

**WARNING: THIS PROCEDURE  
CONTAINS HAZARDOUS OPERATIONS**



**HESSI SPACECRAFT  
LIMITED PERFORMANCE TEST FOR  
THERMAL VACUUM TESTING**

**HSI\_MIT\_057B**

**2000-NOV-29**

**DAVE CURTIS**

As Run on: \_\_\_\_\_ (Date/Time)

By \_\_\_\_\_ (Test Conductor)

Test \_\_\_\_\_

**DOCUMENT REVISION RECORD**

Rev.	Date	Description of Change
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B	2000-11-29	Change Imager Parameter File to run

Western Range/NASA Safety: \_\_\_\_\_ Date \_\_\_\_\_

Project Manager: \_\_\_\_\_ Date \_\_\_\_\_  
 Peter Harvey

System Engineer: \_\_\_\_\_ Date \_\_\_\_\_  
 David Curtis

QA: \_\_\_\_\_ Date \_\_\_\_\_  
 Ron Jackson

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## **1. INTRODUCTION**

### **1.1 Purpose**

This document establishes the Limited Performance Test (LPT) Functional Test Procedures for the HESSI Spacecraft to be performed during Thermal Vacuum. The purpose of this procedure is to verify functional operation of the spacecraft in a limited time (< 4 hours).

### **1.2 Scope**

This procedure will be performed during thermal vacuum dwells which have not been extended for the longer full functional test.

## **2. SETUP**

### **2.1 Test Setup**

The spacecraft shall be setup and powered on using the HSI\_SPACECRAFT\_ON (HSI\_MIT\_010) procedure. Verify that the pages snapped at the end of HSI\_MIT\_010 included PACI, IDPU Thermal, and IDPU Voltages, and that the AD590 CFGMON was running so the temperatures were valid. If not (or if HSI\_MIT\_010 did not immediately precede this test), snap and append those pages now.

### 3. TEST PROCEDURE

#### 3.1 IAD Motor 1 Test

- a. Record the IAD1 motor position from the PACI display page.
- b. Enable IAD1 motor power by typing “/PCBSETSWITCH PCBIAD1, ON” from the ITOS STOL prompt.
- c. Command the motor to move 32 steps, about 1/8 turn of the shaft, by typing “/PCBDRIVEIAD IAD1, STEPS=32, CLOCKWISE” from the ITOS STOL prompt.
- d. Record the IAD1 motor position from the PACI display page
- e. Command the motor back 32 steps by typing “/PCBDRIVEIAD IAD1, STEPS=32, COUNTERCLOCK” from the ITOS STOL prompt.
- f. Record the IAD1 motor position from the PACI display page
- g. Disable power to the IAD1 motor by typing “PCBSETSWITCH PCBIAD1, OFF” from the ITOS STOL prompt.

#### IAD Motor 1 Measurements

Steps	IAD1 Position
0	
32 CW	
32 CCW	

### 3.2 IAD Motor 2 Test

- a. Record the IAD2 motor position from the PACI display page.
- b. Enable IAD1 motor power by typing “/PCBSETSWITCH PCBIAD2, ON” from the ITOS STOL prompt.
- c. Command the motor to move 32 steps, about 1/8 turn of the shaft, by typing “/PCBDRIVEIAD IAD2, STEPS=32, CLOCKWISE” from the ITOS STOL prompt.
- d. Record the IAD2 motor position from the PACI display page
- e. Command the motor back 32 steps by typing “/PCBDRIVEIAD IAD2, STEPS=32, COUNTERCLOCK” from the ITOS STOL prompt.
- f. Record the IAD2 motor position from the PACI display page
- g. Disable power to the IAD2 motor by typing “PCBSETSWITCH PCBIAD2, OFF” from the ITOS STOL prompt.

