameters are used to include the	
			K227	CCD VOG1	40	2,496	complete EMCR command foreseen for this function.	
			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	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
			K228	CCD VRD1	DE	17,982	clock) in the EMAE. Parameters are used to include the
			K227	CCD VOG1	40	2,496	complete EMCR command foreseen for this function.
			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
			K228	CCD VRD1	C6	16,038	clock) in the EMAE. Parameters are used to include the
			K227	CCD VOG1	19	0,975	complete EMCR command foreseen for this function.
			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
			K228	CCD VRD1	D2	17,01	clock) in the EMAE. Parameters are used to include the
			K227	CCD VOG1	26	1,482	complete EMCR command foreseen for this function.
			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	

			K237	CCD RESET1	92	9,052	
			K238	CCD RESET2	92	9,052	
			K236	CCD CCD IG	00	0	
6	K96	Set CCD6 Voltages	K229	CCD VOD1	BF	29,032	This TC is used to set all the CCD6 voltages (bias and Set CCD6 Voltages
			K228	CCD VRD1	EA	18,954	clock) in the EMAE. Parameters are used to include the
			K227	CCD VOG1	40	2,496	complete EMCR command foreseen for this function.
			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	
7	K97	Set CCD7 Voltages	K229	CCD VOD1	BF	29,032	This TC is used to set all the CCD7 voltages (bias and Set CCD7 Voltages
			K228	CCD VRD1	EA	18,954	clock) in the EMAE. Parameters are used to include the
			K227	CCD VOG1	40	2,496	complete EMCR command foreseen for this function.
			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)	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
			E228	CCD VRD1	D2	17,01	clock) in the EMAE. Parameters are used to include the	
			E227	CCD VOG1	19	0,975	complete EMCR command foreseen for this function.	
			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		

			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	This TC is used to set all the CCD2 voltages (bias and Set CCD2 Voltages
			E228	CCD VRD1	EA	18,954	clock) in the EMAE. Parameters are used to include the
			E227	CCD VOG1	40	2,496	complete EMCR command foreseen for this function.
			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	This TC is used to set all the CCD3 voltages (bias and Set CCD3 Voltages
			E228	CCD VRD1	E4	18,468	clock) in the EMAE. Parameters are used to include the
			E227	CCD VOG1	33	1,989	complete EMCR command foreseen for this function.
			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	This TC is used to set all the CCD4 voltages (bias and Set CCD4 Voltages
			E228	CCD VRD1	D2	17,01	clock) in the EMAE. Parameters are used to include the
			E227	CCD VOG1	26	1,482	complete EMCR command foreseen for this function.
			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	

			E235	CCD R	62	5,9976	
			E237	CCD RESET1	A1	9,982	
			E238	CCD RESET2	A1	9,982	
			E236	CCD CCD IG	00	0	
5	E95	Set CCD5 Voltages	E229	CCD VOD1	D6	32,528	This TC is used to set all the CCD5 voltages (bias and Set CCD5 Voltages
			E228	CCD VRD1	EA	18,954	clock) in the EMAE. Parameters are used to include the
			E227	CCD VOG1	40	2,496	complete EMCR command foreseen for this function.
			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	
			E236	CCD CCD IG	00	0	
6	E96	Set CCD6 Voltages	E229	CCD VOD1	D6	32,528	This TC is used to set all the CCD6 voltages (bias and Set CCD6 Voltages
			E228	CCD VRD1	EA	18,954	clock) in the EMAE. Parameters are used to include the
			E227	CCD VOG1	33	1,989	complete EMCR command foreseen for this function.
			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	
			E236	CCD CCD IG	00	0	
7	E97	Set CCD7 Voltages	E229	CCD VOD1	C2	29,488	This TC is used to set all the CCD7 voltages (bias and Set CCD7 Voltages
			E228	CCD VRD1	C6	16,038	clock) in the EMAE. Parameters are used to include the
			E227	CCD VOG1	19	0,975	complete EMCR command foreseen for this function.
			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 Value (engineering)	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 Value (engineering)	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 Value (engineering)	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, Imaging, Timing, Threshold) and status (Stop, Run or Alternate) of each EDU. Parameters are used to include the complete EMCR command foreseen for this function.	Configure EDU in run image except 1
			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		
			K119	EDU 7 OperMode	01	Run		
			K127	EDU 7 Scien.Mode	03	Imaging		
2	K76	Set EMCR EDU THR	K104	EDU Identifier	00	0	This TC is used to set the low threshold of the selected EMCR EDU. In case of EDU alternate working mode, 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.	Set EMCR EDU0 Threshold 35_35
			K110	EDU Low Thresh. 1	0023	35		
			K111	EDU Low Thresh. 2	0023	35		
3	K76	Set EMCR EDU THR	K104	EDU Identifier	02	2	This TC is used to set the low threshold of the selected EMCR EDU. In case of EDU alternate working mode, 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.	Set EMCR EDU2 Threshold 50_50
			K110	EDU Low Thresh. 1	0032	50		
			K111	EDU Low Thresh. 2	0032	50		
4	K76	Set EMCR EDU THR	K104	EDU Identifier	03	3	This TC is used to set the low threshold of the selected EMCR EDU. In case of EDU alternate working mode, 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.	Set EMCR EDU3 Threshold 50_50
			K110	EDU Low Thresh. 1	0032	50		
			K111	EDU Low Thresh. 2	0032	50		
5	K76	Set EMCR EDU THR	K104	EDU Identifier	04	4	This TC is used to set the low threshold of the selected EMCR EDU. In case of EDU alternate working mode, 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.	Set EMCR EDU4 Threshold 50_50
			K110	EDU Low Thresh. 1	0032	50		
			K111	EDU Low Thresh. 2	0032	50		
6	K76	Set EMCR EDU THR	K104	EDU Identifier	05	5	This TC is used to set the low threshold of the selected EMCR EDU. In case of EDU alternate working mode, both thresholds can be set. Parameters are used to	Set EMCR EDU5 Threshold 50_50
			K110	EDU Low Thresh. 1	0032	50		
			K111	EDU Low Thresh. 2	0032	50		

									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 0032 0032	6 50 50	This TC is used to set the low threshold of the selected EMCR EDU. In case of EDU alternate working mode, 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.	Set EMCR EDU6 Threshold 50_50
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 EMCR EDU. In case of EDU alternate working mode, 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.	Set EMCR EDU7 Threshold 50_50

EDU transparent single node

Step	Command Number	Command Name			Parameter Number	Parameter Name	Parameter Value (hex)	Parameter Value (engineering)	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 00 00 00 01 00 01 00 01 00 01 00 01 00 01 00	Run Transparent Stop Transparent Run Transparent Run Transparent Run Transparent Run Transparent Run Transparent Run Transparent	This TC is used to set the operating mode (Transparent, Imaging, Timing, Threshold) and status (Stop, Run or Alternate) of each EDU. Parameters are used to include the complete EMCR command foreseen for this function.	Configure EDU in run transparent except 1
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 EMCR EDU. In case of EDU alternate working mode, 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.	Set EMCR EDU0 Threshold 0_0
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 EMCR EDU. In case of EDU alternate working mode, 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.	Set EMCR EDU2 Threshold 0_0
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

		THR		K110	EDU Low Thresh. 1	0000	0	EMCR EDU. In case of EDU alternate working mode, 0_0
				K111	EDU Low Thresh. 2	0000	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.
5	K76	Set	EMCR EDU	K104	EDU Identifier	04	4	This TC is used to set the low threshold of the selected Set EMCR EDU4 Threshold
		THR		K110	EDU Low Thresh. 1	0000	0	EMCR EDU. In case of EDU alternate working mode, 0_0
				K111	EDU Low Thresh. 2	0000	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	EMCR EDU	K104	EDU Identifier	05	5	This TC is used to set the low threshold of the selected Set EMCR EDU5 Threshold
		THR		K110	EDU Low Thresh. 1	0000	0	EMCR EDU. In case of EDU alternate working mode, 0_0
				K111	EDU Low Thresh. 2	0000	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	EMCR EDU	K104	EDU Identifier	06	6	This TC is used to set the low threshold of the selected Set EMCR EDU6 Threshold
		THR		K110	EDU Low Thresh. 1	0000	0	EMCR EDU. In case of EDU alternate working mode, 0_0
				K111	EDU Low Thresh. 2	0000	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	EMCR EDU	K104	EDU Identifier	07	7	This TC is used to set the low threshold of the selected Set EMCR EDU7 Threshold
		THR		K110	EDU Low Thresh. 1	0000	0	EMCR EDU. In case of EDU alternate working mode, 0_0
				K111	EDU Low Thresh. 2	0000	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 Value (engineering)	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
			K120	EDU 0 Scien.Mode	02	Threshold	Imaging, Timing, Threshold) and status (Stop, Run or	threshold except 1
			K113	EDU 1 OperMode	00	Stop	Alternate) of each EDU. Parameters are used to include	
			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	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		

					K127	EDU 7 Scien.Mode	02	Threshold	
2	K76	Set THR	EMCR	EDU	K104 K110 K111	EDU Identifier EDU Low Thresh. 1 EDU Low Thresh. 2	00 0019 0019	0 25 25	This TC is used to set the low threshold of the selected EMCR EDU. In case of EDU alternate working mode, 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.	Set EMCR EDU0 Threshold 25_25
3	K76	Set THR	EMCR	EDU	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 EMCR EDU. In case of EDU alternate working mode, 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.	Set EMCR EDU2 Threshold 25_25
4	K76	Set THR	EMCR	EDU	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 EMCR EDU. In case of EDU alternate working mode, 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.	Set EMCR EDU3 Threshold 25_25
5	K76	Set THR	EMCR	EDU	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 EMCR EDU. In case of EDU alternate working mode, 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.	Set EMCR EDU4 Threshold 25_25
6	K76	Set THR	EMCR	EDU	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 EMCR EDU. In case of EDU alternate working mode, 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.	Set EMCR EDU5 Threshold 25_25
7	K76	Set THR	EMCR	EDU	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 EMCR EDU. In case of EDU alternate working mode, 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.	Set EMCR EDU6 Threshold 25_25
8	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 EMCR EDU. In case of EDU alternate working mode, 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.	Set EMCR EDU7 Threshold 25_25

EDU 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	K77	Configure EDU	K112	EDU 0 OperMode	01	Run	This TC is used to set the operating mode (Transparent,	Configure EDU 0 in run

					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
					K110	EDU Low Thresh. 1	0023	35	EMCR EDU. In case of EDU alternate working mode, 35_35
					K111	EDU Low Thresh. 2	0023	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	EDU Identifier	02	2	This TC is used to set the low threshold of the selected Set EMCR EDU2 Threshold
					K110	EDU Low Thresh. 1	0032	50	EMCR EDU. In case of EDU alternate working mode, 50_50
					K111	EDU Low Thresh. 2	0032	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.
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
					K110	EDU Low Thresh. 1	0032	50	EMCR EDU. In case of EDU alternate working mode, 50_50
					K111	EDU Low Thresh. 2	0032	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	EDU Identifier	04	4	This TC is used to set the low threshold of the selected Set EMCR EDU4 Threshold
					K110	EDU Low Thresh. 1	0032	50	EMCR EDU. In case of EDU alternate working mode, 50_50
					K111	EDU Low Thresh. 2	0032	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.
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
					K110	EDU Low Thresh. 1	0032	50	EMCR EDU. In case of EDU alternate working mode, 50_50
					K111	EDU Low Thresh. 2	0032	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	EDU Identifier	06	6	This TC is used to set the low threshold of the selected Set EMCR EDU6 Threshold
					K110	EDU Low Thresh. 1	0032	50	EMCR EDU. In case of EDU alternate working mode, 50_50
					K111	EDU Low Thresh. 2	0032	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 EMCR EDU. In case of EDU alternate working mode, 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.	Set EMCR EDU7 Threshold 50_50

