



| | |
|-------------------------------|---|
| Publication Year | 1999 |
| Acceptance in OA @INAF | 2023-02-08T12:30:20Z |
| Title | COMMAND PROCEDURES FOR THE EPIC MOS CAMERA SYSTEM (EMCS) AT S/C LEVEL |
| Authors | LA PALOMBARA, NICOLA; Massa, Piero |
| Handle | http://hdl.handle.net/20.500.12386/33283 |

EST

EPIC

DOCUMENT TYPE: PROCEDURE

TITLE: COMMAND PROCEDURES FOR THE EPIC MOS CAMERA SYSTEM (EMCS) AT S/C LEVEL

DOCUMENT No.: EPIC-EST-TP-002 (Annex of EPIC-EST-OP-001)

PAGE: I of V, 162

PROJECT Ref.: XMM-EPIC

ISSUE No.: 3 **DATE:** September 1999

PREPARED BY: N. La Palombara, P. Massa

PRODUCT ASSURANCE: G.Cafagna

SYSTEM ENGINEER: N. La Palombara

PROGRAM MANAGER: G.Villa

DISTRIBUTION LIST

| POS. | NAME | DEPT. | N° |
|------|-----------------|------------|----|
| 1 | A. Short | LUX | 1 |
| 2 | T. Abbey | LUX | 1 |
| 3 | P. Ferrando | SAP | 1 |
| 4 | D. Texier | ESA-VILSPA | 1 |
| 5 | J. Clavel | ESA-VILSPA | 1 |
| 6 | D. Heger | ESA-ESOC | 1 |
| 7 | E. Serpell | ESA-ESOC | 1 |
| 8 | F. Giannini | ESA-ESTEC | 1 |
| 9 | D. Lumb | ESA-SSD | 1 |
| 10 | N. La Palombara | EST | |
| 11 | P. Massa | EST | |
| 12 | G. Villa | EST | |

CHANGE RECORD

| Issue | Date | Sheet | Description of Change | Release |
|-------|---------|-------|---|---------|
| 1 | June 99 | | First issue of the Document | |
| 2 | June 99 | | <p>Intoduced 4 new Procedures:</p> <ul style="list-style-type: none">- 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) <p>Error corrected:</p> <ul style="list-style-type: none">- 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) <p>Chapter 5 added. It shows the TC execution times.</p> <p>NOTE: Changes in Building Blocks are reported in the Building Block List that now is included to allow hypertext pointing to the block set.</p> | |

| | | | | |
|---|----------|--|--|--|
| 3 | Sept. 99 | | <p>Procedures changed:</p> <ul style="list-style-type: none"> - 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. <p>Building Blocks Issue 4 is now applicable:</p> <ul style="list-style-type: none"> - 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. - Thermal I.3: New Decontamination blocks for 0 °C and +30 °C. | |
| | | | | |

TABLE OF CONTENTS

| | |
|---|------------|
| 1. INTRODUCTION..... | 1 |
| 1.1. PURPOSE..... | 1 |
| 1.2. SCOPE..... | 1 |
| 2. APPLICABLE AND REFERENCE DOCUMENTS..... | 2 |
| 3. TOP LEVEL ACTIVITIES..... | 3 |
| 3.1. SWITCH ON (FM1)..... | 3 |
| 3.2. Full Frame..... | 4 |
| 3.3. Timing..... | 5 |
| 3.4. Small Window..... | 6 |
| 3.5. Large Window..... | 7 |
| 3.6. Small Window - Free Run..... | 8 |
| 3.7. Large Window - Free Run..... | 9 |
| 3.8. Refreshed Frame Store..... | 10 |
| 3.9. Full Frame Double Node..... | 11 |
| 4. EMCS BUILDING BLOCKS..... | 13 |
| 4.1. Bright Pixels Tables i3..... | 26 |
| 4.2. CCD Voltages i1..... | 29 |
| 4.3. Door operations i2..... | 36 |
| 4.4. EDU config i4..... | 37 |
| 4.5. EMAE config i1..... | 51 |
| 4.6. EMAE Sequences i3..... | 54 |
| 4.7. EMCR int-time i4..... | 83 |
| 4.8. EMDH time-synch i2..... | 87 |
| 4.9. FW operations i3..... | 88 |
| 4.10. HBR config i2..... | 99 |
| 4.11. Maintenance i2..... | 107 |
| 4.12. Mode Switching i3..... | 110 |
| 4.13. Offset tables i2..... | 123 |
| 4.14. Pattern Mask tables i3..... | 138 |
| 4.15. Reports i1..... | 157 |
| 4.16. Test image i1..... | 159 |
| 4.17. Thermal i3..... | 160 |

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 Id 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 Id 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 Id ifc8rp_1 to EMAE per](#) , [ES Id ifci10rpp to EMAE per](#) , [ES Id ifci10rdp to EMAE per](#). According to the loaded sequences, the proper EMCR Integration Time settings have to be loaded at step 8 of the following procedures.

3.2. Full Frame

| Step | Activity | Remarks | Building block |
|------|---|---|--|
| 1 | Load sequencer (CCD 1) for exposure (i.e FF) | | ES Id 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 Id cen to EMCR+EDU imaging PMT Id 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 Id 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 Id 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 Id 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 Id 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 Id 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 Id 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 Id 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 Id 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 Id cen to EMCR+EDU threshold](#) and [PMT Id per to EMCR+EDU threshold](#), [HBR Threshold](#) and [EDU threshold single node](#).
- 2) CCD 1 is operated in standard Full Frame mode from Node 0. Other sequences can be addressed, at step 1, by: [ES Id ifc8rp_1 to EMAE cen](#), [ES Id iffci10rpp to EMAE cen](#), [ES Id iffci10rdp to EMAE cen](#). For the last two cases, even the relevant integration time ([Full Frame \(Seq. I.10, 2.5 sec\)](#)) has to be loaded at step 8.

3.3. Timing

| Step | Activity | Remarks | Building block |
|------|---|---|---|
| 1 | Load sequencer (CCD 1) for exposure (i.e Timing) | Timing Diagnostic | ES Id timage3 to EMAE |
| 2 | Central CCD sequencers set-up | | ES set-up CCD cen |
| 3 | Load Pattern Mask tables | | PMT Id cen to EMCR+EDU timing PMT Id 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 Id 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. 1.8, 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 Id 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 Id 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 Id 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 Id 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 Id 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 Id 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 Id 7 to EMCR+EDU std for OV |
| 30 | Load sequencer (CCD 1) for exposure (i.e. Timing) | Timing normal | ES Id 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 Id cen to EMCR+EDU threshold](#) and [PMT Id per to EMCR+EDU threshold](#), [HBR Threshold](#) and [EDU threshold single node](#).
- 2) CCD 1 is operated in standard Timing mode from Node 0. Other sequences can be addressed by, respectively, [ES Id tdiovtge05p to EMAE](#) at step 1 and [ES Id timnctng03p to EMAE](#) at step 30. In this case, the relevant integration time ([Free-run \(Seq. 1.10, 2.5 s per. CCD\)](#)) has to be loaded at step 8.

3.4. Small Window

| Step | Activity | Remarks | Building block |
|------|---|---|--|
| 1 | Load sequencer (CCD 1) for exposure (i.e. Small Window) | | ES Id 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 Id cen to EMCR+EDU imaging PMT Id 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 Id 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 Id 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 Id 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 Id 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 Id 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 Id 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 Id 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 Id 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 Id cen to EMCR+EDU threshold](#) and [PMT Id per to EMCR+EDU threshold](#), [HBR Threshold](#) and [EDU threshold single node](#).
- 2) CCD 1 is operated in standard Small Window mode from Node 0. Other sequences can be addressed by [ES Id iswci10rdp to EMAE](#) at step 1. In this case, the relevant integration time ([Small Window \(Seq. I.10, 110, 0.3-2.7 sec\)](#)) has to be loaded at step 8.

3.5. Large Window

| Step | Activity | Remarks | Building block |
|------|---|---|--|
| 1 | Load sequencer (CCD 1) for exposure (i.e. Large Window) | | ES Id 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 Id cen to EMCR+EDU imaging PMT Id 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 Id 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 Id 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 Id 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 Id 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 Id 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 Id 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 Id 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 Id 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 Id cen to EMCR+EDU threshold](#) and [PMT Id per to EMCR+EDU threshold](#), [HBR Threshold](#) and [EDU threshold single node](#).
- 2) CCD 1 is operated in standard Large Window mode from Node 0. Other sequences can be addressed by [ES Id ilwci10rdp to EMAE](#) at step 1. In this case, the relevant integration time ([Large Window \(Seq. I.10, 310, 0.9-2.7 sec\)](#)) has to be loaded at step 8.

3.6. Small Window - Free Run

| Step | Activity | Remarks | Building block |
|------|---|---|--|
| 1 | Load sequencer (CCD 1) for exposure (i.e. Small Window) | | ES Id 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 Id cen to EMCR+EDU imaging PMT Id 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 Id 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 Id 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 Id 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 Id 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 Id 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 Id 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 Id 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 Id 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 Id cen to EMCR+EDU threshold](#) and [PMT Id per to EMCR+EDU threshold](#), [HBR Threshold](#) and [EDU threshold single node](#).