#### IAD Motor 2 Measurements

Steps	IAD2 Position
0	
32 CW	
32 CCW	

### 3.3 Fine Sun Sensor Functional

The FSS stimulus head is not installed for thermal vacuum, so minimal testing can be performed.

- a. Verify the FSS indicator on the ITOS ACS page reads "No Sun"

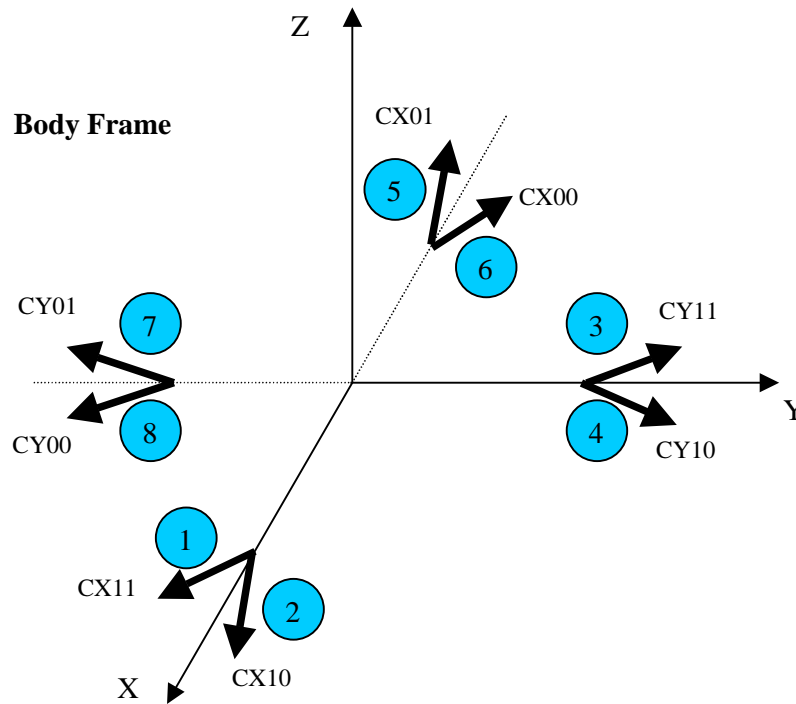
TC Verify \_\_\_\_\_

**3.4 Coarse Sun Sensor Phasing**

- a. Using the GSE CSS simulators, command the following CSS channels and verify the measured CSS sun vector with the expected CSS sun vector. Refer to Figure 4-2 below. Table 4-11 lists the following CSS naming conventions:

**Table 4-11. CSS Naming Conventions**

No.	Physical CSS	CSS Name	PACI Channel
1	+X, upper	CX11	TPACSSCH1
2	+X, lower	CX10	TPACSSCH2
3	+Y, upper	CY11	TPACSSCH3
4	+Y, lower	CY10	TPACSSCH4
5	-X, upper	CX01	TPACSSCH5
6	-X, lower	CX00	TPACSSCH6
7	-Y, upper	CY01	TPACSSCH7
8	-Y, lower	CY00	TPACSSCH8



**Figure 4-2. Coarse Sun Sensor Phasing**

- b. Command the following CSS channels one at a time and verify the measured CSS sun vector with the expected CSS sun vector in Table 4-12. For each channel specified, set the GSE input  $-1300 \mu\text{A}$ .



**Table 4-12. CSS Phasing, one channel at a time**

No.	CSS Channel	CSS Input	Expected Sun Vector			Measured Sun Vector ( $\pm 0.01$ )		
		Current ( $\mu\text{A}$ )	CSS X	CSS Y	CSS Z	CSS X	CSS Y	CSS Z
1	CX11	-1300	0.8660	0.00	0.50			
2	CX10	-1300	0.7660	0.00	-0.6428			
3	CY11	-1300	0.00	0.8660	0.50			
4	CY10	-1300	0.00	0.7660	-0.6428			
5	CX01	-1300	-0.8660	0.00	0.50			
6	CX00	-1300	-0.7660	0.00	-0.6428			
7	CY01	-1300	0.00	-0.8660	0.50			
8	CY00	-1300	0.00	-0.7660	-0.6428			