EDU double node

Step	Command Number	Command Name	Parameter Number	Parameter Name	Parameter Value (hex)	Parameter Value (engineering)	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, Imaging, Timing, Threshold) and status (Stop, Run or Alternate) of each EDU. Parameters are used to include the complete EMCR command foreseen for this function.	Configure all EDUs in run imaging
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 EMCR EDU. In case of EDU alternate working mode, 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.	Set EMCR EDU0 Threshold 35_35
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 EMCR EDU. In case of EDU alternate working mode, 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.	Set EMCR EDU1 Threshold 35_35
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 EMCR EDU. In case of EDU alternate working mode, 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.	Set EMCR EDU2 Threshold 50_50
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 EMCR EDU. In case of EDU alternate working mode, both thresholds can be set. Parameters are used to include the complete EMCR command foreseen for this	Set EMCR EDU3 Threshold 50_50

									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	04 0032 0032	4 50 50	This TC is used to set the low threshold of the selected EMCR EDU. In case of EDU alternate working mode, 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.	Set EMCR EDU4 Threshold 50_50
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 EMCR EDU. In case of EDU alternate working mode, 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.	Set EMCR EDU5 Threshold 50_50
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 EMCR EDU. In case of EDU alternate working mode, 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.	Set EMCR EDU6 Threshold 50_50
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 EMCR EDU. In case of EDU alternate working mode, 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.	Set EMCR EDU7 Threshold 50_50

EDU transparent double node

Step	Command Number	Command Name	Parameter Number	Parameter Name	Parameter Value (hex)	Parameter Value (engineering)	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 00 01 00 01 00 01 00 01 00 01 00 01 00 01 00	Run Transparent Run Transparent Run Transparent Run Transparent Run Transparent Run Transparent Run Transparent Run Transparent	This TC is used to set the operating mode (Transparent, Imaging, Timing, Threshold) and status (Stop, Run or Alternate) of each EDU. Parameters are used to include the complete EMCR command foreseen for this function.	Configure all EDUs in run 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 EMCR EDU. In case of EDU alternate working mode,	Set EMCR EDU0 Threshold 35_35

					K111	EDU Low Thresh. 2	0000	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	EDU Identifier	01	1	This TC is used to set the low threshold of the selected EMCR EDU. In case of EDU alternate working mode, 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	0000	0	Set EMCR EDU1 Threshold 35_35
					K111	EDU Low Thresh. 2	0000	0	
4	K76	Set THR	EMCR	EDU	K104	EDU Identifier	02	2	This TC is used to set the low threshold of the selected EMCR EDU. In case of EDU alternate working mode, 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	0000	0	Set EMCR EDU2 Threshold 50_50
					K111	EDU Low Thresh. 2	0000	0	
5	K76	Set THR	EMCR	EDU	K104	EDU Identifier	03	3	This TC is used to set the low threshold of the selected EMCR EDU. In case of EDU alternate working mode, 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	0000	0	Set EMCR EDU3 Threshold 50_50
					K111	EDU Low Thresh. 2	0000	0	
6	K76	Set THR	EMCR	EDU	K104	EDU Identifier	04	4	This TC is used to set the low threshold of the selected EMCR EDU. In case of EDU alternate working mode, 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	0000	0	Set EMCR EDU4 Threshold 50_50
					K111	EDU Low Thresh. 2	0000	0	
7	K76	Set THR	EMCR	EDU	K104	EDU Identifier	05	5	This TC is used to set the low threshold of the selected EMCR EDU. In case of EDU alternate working mode, 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	0000	0	Set EMCR EDU5 Threshold 50_50
					K111	EDU Low Thresh. 2	0000	0	
8	K76	Set THR	EMCR	EDU	K104	EDU Identifier	06	6	This TC is used to set the low threshold of the selected EMCR EDU. In case of EDU alternate working mode, 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	0000	0	Set EMCR EDU6 Threshold 50_50
					K111	EDU Low Thresh. 2	0000	0	
9	K76	Set THR	EMCR	EDU	K104	EDU Identifier	07	7	This TC is used to set the low threshold of the selected EMCR EDU. In case of EDU alternate working mode, 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	0000	0	Set EMCR EDU7 Threshold 50_50
					K111	EDU Low Thresh. 2	0000	0	

EDU threshold double node

Step	Command Number	Command Name	Parameter Number	Parameter Name	Parameter Value (hex)	Parameter Value (engineering)	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, Imaging, Timing, Threshold) and status (Stop, Run or Alternate) of each EDU. Parameters are used to include the complete EMCR command foreseen for this function.	Configure all EDUs in run threshold mode
			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		
			K119	EDU 7 OperMode	01	Run		
			K127	EDU 7 Scien.Mode	02	Threshold		
2	K76	Set EMCR EDU THR	K104	EDU Identifier	00	0	This TC is used to set the low threshold of the selected EMCR EDU. In case of EDU alternate working mode, 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.	Set EMCR EDU0 Threshold 25_25
			K110	EDU Low Thresh. 1	0019	25		
			K111	EDU Low Thresh. 2	0019	25		
3	K76	Set EMCR EDU THR	K104	EDU Identifier	01	1	This TC is used to set the low threshold of the selected EMCR EDU. In case of EDU alternate working mode, 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.	Set EMCR EDU1 Threshold 25_25
			K110	EDU Low Thresh. 1	0019	25		
			K111	EDU Low Thresh. 2	0019	25		
4	K76	Set EMCR EDU THR	K104	EDU Identifier	02	2	This TC is used to set the low threshold of the selected EMCR EDU. In case of EDU alternate working mode, 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.	Set EMCR EDU2 Threshold 25_25
			K110	EDU Low Thresh. 1	0019	25		
			K111	EDU Low Thresh. 2	0019	25		
5	K76	Set EMCR EDU THR	K104	EDU Identifier	03	3	This TC is used to set the low threshold of the selected EMCR EDU. In case of EDU alternate working mode, 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.	Set EMCR EDU3 Threshold 25_25
			K110	EDU Low Thresh. 1	0019	25		
			K111	EDU Low Thresh. 2	0019	25		
6	K76	Set EMCR EDU THR	K104	EDU Identifier	04	4	This TC is used to set the low threshold of the selected EMCR EDU. In case of EDU alternate working mode, 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.	Set EMCR EDU4 Threshold 25_25
			K110	EDU Low Thresh. 1	0019	25		
			K111	EDU Low Thresh. 2	0019	25		
7	K76	Set EMCR EDU THR	K104	EDU Identifier	05	5	This TC is used to set the low threshold of the selected EMCR EDU. In case of EDU alternate working mode, both thresholds can be set. Parameters are used to	Set EMCR EDU5 Threshold 25_25
			K110	EDU Low Thresh. 1	0019	25		
			K111	EDU Low Thresh. 2	0019	25		

									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 0019 0019	6 25 25	This TC is used to set the low threshold of the selected EMCR EDU. In case of EDU alternate working mode, 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.	Set EMCR EDU6 Threshold 25_25
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 EMCR EDU. In case of EDU alternate working mode, 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.	Set EMCR EDU7 Threshold 25_25

EDU Central CCD Full Frame

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

1	K121	Load EMCR EDU WP	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 (110x100 centrata)
			k139	Window X0	00fa	250		
			k140	Window Y0	00fb	251		
			k141	Window X Size	006e	110		
			k142	Window Y Size	0064	100		

EDU Central CCD LW (310)

Step	Command Number	Command Name	Parameter Number	Parameter Name	Parameter Value (hex)	Parameter Value (engineering)	NOTES (from TC reports)	Details (from Sequences dev.)
1	K121	Load EMCR EDU WP	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 (310x300 centrata)
			k139	Window X0	0096	150		
			k140	Window Y0	0097	151		
			k141	Window X Size	0136	310		
			k142	Window Y Size	012c	300		

EDU Central CCD Double Node

Step	Command Number	Command Name	Parameter Number	Parameter Name	Parameter Value (hex)	Parameter Value (engineering)	NOTES (from TC reports)	Details (from Sequences dev.)
1	K121	Load EMCR EDU WP	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 (310x602 centrata)
			k139	Window X0	0000	0		
			k140	Window Y0	0000	0		
			k141	Window X Size	0136	310		
			k142	Window Y Size	025a	602		
2	K121	Load EMCR EDU WP	k104	EDU Identifier	01	1	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 EDU1 Window (310x602 centrata)
			k139	Window X0	0000	0		
			k140	Window Y0	0000	0		
			k141	Window X Size	0136	310		
			k142	Window Y Size	025a	602		

EDU Peripheral CCDs

Step	Command Number	Command Name	Parameter Number	Parameter Name	Parameter Value (hex)	Parameter Value (engineering)	NOTES (from TC reports)	Details (from Sequences dev.)
1	K121	Load EMCR EDU WP	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 (610x602 centrata)
			k139	Window X0	0000	0		
			k140	Window Y0	0000	0		
			k141	Window X Size	0262	610		
			k142	Window Y Size	025a	602		
2	K121	Load EMCR EDU WP	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 (610x602 centrata)
			k139	Window X0	0000	0		
			k140	Window Y0	0000	0		
			k141	Window X Size	0262	610		
			k142	Window Y Size	025a	602		
3	K121	Load EMCR EDU WP	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 (610x602 centrata)
			k139	Window X0	0000	0		
			k140	Window Y0	0000	0		
			k141	Window X Size	0262	610		
			k142	Window Y Size	025a	602		
4	K121	Load EMCR EDU WP	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 (610x602 centrata)
			k139	Window X0	0000	0		
			k140	Window Y0	0000	0		
			k141	Window X Size	0262	610		
			k142	Window Y Size	025a	602		
5	K121	Load EMCR EDU WP	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 (610x602 centrata)
			k139	Window X0	0000	0		
			k140	Window Y0	0000	0		
			k141	Window X Size	0262	610		
			k142	Window Y Size	025a	602		
6	K121	Load EMCR EDU WP	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 (610x602 centrata)
			k139	Window X0	0000	0		
			k140	Window Y0	0000	0		
			k141	Window X Size	0262	610		
			k142	Window Y Size	025a	602		

EDU all CCDs Fast Diagnostic

Step	Command	Command Name	Parameter	Parameter Name	Parameter	Parameter	Value	NOTES	Details

	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		

4.5. EMAE config i1

EMAE Standard node 0

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 setting of Multiplexers position) in the EMAE. This TC 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.	All groups in Run mode from prime node
			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 the EMAE. Parameters are used to include the complete EMCR command foreseen for this function.	Analogue Chain 1 3 4 5 6 7 8 Power On
			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 EMCH. Parameters are used to include the complete EMCR command foreseen for this function.	Power On
			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

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 setting of Multiplexers position) in the EMAE. This TC 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.	All groups in Run mode from redundant node
			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 the EMAE. Parameters are used to include the complete EMCR command foreseen for this function.	Analogue Chain 1 3 4 5 6 7 8 Power On
			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 EMCH. Parameters are used to include the complete EMCR command foreseen for this function.	Power On
			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

