XMM Optical Monitor

U. C. SANTA BARBARA– LOS ALAMOS & SANDIA NATIONAL LABORATORIES

Authors: J. Kennea, C. Ho, T. Sasseen

DPU FLIGHT SOFTWARE TEST REPORTS FOR RELEASE 12

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TABLE OF CONTENTS

Section 1: Scope of Document

This document contains the test reports for software modifications for Release 11 of the DPU flight software, released in December 2000 mainly to fix problems with field acquisition in Release 11.   The software modifications themselves are described in document XMMOM/UCSB/TC/0053. A complete description of the DPU testing philosophy and setup is given in XMMOM/UCSB/RP/0002.

Section 2: NCR Test Reports

2.1 Test report for NCR 186

Problem

FAST24 changes have been made in the blue code in response to NCR186. However these changes make the output of fast mode data incompatible with the ground software, and therefore the implementation of FAST24 has been held off for a later release.

Action

The FAST24 code is not compiled for the DPU code by default in Release 12. Compilation of FAST24 is controlled by the "FAST24" compile flag.

Test

1. Recompile the DPU flight codes for Release 12.
2. Compile the DPU Release 11 flight code.
3. Binary compare the Release 11 and Release 12 Blue DSP code.

Results

The Blue DSP codes for Release 12 and Release 11 are indenticle. Therefore no blue code changes have been made in Release 12, which negates the need for extensive testing of blue code for this release.

Affected codes

```
blue.asm v1.36
```

2.2 Test report for NCR 206

<u>Problem</u>

Field acquisition always fails if done more than once without a DPU reset. This is caused by various loop variables only being reinitialised during a DPU reset.

<u>Action</u>

DPU code change to reinitialise relevant variables. Added DD_REF output at FAQ stage for debugging.

<u>Test</u>

1. Recompile and reload the DPU flight codes.
2. Execute expose.faqs exposure script. Do 10 FAQs in a row.
3. Examine FAQ results
4. Behavior confirmed both on EOB2@UCSB.

<u>Results</u>

Multiple FAQ work correctly, DD_REF packet output. Seen to work by Jamie Kennea on EOB2@UCSB (2000-12-13)

<u>Affected codes</u>

```
white_default.h v1.26
white_shared_variables.h v1.20
white_static_variables.h v1.21
su_initialize.c v1.44
su_deliverdata.c v1.44
su_makeags.c v1.20
whitedsp.c v1.75
```

2.4 Test report for NCR 212

Problem

Matching up of uploaded reference stars with matched stars in DP_FAQ is difficult if some reference stars are not matched.

Action

Modify the format of DP_FAQ to put in dummy coordinates 0xFFFFFF in the case that a reference stars is not found.

Test

1. Compile and reload DPU code.
2. Run expose.faqs test which simulates 10 FAQs.
3. Examine the cases where not all ref stars are matched.

Results

Seen to work on EOB2@UCSB by Jamie Kennea (2000-12-13)

Affected codes

```
su_deliverdata.c v1.43
su_makeags.h v1.18
```

Appendix 1: List of Acronyms

CPU   Central Processor Unit

CVS   Concurrent Version System

CH   Cheng Ho

DEM   Digital Electronics Module (made up of DPU and ICU)

DPU   Digital Processing Unit (supplied by US)

ECR   Engineering Change Request

EOB   Electro-Optical Breadboard

ICU   Instrument Control Unit (supplied by MSSL)

LANL   Los Alamos National Laboratory

MSSL   Mullard Space Sciences Laboratory

NCR   Non-Conformance Report

SNL   Sandia National Laboratory

UCSB   University of California at Santa Barbara