TC	
----	--

**3.5 Torque Rod Compensation Matrix**

- a. From ITOS, start the torque rod compensation matrix test procedure by typing, "start tqrod\_comp" from the ITOS STOL prompt. Verify that the magnetic field responds to each torque bar.
- b. Rename the output file "tqrod.comp.plt" in hessiops /usr/tmp to "trqrod\_comp\_YYMMDD.plt" (e.g. trqrod\_comp\_000311.plt). Verify that the report file says "PASSED" \_\_\_\_\_OK
- c. Record filename here \_\_\_\_\_

### 3.6 Telecommunications Test

- a. Verify that the antenna hats (all 4) are installed on the spacecraft antennas and properly cabled to the GSE RF Rack
- b. Start the following ITOS script to plot RF Uplink telemetry  
"start PLOT\_RF\_UPLINK"
- c. Configure the RF uplink from the PC GSE as follows
  1. If not started, bring up the "RF Control" window
  2. Configure the PC GSE RF switch for the Forward Receive antenna.
    - On the RF Control window, click on the "Forward" button at least 2 times to FWD. Listen for the click in the RF rack a few seconds after it the button is pushed.
- d. Configure the HP-E4422B S-band Signal Generator in the RF rack as follows (may be stored as configuration #1):
  3. Set the HP-E4422B to "LOCAL" (hit LOCAL key)
  4. Set the center frequency to 2039.645833 MHz.
  5. Set the output power to -37 dBm.
  6. Set the Frequency Modulation (FM) Deviation to 240 kHz and Phase Modulation (PM) deviation to 3.1 rad.
  7. Set the FM Source to EXT2 DC
  8. Set the PM source to EXT1 AC
  9. Set Mod on/off = ON
  10. Disable PM and enable FM.
- e. Configure the HP-33120A Sweep Generator as follows
  1. Set waveform to triangle wave.
  2. Adjust output level to 1.0 V peak-to-peak.
  3. Set the frequency to 0.133 Hz.
  4. On the PC GSE "I&T Diagnostic" Window, select Uplink Path = Transponder
  5. Verify that the Avtec PTP is configured per the Spacecraft Power-On procedure

**3.6.1 Receive Functional Test**

- a. Enable the S-band signal generator RF output (Push RF On button).
- b. Observe from telemetry the time difference between the point at which sweep generator is enabled (indicated by the loop stress) and the time at which carrier lock is indicated. Record this value. It should not be greater than 30 seconds.  
Time to lock carrier: \_\_\_\_\_ Sec (<30 seconds)
- c. Continue to monitor telemetry for 30 seconds and ensure that the command receiver continues to track the swept Continuous Wave (CW) signal.  
TC Verify \_\_\_\_\_
- d. Enable FM Modulation.
- e. With the command receiver locked, disable the uplink sweep by disabling the FM modulation on the signal generator. This must be done when the sweep is near the nominal frequency (close to zero loop stress) or the command receiver will lose lock. Verify that the command receiver remains locked. (or repeat d and e until it does)  
TC Verify \_\_\_\_\_
- f. Enable the PM input to the signal generator.
- g. Monitor telemetry and ensure that sub-carrier lock is achieved.  
Sub-carrier Lock Status = Locked  
TC Verify \_\_\_\_\_
- h. Continue to monitor the carrier and sub-carrier lock status and ensure that both indicate a lock condition for 30 seconds.  
TC Verify \_\_\_\_\_
- i. Send a "/resync" command to ITOS
- j. Send "cmdblasthcd" procedure to uplink 64 commands. Verify that Command Count increases to 64, and the Code Block Error counter is zero  
TC Received \_\_\_\_\_ Code Block Errors \_\_\_\_\_  
TC Verify \_\_\_\_\_
- k. Decrease the RF signal generator output power level until the receiver lock telemetry indicates unlocked status. Record the power level where the receiver loses lock. (Typically about -69 dBm)  
RECEIVER LOSES LOCK POWER LEVEL \_\_\_\_\_ DBm
- l. Increase the RF signal generator output +10dB above recorded setting. If system does not relock, repeat step 3.6.1.2.b.
- m. Send "cmdblasthcd" procedure to uplink 64 commands. Verify that Command Count increases to 64, and the Code Block Error counter is zero  
TC Received \_\_\_\_\_ Code Block Errors \_\_\_\_\_  
TC Verify \_\_\_\_\_
- n. Return the RF signal generator output to -37dB