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 setting of Multiplexers position) in the EMAE. This TC 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.	All groups in Run mode from prime node
			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 the EMAE. Parameters are used to include the complete EMCR command foreseen for this function.	All Analogue Chains On
			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 EMCH. Parameters are used to include the complete EMCR command foreseen for this function.	Pre-Amplifiers Power On 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)	NOTES (from TC Reports)	Details (from Sequences dev.)
1	k81	Load EMAE Comman	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.	seq.1 low address
2	k81	Load EMAE Comman	K133 K160	EMAE CommandAddr. EMAE CommandDatum	22 0	34 0		seq.1 hight address
3	k81	Load EMAE Comman	K133 K160	EMAE CommandAddr. EMAE CommandDatum	63 0	99 0		seq.2 low address
4	k81	Load EMAE Comman	K133 K160	EMAE CommandAddr. EMAE CommandDatum	62 0	98 0		seq.2 hight address
5	k81	Load EMAE Comman	K133 K160	EMAE CommandAddr. EMAE CommandDatum	a3 0	163 0		seq.3 low address
6	k81	Load EMAE Comman	K133 K160	EMAE CommandAddr. EMAE CommandDatum	a2 0	162 0		seq.3 hight address
7	k81	Load EMAE Comman	K133 K160	EMAE CommandAddr. EMAE CommandDatum	e3 0	227 0		seq.4 low address
8	k81	Load EMAE Comman	K133 K160	EMAE CommandAddr. EMAE CommandDatum	e2 0	226 0		seq.4 high address
9	k81	Load EMAE Comman	K133 K160	EMAE CommandAddr. EMAE CommandDatum	33 0	51 0		seq.5 low address
10	k81	Load EMAE Comman	K133 K160	EMAE CommandAddr. EMAE CommandDatum	32 0	50 0		seq.5 high address
11	k81	Load EMAE Comman	K133 K160	EMAE CommandAddr. EMAE CommandDatum	21 81	33 129		seq.1 low gain node 0 run
12	k81	Load EMAE Comman	K133 K160	EMAE CommandAddr. EMAE CommandDatum	61 80	97 128		seq.2 low gain node 0 run
13	k81	Load EMAE Comman	K133 K160	EMAE CommandAddr. EMAE CommandDatum	a1 80	161 128		seq.3 low gain node 0 run
14	k81	Load EMAE Comman	K133 K160	EMAE CommandAddr. EMAE CommandDatum	e1 80	225 128		seq.4 low gain node 0 run
15	k81	Load EMAE Comman	K133 K160	EMAE CommandAddr. EMAE 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)	NOTES (from TC Reports)	Details (from Sequences dev.)
1	k81	Load EMAE Comman	K133 K160	EMAE CommandAddr. EMAE 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

2	k81	Load Comman	EMAE	K133 K160	EMAE CommandAddr. EMAE CommandDatum	32 0	50 0			seq.5 high address
3	k81	Load Comman	EMAE	K133 K160	EMAE CommandAddr. EMAE CommandDatum	3e 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)	NOTES (from TC Reports)	Details (from Sequences dev.)
1	k81	Load Comman EMAE	K133 K160	EMAE CommandAddr. EMAE CommandDatum	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. EMAE CommandDatum	62 0	98 0		seq.2 hight address
3	k81	Load Comman EMAE	K133 K160	EMAE CommandAddr. EMAE CommandDatum	a3 0	163 0		seq.3 low address
4	k81	Load Comman EMAE	K133 K160	EMAE CommandAddr. EMAE CommandDatum	a2 0	162 0		seq.3 hight address
5	k81	Load Comman EMAE	K133 K160	EMAE CommandAddr. EMAE CommandDatum	e3 0	227 0		seq.4 low address
6	k81	Load Comman EMAE	K133 K160	EMAE CommandAddr. EMAE CommandDatum	e2 0	226 0		seq.4 high address
7	k81	Load Comman EMAE	K133 K160	EMAE CommandAddr. EMAE CommandDatum	61 80	97 128		seq.2 low gain node 0 run
8	k81	Load Comman EMAE	K133 K160	EMAE CommandAddr. EMAE CommandDatum	a1 80	161 128		seq.3 low gain node 0 run
9	k81	Load Comman EMAE	K133 K160	EMAE CommandAddr. EMAE CommandDatum	e1 80	225 128		seq.4 low gain node 0 run
10	k81	Load Comman EMAE	K133 K160	EMAE CommandAddr. EMAE CommandDatum	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)	NOTES (from TC Reports)	Details (from Sequences dev.)
1	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.	seq.1 low address
2	k81	Load Comman EMAE	K133 K160	EMAE CommandAddr. EMAE CommandDatum	22 0	34 0		seq.1 hight address
3	k81	Load Comman EMAE	K133 K160	EMAE CommandAddr. EMAE CommandDatum	21 81	33 129		seq.1 low gain node 0 run
4	k81	Load Comman EMAE	K133 K160	EMAE CommandAddr. EMAE CommandDatum	3e ff	62 255		Start Sequencer

ES du all from EMCR

Step	Command Number	Command Name	Parameter Number	Parameter Name	Parameter Value (hex)	Parameter Value (engineering)	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 EMDH Tables	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 EMDH Tables	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 EMDH Tables	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 EMDH Tables	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 EMDH Tables	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 Value (engineering)	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 EMDH Tables	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

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

ES ld FW

Step	Command Number	Command Name	Parameter Number	Parameter Name	Parameter Value (hex)	Parameter Value (engineering)	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.	filter3.seq
2	K74	Upload EMCRM Seq	k109	Seq.Pro.Ident.	0	0	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 #0
3	k82	Load EMAE Sequen	K109 K106 K132	Seq.Pro.Ident. EMAE Seq.Ident. EMAE Seq. Offset	4 5 0	4 5 0	This TC is used to load in one of the four EMAE Sequencers one of the four Sequence Programs stored in the EMCR memory.	Upload EMAE Sequencer Seq4->Seq5

ES ld ifc8rd_1 to EMAE cen

Step	Command Number	Command Name	Parameter Number	Parameter Name	Parameter Value (hex)	Parameter Value (engineering)	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.	ifc8rd_1_0.seq
2	K74	Upload EMCRM Seq	k109	Seq.Pro.Ident.	0	0	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	SEQUENCE #0

								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 Sequencers one of the four Sequence Programs stored in the EMCR memory.	Upload EMAE Sequencer Seq0->Seq1

ES ld iffci10rdp to EMAE cen

Step	Command Number	Command Name		Parameter Number	Parameter Name	Parameter Value (hex)	Parameter Value (engineering)	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.	iffci10rdp_0.seq
2	K74	Upload Seq	EMCRM	k109	Seq.Pro.Ident.	0	0	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 #0
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 Sequencers one of the four Sequence Programs stored in the EMCR memory.	Upload EMAE Sequencer Seq0->Seq1

ES ld ifc8rd_1 to EMAE per

Step	Command Number	Command Name		Parameter Number	Parameter Name	Parameter Value (hex)	Parameter Value (engineering)	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.	ifc8rd_1_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		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 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 ld iffci10rdp to EMAE per

Step	Command Number	Command Name	Parameter Number	Parameter Name	Parameter Value (hex)	Parameter Value (engineering)	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.	iffci10rdp_1.seq
2	K74	Upload EMCRM Seq	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		iffci10rdp_2.seq
4	K74	Upload EMCRM Seq	k109	Seq.Pro.Ident.	2	2		SEQUENCE #2
5	K53	Load EMDH table	k300		13A30	80432		iffci10rdp_3.seq
6	K74	Upload EMCRM Seq	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 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 ld ifc8rd_2 to EMAE cen

Step	Command Number	Command Name	Parameter Number	Parameter Name	Parameter Value (hex)	Parameter Value (engineering)	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	ifc8rd_2_0.seq

								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 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 #0
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 Sequencers one of the four Sequence Programs stored in the EMCR memory.	Upload EMAE Sequencer Seq0->Seq1

ES ld iffci10rdr to EMAE cen

Step	Command Number	Command Name	Parameter Number	Parameter Name	Parameter Value (hex)	Parameter Value (engineering)	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.	ifc8rd_2_0.seq
2	K74	Upload Seq	EMCRM	k109	Seq.Pro.Ident.	0 0	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 #0
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 Sequencers one of the four Sequence Programs stored in the EMCR memory.	Upload EMAE Sequencer Seq0->Seq1

ES ld ifc8rd_2 to EMAE per

Step	Command Number	Command Name	Parameter Number	Parameter Name	Parameter Value (hex)	Parameter Value (engineering)	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.	ifc8rd_2_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		ifc8rd_2_2.seq
4	K74	Upload Seq	EMCRM	k109	Seq.Pro.Ident.	2 2		SEQUENCE #2

5	K53	Load EMDH table	k300		13A30	80432			ifc8rd_2_3.seq
6	K74	Upload EMCRM Seq	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 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 ld iffci10rdr to EMAE per

Step	Command Number	Command Name	Parameter Number	Parameter Name	Parameter Value (hex)	Parameter Value (engineering)	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 EMCRM Seq	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 EMCRM Seq	k109	Seq.Pro.Ident.	2	2		SEQUENCE #2
5	K53	Load EMDH table	k300		13A30	80432		iffci10rdr_3.seq
6	K74	Upload EMCRM Seq	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 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 ld ifc8rp_1 to EMAE cen

Step	Command Number	Command Name	Parameter Number	Parameter Name	Parameter Value (hex)	Parameter Value (engineering)	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.	ifc8rp_1_0.seq
2	K74	Upload EMCRM Seq	k109	Seq.Pro.Ident.	0	0	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 #0
3	k82	Load EMAE Sequen	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 Sequencers one of the four Sequence Programs stored in the EMCR memory.	Upload EMAE Sequencer Seq0->Seq1

ES ld iffci10rpp to EMAE cen

Step	Command Number	Command Name	Parameter Number	Parameter Name	Parameter Value (hex)	Parameter Value (engineering)	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_0.seq
2	K74	Upload EMCRM Seq	k109	Seq.Pro.Ident.	0	0	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 #0
3	k82	Load EMAE Sequen	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 Sequencers one of the four Sequence Programs stored in the EMCR memory.	Upload EMAE Sequencer Seq0->Seq1

ES ld ifc8rp_1 to EMAE per

Step	Command Number	Command Name	Parameter Number	Parameter Name	Parameter Value (hex)	Parameter Value (engineering)	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.	ifc8rp_1_1.seq
2	K74	Upload EMCRM Seq	k109	Seq.Pro.Ident.	1	1	This TC is used to load in the EMCR memory the complete Sequence Program previously stored in the	SEQUENCE #1

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

ES ld iffci10rpp to EMAE per

Step	Command Number	Command Name	Parameter Number	Parameter Name	Parameter Value (hex)	Parameter Value (engineering)	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 EMCRM Seq	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 EMCRM Seq	k109	Seq.Pro.Ident.	2	2		SEQUENCE #2
5	K53	Load EMDH table	k300		13A30	80432		iffci10rpp_3.seq
6	K74	Upload EMCRM Seq	k109	Seq.Pro.Ident.	3	3		SEQUENCE #3
7	k82	Load Sequen	EMAE	K109	Seq.Pro.Ident.	1	1	This TC is used to load in one of the four EMAE Sequencers one of the four Sequence Programs stored in the EMCR memory.	Upload EMAE Sequencer Seq1->Seq2
				K106	EMAE Seq.Ident.	2	2		
				K132	EMAE Seq. Offset	0	0		
8	k82	Load Sequen	EMAE	K109	Seq.Pro.Ident.	2	2		Upload EMAE Sequencer Seq2->Seq3
				K106	EMAE Seq.Ident.	3	3		
				K132	EMAE Seq. Offset	0	0		
9	k82	Load Sequen	EMAE	K109	Seq.Pro.Ident.	3	3		Upload EMAE Sequencer Seq3->Seq4
				K106	EMAE Seq.Ident.	4	4		

			K132	EMAE Seq. Offset	0	0			

ES ld 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 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.	ifc8rp_2_0.seq
2	K74	Upload EMCRM Seq	k109	Seq.Pro.Ident.		0	0	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 #0
3	k82	Load EMAE Sequen	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 Sequencers one of the four Sequence Programs stored in the EMCR memory.	Upload EMAE Sequencer Seq0->Seq1

ES ld 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 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.	iffci10rpr_0.seq
2	K74	Upload EMCRM Seq	k109	Seq.Pro.Ident.		0	0	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 #0
3	k82	Load EMAE Sequen	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 Sequencers one of the four Sequence Programs stored in the EMCR memory.	Upload EMAE Sequencer Seq0->Seq1

ES ld 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.)