3.7. Large Window - Free Run

| Step | Activity | Remarks | Building block |
|------|---|---|--|
| 1 | Load sequencer (CCD 1) for exposure (i.e. Small Window) | | ES Id 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 Id cen to EMCR+EDU imaging PMT Id 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 Id 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 Id 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 Id 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 Id 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 Id 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 Id 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 Id 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 Id 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 Id cen to EMCR+EDU threshold](#) and [PMT Id per to EMCR+EDU threshold](#), [HBR Threshold](#) and [EDU threshold single node](#).

3.8. Refreshed Frame Store

| Step | Activity | Remarks | Building block |
|------|---|---|--|
| 1 | Load sequencer (CCD 1) for exposure (i.e FF) | | ES Id 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 Id cen to EMCR+EDU imaging PMT Id 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 Id 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 Id 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 Id 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 Id 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 Id 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 Id 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 Id 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 Id 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 Id cen to EMCR+EDU threshold](#) and [PMT Id per to EMCR+EDU threshold](#), [HBR Threshold](#) and [EDU threshold single node](#).
- 2) CCD 1 is operated in standard Refreshed Frame Store mode from Node 0. Other sequences can be addressed by [ES Id rfscr3rdp200 to EMAE](#) at step 1.

3.9. Full Frame Double Node

| Step | Activity | Remarks | Building block |
|------|---|---|--|
| 1 | Load sequencer (CCD 1) for exposure (i.e. FF) | | ES Id 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 Id cen to EMCR+EDU imaging PMT Id 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 Id 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 Id 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 Id 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 Id 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 Id 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 Id 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 Id 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 Id 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 Id 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 Id cen to EMCR+EDU threshold](#) and [PMT Id per to EMCR+EDU threshold](#), [HBR Double Node Threshold](#) and [EDU Threshold Double Node](#).

4. EMCS BUILDING BLOCKS

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

| building block name | Action | preconditions | postconditions | notes | file (.xls) | issue | change note |
|---|--|---------------|----------------|-------|----------------------|-------|----------------------------|
| 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 Window | 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 | |

EMCS

| | | | | | | |
|--|---|-----------|--|----------------|---|-----|
| EDU all CCDs Fast Diagnostic EMA Standard node 0 | Window set up for all CCDs in Fast Diagnostic FF or RFS Idle mode Setting of Multiplexers, Preamplifiers and Analogue Chains for Idle mode the CCD readout from primary nodes | Idle mode | none | EDU config | 1 | New |
| EMA Standard node 1 | Setting of Multiplexers, Preamplifiers and Analogue Chains for Idle mode the CCD readout from redundant nodes | | none | EMA config | 1 | |
| EMA Double node | Setting of Multiplexers, Preamplifiers and Analogue Chains for Idle mode the central CCD readout from both nodes and peripheral CCD readout from primary nodes | | none | EMA config | 1 | |
| ES set-up | Set up of the low and high addresses of the sequencers and sequencers low gain node 0 then run then start sequencer for FW | | | Emae Sequences | 1 | |
| ES set-up FW | Set up of the low and high addresses 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 high addresses 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 high addresses 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 Id 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 Id 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 Id ifci10rdp 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 Id 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 Id ifci10rdp 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 Id 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 Id ifci10rdr 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 | |

EMCS

Ref:
Project Ref.:
Issue: 3
Date:

EPIC-EST-TP-002
XMM-EPIC
Page: 15
September 1999

| | | | | |
|---|---|---|----------------|---|
| ES Id ifc8rd_2 to EMAE_per | Map EMCR-> EMAE is : 0->1 Load Imaging Full Frame Cold reset on demand Sequence peripheral CCDs node 2 (#1,#2,#3) Map EMCR-> EMAE is : 1->2, 2->3, 3->4 | peripheral CCDs a building block with sequence for central CCD | Emae Sequences | 1 |
| ES Id ifci10rdr 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 Id 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 Id ifci10rpp 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 Id 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 Id ifci10rpp 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 Id 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 Id ifci10rpr 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 Id 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 Id ifci10rpr 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 Id 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 Id ifci10rdb 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 Id 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 |

EMCS

| | | | | |
|--|---|--|----------------|---|
| ES Id ifc10rpb to EMAE | Map EMCR-> EMAE is : 0->1, 4->5 Load Imaging Full Frame Cold reset per pixel Sequence central CCD node both (#0) Load FW sequence (#4) | a building block with sequence for peripheral CCDs | Emae Sequences | 1 |
| ES Id ifw5_n1 to EMAE | Map EMCR-> EMAE is : 0->1, 4->5 Load Imaging Full Frame Warm Sequence central and peripheral CCDs node 1 (#0, #1, #2,#3) | | Emae Sequences | 1 |
| ES Id ifw8rd_1 to EMAE | Map EMCR-> EMAE is : 0->1, 1->2, 2->3, 3->4 Load Imaging Window Cold reset on demand Sequence 110x100 central CCD node 1 (#0) | a building block with sequence for peripheral CCDs | Emae Sequences | 1 |
| ES Id iswci10rdp to EMAE | Map EMCR-> EMAE is : 0->1 Load Imaging Window Cold reset on demand Sequence 110x100 central CCD node 1 (#0) | a building block with sequence for peripheral CCDs | Emae Sequences | 1 |
| ES Id ifw8rd_2 to EMAE | Map EMCR-> EMAE is : 0->1 Load Imaging Window Cold reset on demand Sequence 110x100 central CCD node 2 (#0) | a building block with sequence for peripheral CCDs | Emae Sequences | 1 |
| ES Id iswci10rdr to EMAE | Map EMCR-> EMAE is : 0->1 Load Imaging Window Cold reset on demand Sequence 110x100 central CCD node 2 (#0) | a building block with sequence for peripheral CCDs | Emae Sequences | 1 |
| ES Id ifw8rd_b to EMAE | Map EMCR-> EMAE is : 0->1 Load Imaging Window Cold reset on demand Sequence 110x100 central CCD node both (#0) | a building block with sequence for peripheral CCDs | Emae Sequences | 1 |
| ES Id iswci10rdb to EMAE | Map EMCR-> EMAE is : 0->1 Load Imaging Window Cold reset on demand Sequence 110x100 central CCD node both (#0) | a building block with sequence for peripheral CCDs | Emae Sequences | 1 |
| ES Id ifw8rd_3_1 to EMAE | Map EMCR-> EMAE is : 0->1 Load Imaging Window Cold reset on demand Sequence 310x300 central CCD node 1 (#0) | a building block with sequence for peripheral CCDs | Emae Sequences | 1 |
| ES Id ilwci10rdp to EMAE | Map EMCR-> EMAE is : 0->1 Load Imaging Window Cold reset on demand Sequence 310x300 central CCD node 1 (#0) | a building block with sequence for peripheral CCDs | Emae Sequences | 1 |
| ES Id ifw8_3_2 to EMAE | Map EMCR-> EMAE is : 0->1 Load Imaging Window Cold reset on demand Sequence 310x300 central CCD node 2 (#0) | a building block with sequence for peripheral CCDs | Emae Sequences | 1 |
| ES Id ilwci10rdr to EMAE | Map EMCR-> EMAE is : 0->1 Load Imaging Window Cold reset on demand Sequence 310x300 central CCD node 2 (#0) | a building block with sequence for peripheral CCDs | Emae Sequences | 1 |
| ES Id ifw8rd_b to EMAE | Map EMCR-> EMAE is : 0->1 Load Imaging Window Cold reset on demand Sequence 110x100 central CCD node both (#0) | a building block with sequence for peripheral CCDs | Emae Sequences | 1 |
| ES Id ilwci10rdb to EMAE | Map EMCR-> EMAE is : 0->1 Load Imaging Window Cold reset on demand Sequence | a building block with | Emae Sequences | 1 |

| | | | | | | |
|--|--|--|--|----------------|---|-----|
| ES Id rfc3rd_1_200 to EMAE | 110x100 central CCD node both (#0) Map EMCR-> EMAE is : 0->1 Load Refreshed Frame Store Sequence on central CCD reset on demand node 1 (#0) Map EMCR-> EMAE is : 0->1 | sequence for peripheral CCDs a building block with sequence for peripheral CCDs | Sequence not listed in EPIC.EST.LI.005 Issue 2 | Emae Sequences | 1 | |
| ES Id 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 Id 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 Id 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 Id 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 Id 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 Id 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 Id 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 Id 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 Id 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 Id tnc1_n2 to EMAE | Load Timing Imaging Sequence on central CCD | a building block with | | Emae Sequences | 1 | |