- o. Disable the RF signal generator RF output
- p. Change the uplink path to GSE on the PC GSE

**3.6.2 Transmitter Performance Testing**

**START OF HAZARDOUS OPERATIONS**

SAFETY: Verify that the antenna hats (all 4) are installed on the spacecraft antennas and properly cabled to the GSE RF Rack prior to proceeding

VERIFY	
--------	--

Verify that the FEP or Transmit enable plug is installed in the spacecraft

VERIFY	
--------	--

- a. Configure the S-band Downconverter in the PC GSE RF Control task as follows:
  - 1. LNA path selected.
  - 2. S-band frequency range (2200-2300 MHz).
  - 3. Internal TCXO.
  - 4. Center Frequency 2215 MHz.
  - 5. Toggle "Input 1" (Forward Transmit Antenna) to Input 2 and back to Input 1.
  - 6. Push "Program" Button ON. Wait 1 Second. Push "Program" Off.
  
- b. Send the ITOS command "/dlsetrate rate125kbps" to change the downlink rate to 125kbps
- c. On page CIB\_HCD\_CMDS, Push downlink rate = high. TC Verify \_\_\_\_\_
- d. Command the RF switch to the forward pushing the "FWD" button on the PCB ITOS page. Verify that the Antenna telemetry on the "PACI" ITOS page indicates FWD TC Verify \_\_\_\_\_
- e. Enable transmitter RF output power by pushing the "TRANSMIT Ebl" button closely followed by the "TRANSMIT On" button on the PCB ITOS page. Verify that the transmitter status readback indicates "On". TC Verify \_\_\_\_\_
- f. Verify that the transmitter status readback indicates "On". TC Verify \_\_\_\_\_
- g. Set the BitSync in the signal rack to 125kbps RF using a preset file. Verify that the bitsync locks and ITOS continues to receive telemetry. TC Verify \_\_\_\_\_

- h. Monitor the telemetry receiver status and ensure it remains locked for a period of 2 minutes.  
TC Verify \_\_\_\_\_
- i. Monitor the Reed-Solomon decoder status and ensure no errors occurred within the 2-minute period.  
TC Verify \_\_\_\_\_
- j. Send the ITOS command `"/dlsetrate rate4mbps"` to change the downlink rate to 4mbps. Verify that ITOS telemetry is discontinued, and the BitSync on the signal rack loses lock  
TC Verify \_\_\_\_\_
- k. Set the BitSync for 4Mbps RF (use a preset file). Verify that the BitSync locks and ITOS receives telemetry again.
- l. Monitor the Reed-Solomon decoder status and ensure no errors occurred within the 2-minute period.  
TC Verify \_\_\_\_\_
- m. Send the ITOS command `"/dlsetrate rate125kbps"` to change the downlink rate to 125kbps. Verify that ITOS telemetry is discontinued, and the BitSync on the signal rack loses lock  
TC Verify \_\_\_\_\_
- n. Set the BitSync for 125kbps HL (use a preset file). Verify that the BitSync locks and ITOS receives telemetry again.  
TC Verify \_\_\_\_\_
- o. Turn off the RF transmitter by pushing the "TRANSMIT OFF" button on the ITOS PCB page.