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.	ifc8rp_2_1.seq	
2	K74	Upload EMCRM Seq	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		ifc8rp_2_2.seq	
4	K74	Upload EMCRM Seq	k109	Seq.Pro.Ident.	2	2		SEQUENCE #2	
5	K53	Load EMDH table	k300		13A30	80432		ifc8rp_2_3.seq	
6	K74	Upload EMCRM Seq	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 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 ld iffci10rpr to EMAE per

Step	Command Number	Command Name	Parameter Number	Parameter Name	Parameter Value (hex)	Parameter Value (engineering)	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.	iffci10rpr_1.seq
2	K74	Upload EMCRM Seq	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		iffci10rpr_2.seq
4	K74	Upload EMCRM Seq	k109	Seq.Pro.Ident.	2	2		SEQUENCE #2
5	K53	Load EMDH table	k300		13A30	80432		iffci10rpr_3.seq
6	K74	Upload EMCRM Seq	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

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

ES ld ifc8rd_b to EMAE

Step	Command Number	Command Name	Parameter Number	Parameter Name	Parameter Value (hex)	Parameter Value (engineering)	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.	ifc8rd_b_0.seq
2	K74	Upload Seq EMCRM	k109	Seq.Pro.Ident.	0	0	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 #0
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
		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 ld iffci10rdb to EMAE

Step	Command Number	Command Name	Parameter Number	Parameter Name	Parameter Value (hex)	Parameter Value (engineering)	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.	iffci10rdb_0.seq
2	K74	Upload Seq EMCRM	k109	Seq.Pro.Ident.	0	0	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 #0
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
		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 ld ifc8rp_b to EMAE

Step	Command Number	Command Name	Parameter Number	Parameter Name	Parameter Value (hex)	Parameter Value (engineering)	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.	ifc8rp_b_0.seq
2	K74	Upload EMCRM Seq	k109	Seq.Pro.Ident.	0	0	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 #0
3	k82	Load EMAE Sequen	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 Sequencers one of the four Sequence Programs stored in the EMCR memory.	Upload EMAE Sequencer Seq0->Seq1

ES ld iffci10rpb to EMAE

Step	Command Number	Command Name	Parameter Number	Parameter Name	Parameter Value (hex)	Parameter Value (engineering)	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.	iffci10rpb_0.seq
2	K74	Upload EMCRM Seq	k109	Seq.Pro.Ident.	0	0	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 #0
3	k82	Load EMAE Sequen	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 Sequencers one of the four Sequence Programs stored in the EMCR memory.	Upload EMAE Sequencer Seq0->Seq1

ES ld ifw5_n1 to EMAE

Step	Command Number	Command Name	Parameter Number	Parameter Name	Parameter Value (hex)	Parameter Value (engineering)	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	ifw5_n1_0.seq

									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 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 #0
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	Seq.Pro.Ident.	0		0	This TC is used to load in one of the four EMAE Sequencers one of the four Sequence Programs stored in the EMCR memory.	Upload EMAE Sequencer Seq0->Seq1
				K106	EMAE Seq.Ident.	1		1		
				K132	EMAE Seq. Offset	0		0		
10	k82	Load Sequen	EMAE	K109	Seq.Pro.Ident.	1		1		Upload EMAE Sequencer Seq1->Seq2
				K106	EMAE Seq.Ident.	2		2		
				K132	EMAE Seq. Offset	0		0		
11	k82	Load Sequen	EMAE	K109	Seq.Pro.Ident.	2		2		Upload EMAE Sequencer Seq2->Seq3
				K106	EMAE Seq.Ident.	3		3		
				K132	EMAE Seq. Offset	0		0		
12	k82	Load Sequen	EMAE	K109	Seq.Pro.Ident.	3		3		Upload EMAE Sequencer Seq3->Seq4
				K106	EMAE Seq.Ident.	4		4		
				K132	EMAE Seq. Offset	0		0		

ES ld ifw8rd_1 to EMAE

Step	Command Number	Command Name	Parameter Number	Parameter Name	Parameter Value (hex)	Parameter Value (engineering)	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.	ifw8rd_1_0.seq
2	K74	Upload Seq	EMCRM k109	Seq.Pro.Ident.		0 0	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 #0
3	k82	Load Sequen	EMAE K109	Seq.Pro.Ident.	0	0	This TC is used to load in one of the four EMAE Sequencers one of the four Sequence Programs stored in the EMCR memory.	Upload EMAE Sequencer Seq0->Seq1
			K106	EMAE Seq.Ident.	1	1		
			K132	EMAE Seq. Offset	0	0		

ES ld 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 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.	iswc10rdp_0.seq
2	K74	Upload EMCRM Seq	k109	Seq.Pro.Ident.		0 0	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 #0
3	k82	Load EMAE Sequen	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 Sequencers one of the four Sequence Programs stored in the EMCR memory.	Upload EMAE Sequencer Seq0->Seq1

ES ld 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 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.	ifw8rd_2_0.seq
2	K74	Upload EMCRM Seq	k109	Seq.Pro.Ident.		0 0	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 #0
3	k82	Load EMAE Sequen	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 Sequencers one of the four Sequence Programs stored in the EMCR memory.	Upload EMAE Sequencer Seq0->Seq1

ES ld 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 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.	iswci10rdr_0.seq

2	K74	Upload Seq	EMCRM	k109	Seq.Pro.Ident.		0	0	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 #0
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 Sequencers one of the four Sequence Programs stored in the EMCR memory.	Upload EMAE Sequencer Seq0->Seq1

ES ld ifw8rd_b to EMAE

Step	Command Number	Command Name	Parameter Number	Parameter Name	Parameter Value (hex)	Parameter Value (engineering)	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.	ifw8rd_b_0.seq
2	K74	Upload Seq	EMCRM	k109	Seq.Pro.Ident.	0	0	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 #0
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 Sequencers one of the four Sequence Programs stored in the EMCR memory.	Upload EMAE Sequencer Seq0->Seq1

ES ld iswci10rdb to EMAE

Step	Command Number	Command Name	Parameter Number	Parameter Name	Parameter Value (hex)	Parameter Value (engineering)	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.	iswci10rdb_0.seq
2	K74	Upload Seq	EMCRM	k109	Seq.Pro.Ident.	0	0	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 #0
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 Sequencers one of the four Sequence Programs stored in the EMCR memory.	Upload EMAE Sequencer Seq0->Seq1

ES ld 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 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.	ifw8rd_3_1_0.seq
2	K74	Upload EMCRM Seq	k109	Seq.Pro.Ident.	0	0	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 #0
3	k82	Load EMAE Sequen	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 Sequencers one of the four Sequence Programs stored in the EMCR memory.	Upload EMAE Sequencer Seq0->Seq1

ES ld 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 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.	ilwci10rdp_0.seq
2	K74	Upload EMCRM Seq	k109	Seq.Pro.Ident.	0	0	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 #0
3	k82	Load EMAE Sequen	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 Sequencers one of the four Sequence Programs stored in the EMCR memory.	Upload EMAE Sequencer Seq0->Seq1

ES ld 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

										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 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 #0
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 Sequencers one of the four Sequence Programs stored in the EMCR memory.	Upload EMAE Sequencer Seq0->Seq1

ES ld ilwci10rdr to EMAE

Step	Command Number	Command Name	Parameter Number	Parameter Name	Parameter Value (hex)	Parameter Value (engineering)	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.	ilwci10rdr_0.seq
2	K74	Upload Seq	EMCRM	k109	Seq.Pro.Ident.	0	0	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 #0
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 Sequencers one of the four Sequence Programs stored in the EMCR memory.	Upload EMAE Sequencer Seq0->Seq1

ES ld ifw8rd_3_b to EMAE

Step	Command Number	Command Name	Parameter Number	Parameter Name	Parameter Value (hex)	Parameter Value (engineering)	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.	ifw8rd_3_b_0.seq
2	K74	Upload Seq	EMCRM	k109	Seq.Pro.Ident.	0	0	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 #0
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

	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 ld ilwci10rdb to EMAE

Step	Command Number	Command Name	Parameter Number	Parameter Name	Parameter Value (hex)	Parameter Value (engineering)	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.	ilwci10rdb_0.seq
2	K74	Upload EMCRM Seq	k109	Seq.Pro.Ident.	0	0	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 #0
3	k82	Load EMAE Sequen	K109	Seq.Pro.Ident.	0	0	This TC is used to load in one of the four EMAE Sequencers one of the four Sequence Programs stored in the EMCR memory.	Upload EMAE Sequencer Seq0->Seq1
			K106	EMAE Seq.Ident.	1	1		
			K132	EMAE Seq. Offset	0	0		

ES ld rfc3rd_1_200 to EMAE

Step	Command Number	Command Name	Parameter Number	Parameter Name	Parameter Value (hex)	Parameter Value (engineering)	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.	rfc3rd_1_200.seq
2	K74	Upload EMCRM Seq	k109	Seq.Pro.Ident.	0	0	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 #0
3	k82	Load EMAE Sequen	K109	Seq.Pro.Ident.	0	0	This TC is used to load in one of the four EMAE Sequencers one of the four Sequence Programs stored in the EMCR memory.	Upload EMAE Sequencer Seq0->Seq1
			K106	EMAE Seq.Ident.	1	1		
			K132	EMAE Seq. Offset	0	0		

ES ld rfscr3rdp200 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 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.	rfscr3rdp200.seq
2	K74	Upload EMCRM Seq	k109	Seq.Pro.Ident.	0	0		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 #0
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 Sequencers one of the four Sequence Programs stored in the EMCR memory.	Upload EMAE Sequencer Seq0->Seq1

ES ld 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 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.	rfc3rd_2_200.seq
2	K74	Upload EMCRM Seq	k109	Seq.Pro.Ident.	0	0		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 #0
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 Sequencers one of the four Sequence Programs stored in the EMCR memory.	Upload EMAE Sequencer Seq0->Seq1