EMCS

| | | | | | |
|---|---|--|----------------|---|-----|
| ES Id tdc2_n1 to EMAE | node 2 (#0) - timing normal cold Map EMCR-> EMAE is : 0->1 Load Transparent Timing Imaging Sequence on central CCD node 1 (#0) - timing diagnostic cold | sequence for peripheral CCDs a building block with sequence for peripheral CCDs | Emae Sequences | 1 | |
| ES Id tdiovtge05p to EMAE | Map EMCR-> EMAE is : 0->1 Load Transparent Timing Imaging Sequence on central CCD node 1 (#0) - timing diagnostic cold | a building block with sequence for peripheral CCDs | Emae Sequences | 1 | |
| ES Id tdc2_n2 to EMAE | Map EMCR-> EMAE is : 0->1 Load Transparent Timing Imaging Sequence on central CCD node 2 (#0) - timing diagnostic cold | a building block with sequence for peripheral CCDs | Emae Sequences | 1 | |
| ES Id tdiovtge05r to EMAE | Map EMCR-> EMAE is : 0->1 Load Transparent Timing Imaging Sequence on central CCD node 2 (#0) - timing diagnostic cold | a building block with sequence for peripheral CCDs | Emae Sequences | 1 | |
| ES Id timage3 to EMAE | Map EMCR-> EMAE is : 0->1 Load Timing Imaging Sequence on central CCD node 1 (#0) | a building block with sequence for peripheral CCDs | Emae Sequences | 1 | |
| ES Id timnctng03p to EMAE | Map EMCR-> EMAE is : 0->1 Load Timing Imaging Sequence on central CCD node 1 (#0) | a building block with sequence for peripheral CCDs | Emae Sequences | 1 | |
| ES Id timnctng03r to EMAE | Map EMCR-> EMAE is : 0->1 Load Timing Imaging Sequence on central CCD node 2 (#0) | a building block with sequence for peripheral CCDs | Emae Sequences | 1 | |
| ES Id+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 | Synchronize 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 | Synchronize 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 |

EMCS

| | | | | | | |
|---|---|-----------|------|-----------------------|---|--------------------------|
| 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 | | | Maintenance | 1 | |
| EMDH Memory cks rep | Checksum report on EMDH memory | | | Maintenance | 1 | |
| EMDH Memory dmp rep | Dump report on EMDH memory | | | Maintenance | 1 | |
| Ld EMCR Memory | Load EMCR memory | | | Maintenance | 2 | |
| Ld EMCR Memory v14 | Load EMCR memory sw issue 14 | | | Maintenance | 1 | |
| EMCR Memory cks rep | Checksum report on EMCR memory | | | Maintenance | 1 | |
| EMCR Memeory dmp rep | Dump report on EMCR memory | | | Maintenance | 1 | |
| EMCR cold restart | Cold restart of EMCR - use of PROM program | | | Maintenance | 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 |

EMCS

| | | | | | | |
|--|---|---------------------------------|------|----------------|---|-------------------------------------|
| Enter OV CCD4 FS | Enter Offset and Variance Mode CCD4 FS camera | | | Mode Switching | 2 | updated 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 Id 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 Id 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 Id 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 Id 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 Id 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 | |

EMCS

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

EMCS

| | | | | | | |
|--|--|---------------------------------------|------|---------------------|---|-----------------|
| OT Id 4 to EMCR+EDU alt for OV | Map EMCR->EDU is : 3->3. Load Offset table #4 from EMDH to EDU Alternate area. after Offset and variance computation. Full frame case. First and last 4 columns are overwritten. Map EMCR->EDU is : 4->4. | offset and variance computation | | Offset tables | 1 | |
| OT Id 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 Id 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 Id 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 Id cen to EMCR imaging | Load Pattern Mask tables to EMCR for CCD1. Imaging case | none | none | Pattern mask tables | 3 | |
| PMT Id cen to EMCR timing | Load Pattern Mask tables to EMCR for CCD1. Timing case | none | none | Pattern mask tables | 3 | |
| PMT Id cen to EMCR threshold | Load Pattern Mask tables to EMCR for CCD1. Threshold case | none | none | Pattern mask tables | 3 | |
| PMT Id 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 Id 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 Id cen to EMCR+EDU threshold | Load Pattern Mask tables to EDU for CCD1. | none | none | Pattern mask tables | 3 | Mapping changed |

EMCS

| | | | | | | |
|--|---|------|------|---------------------|---|-----------------|
| PMT Id per to EMCR imaging | Threshold case Map EMCR->EDU is : 0->0, 0->1 Load all peripheral Pattern Mask tables to EMCR. | none | none | Pattern mask tables | 2 | |
| PMT Id per to EMCR threshold | Imaging case Load all peripheral Pattern Mask tables to EMCR. | none | none | Pattern mask tables | 1 | New |
| PMT Id per to EMCR+EDU imaging | Threshold case Load all peripheral Pattern Mask tables to EMCR then to EDU. | none | none | Pattern mask tables | 2 | Mapping changed |
| PMT Id per to EMCR+EDU threshold | Imaging case Map EMCR->EDU is : 2->2, 2->3, 2->4, 2->5, 2->6, 2->7 Load all peripheral Pattern Mask tables to EMCR then to EDU. | none | none | Pattern mask tables | 1 | New |
| PMT du all from EMCR | Threshold case Map EMCR->EDU is : 2->2, 2->3, 2->4, 2->5, 2->6, 2->7 Dump all Patten Mask tables from EMCR. | none | none | Pattern mask tables | 1 | |
| 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 none size, HBR thrshold values | none | none | Reports | 1 | |
| Extr conf + Thermal limits | Generate report about current Extraheating configuration, none 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 none 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) | Value | NOTES (from TC reports) | Details (from Sequences dev.) |
|------|----------------|----------------|------------------|------------------|--|---|-------|---|-------------------------------|
| 1 | E33 | Load HBR 1 BPT | E164 | HBR1 Bright P.N. | 08 01F5 0104 00F5 0181 00F5 0182 01F4 0187 01BA 01B5 01BA 01B7 01BA 01BB 01BA 01C5 | 8 501 260 245 385 245 386 500 391 442 437 442 439 442 443 442 453 | | This TC is used to load in the EMDH the bright pixel table for the HBR 1 channel. | |
| 2 | E12 | Load HBR 2 BPT | E165 | HBR2 Bright P.N. | | | | This TC is used to load in the EMDH the bright pixel table for the HBR 2 channel. | |
| 3 | E13 | Load HBR 3 BPT | E166 | HBR3 Bright P.N. | 02 009A 0128 0182 0244 | 2 154 296 386 580 | | This TC is used to load in the EMDH the bright pixel table for the HBR 3 channel. | |
| 4 | E103 | Load HBR 4 BPT | E167 | HBR4 Bright P.N. | 03 0225 00BA 01BE 011F 0140 01E6 | 3 549 186 446 287 320 486 | | This TC is used to load in the EMDH the bright pixel table for the HBR 4 channel. | |
| 5 | E104 | Load HBR 5 BPT | E168 | HBR5 Bright P.N. | 02 01C4 0117 0064 01BB | 2 452 279 100 443 | | This TC is used to load in the EMDH the bright pixel table for the HBR 5 channel. | |
| 6 | E105 | Load HBR 6 BPT | E169 | HBR6 Bright P.N. | 05 01B4 001C 0109 0042 0109 014D 0109 014A 0109 014B | 5 436 28 265 66 265 333 265 330 265 331 | | This TC is used to load in the EMDH the bright pixel table for the HBR 6 channel. | |
| 7 | E106 | Load HBR 7 BPT | E170 | HBR7 Bright P.N. | 05 01BD 001C 0173 00B6 0256 00ED 0037 00F5 0193 01EA | 5 445 28 371 182 598 237 55 245 403 490 | | This TC is used to load in the EMDH the bright pixel table for the HBR 7 channel. | |
| 8 | E107 | Load HBR 8 BPT | E171 | HBR8 Bright P.N. | 08 01BB 00C4 00FB 00E6 00FB 00E7 00FB 00E9 00B1 0132 00DD 0190 014A 0225 003D 0249 | 8 443 196 251 230 251 231 251 233 177 306 221 400 330 549 61 585 | | This TC is used to load in the EMDH the bright pixel table for the HBR 8 channel. | |