**3.7 ELECTRICAL POWER TEST**

**3.7.1 Power ON Solar Array Simulator**

- a. On the PC "Power Supply" display, set SAS Supply to 50V, 17A, ON. TC verify \_\_\_\_\_
- b. Push "Press to Apply" for the SAS control TC verify \_\_\_\_\_
- c. On the PC I&T Diagnostic display, select "cmd\_all". TC verify \_\_\_\_\_
- d. Set Current to 1.0 Amps per string. Push "Enable All" TC verify \_\_\_\_\_
- e. On the PC "Power Supply" display, Push "Output" button to turn OFF. TC verify \_\_\_\_\_
- f. On the PC "Power Supply" display, Push "Press to Apply". TC verify \_\_\_\_\_
- g. Verify TAC Current goes to Zero TC verify \_\_\_\_\_
- h. Verify SAS Current is non zero on the SAS display TC verify \_\_\_\_\_
- i. Verify PACI battery current is positive (battery is being charged) TC verify \_\_\_\_\_

**3.7.2 Establish GSE Connection**

- a. Run the TCP\_COMM.vi (I&T File Open, then ***RUN***) TC verify \_\_\_\_\_
- b. Type "start connect\_to\_power\_rack\_gse" from the ITOS STOL prompt. TC verify \_\_\_\_\_
- c. Wait for the TCP/IP connection status indicator to turn "green". TC verify \_\_\_\_\_

**3.7.3 Mission Mode Relay Test**

- a. Type "start test\_ccb\_mission\_mode" from the ITOS STOL prompt. TC verify \_\_\_\_\_
- b. Wait for the test to complete and then review the data. (May need to re-load the .rpt screen to see the final results on these tests) Passed \_\_\_\_\_
- c. Type "start sc\_mm\_nom" to set back to mission mode. TC verify \_\_\_\_\_

**3.7.4 Solar Array Switch Test**

- a. Type "start test\_ccb\_sa\_switches" from the ITOS STOL prompt. TC verify \_\_\_\_\_
- b. When prompted to set RTDs to 2000, press OK to continue. TC verify \_\_\_\_\_
- c. Wait for the test to complete and then review the data. Passed \_\_\_\_\_
- d. Re-enable the SAS supplies at 1 amp/string on the PC GSE TC verify \_\_\_\_\_

**3.7.5 Battery Temp Select Test**

- a. Type "start test\_ccb\_temp\_select" from the ITOS STOL prompt. TC verify \_\_\_\_\_
- b. Wait for the test to complete and then review the data. Passed \_\_\_\_\_

**3.7.6 Battery Voltage Test**

- a. Measure and record the Battery voltage telemetry as measured by the CCB. Battery Voltage \_\_\_\_\_
- b. Measure and record the Battery Half voltage telemetry as measured by the CCB. Battery Half Voltage \_\_\_\_\_
- c. Measure and record the bus voltage using the Power PC . Bus Voltage \_\_\_\_\_

**3.7.7 VT Select Telemetry Test**

- a. Type "start test\_ccb\_vtcurve\_tlm" from the ITOS STOL prompt. TC verify \_\_\_\_\_
- b. Wait for the test to complete and then review the data. Passed \_\_\_\_\_

**4. LAUNCH VEHICLE INTERFACE TEST**

**4.1 Launch Vehicle Serial Communications Test**

Perform the following:

- a. From the power rack GSE, open the LV diagnostics vi. TC Verify \_\_\_\_\_
- b. Verify the LV is receiving S/C Real Time (RT) State of Health (SOH) data at a 1 Hz rate.
- c. Verify the number of bytes received is 204. TC Verify \_\_\_\_\_
- d. Verify the first two bytes of the SOH data packet is 0x33, 0xC8. TC Verify \_\_\_\_\_
- e. Modify the first byte of the TX Start Array data from 0x33 to 0x34 and verify the S/C stops transmitting LV SOH data. TC Verify \_\_\_\_\_
- f. Modify the first byte of the TX Start Array data from 0x34 to 0x33 and verify the S/C begins transmitting LV SOH data. TC Verify \_\_\_\_\_
- g. Modify the second byte of the TX Start Array data from 0xAA to 0xAB and verify the S/C stops transmitting LV SOH data. TC Verify \_\_\_\_\_
- h. Modify the second byte of the TX Start Array data from 0xAB to 0xAA and verify the S/C begins transmitting LV SOH data. TC Verify \_\_\_\_\_



## 5. INSTRUMENT TESTS

### 5.1 PMT Test

- a. Start the IRECORD\_PMT Proc to display the PMT telemetry (in hex). This page updates once a minute.
- b. Send IDPUDUMPTBL PMTVARS to dump PMT data to the SOH Memory Dump page
- c. With the Stanford Research waveform generator (SR) connected to the RAS PMT dust cover power off , read the PMT count rate off the SOH Memory Dump ITOS page, value #1 (should be <5) Value: \_\_\_\_\_
- d. Turn on Set the SR. Verify the following settings (should be recalled on power-up):
  1. Amplitude = 5Vpp
  2. Offset = 2.5Vpp
  3. Modulation=Off
  4. Waveform = ARB
  5. Frequency = 1099.9Hz
- e. Set the Heathkit resistance box connected to the SR to 100Kohms (HI range).
- f. Record the PMT count rate, value #1 in the Memory Dump ITOS page. Should be 61-6f hex. Value: \_\_\_\_\_

**5.2 Particle Detector Test**

- a. With the nominal PD settings (IPDTHRESH=6, IPDHVDAC=122), record the PD counters (should be 0/0) IPDCTRA\_\_\_\_\_ IPDCTRB\_\_\_\_\_
- b. Set the PD threshold to 4: Send ITOS command "/IPDTHRESH VOLTAGE=4". Record the PD Counters (should be 0/0): IPDCTRA\_\_\_\_\_ IPDCTRB\_\_\_\_\_
- c. Set the PD threshold to 2: Send ITOS command "/IPDTHRESH VOLTAGE=2". Record the PD Counters (should be <30/0): IPDCTRA\_\_\_\_\_ IPDCTRB\_\_\_\_\_
- d. Set the PD threshold back to 6: Send ITOS command "/IPDTHRESH VOLTAGE=6". Record the PD Counters (should be 0/0): IPDCTRA\_\_\_\_\_ IPDCTRB\_\_\_\_\_

**5.3 Cryocooler Test**

**If the Cryocooler is currently running, skip this test.**

- a. Run ITOS command "CFGMON CRYOPOWER" to calculate the Cryocooler power level on the Spectrometer power page.
- b. Verify that the CPC Status on the SOH Spectrometer Power page is "TRIPPED"  
TC Verify: \_\_\_\_\_
- c. Start the ITOS script "ICRYO\_ON". Verify that CPC Status is now "OK"  
TC Verify: \_\_\_\_\_
- d. Record the ICT1T Temperature on the SOH Spectrometer Power ITOS page  
ICT1T: \_\_\_\_\_
- e. Record the accelerometer setting on the SOH Spectrometer Power ITOS page.  
Should be about 10mG  
IACCEL: \_\_\_\_\_
- f. Start the ITOS proc "ICRYOMAIN\_RAMP(20)". Record the following values:  
TIME \_\_\_\_\_  
ICRYOMAIN \_\_\_\_\_  
ICRYOBAL \_\_\_\_\_  
ICRYOPHASE \_\_\_\_\_  
CRYO POWER \_\_\_\_\_  
IACCEL \_\_\_\_\_
- g. Wait 2 minutes, then record ICT1T (should have decrease from previous measurement in (d) )  
ICT1T: \_\_\_\_\_
- h. Start the ITOS proc "ICRYOMAIN\_RAMP(0)". Verify that CRYO\_POWER returns to zero (+/- 3W)  
Record the time the Cryocooler stops.  
Enter the elapsed on-time in the cryocooler log  
TC Verify: \_\_\_\_\_  
TIME: \_\_\_\_\_

#### 5.4 Detector Interface

This step may be skipped if the Detector Functional is being run soon (detectors cold).