ES ld 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 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.	rfscr3rdr200.seq
2	K74	Upload EMCRM Seq	k109	Seq.Pro.Ident.	0	0		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	SEQUENCE #0

								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 Sequencers one of the four Sequence Programs stored in the EMCR memory.	Upload EMAE Sequencer Seq0->Seq1

ES ld rfc3rd_b_200 to EMAE

Step	Command Number	Command Name	Parameter Number	Parameter Name	Parameter Value (hex)	Parameter Value (engineering)	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.	rfc3rd_b_200.seq
2	K74	Upload Seq	EMCRM	k109	Seq.Pro.Ident.	0	0 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 #0
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 Sequencers one of the four Sequence Programs stored in the EMCR memory.	Upload EMAE Sequencer Seq0->Seq1

ES ld rfscr3rdb200 to EMAE

Step	Command Number	Command Name	Parameter Number	Parameter Name	Parameter Value (hex)	Parameter Value (engineering)	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.	rfscr3rdb200.seq
2	K74	Upload Seq	EMCRM	k109	Seq.Pro.Ident.	0	0 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 #0
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 Sequencers one of the four Sequence Programs stored in the EMCR memory.	Upload EMAE Sequencer Seq0->Seq1

ES ld 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 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.	rfscr3rpp200.seq
2	K74	Upload EMCRM Seq	k109	Seq.Pro.Ident.	0	0	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 #0
3	k82	Load EMAE Sequen	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 Sequencers one of the four Sequence Programs stored in the EMCR memory.	Upload EMAE Sequencer Seq0->Seq1

ES ld 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 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.	rfscr3rpr200.seq
2	K74	Upload EMCRM Seq	k109	Seq.Pro.Ident.	0	0	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 #0
3	k82	Load EMAE Sequen	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 Sequencers one of the four Sequence Programs stored in the EMCR memory.	Upload EMAE Sequencer Seq0->Seq1

ES ld 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 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.	rfscr3rpb200.seq

2	K74	Upload Seq	EMCRM	k109	Seq.Pro.Ident.		0	0	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 #0
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 Sequencers one of the four Sequence Programs stored in the EMCR memory.	Upload EMAE Sequencer Seq0->Seq1

ES ld tnc1_n1 to EMAE

Step	Command Number	Command Name	Parameter Number	Parameter Name	Parameter Value (hex)	Parameter Value (engineering)	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.	tnc1_n1_0.seq
2	K74	Upload Seq	EMCRM	k109	Seq.Pro.Ident.	0	0	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 #0
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 Sequencers one of the four Sequence Programs stored in the EMCR memory.	Upload EMAE Sequencer Seq0->Seq1

ES ld tnc1_n2 to EMAE

Step	Command Number	Command Name	Parameter Number	Parameter Name	Parameter Value (hex)	Parameter Value (engineering)	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.	tnc1_n2_0.seq
2	K74	Upload Seq	EMCRM	k109	Seq.Pro.Ident.	0	0	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 #0
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 Sequencers one of the four Sequence Programs stored in the EMCR memory.	Upload EMAE Sequencer Seq0->Seq1

ES ld tdc2_n1 to EMAE

Step	Command Number	Command Name	Parameter Number	Parameter Name	Parameter Value (hex)	Parameter Value (engineering)	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.	tdc2_n1_0.seq
2	K74	Upload EMCRM Seq	k109	Seq.Pro.Ident.	0	0	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 #0
3	k82	Load EMAE Sequen	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 Sequencers one of the four Sequence Programs stored in the EMCR memory.	Upload EMAE Sequencer Seq0->Seq1

ES ld tdiovctge05p to EMAE

Step	Command Number	Command Name	Parameter Number	Parameter Name	Parameter Value (hex)	Parameter Value (engineering)	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.	tdiovctge05p.seq
2	K74	Upload EMCRM Seq	k109	Seq.Pro.Ident.	0	0	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 #0
3	k82	Load EMAE Sequen	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 Sequencers one of the four Sequence Programs stored in the EMCR memory.	Upload EMAE Sequencer Seq0->Seq1

ES ld tdc2_n2 to EMAE

Step	Command Number	Command Name	Parameter Number	Parameter Name	Parameter Value (hex)	Parameter Value (engineering)	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

										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 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 #0
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 Sequencers one of the four Sequence Programs stored in the EMCR memory.	Upload EMAE Sequencer Seq0->Seq1

ES ld tdiovctge05r to EMAE

Step	Command Number	Command Name	Parameter Number	Parameter Name	Parameter Value (hex)	Parameter Value (engineering)	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.	tdiovctge05r.seq
2	K74	Upload Seq	EMCRM	k109	Seq.Pro.Ident.	0	0	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 #0
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 Sequencers one of the four Sequence Programs stored in the EMCR memory.	Upload EMAE Sequencer Seq0->Seq1

ES ld timage3 to EMAE

Step	Command Number	Command Name	Parameter Number	Parameter Name	Parameter Value (hex)	Parameter Value (engineering)	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.	timage3.seq
2	K74	Upload Seq	EMCRM	k109	Seq.Pro.Ident.	0	0	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 #0
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

	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 ld timnctng03p to EMAE

Step	Command Number	Command Name	Parameter Number	Parameter Name	Parameter Value (hex)	Parameter Value (engineering)	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.	timnctng03p.seq
2	K74	Upload EMCRM Seq	k109	Seq.Pro.Ident.	0	0	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 #0
3	k82	Load EMAE Sequen	K109	Seq.Pro.Ident.	0	0	This TC is used to load in one of the four EMAE Sequencers one of the four Sequence Programs stored in the EMCR memory.	Upload EMAE Sequencer Seq0->Seq1
			K106	EMAE Seq.Ident.	1	1		
			K132	EMAE Seq. Offset	0	0		

ES ld timnctng03r to EMAE

Step	Command Number	Command Name	Parameter Number	Parameter Name	Parameter Value (hex)	Parameter Value (engineering)	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.	timnctng03r.seq
2	K74	Upload EMCRM Seq	k109	Seq.Pro.Ident.	0	0	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 #0
3	k82	Load EMAE Sequen	K109	Seq.Pro.Ident.	0	0	This TC is used to load in one of the four EMAE Sequencers one of the four Sequence Programs stored in the EMCR memory.	Upload EMAE Sequencer Seq0->Seq1
			K106	EMAE Seq.Ident.	1	1		
			K132	EMAE Seq. Offset	0	0		

ES ld+setup l33ci10rdp to EMAE

Step	Command Number	Command Name	Parameter Number	Parameter Name	Parameter Value (hex)	Parameter Value (engineering)	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.	l33ci10rdp_0.seq

2	K74	Upload Seq	EMCRM	k109	Seq.Pro.Ident.		0	0	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 #0
3	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.	I33ci10rdp_1.seq
4	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
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	Seq.Pro.Ident.	0		0	This TC is used to load in one of the four EMAE Sequencers one of the four Sequence Programs stored in the EMCR memory.	Upload EMAE Sequencer Seq0->Seq1
				K106	EMAE Seq.Ident.	1		1		
				K132	EMAE Seq. Offset	0		0		
10	k82	Load Sequen	EMAE	K109	Seq.Pro.Ident.	1		1	This TC is used to load in one of the four EMAE Sequencers one of the four Sequence Programs stored in the EMCR memory.	Upload EMAE Sequencer Seq1->Seq2
				K106	EMAE Seq.Ident.	2		2		
				K132	EMAE Seq. Offset	0		0		
11	k82	Load Sequen	EMAE	K109	Seq.Pro.Ident.	2		2		Upload EMAE Sequencer Seq2->Seq3
				K106	EMAE Seq.Ident.	3		3		
				K132	EMAE Seq. Offset	0		0		
12	k82	Load Sequen	EMAE	K109	Seq.Pro.Ident.	3		3		Upload EMAE Sequencer Seq3->Seq4
				K106	EMAE Seq.Ident.	4		4		
				K132	EMAE Seq. Offset	0		0		
13	k81	Load Comman	EMAE	K133	EMAE CommandAddr.	23		35	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
				K160	EMAE CommandDatum	0		0		
14	k81	Load Comman	EMAE	K133	EMAE CommandAddr.	22		34		seq.1 hight address
				K160	EMAE CommandDatum	0		0		
15	k81	Load Comman	EMAE	K133	EMAE CommandAddr.	63		99		seq.2 low address
				K160	EMAE CommandDatum	0		0		
16	k81	Load Comman	EMAE	K133	EMAE CommandAddr.	62		98		seq.2 hight address
				K160	EMAE CommandDatum	0		0		
17	k81	Load Comman	EMAE	K133	EMAE CommandAddr.	a3		163		seq.3 low address
				K160	EMAE CommandDatum	0		0		
18	k81	Load Comman	EMAE	K133	EMAE CommandAddr.	a2		162		seq.3 hight address
				K160	EMAE CommandDatum	0		0		
19	k81	Load Comman	EMAE	K133	EMAE CommandAddr.	e3		227		seq.4 low address
				K160	EMAE CommandDatum	0		0		
20	k81	Load Comman	EMAE	K133	EMAE CommandAddr.	e2		226		seq.4 high address
				K160	EMAE CommandDatum	0		0		

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)	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, readout delay time, etc.) needed for a correct observation cycle. Parameters are used to include the complete EMCR command foreseen for this function.	Set EMCR Observation timing at 2.8 sec for all CCDs
			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)	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, readout delay time, etc.) needed for a correct observation cycle. Parameters are used to include the complete EMCR command foreseen for this function.	Set EMCR Observation timing at 2.8 sec for all CCDs
			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)	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, readout delay time, etc.) needed for a correct observation cycle. Parameters are used to include the	Set EMCR Observation timing at 1.4 sec for central CCD and 2.8 sec for
			K149	EMCRGroup2IntTim	001e	3 sec		
			K150	EMCRGroup3IntTim	001e	3 sec		

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)	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, readout delay time, etc.) needed for a correct observation cycle. Parameters are used to include the complete EMCR command foreseen for this function.	Set EMCR Observation timing at 1.4 sec for central CCD and 2.8 sec for 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)	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, readout delay time, etc.) needed for a correct observation cycle. Parameters are used to include the complete EMCR command foreseen for this function.	Set EMCR Observation timing at 0.4 sec for central CCD and 2.8 sec for 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)	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, readout delay time, etc.) needed for a correct observation cycle. Parameters are used to include the complete EMCR command foreseen for this function.	Set EMCR Observation timing at 0.4 sec for central CCD and 2.8 sec for peripheral CCDs
			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)	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, readout delay time, etc.) needed for a correct observation cycle. Parameters are used to include the complete EMCR command foreseen for this function.	Set EMCR Observation timing at 0.9 sec for central CCD and 2.8 sec for peripheral CCDs
			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)	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, readout delay time, etc.) needed for a correct observation cycle. Parameters are used to include the complete EMCR command foreseen for this function.	Set EMCR Observation timing at 0.9 sec for central CCD and 2.8 sec for peripheral CCDs
			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	Command Number	Command Name	Parameter Number	Parameter Name	Parameter Value (hex)	Parameter Value (engineering)	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, readout delay time, etc.) needed for a correct observation cycle. Parameters are used to include the complete EMCR command foreseen for this function.	Set EMCR Observation timing in Free Run for central CCD and 2,8 sec for peripheral CCDs
			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	Command Number	Command Name	Parameter Number	Parameter Name	Parameter Value (hex)	Parameter Value (engineering)	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, readout delay time, etc.) needed for a correct observation cycle. Parameters are used to include the complete EMCR command foreseen for this function.	Set EMCR Observation timing in Free Run for central CCD and 2,8 sec for peripheral CCDs
			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 Value (engineering)	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.					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 Value (engineering)	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 Value (engineering)	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	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 Value (engineering)	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.	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 Value (engineering)	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	1	Out Position		

			E135	FW Exp. Abs. Pos.	7	Not Valid CS	
			E147	Stop Redundant	1	Out Position	
			E137	New Address	514	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 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.	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	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	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.	
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.	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.	
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	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.	
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.	0	Open		
			E147	Stop Redundant	0	In Position		

			E137	New Address	1334	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 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		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	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		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	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

	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.	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	1	Out of Position	
			E135	FW Exp. Abs. Pos.	7	Not Valid CS	
			E147	Stop Redundant	1	Out of Position	
			E137	New Address	1580	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.