Load BPT FM2

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

Load BPT FS

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

EMCS

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

4.2. CCD Voltages i1

FM1 normal

| Step | Command Number | Command Name | Parameter Number | Parameter Name | Parameter Value (hex) | Parameter Value (engineering) | Value | NOTES (from TC reports) | Details (from Sequences dev.) | | | | |
|------|----------------|-------------------|------------------|----------------|-----------------------|-------------------------------|---|-------------------------|-------------------------------|---|---------|---|--|
| 1 | E91 | Set CCD1 Voltages | E229 | CCD VOD1 | BE | 28,956 | This TC is used to set all the CCD1 voltages (bias and Set CCD1 Voltages clock) in the EMAE. Parameters are used to include the complete EMCR command foreseen for this function. | | | | | | |
| | | | E228 | CCD VRD1 | D1 | 17,0335 | | | | | | | |
| | | | E227 | CCD VOG1 | 1A | 1,0062 | | | | | | | |
| | | | E232 | CCD VOD2 | BF | 29,0129 | | | | | | | |
| | | | E231 | CCD VRD2 | D1 | 16,9917 | | | | | | | |
| | | | E230 | CCD VOG2 | 1A | 1,0062 | | | | | | | |
| | | | E223 | CCD VSS | 00 | 0 | | | | | | | |
| | | | E225 | CCD VGR | 7C | 15,004 | | | | | | | |
| | | | E224 | CCD VBB | 00 | 0 | | | | | | | |
| | | | E226 | CCD VID | A6 | 20,0528 | | | | | | | |
| | | | E233 | CCD I | 63 | 5,9895 | | | | | | | |
| | | | E234 | CCD S | 63 | 6,0093 | | | | | | | |
| | | | E235 | CCD R | 84 | 7,9992 | | | | | | | |
| | | | E237 | CCD RESET1 | 95 | 9,0294 | | | | | | | |
| | | | E238 | CCD RESET2 | 95 | 9,0294 | | | | | | | |
| | | | 2 | E92 | Set CCD2 Voltages | E229 | | | CCD VOD1 | CB | 30,9372 | This TC is used to set all the CCD2 voltages (bias and Set CCD2 Voltages clock) in the EMAE. Parameters are used to include the complete EMCR command foreseen for this function. | |
| | | | | | | 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 | | | | | | | |
| 3 | E93 | Set CCD3 Voltages | | | | E236 | CCD CCD IG | 00 | 0 | This TC is used to set all the CCD3 voltages (bias and Set CCD3 Voltages clock) in the EMAE. Parameters are used to include the complete EMCR command foreseen for this function. | | | |
| | | | | | | E229 | CCD VOD1 | C5 | 30,0228 | | | | |
| | | | E228 | CCD VRD1 | D1 | 17,0335 | | | | | | | |
| | | | E227 | CCD VOG1 | 1A | 1,0062 | | | | | | | |
| | | | E232 | CCD VOD2 | C5 | 29,9243 | | | | | | | |
| | | | E231 | CCD VRD2 | D1 | 16,9917 | | | | | | | |
| | | | E230 | CCD VOG2 | 1A | 1,0062 | | | | | | | |
| | | | E223 | CCD VSS | 00 | 0 | | | | | | | |
| | | | E225 | CCD VGR | 7C | 15,004 | | | | | | | |
| | | | E224 | CCD VBB | 00 | 0 | | | | | | | |
| | | | E226 | CCD VID | A6 | 20,0528 | | | | | | | |
| | | | E233 | CCD I | 74 | 7,018 | | | | | | | |

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

EMCS

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

FM2 normal

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

EMCS

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

EMCS

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

FS normal

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

EMCS

| | | | | | | | |
|---|-----|-------------------|------------|------------|--------|--------|---|
| | | E226 | CCD VID | A5 | 19,965 | | |
| | | E233 | CCD I | 82 | 7,969 | | |
| | | E234 | CCD S | 83 | 8,0172 | | |
| | | E235 | CCD R | 72 | 6,9768 | | |
| | | E237 | CCD RESET1 | 92 | 9,052 | | |
| | | E238 | CCD RESET2 | 92 | 9,052 | | |
| | | E236 | CCD CCD IG | 00 | 0 | | |
| 2 | E92 | Set CCD2 Voltages | E229 | CCD VOD1 | BF | 29,032 | This TC is used to set all the CCD2 voltages (bias and Set CCD2 Voltages clock) in the EMAE. Parameters are used to include the complete EMCR command foreseen for this function. |
| | | | E228 | CCD VRD1 | EA | 18,954 | |
| | | | E227 | CCD VOG1 | 40 | 2,496 | |
| | | | E232 | CCD VOD2 | BF | 29,032 | |
| | | | E231 | CCD VRD2 | EA | 18,954 | |
| | | | E230 | CCD VOG2 | 40 | 2,496 | |
| | | | E223 | CCD VSS | 00 | 0 | |
| | | | E225 | CCD VGR | 7C | 15,004 | |
| | | | E224 | CCD VBB | 00 | 0 | |
| | | | E226 | CCD VID | A5 | 19,965 | |
| | | | E233 | CCD I | 93 | 9,0111 | |
| | | | E234 | CCD S | 93 | 8,9964 | |
| | | | E235 | CCD R | 93 | 8,9964 | |
| | | | E237 | CCD RESET1 | 81 | 7,998 | |
| | | | E238 | CCD RESET2 | 81 | 7,998 | |
| | | | E236 | CCD CCD IG | 00 | 0 | |
| 3 | E93 | Set CCD3 Voltages | E229 | CCD VOD1 | D6 | 32,528 | This TC is used to set all the CCD3 voltages (bias and Set CCD3 Voltages clock) in the EMAE. Parameters are used to include the complete EMCR command foreseen for this function. |
| | | | E228 | CCD VRD1 | E4 | 18,468 | |
| | | | E227 | CCD VOG1 | 33 | 1,989 | |
| | | | E232 | CCD VOD2 | D6 | 32,528 | |
| | | | E231 | CCD VRD2 | E4 | 18,468 | |
| | | | E230 | CCD VOG2 | 33 | 1,989 | |
| | | | E223 | CCD VSS | 00 | 0 | |
| | | | E225 | CCD VGR | 7C | 15,004 | |
| | | | E224 | CCD VBB | 00 | 0 | |
| | | | E226 | CCD VID | A5 | 19,965 | |
| | | | E233 | CCD I | 93 | 9,0111 | |
| | | | E234 | CCD S | 93 | 8,9964 | |
| | | | E235 | CCD R | 83 | 8,0172 | |
| | | | E237 | CCD RESET1 | 81 | 7,998 | |
| | | | E238 | CCD RESET2 | 81 | 7,998 | |
| | | | E236 | CCD CCD IG | 00 | 0 | |
| 4 | E94 | Set CCD4 Voltages | E229 | CCD VOD1 | C2 | 29,488 | This TC is used to set all the CCD4 voltages (bias and Set CCD4 Voltages clock) in the EMAE. Parameters are used to include the complete EMCR command foreseen for this function. |
| | | | E228 | CCD VRD1 | D2 | 17,01 | |
| | | | E227 | CCD VOG1 | 26 | 1,482 | |
| | | | E232 | CCD VOD2 | C2 | 29,488 | |
| | | | E231 | CCD VRD2 | D2 | 17,01 | |
| | | | E230 | CCD VOG2 | 26 | 1,482 | |
| | | | E223 | CCD VSS | 00 | 0 | |
| | | | E225 | CCD VGR | 7C | 15,004 | |
| | | | E224 | CCD VBB | 00 | 0 | |
| | | | E226 | CCD VID | A5 | 19,965 | |
| | | | E233 | CCD I | 93 | 9,0111 | |
| | | | E234 | CCD S | 93 | 8,9964 | |

EMCS

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

E236 CCD CCD IG 00 0

4.3. Door operations i2

Door

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

Venting valve

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

4.4. EDU config i4

EDU Imaging

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

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

EDU transparent single node

| Step Number | Command Number | Command Name | Parameter Number | Parameter Name | Parameter Value (hex) | Parameter (engineering) | Value | NOTES (from TC reports) | Details (from Sequences dev.) |
|-------------|----------------|---------------|--|--|--|---|-------------|---|-------------------------------|
| 1 | K77 | Configure EDU | K112 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, Configure EDU in Imaging, Timing, Threshold) and status (Stop, Run or run transparent Alternate) of each EDU. Parameters are used to include except 1 the complete EMCR command foreseen for this function. | |
| 2 | K76 | Set THR | EMCR | EDU K104 K110 K111 | EDU Identifier EDU Low Thresh. 1 EDU Low Thresh. 2 | 00 0000 0000 | 0 0 0 | This TC is used to set the low threshold of the selected Set EMCR EDU0 Threshold EMCR EDU. In case of EDU alternate working mode, 0_0 both thresholds can be set. Parameters are used to include the complete EMCR command foreseen for this function. End-effect is verified via H/K parameters from E1398 to E1413. | |
| 3 | K76 | Set THR | EMCR | EDU K104 K110 K111 | EDU Identifier EDU Low Thresh. 1 EDU Low Thresh. 2 | 02 0000 0000 | 2 0 0 | This TC is used to set the low threshold of the selected Set EMCR EDU2 Threshold EMCR EDU. In case of EDU alternate working mode, 0_0 both thresholds can be set. Parameters are used to include the complete EMCR command foreseen for this function. End-effect is verified via H/K parameters from E1398 to E1413. | |
| 4 | K76 | Set | EMCR | EDU K104 | EDU Identifier | 03 | 3 | This TC is used to set the low threshold of the selected Set EMCR EDU3 Threshold | |

