REVISIONS

Rev	ECO No.	Description	Checked	Approved	Date
01	36-962	Initial version			10/10/97

	NAME	DATE
Drawn:	J. Francis	10/07/97
Checked:		
Approved:		
Released:		

MASSACHUSETTS INSTITUTE OF TECHNOLOGY
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ACIS Flight Software Jitter DAC Test Procedure

Size	Code Identification No.	Drawing No.	Rev.
T	80230	36–57401.01	01

Scale: NONE

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LIST OF UNDETERMINED ITEMS

1.

1.0 Introduction

1.1 Identification

FileName: `JitterDac.book rev 01`

1.2 Purpose

The purpose of this test is to validate that the Flight Software has properly implemented the "Jitter DAC" feature, and that the initial noise levels from the CCDs is comparable to those taken at XRCF Flat-field testing with the "Jitter-DAC" patch in place.

1.3 Scope

This procedure assumes that the test conductor is experienced with the ACIS GSE, and the ACIS high-speed tap. It also assumes that the test conductor is capable of, or has an co-conductor who is capable of analyzing the high-speed tap data and signing-off on the acceptability of images captured during the test.

1.4 Overview

This test must be performed with the video boards idle for no less than about 15 minutes.

1. Start a Timed Exposure Science run with the high-speed tap attached and acquiring frames.
2. Acquire no fewer than 100 frames, starting from the first frame.
3. Analyze the CCD noise levels verify that the CCD noise power level is stable to within a 1 ADU within the first few frames, and remains stable over the 100 sampled frames.

2.0 Test Cases

2.1 Setup

1. Focal plane is cold (around -19 C)
2. Door is closed (i.e. no X-rays on I0)
3. BEP A and B are powered
4. Either DEA side A or DEA side B are powered (NOT BOTH)
5. High-speed tap cable is attached and checked-out
6. The imaging CCD I0 has not been clocked within the last 15 minutes
7. The telemetry rate can be either 500 bps or 24 Kbps

2.2 Time

This test will take under 1 hour to run.

2.3 Steps

1. Cold Boot BEP A

   `Software Version = 11? _____`

2. Power on FEPs 0..5 and Video Boards CCD_I0..CCD_I3 and CCD_S2, CCD_S3

   `result = CMDRESULT_OK? _____`

3. Wait at least 1.5 minutes for the boards to come up
4. Select High-Speed Tap from I0

   ```
   result = CMDRESULT_OK? _____
   ```

5. Load the Timed Exposure parameter block, *jitterdac.te*

   ```
   result = CMDRESULT_OK? _____
   ```

6. Start the Timed Exposure Science Run

   ```
   result = CMDRESULT_OK? _____
   ```

7. Wait no less than 30 seconds and no longer than 1 minute
8. Start the high-speed tap capture for at least 100 frames The capture should block until ACIS starts clocking bias calibration frames. Once the bias has started, the capture should start seeing and acquiring frames.

   ```
   frames being captured? _____
   ```

9. Once the desired number of frames (at least 100) have been captured, stop the science run.

   ```
   result = CMDRESULT_OK? _____
   termination reason = SMTERM_STOPCMD? _____
   ```

10. Analyze the captured frames and verify that the overclock-corrected bias level did not drift by more than TBD ADU over the 100 frames, and that the noise power, over the 100 frames is less than 4 ADU.

    ```
    bias level drift < TBD ADU? _____ noise power < 4 ADU? _____
    PASS/FAIL: Pass if all of the above = YES _____
    ```

3.0 Test Script(s)

4.0 Test Results

1	Run Date	
2	Test Conductor	
3	Software Version	
4	Number of tests passed	
5	Number of tests failed	
6	Number of tests not run	

```
paramBlockName          = teBlock
parameterBlockId        = 0x8fffffff
fepCcdSelect            = 7 0 1 2 3 6
fepMode                 = 2
bepPackingMode          = 1
onChip2x2Summing        = 0
ignoreBadPixelMap       = 0
ignoreBadColumnMap      = 0
recomputeBias           = 1
trickleBias             = 0
subarrayStartRow        = 0
subarrayRowCount        = 1023
overclockPairsPerNode   = 8
outputRegisterMode      = 0
ccdVideoResponse        = 0 0 0 0 0 0
primaryExposure         = 33
secondaryExposure       = 0
dutyCycle               = 0
fep0EventThreshold      = 20 20 20 20
fep1EventThreshold      = 38 38 38 38
fep2EventThreshold      = 38 38 38 38
fep3EventThreshold      = 38 38 38 38
fep4EventThreshold      = 38 38 38 38
fep5EventThreshold      = 38 38 38 38
fep0SplitThreshold      = 13 13 13 13
fep1SplitThreshold      = 13 13 13 13
fep2SplitThreshold      = 13 13 13 13
fep3SplitThreshold      = 13 13 13 13
fep4SplitThreshold      = 13 13 13 13
fep5SplitThreshold      = 13 13 13 13
lowerEventAmplitude     = 0
eventAmplitudeRange     = 65535
gradeSelections         = 0xffff 0xffff 0xffff 0xffff 0xffff 0xffff 0xffff 0xffff 0xffff 0
xffff 0xffff 0xffff 0xffff 0xffff 0xffff 0xffff
windowSlotIndex         = 65535
histogramCount          = 0
biasCompressionSlotIndex = 3 1 1 1 1 1
rawCompressionSlotIndex = 0
ignoreInitialFrames     = 50
biasAlgorithmId         = 1 1 1 1 1 1
biasArg0                = 5 5 5 5 5 5
biasArg1                = 16 16 16 16 16 16
biasArg2                = 0 0 0 0 0 0
biasArg3                = 26 50 50 50 50 50
biasArg4                = 20 20 20 20 20 20
fep0VideoOffset         = 79 79 79 77
fep1VideoOffset         = 87 86 76 89
fep2VideoOffset         = 83 69 79 83
fep3VideoOffset         = 86 65 82 89
fep4VideoOffset         = 76 68 79 80
fep5VideoOffset         = 90 86 79 94
deaLoadOverride         = 0
fepLoadOverride         = 0
```