MOS2 Sync Nor 4Step

Step	Command Number	Command Name	Parameter Number	Parameter Name	Parameter Value (hex)	Parameter Value (engineering)	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	4	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.					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 Value (engineering)	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	0	In Position	
			K135	FW Exp. Abs. Pos.	4	Filter A	
			K147	Stop Redundant	0	In Position	
			K137	New Address	266	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 A Calibration position

Step	Command Number	Command Name	Parameter Number	Parameter Name	Parameter Value (hex)	Parameter Value (engineering)	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 Position		
			K135	FW Exp. Abs. Pos.	7	Not Valid CS		
			K147	Stop Redundant	1	Out Position		
			K137	New Address	246	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 B position

Step	Command Number	Command Name	Parameter Number	Parameter Name	Parameter Value (hex)	Parameter Value (engineering)	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	0	In Position		
			K135	FW Exp. Abs. Pos.	3	Filter B		
			K147	Stop Redundant	0	In Position		
			K137	New Address	533	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 B Calibration position

Step	Command Number	Command Name	Parameter Number	Parameter Name	Parameter Value (hex)	Parameter Value (engineering)	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 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 Value (engineering)	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	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 Value (engineering)	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 Position	
			K135	FW Exp. Abs. Pos.	7	Not Valid CS	
			K147	Stop Redundant	1	Out Position	
			K137	New Address	779	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 D position

Step	Command Number	Command Name	Parameter Number	Parameter Name	Parameter Value (hex)	Parameter Value (engineering)	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	0	In Position		
			K135	FW Exp. Abs. Pos.	1	Filter D		
			K147	Stop Redundant	0	In Position		
			K137	New Address	1066	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 D Calibration position

Step	Command Number	Command Name	Parameter Number	Parameter Name	Parameter Value (hex)	Parameter Value (engineering)	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 Position		
			K135	FW Exp. Abs. Pos.	7	Not Valid CS		
			K147	Stop Redundant	1	Out Position		
			K137	New Address	1046	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 Open position

Step	Command Number	Command Name	Parameter Number	Parameter Name	Parameter Value (hex)	Parameter Value (engineering)	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	0	In Position		
			K135	FW Exp. Abs. Pos.	0	Open		
			K147	Stop Redundant	0	In Position		
			K137	New Address	1332	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 Open Calibration position

Step	Command NumbKr	Command Name	ParamKtKr NumbKr	Parameter Name	Parameter Value (hex)	Parameter Value (engineering)	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 Position		
			K135	FW Exp. Abs. Pos.	7	Not Valid CS		
			K147	Stop Redundant	1	Out Position		
			K137	New Address	1312	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 position

Step	Command Number	Command Name	Parameter Number	Parameter Name	Parameter Value (hex)	Parameter Value (engineering)	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	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)	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 Value (engineering)	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 status and the processing. End-effect is verified with H/K parameters from E1028 to E1035.	Set HBR 1,3,4,5,6,7,8 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	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 Value (engineering)	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 status and the processing. End-effect is verified with H/K parameters from E1028 to E1035.	Set HBR 1,3,4,5,6,7,8 in EDU threshold 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	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 Value (engineering)	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 status and the processing. End-effect is verified with H/K parameters from E1028 to E1035.	Set all HBRs 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	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 Value (engineering)	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 status and the processing. End-effect is verified with H/K parameters from E1028 to E1035.	Set all HBRs in EDU threshold 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	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

Step	Command Number	Command Name	Parameter Number	Parameter Name	Parameter Value (hex)	Parameter Value (engineering)	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 status and the processing. End-effect is verified with H/K parameters from E1028 to E1035.	Set HBR 1 inTiming mode, 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 Value (engineering)	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 status and the processing. End-effect is verified with H/K parameters from E1028 to E1035.	Set HBR 1 in Transparent 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	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

	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 status and the processing. End-effect is verified with mode H/K parameters from E1028 to E1035.	Set HBR 2 in Transparent
			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 Value (engineering)	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 status and the processing. End-effect is verified with mode H/K parameters from E1028 to E1035.	Set HBR 3 in Transparent
			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 Value (engineering)	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 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	Command Number	Command Name	Parameter Number	Parameter Name	Parameter Value (hex)	Parameter Value (engineering)	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	Command Number	Command Name	Parameter Number	Parameter Name	Parameter Value (hex)	Parameter Value (engineering)	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	
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	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 Value (engineering)	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	
			K29	HBR7Selection	1	Selected	status and the processing. End-effect is verified with mode	
			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	000A	Transparent		
			K46	HBR 8 Processing	0000	Disabled		

HBR 8 transparent

Step	Command Number	Command Name	Parameter Number	Parameter Name	Parameter Value (hex)	Parameter Value (engineering)	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	
			K29	HBR7Selection	1	Selected	status and the processing. End-effect is verified with mode	

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)	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 EMDH the buffer allocation for each HBR channel to be used in the scientific processing of the incoming events.	Set all HBRs at standard size
			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 the EMDH the low/high threshold values for each HBR 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.	Set all HBRs at maximum thresholds
			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
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. Mantenance 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	

								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.	

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 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.	code file name :EMCR_v14
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 Value (engineering)	NOTES (from TC Reports)	Details (from Sequences dev.)
1	k81	Load EMAE Comman	K133	EMAE 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	EMAE CommandDatum	f0	240		
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 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	0000	0		
			K140	Window Yo	0000	0		
			K141	Window X size	0136	310		
			K142	Window Y size	025a	602		
			K241	CCD Identifier	0001	1		
			K242	Readout node	0000	0		
					0000	0		
					0000	0		
			K243	CCD Mode	0001	1		
			K244	SmoothUppThreshold	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	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 Comman	K133	EMAE CommandAddr.	3e	62		Start Sequencer
			K160	EMAE CommandDatum	ff	255		

Enter OV CCD1 LW

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

							the complete EMCR command foreseen for this function.	
2	k5	Enter O Mode	K1	Rejected Frames	000a	10	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	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	SmoothUppThreshold	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 EMAE Comman	K133	EMAE CommandAddr.	3e	62		Start Sequencer
			K160	EMAE CommandDatum	ff	255		

Enter OV CCD1 SW

Step	Command Number	Command Name	Parameter Number	Parameter Name	Parameter Value (hex)	Parameter Value (engineering)	NOTES (from TC Reports)	Details (from Sequences dev.)
1	k81	Load EMAE Comman	K133	EMAE 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	EMAE 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		
			K243	CCD Mode	0001	1		

				K244	SmoothUppThreshold	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 Comman	EMAE	K133	EMAE CommandAddr.	3e	62		Start Sequencer
				K160	EMAE CommandDatum	ff	255		

Enter OV CCD1 FS

Step	Command Number	Command Name	Parameter Number	Parameter Name	Parameter Value (hex)	Parameter Value (engineering)	NOTES (from TC Reports)	Details (from Sequences dev.)
1	k81	Load Comman EMAE	K133	EMAE 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	EMAE CommandDatum	f0	240		
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 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	0000	0		
			K140	Window Yo	0000	0		
			K141	Window X size	0262	610		
			K142	Window Y size	025a	602		
			K241	CCD Identifier	0001	1		
			K242	Readout node	0000	0		
					0000	0		
					0000	0		
			K243	CCD Mode	0000	0		
			K244	SmoothUppThreshold	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	0000	0		
			K251	Field of View P2	0000	0		
			K252	Field of View P3	012c	300		
			K253	Field of View P4	0000	0		

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

Enter OV CCD2 FS

Step	Command Number	Command Name		Parameter Number	Parameter Name	Parameter Value (hex)	Parameter Value (engineering)	NOTES (from TC Reports)	Details (from Sequences dev.)
1	k81	Load Comman	EMAE	K133	EMAE 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	EMAE CommandDatum	f0	240		
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 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	0000	0		
				K140	Window Yo	0000	0		
				K141	Window X size	0262	610		
				K142	Window Y size	025a	602		
				K241	CCD Identifier	0002	2		
				K242	Readout node	0000	0		
						0000	0		
						0000	0		
				K243	CCD Mode	0000	0		
				K244	SmoothUppThreshold	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	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	600		
				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 CCD3 FS

Step	Command Number	Command Name	Parameter Number	Parameter Name	Parameter Value (hex)	Parameter Value (engineering)	NOTES (from TC Reports)	Details (from Sequences dev.)
1	k81	Load EMAE Comman	K133	EMAE 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	EMAE CommandDatum	f0	240		
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 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	0000	0		
			K140	Window Yo	0000	0		
			K141	Window X size	0262	610		
			K142	Window Y size	025a	602		
			K241	CCD Identifier	0003	3		
			K242	Readout node	0000	0		
					0000	0		
					0000	0		
			K243	CCD Mode	0000	0		
			K244	SmoothUppThreshold	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	0000	0		
			K251	Field of View P2	0064	100		
			K252	Field of View P3	012b	299		
			K253	Field of View P4	0033	51		
			K254	Field of View P5	0256	598		
			K255	Field of View P6	0064	100		
			K256	Field of View P7	024e	590		
			K257	Field of View P8	0258	600		
3	k81	Load EMAE Comman	K133	EMAE CommandAddr.	3e	62		Start Sequencer
			K160	EMAE CommandDatum	ff	255		

Enter OV CCD4 FS

Step	Command Number	Command Name	Parameter Number	Parameter Name	Parameter Value (hex)	Parameter Value (engineering)	NOTES (from TC Reports)	Details (from Sequences dev.)
1	k81	Load EMAE Comman	K133	EMAE 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	EMAE CommandDatum	f0	240		
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,	

				K139	Window Xo	0000	0	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.	
				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	SmoothUppThreshold	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 Comman	EMAE	K133	EMAE CommandAddr.	3e	62		Start Sequencer
				K160	EMAE CommandDatum	ff	255		