EMCS

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

EDU threshold single node

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

EMCS

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

EDU Timing

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

EMCS

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

EMCS

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

EDU double node

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

EMCS

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

EDU transparent double node

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

EMCS

| | | | | | | | | | |
|---|-----|------------|------|--------------------------|--|--------------------|-------------|--|--|
| | | | | K111 | EDU Low Thresh. 2 | 0000 | 0 | | |
| 3 | K76 | Set THR | EMCR | EDU K104 K110 K111 | EDU Identifier EDU Low Thresh. 1 EDU Low Thresh. 2 | 01 0000 0000 | 1 0 0 | | both thresholds can be set. Parameters are used to include the complete EMCR command foreseen for this function. End-effect is verified via H/K parameters from E1398 to E1413. This TC is used to set the low threshold of the selected Set EMCR EDU1 Threshold EMCR EDU. In case of EDU alternate working mode, 35_35 both thresholds can be set. Parameters are used to include the complete EMCR command foreseen for this function. End-effect is verified via H/K parameters from E1398 to E1413. |
| 4 | K76 | Set THR | EMCR | EDU K104 K110 K111 | EDU Identifier EDU Low Thresh. 1 EDU Low Thresh. 2 | 02 0000 0000 | 2 0 0 | | This TC is used to set the low threshold of the selected Set EMCR EDU2 Threshold EMCR EDU. In case of EDU alternate working mode, 50_50 both thresholds can be set. Parameters are used to include the complete EMCR command foreseen for this function. End-effect is verified via H/K parameters from E1398 to E1413. |
| 5 | K76 | Set THR | EMCR | EDU K104 K110 K111 | EDU Identifier EDU Low Thresh. 1 EDU Low Thresh. 2 | 03 0000 0000 | 3 0 0 | | This TC is used to set the low threshold of the selected Set EMCR EDU3 Threshold EMCR EDU. In case of EDU alternate working mode, 50_50 both thresholds can be set. Parameters are used to include the complete EMCR command foreseen for this function. End-effect is verified via H/K parameters from E1398 to E1413. |
| 6 | K76 | Set THR | EMCR | EDU K104 K110 K111 | EDU Identifier EDU Low Thresh. 1 EDU Low Thresh. 2 | 04 0000 0000 | 4 0 0 | | This TC is used to set the low threshold of the selected Set EMCR EDU4 Threshold EMCR EDU. In case of EDU alternate working mode, 50_50 both thresholds can be set. Parameters are used to include the complete EMCR command foreseen for this function. End-effect is verified via H/K parameters from E1398 to E1413. |
| 7 | K76 | Set THR | EMCR | EDU K104 K110 K111 | EDU Identifier EDU Low Thresh. 1 EDU Low Thresh. 2 | 05 0000 0000 | 5 0 0 | | This TC is used to set the low threshold of the selected Set EMCR EDU5 Threshold EMCR EDU. In case of EDU alternate working mode, 50_50 both thresholds can be set. Parameters are used to include the complete EMCR command foreseen for this function. End-effect is verified via H/K parameters from E1398 to E1413. |
| 8 | K76 | Set THR | EMCR | EDU K104 K110 K111 | EDU Identifier EDU Low Thresh. 1 EDU Low Thresh. 2 | 06 0000 0000 | 6 0 0 | | This TC is used to set the low threshold of the selected Set EMCR EDU6 Threshold EMCR EDU. In case of EDU alternate working mode, 50_50 both thresholds can be set. Parameters are used to include the complete EMCR command foreseen for this function. End-effect is verified via H/K parameters from E1398 to E1413. |
| 9 | K76 | Set THR | EMCR | EDU K104 K110 K111 | EDU Identifier EDU Low Thresh. 1 EDU Low Thresh. 2 | 07 0000 0000 | 7 0 0 | | This TC is used to set the low threshold of the selected Set EMCR EDU7 Threshold EMCR EDU. In case of EDU alternate working mode, 50_50 both thresholds can be set. Parameters are used to include the complete EMCR command foreseen for this function. End-effect is verified via H/K parameters from E1398 to E1413. |

EDU threshold double node

EMCS

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

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

EDU Central CCD Full Frame

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

EDU Central CCD Timing

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

EDU Central CCD SW (110)

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

| | | | | | | | | | |
|---|------|------------|------|-----|--------------------------------------|--|------------------------------------|-------------------------------|---|
| 1 | K121 | Load WP | EMCR | EDU | k104 k139 k140 k141 k142 | EDU Identifier Window X0 Window Y0 Window X Size Window Y Size | 00 00fa 00fb 006e 0064 | 0 250 251 110 100 | This TC is used to load in one of the 8 EMCR EDUs the 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. |
|---|------|------------|------|-----|--------------------------------------|--|------------------------------------|-------------------------------|---|

EDU Central CCD LW (310)

| Step Number | Command Number | Command Name | Parameter Number | Parameter Name | Parameter Value (hex) | Parameter (engineering) | Value | NOTES (from TC reports) | Details (from Sequences dev.) |
|-------------|----------------|--------------|------------------|----------------|--------------------------------------|--|------------------------------------|-------------------------------|---|
| 1 | K121 | Load WP | EMCR | EDU | k104 k139 k140 k141 k142 | EDU Identifier Window X0 Window Y0 Window X Size Window Y Size | 00 0096 0097 0136 012c | 0 150 151 310 300 | This TC is used to load in one of the 8 EMCR EDUs the 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. |

EDU Central CCD Double Node

| Step Number | Command Number | Command Name | Parameter Number | Parameter Name | Parameter Value (hex) | Parameter (engineering) | Value | NOTES (from TC reports) | Details (from Sequences dev.) |
|-------------|----------------|--------------|------------------|----------------|--------------------------------------|--|------------------------------------|---------------------------|---|
| 1 | K121 | Load WP | EMCR | EDU | k104 k139 k140 k141 k142 | EDU Identifier Window X0 Window Y0 Window X Size Window Y Size | 00 0000 0000 0136 025a | 0 0 0 310 602 | This TC is used to load in one of the 8 EMCR EDUs the 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. |
| 2 | K121 | Load WP | EMCR | EDU | k104 k139 k140 k141 k142 | EDU Identifier Window X0 Window Y0 Window X Size Window Y Size | 01 0000 0000 0136 025a | 1 0 0 310 602 | This TC is used to load in one of the 8 EMCR EDUs the 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. |

EDU Peripheral CCDs

EMCS

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

EDU all CCDs Fast Diagnostic

| Step | Command | Command Name | Parameter | Parameter Name | Parameter | Parameter | Value | NOTES | Details |
|------|---------|--------------|-----------|----------------|-----------|-----------|-------|-------|---------|
|------|---------|--------------|-----------|----------------|-----------|-----------|-------|-------|---------|

EMCS

| Number | Number | Value (hex) | (engineering) | (from TC reports) | (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 00cb 00c8 | 0 0 0 203 200 | 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) |
| 2 | K121 | Load WP | EMCR EDU | k104 k139 k140 k141 k142 | EDU Identifier Window X0 Window Y0 Window X Size Window Y Size | 02 0000 0000 00cb 00c8 | 2 0 0 203 200 | 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) |
| 3 | K121 | Load WP | EMCR EDU | k104 k139 k140 k141 k142 | EDU Identifier Window X0 Window Y0 Window X Size Window Y Size | 03 0000 0000 00cb 00c8 | 3 0 0 203 200 | 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) |
| 4 | K121 | Load WP | EMCR EDU | k104 k139 k140 k141 k142 | EDU Identifier Window X0 Window Y0 Window X Size Window Y Size | 04 0000 0000 00cb 00c8 | 4 0 0 203 200 | 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) |
| 5 | K121 | Load WP | EMCR EDU | k104 k139 k140 k141 k142 | EDU Identifier Window X0 Window Y0 Window X Size Window Y Size | 05 0000 0000 00cb 00c8 | 5 0 0 203 200 | 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) |
| 6 | K121 | Load WP | EMCR EDU | k104 k139 k140 k141 k142 | EDU Identifier Window X0 Window Y0 Window X Size Window Y Size | 06 0000 0000 00cb 00c8 | 6 0 0 203 200 | 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) |
| 7 | K121 | Load WP | EMCR EDU | k104 k139 k140 k141 k142 | EDU Identifier Window X0 Window Y0 Window X Size Window Y Size | 07 0000 0000 00cb 00c8 | 7 0 0 203 200 | 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) |

EMCS

Ref: EPIC-EST-TP-002
Project Ref.: XMM-EPIC
Issue: 3 Page: 50
Date: September 1999

EST

4.5. EMAE config i1

EMAE Standard node 0

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

EMAE Standard node 1

EMCS

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

EMAE Double node

EMCS

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

4.6. EMAE Sequences i3

ES set-up

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

ES set-up FW

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

EMCS

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

ES set-up CCDs per

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

ES set-up CCD cen

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

ES du all from EMCR

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

ES du all from EMAE

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

EMCS

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

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

ES Id FW

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

ES Id ifc8rd_1 to EMAЕ cen

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

EMCS

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

ES Id iffc10rdp to EMAE cen

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

ES Id ifc8rd_1 to EMAE per

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

EMCS

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

ES Id iffci10rdp to EMAE per

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

ES Id ifc8rd_2 to EMAE cen

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

EMCS

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

ES Id iffc10rdr to EMAE cen

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

ES Id ifc8rd_2 to EMAE per

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

EMCS

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

ES Id iffci10rdr to EMAE per

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

ES Id ifc8rp_1 to EMAE cen

EMCS

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

ES Id iffci10rpp 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 iffci10rpp_0.seq area the Offset, Sequence, Pattern Mask tables or Test Image to be loaded in EMCR. More TC will be used to load the complete table in the EMDH, start address and length will be opportunely set. | |
| 2 | K74 | Upload Seq | EMCRM k109 | Seq.Pro.Ident. | | | 0 0 | This TC is used to load in the EMCR memory the SEQUENCE #0 complete Sequence Program previously stored in the EMDH Tables area. Parameters are used to include the first part of the command to be delivered from EMDH to EMCR. | |
| 3 | k82 | Load Sequen | EMAE K109 K106 K132 | Seq.Pro.Ident. EMAE Seq.Ident. EMAE Seq. Offset | 0 1 0 | 0 1 0 | | This TC is used to load in one of the four EMAE Upload EMAE Sequencers one of the four Sequence Programs stored Seq0->Seq1 in the EMCR memory. | |

ES Id ifc8rp_1 to EMAE per

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

EMCS

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

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

ES Id iffci10rpp to EMAE per

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

EMCS

K132 EMAE Seq. Offset 0 0

ES Id ifc8rp_2 to EMAE cen

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

ES Id iffci10rpr to EMAE cen

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

ES Id 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.) |
|------|----------------|--------------|------------------|----------------|-----------------------|-------------------------|-------|-------------------------|-------------------------------|
|------|----------------|--------------|------------------|----------------|-----------------------|-------------------------|-------|-------------------------|-------------------------------|

EMCS

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

ES Id iffci10rpr to EMAE per

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

EMCS

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

ES Id ifc8rd_b to EMAE

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

ES Id iffci10rdb to EMAE

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

ES Id ifc8rp_b to EMAE

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

ES Id iffc10rpb to EMAE

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

ES Id ifw5_n1 to EMAE

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

EMCS

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

ES Id ifw8rd_1 to EMAE

| Step | Command Number | Command Name | Parameter Number | Parameter Name | Parameter Value (hex) | Parameter Value (engineering) | Value | NOTES (from TC Reports) | Details (from Sequences dev.) |
|------|----------------|-----------------|---------------------------|---|-----------------------|-------------------------------|-------|---|-------------------------------|
| 1 | K53 | Load EMDH table | k300 | | 13A30 | 80432 | | This TC is used to load in a specific EMDH memory 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. | |
| 3 | k82 | Load Sequen | EMAE K109 K106 K132 | Seq.Pro.Ident. EMAE Seq.Ident. EMAE Seq. Offset | 0 1 0 | 0 1 0 | | This TC is used to load in one of the four EMAE Upload EMAE Sequencers one of the four Sequence Programs stored in the EMCR memory. | Sequencer Seq0->Seq1 |

ES Id iswci10rdp to EMAE

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

ES Id ifw8rd_2 to EMAE

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

ES Id iswci10rdr to EMAE

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

EMCS

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

ES Id ifw8rd_b to EMAE

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

ES Id iswci10rdb to EMAE

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

ES Id ifw8rd_3_1 to EMAE

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

ES Id ilwci10rdp to EMAE

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

ES Id ifw8rd_3_2 to EMAE

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

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

ES Id ilwci10rdr to EMAE

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

ES Id ifw8rd_3_b to EMAE

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

EMCS

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

ES Id rfc3rd_2_200 to EMAE

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

ES Id rfscr3rdr200 to EMAE

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

EMCS

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

ES Id rfc3rd_b_200 to EMAE

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

ES Id rfscr3rdb200 to EMAE

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

ES Id rfscr3rpp200 to EMAE

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

ES Id rfscr3rpr200 to EMAE

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

ES Id rfscr3rpb200 to EMAE

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

EMCS

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

ES Id tnc1_n1 to EMAE

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

ES Id tnc1_n2 to EMAE

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

ES Id tdc2_n1 to EMAE

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

ES Id tdiovctge05p to EMAE

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

ES Id tdc2_n2 to EMAE

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

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

ES Id tdiovctge05r to EMAE

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

ES Id timage3 to EMAE

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

EMCS

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

ES Id timnctng03p to EMAE

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

ES Id timnctng03r to EMAE

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

ES Id+setup I33ci10rdp to EMAE

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

EMCS

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

EMCS

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

4.7. EMCR int-time i4

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

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

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

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

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

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

EMCS

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

4.8. EMDH time-synch i2

On-board time management

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

4.9. FW operations i3

MOS1 Sync Nor 3Step

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

MOS1 FW to Filter A position

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

MOS1 FW to Filter A Calibration position

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

MOS1 FW to Filter B position

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

MOS1 FW to Filter B Calibration position

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

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

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

MOS1 FW to Filter C position

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

MOS1 FW to Filter C Calibration position

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

MOS1 FW to Filter D position

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

MOS1 FW to Filter D Calibration position

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

MOS1 FW to Open position

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

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

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

MOS1 FW to Open Calibration position

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

MOS1 FW to Close position

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

EMCS

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

MOS2 Sync Nor 4Step

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

MOS2 FW to Filter A position

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

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

MOS2 FW to Filter A Calibration position

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

MOS2 FW to Filter B position

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

MOS2 FW to Filter B Calibration position

| Step | Command Number | Command Name | Parameter Number | Parameter Name | Parameter Value (hex) | Parameter (engineering) | Value | NOTES (from TC Reports) | Details (from Sequences dev.) |
|------|----------------|------------------|------------------|-------------------|-----------------------|-------------------------|-------|--|-------------------------------|
| 1 | K49 | Apply Power F.W. | K98 | FW PW CoilSelec | 1 | Nominal Coil | | This TC is used, by the EMDH, to switch-on the relay which allows to apply primary power to the Filter Wheel. The parameter allows to select which coil of the Filter Wheel shall be powered. End-effect is verified with H/K parameters E1012-13. | |
| 2 | K85 | Turn Filt. Wheel | K99 | FW T Coil Sel. | 1 | Nominal On | | | |
| | | | K134 | Rotation Direct | 0 | Forward | | | |
| | | | 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 | | | |
| 3 | K50 | Remove PW F.W. | K137 | New Address | 513 | Steps | | This TC is used, by the EMDH, to switch-off the relay which allows to apply primary power to the Filter Wheel. End-effect is verified with H/K parameters E1012-13. | |

MOS2 FW to Filter C position

| Step | Command Number | Command Name | Parameter Number | Parameter Name | Parameter Value (hex) | Parameter (engineering) | Value | NOTES (from TC Reports) | Details (from Sequences dev.) |
|------|----------------|------------------|------------------|-------------------|-----------------------|-------------------------|-------|--|-------------------------------|
| 1 | K49 | Apply Power F.W. | K98 | FW PW CoilSelec | 1 | Nominal Coil | | This TC is used, by the EMDH, to switch-on the relay which allows to apply primary power to the Filter Wheel. The parameter allows to select which coil of the Filter Wheel shall be powered. End-effect is verified with H/K parameters E1012-13. | |
| 2 | K85 | Turn Filt. Wheel | K99 | FW T Coil Sel. | 1 | Nominal On | | | |
| | | | K134 | Rotation Direct | 0 | Forward | | | |
| | | | 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 | | | |
| 3 | K50 | Remove PW F.W. | K137 | New Address | 799 | Steps | | This TC is used, by the EMDH, to switch-off the relay which allows to apply primary power to the Filter Wheel. End-effect is verified with H/K parameters E1012-13. | |

MOS2 FW to Filter C Calibration position

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

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

MOS2 FW to Filter D position

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

MOS2 FW to Filter D Calibration position

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

MOS2 FW to Open position

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

EMCS

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

MOS2 FW to Close Calibration position

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

4.10. HBR config i2

HBR Imaging

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

HBR threshold

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

HBR double node

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

HBR double node threshold

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

HBR timing

EMCS

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

HBR 1 transparent

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

HBR 2 transparent

| Step | Command | Command Name | Parameter | Parameter Name | Parameter | Parameter | Value | NOTES | Details |
|------|---------|--------------|-----------|----------------|-----------|-----------|-------|-------|---------|
|------|---------|--------------|-----------|----------------|-----------|-----------|-------|-------|---------|

EMCS

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

HBR 3 transparent

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

HBR 4 transparent

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

EMCS

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

HBR 5 transparent

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

HBR 6 transparent

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

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

HBR 7 transparent

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

HBR 8 transparent

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

EMCS

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

Default HBR Threshold and Size

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

EMCS

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

4.11. Maintenance i2

Ld EMDH Memory

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

EMDH Memory cks rep

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

EMDH Memory dmp rep

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

Ld EMCR Memory

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

3 k71 Start EMCR RAM P

the start address and data to be loaded. Command will be executed only in Safe Stand-by mode with EMCR running the Boot program.
 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 code file name :EMCR_v14 area. The parameters are used to specify respectively the start address and data to be loaded. Command will be executed only in Safe Stand-by mode with EMCR running the Boot program. | |
| 3 | k71 | Start EMCR RAM P | | | | | | This TC is used, by EMCR, to start execution of the program stored in RAM Memory. Parameters are used to include the complete EMCR command foreseen for this function. | |

EMCR Memory cks rep

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

EMCR Memory dmp rep

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

EMCR cold restart

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

4.12. Mode Switching i3

Enter OV CCD1 DN

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

Enter OV CCD1 LW

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

EMCS

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

the complete EMCR command foreseen for this function.