Enter OV CCD5 FS

Step	Command Number	Command Name		Parameter Number	Parameter Name	Parameter Value (hex)	Parameter Value (engineering)	NOTES (from TC Reports)	Details (from Sequences dev.)
1	k81	Load Comman	EMAE	K133	EMAE 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	EMAE CommandDatum	f0	240		
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 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	0000	0		
				K140	Window Yo	0000	0		
				K141	Window X size	0262	610		
				K142	Window Y size	025a	602		
				K241	CCD Identifier	0005	5		
				K242	Readout node	0000	0		
						0000	0		
						0000	0		
				K243	CCD Mode	0000	0		
				K244	SmoothUppThreshold	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	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)	NOTES (from TC Reports)	Details (from Sequences dev.)
1	k81	Load Comman	EMAE	K133	EMAE 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	EMAE CommandDatum	f0	240		
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 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	0000	0		
				K140	Window Yo	0000	0		
				K141	Window X size	0262	610		
				K142	Window Y size	025a	602		
				K241	CCD Identifier	0006	6		
				K242	Readout node	0000	0		
						0000	0		
						0000	0		
				K243	CCD Mode	0000	0		
				K244	SmoothUppThreshold	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	0000	0		
				K251	Field of View P2	0064	100		
				K252	Field of View P3	012b	299		
				K253	Field of View P4	0033	51		
				K254	Field of View P5	0256	598		
				K255	Field of View P6	0064	100		
				K256	Field of View P7	024e	590		

				K257	Field of View P8	0258	600		
3	k81	Load Comman	EMAE	K133 K160	EMAE CommandAddr. EMAE CommandDatum	3e ff	62 255		Start Sequencer

Enter OV CCD7 FS

Step	Command Number	Command Name		Parameter Number	Parameter Name	Parameter Value (hex)	Parameter Value (engineering)	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	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 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 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	EMAE CommandAddr. EMAE CommandDatum	3e ff	62 255		Start Sequencer

Enter OV Timing FS

Step	Command Number	Command Name		Parameter Number	Parameter Name	Parameter Value (hex)	Parameter Value (engineering)	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	k5	Enter O Mode	K1	Rejected Frames	0bc2	3010	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	00ff	256		
			K140	Window Yo	0000	0		
			K141	Window X size	0064	100		
			K142	Window Y size	0001	1		
			K241	CCD Identifier	0004	4		
			K242	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 EMAE Comman	K133	EMAE CommandAddr.	3e	62		Start Sequencer
			K160	EMAE CommandDatum	ff	255		

Enter Prime

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

		Comman	K160	EMAE CommandDatum	f0	240	EMAE, through EMCR. Parameters are used to include the complete EMCR command foreseen for this function.
2	k4	Enter FAST Mode					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 Value (engineering)	NOTES (from TC Reports)	Details (from Sequences dev.)
1	k81	Load EMAE Comman	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	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 Value (engineering)	NOTES (from TC Reports)	Details (from Sequences dev.)
1	k81	Load EMAE Comman	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	k6	Enter CCD Diagn. Mode	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 EMAE Comman	K133 K160	EMAE CommandAddr. EMAE CommandDatum	3e ff	62 255		Start Sequencer

Enter Fast Diagnostic FF

Step	Command Number	Command Name	Parameter Number	Parameter Name	Parameter Value (hex)	Parameter Value (engineering)	NOTES (from TC Reports)	Details (from Sequences dev.)
1	k81	Load EMAE Comman	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	k6	Enter CCD Diagn. Mode	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	

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

Enter Diagnostic LW

Step	Command Number	Command Name		Parameter Number	Parameter Name	Parameter Value (hex)	Parameter Value (engineering)	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	k6	Enter CCD Mode	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. EMAE CommandDatum	3e ff	62 255		Start Sequencer

Enter Diagnostic SW

Step	Command Number	Command Name		Parameter Number	Parameter Name	Parameter Value (hex)	Parameter Value (engineering)	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	k6	Enter CCD Mode	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. EMAE CommandDatum	3e ff	62 255		Start Sequencer

Enter Diagnostic 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	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	EMAE, 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	EMAE K133 K160	EMAE CommandAddr. EMAE CommandDatum	3e ff	62 255		Start Sequencer

Enter Diagnostic DN

Step	Command Number	Command Name	Parameter Number	Parameter Name	Parameter Value (hex)	Parameter Value (engineering)	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	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	EMAE K133 K160	EMAE CommandAddr. EMAE CommandDatum	3e ff	62 255		Start Sequencer

Enter Idle

Step	Command Number	Command Name	Parameter Number	Parameter Name	Parameter Value (hex)	Parameter Value (engineering)	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 Value (engineering)	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	EMAE K133 K160	EMAE CommandAddr. EMAE CommandDatum	3e ff	62 255	This TC is used to send one low level command to EMAE, through EMCR. Parameters are used to include	Start Sequencer

the complete EMCR command foreseen for this function.

4.13. Offset tables i2

OT ld all to EMCR

Step	Command Number	Command Name		Parameter Number	Parameter Name	Parameter Value (hex)	Parameter Value (engineering)	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 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.	file-name for table 0
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.	EMCR OT0
3	k53	LOAD TABLES	EMDH	k300 k301		13A30 1212	80432 4626		file-name for table 1
4	k73	Upload OST	EMCRM	k108	OST Identifier	1	1		EMCR OT1
5	k53	LOAD TABLES	EMDH	k300 k301		13A30 1212	80432 4626		file-name for table 2
6	k73	Upload OST	EMCRM	k108	OST Identifier	2	2		EMCR OT2
7	k53	LOAD TABLES	EMDH	k300 k301		13A30 1212	80432 4626		file-name for table 3
8	k73	Upload OST	EMCRM	k108	OST Identifier	3	3		EMCR OT3
9	k53	LOAD TABLES	EMDH	k300 k301		13A30 1212	80432 4626		file-name for table 4
10	k73	Upload OST	EMCRM	k108	OST Identifier	4	4		EMCR OT4
11	k53	LOAD TABLES	EMDH	k300 k301		13A30 1212	80432 4626		file-name for table 5
12	k73	Upload OST	EMCRM	k108	OST Identifier	5	5		EMCR OT5
13	k53	LOAD TABLES	EMDH	k300 k301		13A30 1212	80432 4626		file-name for table 6
14	k73	Upload OST	EMCRM	k108	OST Identifier	6	6		EMCR OT6
15	k53	LOAD TABLES	EMDH	k300 k301		13A30 1212	80432 4626		file-name for table 7
16	k73	Upload OST	EMCRM	k108	OST Identifier	7	7		EMCR OT7

OT ld all EDU std (EDU1 alt)

Step	Command Number	Command Name	Parameter Number	Parameter Name	Parameter Value (hex)	Parameter Value (engineering)	NOTES (from TC Reports)	Details (from Sequences dev.)
1	k53	LOAD EMDH TABLES	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.	file-name for table 0
2	k73	Upload EMCRM OST	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.	EMCR OT0
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.	
			k108	OST Identifier	0	0		
			k105	EDU Zone	0	Normal area		
4	k78	Load EDU OffsetT	k104	EDU Identifier	1	1	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		
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 ld all EDU alt (EDU1 nor)

Step	Command Number	Command Name	Parameter Number	Parameter Name	Parameter Value (hex)	Parameter Value (engineering)	NOTES (from TC Reports)	Details (from Sequences dev.)
1	k53	LOAD EMDH TABLES	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.	file-name for table 0

2	k73	Upload EMCRM OST	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.
			k108	OST Identifier	0		0	
			k105	EDU Zone	1		Alternate area	
4	k78	Load EDU OffsetT	k104	EDU Identifier	1		1	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	
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 ld 0 to EMCR for OV

Step	Command Number	Command Name	Parameter Number	Parameter Name	Parameter Value (hex)	Parameter Value (engineering)	NOTES (from TC Reports)	Details (from Sequences dev.)
1	k53	LOAD EMDH TABLES	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.	patch of the first 4 words 0FFF 0FFF 0FFF 0FFF
2	k53	LOAD EMDH TABLES	k300		13C8E	81038		patch of the last 4 words 0FFF 0FFF 0FFF 0FFF
3	k73	Upload EMCRM OST	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 ld 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 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.	patch of the first 4 words 0FFF 0FFF 0FFF 0FFF
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 ld 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 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.	patch of the first 4 words 0FFF 0FFF 0FFF 0FFF
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 ld 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 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.	patch of the first 4 words 0FFF 0FFF 0FFF 0FFF
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 ld 4 to EMCR for OV

Step	Command Number	Command Name		Parameter Number	Parameter Name	Parameter Value (hex)	Parameter Value (engineering)	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 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.	patch of the first 4 words 0FFF 0FFF 0FFF 0FFF
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 ld 5 to EMCR for OV

Step	Command Number	Command Name		Parameter Number	Parameter Name	Parameter Value (hex)	Parameter Value (engineering)	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 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.	patch of the first 4 words 0FFF 0FFF 0FFF 0FFF
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 ld 6 to EMCR for OV

Step	Command Number	Command Name		Parameter Number	Parameter Name	Parameter Value (hex)	Parameter Value (engineering)	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 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.	patch of the first 4 words 0FFF 0FFF 0FFF 0FFF
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 ld 7 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 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.	patch of the first 4 words 0FFF 0FFF 0FFF 0FFF
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 ld 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 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.	patch of the first 4 words 0FFF 0FFF 0FFF 0FFF
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 ld 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 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.	patch of the first 4 words 0FFF 0FFF 0FFF 0FFF
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	

			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 ld 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 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.	patch of the first 4 words 0FFF 0FFF 0FFF 0FFF
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	EDU Identifier	2	2		This TC is used to load one of the eight Offset Tables stored in the EMCR memory in	
			k108	OST Identifier	2	2		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 ld 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 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.	patch of the first 4 words 0FFF 0FFF 0FFF 0FFF
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	EDU Identifier	3	3		This TC is used to load one of the eight Offset Tables stored in the EMCR memory in	
			k108	OST Identifier	3	3		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 ld 4 to EMCR+EDU std for OV

Step	Command	Command Name	Parameter	Parameter Name	Parameter	Parameter	Value	NOTES	Details

	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 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.	patch of the first 4 words 0FFF 0FFF 0FFF 0FFF
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 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 ld 5 to EMCR+EDU std for OV

Step	Command Number	Command Name		Parameter Number	Parameter Name	Parameter Value (hex)	Parameter Value (engineering)	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 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.	patch of the first 4 words 0FFF 0FFF 0FFF 0FFF
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 ld 6 to EMCR+EDU std for OV

Step	Command Number	Command Name		Parameter Number	Parameter Name	Parameter Value (hex)	Parameter Value (engineering)	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 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.	patch of the first 4 words 0FFF 0FFF 0FFF 0FFF
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.
4	k78	Load EDU OffsetT	k104	EDU Identifier	6	6	This TC is used to load one of the eight Offset Tables stored in the EMCR memory in
			k108	OST Identifier	6	6	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 ld 7 to EMCR+EDU std for OV

Step	Command Number	Command Name	Parameter Number	Parameter Name	Parameter Value (hex)	Parameter Value (engineering)	NOTES (from TC Reports)	Details (from Sequences dev.)
1	k53	LOAD EMDH TABLES	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.	patch of the first 4 words 0FFF 0FFF 0FFF 0FFF
2	k53	LOAD EMDH TABLES	k300		13C8E	81038		patch of the last 4 words 0FFF 0FFF 0FFF 0FFF
3	k73	Upload EMCRM OST	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	EDU Identifier	7	7	This TC is used to load one of the eight Offset Tables stored in the EMCR memory in	
			k108	OST Identifier	7	7	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 ld 0 to EMCR+EDU alt for OV

Step	Command Number	Command Name	Parameter Number	Parameter Name	Parameter Value (hex)	Parameter Value (engineering)	NOTES (from TC Reports)	Details (from Sequences dev.)
1	k53	LOAD EMDH TABLES	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.	patch of the first 4 words 0FFF 0FFF 0FFF 0FFF
2	k53	LOAD EMDH TABLES	k300		13C8E	81038		patch of the last 4 words 0FFF 0FFF 0FFF 0FFF
3	k73	Upload EMCRM OST	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	EDU Identifier	0	0	This TC is used to load one of the eight Offset Tables stored in the EMCR memory in	
			k108	OST Identifier	0	0	one of the eight EMCR EDUs. Parameters are used to include the complete EMCR	
			k105	EDU Zone	1	Alternate area	command dedicated to this function.	