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

Start Sequencer

Enter OV CCD1 SW

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

EMCS

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

Start Sequencer

Enter OV CCD1 FS

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

EMCS

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

Enter OV CCD2 FS

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

Enter OV CCD3 FS

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

Enter OV CCD4 FS

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

EMCS

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

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

Start Sequencer

Enter OV CCD5 FS

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

EMCS

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

Enter OV CCD6 FS

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

EMCS

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

Enter OV CCD7 FS

| Step | Command Number | Command Name | Parameter Number | Parameter Name | Parameter Value (hex) | Parameter Value (engineering) | Value | NOTES (from TC Reports) | Details (from Sequences dev.) |
|------|----------------|----------------|--|---|--|---|-------|---|-------------------------------|
| 1 | k81 | Load Comman | EMAE K133 K160 | Field of View P8 EMA CommandAddr. EMA CommandDatum | 0258 3e ff | 600 62 240 | | 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 0096 0001 0064 0014 000a 0001 0000 0000 01c2 0033 01f3 015e 0260 0257 000a 0005 | 5 0 0 610 602 7 0 0 0 150 1 100 20 10 1 0 0 450 51 499 350 608 599 10 5 | | This TC is used to perform transition to OFFSET and VARIANCE Mode. In this mode, EMCS will start the CCD readout of 1 frame in transparent mode. EMCS will reject the specified number of frames before to store the last one, compute the Offset and Variance, send to ground the result, update the EMDH Table. | |
| 3 | k81 | Load Comman | EMAE K133 K160 | Field of View P8 EMA CommandAddr. EMA CommandDatum | 0258 3e ff | 600 62 255 | | | Start Sequencer |

Enter OV Timing FS

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

EMCS

| | | | | | | | |
|---|------|--------------------|------|--------------------|----------------|-------|------|
| 2 | k5 | Enter O Mode | K1 | Rejected Frames | 0bc2 | 3010 | |
| | | | 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 Comman | EMA E | K133 |
| | K160 | EMA E CommandDatum | | | | ff | 255 |
| | | | | | | | |

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

Start Sequencer

Enter Prime

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

Enter Fast

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

Comman K160 EMAE CommandDatum f0 240

2 k4 Enter FAST Mode

EMAЕ, through EMCR. Parameters are used to include the complete EMCR command foreseen for this function.
 This TC is used to perform transition to FAST Mode. In this mode, EMCS will start the CCD readout depending on the instrument configuration performed in IDLE Mode. Scientific TM packets will be generated with information regarding the incoming events.

Enter In Flight Test

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

Enter Diagnostic FF or RFS

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

Enter Fast Diagnostic FF

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

EMCS

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

Enter Diagnostic LW

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

Enter Diagnostic SW

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

Enter Diagnostic Timing

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

EMCS

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

Enter Diagnostic DN

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

Enter Idle

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

Observation to idle

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

the complete EMCR command foreseen for this function.

4.13. Offset tables i2

OT Id all to EMCR

| Step | Command Number | Command Name | Parameter Number | Parameter Name | Parameter Value (hex) | Parameter Value (engineering) | Value | NOTES (from TC Reports) | Details (from Sequences dev.) |
|------|----------------|--------------|------------------|----------------|-----------------------|-------------------------------|-------|---|--|
| 1 | k53 | LOAD TABLES | EMDH k300 | | 13A30 | 80432 | | This TC is used to load in a specific EMDH memory file-name for table 0 area the Offset, Sequence, Pattern Mask tables or Test Image to be loaded in EMCR. More TC will be used to load the complete table in the EMDH, start address and length will be opportunely set. | |
| 2 | k73 | Upload OST | EMCRM k108 | OST Identifier | | 0 0 | | | This TC is used to load in the EMCR memory the 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 | k53 | LOAD TABLES | EMDH k300 | | 13A30 | 80432 | | | file-name for table 1 |
| 4 | k73 | Upload OST | EMCRM k108 | OST Identifier | 1212 | 4626 | 1 1 | | EMCR OT1 |
| 5 | k53 | LOAD TABLES | EMDH k300 | | 13A30 | 80432 | | | file-name for table 2 |
| 6 | k73 | Upload OST | EMCRM k108 | OST Identifier | 1212 | 4626 | 2 2 | | EMCR OT2 |
| 7 | k53 | LOAD TABLES | EMDH k300 | | 13A30 | 80432 | | | file-name for table 3 |
| 8 | k73 | Upload OST | EMCRM k108 | OST Identifier | 1212 | 4626 | 3 3 | | EMCR OT3 |
| 9 | k53 | LOAD TABLES | EMDH k300 | | 13A30 | 80432 | | | file-name for table 4 |
| 10 | k73 | Upload OST | EMCRM k108 | OST Identifier | 1212 | 4626 | 4 4 | | EMCR OT4 |
| 11 | k53 | LOAD TABLES | EMDH k300 | | 13A30 | 80432 | | | file-name for table 5 |
| 12 | k73 | Upload OST | EMCRM k108 | OST Identifier | 1212 | 4626 | 5 5 | | EMCR OT5 |
| 13 | k53 | LOAD TABLES | EMDH k300 | | 13A30 | 80432 | | | file-name for table 6 |
| 14 | k73 | Upload OST | EMCRM k108 | OST Identifier | 1212 | 4626 | 6 6 | | EMCR OT6 |
| 15 | k53 | LOAD TABLES | EMDH k300 | | 13A30 | 80432 | | | file-name for table 7 |
| 16 | k73 | Upload OST | EMCRM k108 | OST Identifier | 1212 | 4626 | 7 7 | | EMCR OT7 |

OT Id all EDU std (EDU1 alt)

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

OT Id all EDU alt (EDU1 nor)

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

EMCS

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

OT Id 0 to EMCR for OV

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

OT Id 1 to EMCR for OV

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

OT Id 2 to EMCR for OV

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

OT Id 3 to EMCR for OV

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

OT Id 4 to EMCR for OV

EMCS

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

OT Id 5 to EMCR for OV

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

OT Id 6 to EMCR for OV

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

OT Id 7 to EMCR for OV

EMCS

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

OT Id 0 to EMCR+EDU std for OV

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

OT Id 1 to EMCR+EDU std for OV

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

EMCS

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

OT Id 2 to EMCR+EDU std for OV

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

OT Id 3 to EMCR+EDU std for OV

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

OT Id 4 to EMCR+EDU std for OV

| Step | Command | Command Name | Parameter | Parameter Name | Parameter | Parameter | Value | NOTES | Details |
|------|---------|--------------|-----------|----------------|-----------|-----------|-------|-------|---------|
|------|---------|--------------|-----------|----------------|-----------|-----------|-------|-------|---------|

EMCS

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

OT Id 5 to EMCR+EDU std for OV

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

OT Id 6 to EMCR+EDU std for OV

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

EMCS

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

OT Id 7 to EMCR+EDU std for OV

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

OT Id 0 to EMCR+EDU alt for OV

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

OT Id 1 to EMCR+EDU alt for OV

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

EMCS

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

OT Id 2 to EMCR+EDU alt for OV

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

OT Id 3 to EMCR+EDU alt for OV

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

EMCS

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

OT Id 4 to EMCR+EDU alt for OV

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

OT Id 5 to EMCR+EDU alt for OV

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

OT Id 6 to EMCR+EDU alt for OV

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

EMCS

TABLES

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

OT Id 7 to EMCR+EDU alt for OV

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

OT du all from EMCR

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

EMCS

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

OT du all from EDU std

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

EMCS

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

OT du all from EDU alt

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

EMCS

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

4.14. Pattern Mask tables i3

PMT Id cen to EMCR imaging

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

EMCS

```

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

PMT Id cen to EMCR timing

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

EMCS

| | | | | | | | |
|---|-----|-------------|------|---------|----------------|---------------------|---|
| | | | | | | 0000 0000 0000 | |
| | | | | | | 0000 0000 0000 | |
| | | | | | | 0000 0000 ffff ffff | |
| | | | | | | fff 0000 0000 ffff | |
| | | | | | | fff fff 0000 0000 | |
| | | | | | | fff fff fff 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 | |
| | | | | | | fff 0000 0000 | |
| | | | | | | 0000 0000 0008 | |
| | | | | | | 0000 0000 0000 | |
| | | | | | | 0000 0008 0000 | |
| | | | | | | 0000 0000 0000 | |
| | | | | | | 0000 0000 0000 | |
| | | | | | | 0000 0000 0000 | |
| | | | | | | 0000 0000 0000 | |
| | | | | | | 0000 0000 0000 | |
| | | | | | | 0000 fff 0000 | |
| | | | | | | 0000 0000 0000 | |
| | | | | | | 0000 0000 0000 | |
| | | | | | | 0000 0000 0000 | |
| | | | | | | 0000 0000 0000 | |
| | | | | | | 0000 0006 0000 | |
| | | | | | | 0000 0000 fff fff | |
| | | | | | | fff 0000 0000 fff | |
| | | | | | | fff fff 0000 0000 | |
| | | | | | | fff fff fff 0000 | |
| | | | | | | 0000 0000 0008 | |
| | | | | | | 0000 0000 0000 | |
| | | | | | | 0000 0000 0000 | |
| | | | | | | 0000 0000 fff fff | |
| | | | | | | fff 0000 0000 fff | |
| | | | | | | fff fff 0000 0000 | |
| | | | | | | fff fff fff 0000 | |
| | | | | | | 0000 0000 0000 | |
| | | | | | | 0000 0000 | |

PMT Id cen to EMCR threshold

EMCS

```

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

PMT Id cen to EMCR+EDU imaging

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

EMCS

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

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

PMT Id cen to EMCR+EDU timing

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

EMCS

Ref: EPIC-EST-TP-002
 Project Ref.: XMM-EPIC
 Issue: 3 Page: 144
 Date: September 1999

| | | | | | | | | |
|---|-----|------------------|--------------|----------------------------------|--------|----------------|---|---|
| 2 | k79 | Load EDU PMTable | k104 k107 | EDU Identifier PMT Identifier | 0 0 | 0000 0000 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 | 0 | |

PMT Id 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 PMT | M. k107 | PMT Identifier | 0 | 0 | This TC is used to load the Pattern/Masks Table in the addressed EMCR memory areas available for this scope. Parameters are used to load the complete EMCR command foreseen for this function. | |
| 0000 0000 0000 | | | | | | | | |
| 0000 0000 0000 | | | | | | | | |
| 0000 0000 0000 | | | | | | | | |
| 0000 0000 0000 | | | | | | | | |
| fff 0000 0000 | | | | | | | | |
| 0000 0000 0000 | | | | | | | | |
| 0000 0000 0000 | | | | | | | | |
| 0000 0000 0000 | | | | | | | | |
| 0000 0000 0000 | | | | | | | | |
| 0000 0000 0000 | | | | | | | | |
| 0000 0000 0000 | | | | | | | | |
| 0000 0000 0000 | | | | | | | | |
| 0000 0000 0000 | | | | | | | | |
| 0000 0000 0000 | | | | | | | | |
| 0000 0000 0000 | | | | | | | | |
| 0000 0000 0000 | | | | | | | | |
| 0000 0000 0000 | | | | | | | | |
| 0000 0000 0000 | | | | | | | | |
| 0000 0000 0000 | | | | | | | | |
| 0000 0000 0000 | | | | | | | | |
| 0000 0000 0000 | | | | | | | | |
| 0000 0000 0000 | | | | | | | | |
| 0000 0000 0000 | | | | | | | | |
| 0000 0000 0000 | | | | | | | | |
| 0000 0000 0000 | | | | | | | | |
| 2 | k79 | Load EDU PMTable | k104 k107 | EDU Identifier PMT Identifier | 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. | |
| | | | | | | | | |

EMCS

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

PMT Id per to EMCR imaging

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

EMCS

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

3 k72 Load EMCR M. k107 PMT Identifier

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

EMCS

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

EMCS

```

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

PMT Id per to EMCR threshold

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

EMCS

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

3 k72 Load EMCR M. k107 PMT Identifier

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

EMCS

| | | | | | | | | |
|---|-----|----------|------|---------|----------------|------|------|------|
| 4 | k72 | Load PMT | EMCR | M. k107 | PMT Identifier | 5 | | 5 |
| | | | | | | 0000 | 0000 | 0000 |
| | | | | | | 0000 | 0000 | 0000 |
| | | | | | | 0000 | 0000 | 0000 |
| | | | | | | 0000 | 0000 | 0000 |
| | | | | | | fff | 0000 | 0000 |
| | | | | | | 0000 | 0000 | 0000 |
| | | | | | | 0000 | 0000 | 0000 |
| | | | | | | 0000 | 0000 | 0000 |
| | | | | | | 0000 | 0000 | 0000 |
| | | | | | | 0000 | 0000 | 0000 |
| | | | | | | 0000 | 0000 | 0000 |
| | | | | | | 0000 | fff | 0000 |
| | | | | | | 0000 | 0000 | 0000 |
| | | | | | | 0000 | 0000 | 0000 |
| | | | | | | 0000 | 0000 | 0000 |
| | | | | | | 0000 | 0000 | 0000 |
| | | | | | | 0000 | 0000 | 0000 |
| | | | | | | 0000 | 0000 | fff |
| | | | | | | 0000 | 0000 | 0000 |
| | | | | | | 0000 | 0000 | 0000 |
| | | | | | | 0000 | 0000 | 0000 |
| | | | | | | 0000 | 0000 | 0000 |
| | | | | | | 0000 | 0000 | 0000 |
| | | | | | | 0000 | 0000 | 0000 |
| | | | | | | 0000 | 0000 | 0000 |
| | | | | | | 0000 | 0000 | 0000 |
| | | | | | | 0000 | fff | 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 |
| | | | | | | fff | 0000 | 0000 |
| | | | | | | 0000 | 0000 | 0000 |
| | | | | | | 0000 | 0000 | 0000 |
| | | | | | | 0000 | 0000 | 0000 |
| | | | | | | 0000 | 0000 | 0000 |
| | | | | | | 0000 | 0000 | 0000 |
| | | | | | | 0000 | 0000 | 0000 |
| | | | | | | 0000 | 0000 | 0000 |
| | | | | | | 0000 | 0000 | 0000 |
| | | | | | | 0000 | fff | 0000 |
| | | | | | | 0000 | 0000 | 0000 |
| | | | | | | 0000 | 0000 | 0000 |

EST

EMCS

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
fff 0000 0000
0000 0000 0000
0000 0000 0000
0000 0000 0000
0000

6 k72 Load EMCR M. k107 PMT Identifier

7 7
0000 0000 0000
0000 0000 0000
0000 0000 0000
0000 0000 0000
fff 0000 0000
0000 0000 0000
0000 0000 0000
0000 0000 0000
0000 0000 0000
0000 0000 0000
0000 0000 0000
0000 0000 0000
0000 0000 0000
0000 0000 0000
0000 0000 0000
0000 0000 0000
0000 0000 0000
0000 0000 0000
0000 0000 0000
0000 0000 0000
0000 0000 0000
0000 0000 0000
0000 0000 0000
0000 0000 0000
0000 0000 0000
0000 0000 0000
0000 0000 0000
0000 0000 0000
0000 0000 0000
0000 0000 0000
0000 0000 0000
fff 0000 0000
0000 0000 0000

EMCS

0000 0000 0000
 0000 0000 0000
 0000

PMT Id per to EMCR+EDU imaging

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

PMT Id per to EMCR+EDU threshold

EMCS

PMT du all from EMCR

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

PMT du all from EDU

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

4.15. Reports i1

HBR conf, buff_sz, thres_v

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

Extr conf + Thermal limits

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

Pkt generation

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

HBR BPT

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

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

Global report

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

4.16. Test image i1

Du test image

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

Ld test image

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

4.17. Thermal i3

Annealing

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

Decontamination

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

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

Decontamination 0 °C

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

Decontamination +30 °C

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

EMCS

| | | | | | | |
|---|----|-----------------|-----|------------------|---|-------|
| 2 | k7 | Enter EXTH Mode | k93 | AnnealConfShroud | 1 | 1 |
| | | | k94 | AnnealConfAnneal | 1 | 1 |
| | | | k3 | ExtraheatingMode | | 1 1 |
| | | | k4 | MinTempSetValue | | +25°C |
| | | | k5 | MaxTempSetValue | | +35°C |

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.

Deicing

| Step | Command Number | Command Name | Parameter Number | Parameter Name | Parameter Value (hex) | Parameter Value (engineering) | Value | NOTES (from TC Reports) | Details (from Sequences dev.) |
|------|------------------|----------------|------------------|-------------------|-----------------------|-------------------------------|---|-------------------------|-------------------------------|
| 1 | k35 | Load EXTH Conf | k80 | DeicingLowTempLim | | -90°C | Load Extraheating Configuration. This TC is used to load in the EMDH the configuration of the relays to be used in the different extraheating submodes. Also the safety temperature limits checked by the EMDH during the different extraheating submodes are loaded. | | |
| | | | k81 | DeicingUppTempLim | | -50°C | | | |
| | | | k82 | DeconLowTempLim | | -40°C | | | |
| | | | k83 | DeconUppTempLim | | 0°C | | | |
| | | | k84 | AnnealLowTempLim | | +100°C | | | |
| | | | k85 | AnnealUppTempLim | | +150°C | | | |
| | | | k86 | DeicingConfThCont | 1 | 1 | | | |
| | | | k87 | DeicingConfShroud | 1 | 1 | | | |
| | | | k88 | DeicingConfAnneal | 0 | 0 | | | |
| | | | k89 | DecontConfThCont | 0 | 0 | | | |
| | | | k90 | DecontConfShroud | 1 | 1 | | | |
| | | | k91 | DecontConfAnneal | 1 | 1 | | | |
| | | | k92 | AnnealConfThCont | 0 | 0 | | | |
| | | | 2 | k7 | Enter EXTH Mode | k93 | | | AnnealConfShroud |
| k94 | AnnealConfAnneal | 1 | | | | 1 | | | |
| k3 | ExtraheatingMode | | | | | 0 0 | | | |
| k4 | MinTempSetValue | | | | | -70°C | | | |
| k5 | MaxTempSetValue | | | | | -65°C | | | |

Set FPA Nom -70

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

Set FPA Nom -100

EMCS

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

Set FPA Red -70

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

Set FPA Red -100

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