OT ld 1 to EMCR+EDU alt for OV

Step	Command Number	Command Name	Parameter Number	Parameter Name	Parameter Value (hex)	Parameter Value (engineering)	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 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.	patch of the first 4 words 0FFF 0FFF 0FFF 0FFF
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 ld 2 to EMCR+EDU alt for OV

Step	Command Number	Command Name		Parameter Number	Parameter Name	Parameter Value (hex)	Parameter Value (engineering)	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 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.	patch of the first 4 words 0FFF 0FFF 0FFF 0FFF
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 ld 3 to EMCR+EDU alt for OV

Step	Command Number	Command Name		Parameter Number	Parameter Name	Parameter Value (hex)	Parameter Value (engineering)	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 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.	patch of the first 4 words 0FFF 0FFF 0FFF 0FFF
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	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 ld 4 to EMCR+EDU alt for OV

Step	Command Number	Command Name	Parameter Number	Parameter Name	Parameter Value (hex)	Parameter Value (engineering)	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 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.	patch of the first 4 words 0FFF 0FFF 0FFF 0FFF
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 ld 5 to EMCR+EDU alt for OV

Step	Command Number	Command Name	Parameter Number	Parameter Name	Parameter Value (hex)	Parameter Value (engineering)	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 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.	patch of the first 4 words 0FFF 0FFF 0FFF 0FFF
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 ld 6 to EMCR+EDU alt for OV

Step	Command Number	Command Name	Parameter Number	Parameter Name	Parameter Value (hex)	Parameter Value (engineering)	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

		TABLES						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.	0FFF 0FFF 0FFF 0FFF
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.	
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 ld 7 to EMCR+EDU alt for OV

Step	Command Number	Command Name		Parameter Number	Parameter Name	Parameter Value (hex)	Parameter Value (engineering)	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 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.	patch of the first 4 words 0FFF 0FFF 0FFF 0FFF
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.	
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 Value (engineering)	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

										be sent by TM.	
3	k117	Dload OST	EMCR	M k108	OST Identifier		1 1				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)	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 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 0	1 Normal area		EDU1
4	k54	Dump	EMDH	k300		13A30	80432		TM pkts for table 1

		Tables		k301		1212	4626		
5	k67	Download	EDU	k104	EDU Identifier	2	2		EDU2
		OST		k105	EDU Zone	0	Normal area		
6	k54	Dump	EMDH	k300		13A30	80432		TM pkts for table 2
		Tables		k301		1212	4626		
7	k67	Download	EDU	k104	EDU Identifier	3	3		EDU3
		OST		k105	EDU Zone	0	Normal 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	0	Normal 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	0	Normal 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	0	Normal 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	0	Normal area		
16	k54	Dump	EMDH	k300		13A30	80432		TM pkts for table 7
		Tables		k301		1212	4626		

OT du all from EDU alt

Step	Command Number	Command Name		Parameter Number	Parameter Name	Parameter Value (hex)	Parameter Value (engineering)	NOTES (from TC Reports)	Details (from Sequences dev.)
1	k67	Download	EDU	k104	EDU Identifier	0	0	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
		OST		k105	EDU Zone	0	Alternate area		
2	k54	Dump	EMDH	k300		13A30	80432	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
		Tables		k301		1212	4626		
3	k67	Download	EDU	k104	EDU Identifier	1	1		EDU1
		OST		k105	EDU Zone	1	Alternate area		
4	k54	Dump	EMDH	k300		13A30	80432		TM pkts for table 1
		Tables		k301		1212	4626		
5	k67	Download	EDU	k104	EDU Identifier	2	2		EDU2
		OST		k105	EDU Zone	1	Alternate area		
6	k54	Dump	EMDH	k300		13A30	80432		TM pkts for table 2

		Tables		k301		1212	4626	
7	k67	Download	EDU	k104	EDU Identifier	3	3	EDU3
		OST		k105	EDU Zone	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 ld 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 EMCR PMT	M. k107	PMT Identifier	0 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	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.	
2	k72	Load EMCR PMT	M. k107	PMT Identifier	1 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	1		

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

PMT ld 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 EMCR PMT M.	k107	PMT Identifier	0 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 ffff 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	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 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 ffff 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 fff ffff ffff 0000 0000 ffff ffff ffff 0000 0000 ffff ffff ffff 0000 0000 0000 0000 0000 0000

PMT ld cen 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 EMCR PMT	M. k107	PMT Identifier	0 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 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 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 ffff 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000	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.	
2	k72	Load EMCR PMT	M. k107	PMT Identifier	1 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 ffff 0000	1		

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
00000 0000 0000
0000 0000 0000
ffff 0000 0000
0000 0000 0000
0000 0000 0000
0000 0000 0000
0000

PMT ld 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 EMCR PMT	M. k107	PMT Identifier	0 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	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.	

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

PMT ld cen to EMCR+EDU 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 EMCR M. PMT	k107	PMT Identifier	0 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 ffff 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 ffff ffff ffff 0000 0000 ffff ffff ffff 0000 0000 ffff ffff ffff 0000 0000 0000 0000	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		
2	k79	Load EDU PMTable	k104	EDU 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.
			k107	PMT Identifier	0	0	
3	k79	Load EDU PMTable	k104	EDU Identifier	1	1	
			k107	PMT Identifier	0	0	

PMT ld cen to EMCR+EDU 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 EMCR M. PMT	k107	PMT Identifier	0 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 ffff 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 00000 0000 0000 0000 0000 0000 ffff 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000	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.	
2	k79	Load EDU PMTable	k104	EDU 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.	
			k107	PMT Identifier	0	0		

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

PMT ld 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 EMCR M. PMT	k107	PMT Identifier	2 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	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	k72	Load EMCR M. PMT	k107	PMT Identifier	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 8484 81dd	3		

						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 PMT	EMCR	M. k107	PMT Identifier	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	4

4	k72	Load PMT	EMCR	M. k107	PMT Identifier	5 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	5
5	k72	Load PMT	EMCR	M. k107	PMT Identifier	6 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	6

						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	
6	k72	Load PMT	EMCR	M. k107	PMT Identifier	7	7
						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 8484 81dd a108 0000 0000 82ee ffff 83bb 0000 0000 8860 8377 9210 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	

PMT ld per to EMCR 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	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.	

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 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 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
ffff 0000 0000
0000 0000 0000
0000 0000 0000
0000 0000 0000
0000

2	k72	Load PMT	EMCR	M. k107	PMT Identifier	3 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 ffff 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000	3

						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 ffff 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000	
3	k72	Load PMT	EMCR	M. k107	PMT Identifier	4 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 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 0000 0000 ffff 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 ffff 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000	4

4	k72	Load PMT	EMCR	M. k107	PMT Identifier	5 5 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 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 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 ffff 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000
5	k72	Load PMT	EMCR	M. k107	PMT Identifier	6 6 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 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 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
ffff 0000 0000
0000 0000 0000
0000 0000 0000
0000 0000 0000
0000

6	k72	Load PMT	EMCR	M. k107	PMT Identifier	7	7

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 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 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
ffff 0000 0000
0000 0000 0000

0000 0000 0000
0000 0000 0000
0000

PMT ld 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 M. PMT	k107	PMT Identifier	2 0 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 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 ld per to EMCR+EDU 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 EMCR M. PMT	k107	PMT Identifier	2 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 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 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 ffff 0000 0000 0000 0000 0000 0000 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.	
2	k79	Load EDU PMTable	k104	EDU Identifier	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.	
			k107	PMT Identifier	2	2		
3	k79	Load EDU PMTable	k104	EDU Identifier	3	3		
			k107	PMT Identifier	2	2		
4	k79	Load EDU PMTable	k104	EDU Identifier	4	4		
			k107	PMT Identifier	2	2		
5	k79	Load EDU PMTable	k104	EDU Identifier	5	5		
			k107	PMT Identifier	2	2		
6	k79	Load EDU PMTable	k104	EDU Identifier	6	6		
			k107	PMT Identifier	2	2		
7	k79	Load EDU PMTable	k104	EDU Identifier	7	7		
			k107	PMT Identifier	2	2		

PMT du all from EMCR

Step	Command Number	Command Name	Parameter Number	Parameter Name	Parameter Value (hex)	Parameter Value (engineering)	NOTES (from TC Reports)	Details (from Sequences dev.)
1	k116	Dload EMCR M PMT	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 EMDH Tables	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 EMCR M PMT	k107	PMT Identifier	1	1		EMCR PMT1
4	k54	Dump EMDH Tables	k300 k301		13A30 1212	80432 4626		TM pkts for table 1
5	k116	Dload EMCR M PMT	k107	PMT Identifier	2	2		EMCR PMT2
6	k54	Dump EMDH Tables	k300 k301		13A30 1212	80432 4626		TM pkts for table 2
7	k116	Dload EMCR M PMT	k107	PMT Identifier	3	3		EMCR PMT3
8	k54	Dump EMDH Tables	k300 k301		13A30 1212	80432 4626		TM pkts for table 3
9	k116	Dload EMCR M PMT	k107	PMT Identifier	4	4		EMCR PMT4
10	k54	Dump EMDH Tables	k300 k301		13A30 1212	80432 4626		TM pkts for table 4
11	k116	Dload EMCR M PMT	k107	PMT Identifier	5	5		EMCR PMT5
12	k54	Dump EMDH Tables	k300 k301		13A30 1212	80432 4626		TM pkts for table 5
13	k116	Dload EMCR M PMT	k107	PMT Identifier	6	6		EMCR PMT6
14	k54	Dump EMDH Tables	k300 k301		13A30 1212	80432 4626		TM pkts for table 6
15	k116	Dload EMCR M PMT	k107	PMT Identifier	7	7		EMCR PMT7
16	k54	Dump EMDH Tables	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.	TM pkt for table 0
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)	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 Value (engineering)	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 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.	Dump Test Image from EMCR to EMDH

Ld test image

Step	Command Number	Command Name	Parameter Number	Parameter Name	Parameter Value (hex)	Parameter Value (engineering)	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 complete Test Image previously stored in a dedicated EMDH memory area. Parameters are used to include the first part of the EMCR command foreseen for this function	Load Test Image from EMDH to EMCR

4.17. Thermal i3

Annealing

Step	Command Number	Command Name	Parameter Number	Parameter Name	Parameter Value (hex)	Parameter Value (engineering)	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)	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)	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)	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		

			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		+25°C	
			k5	MaxTempSetValue		+35°C	

Deicing

Step	Command Number	Command Name	Parameter Number	Parameter Name	Parameter Value (hex)	Parameter Value (engineering)	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)	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

Step	Command Number	Command Name	Parameter Number	Parameter Name	Parameter Value (hex)	Parameter Value (engineering)	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 Value (engineering)	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 Value (engineering)	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		