- a. Send the ITOS command "dlsetrate rate4mbps". Verify that ITOS telemetry is discontinued and the BitSync on the signal rack loses lock. TC Verify: \_\_\_\_\_
- b. Set the BitSync to 4Mbps HL (use the preset file). Verify that the BitSync regains lock and ITOS telemetry returns. TC Verify: \_\_\_\_\_
- c. Start the SSRN program on the ITOS1 work station (located in directory SSR). Set the buffer size to 1M, and click on the TCP Client OPEN button. Verify that the Connected light turns green. TC Verify: \_\_\_\_\_
- d. Start the ITOS procedure "IDIB\_TM\_ON" TC Verify: \_\_\_\_\_
- e. If the SSR has not yet been partitioned, do so now using the button on the SSRCONTROL page.
- f. On the SSR ITOS page, push the "PlayOffset=0" button, then the "Start Record" button. Verify that the record pointer on the SSR ITOS page starts incrementing. TC Verify: \_\_\_\_\_
- g. Start the ITOS procedure "idib\_evtsim1". Wait 1 minute to collect data in the SSR. TC Verify: \_\_\_\_\_
- h. Push the "Save to File" button on the SSR GSE TC Verify: \_\_\_\_\_
- i. Send the ITOS command "/ssrplayrtsi numpackets=10000, bypassedac=0". Verify that the playback pointer on the SSR ITOS page starts incrementing. Verify that the performance meter on the computer running SSRM is at maximum. TC Verify: \_\_\_\_\_
- j. Wait for the playback to finish. Verify that the performance meter on the computer running SSRM reduces to about 50%. Turn off the "Save to File" TC Verify: \_\_\_\_\_
- k. On SSRM, select the "Spectra", "Event Stats", and "Monitor rates" displays. Arrange the displays on the screen to show all three (Monitor Rates plot is not needed). On the Spectra display select detector 1, Log counts.
- l. On SSRM, push the Replay File button and select the most recent file (just collected). File Name: \_\_\_\_\_
- m. Verify that all 9 detectors are making events at about the same rate (on the Event Statistics display). Verify that all 9 detectors have 96% live time front and rear, but no other counts on the Monitor Rates display (record any detector making other than 0 counts): TC Verify: \_\_\_\_\_
- n. If no Monitor rates packets are sent, repeat steps h-l
- o. Verify on the Spectra plot that there are events in a block of 64 bins near the middle of the range. TC Verify: \_\_\_\_\_
- p. Snap and print the SSRN display.
- q. Select the next detector on the Spectra display and repeat steps h and j for each detector.

**5.5 Imager Functional**

- a. Record the RAS temperatures as indicated on the SOH Thermal ITOS Page  
 IRAS1T \_\_\_\_\_  
 IRAS2T \_\_\_\_\_
- b. Perform a screen snap and print of a window containing the IDPU SOH displays for Executive, IDPU Voltages, ADP, Imager Voltages, Thermal, and Actuators. Append to this as-run procedure. TC Verify \_\_\_\_\_
- c. Stop the SSR recorder and set the write pointer to zero. TC Verify \_\_\_\_\_
- d. Verify that SSRN is running on ITOS1 computer (see 5.4). Select Buffer Size 1Mb, Packet size = Spectrum Relay, Select TCP Client TC Verify \_\_\_\_\_
- e. Perform the RAS /SAS Dark Level test low rate:
  1. Start the ITOS procedure "v6s0r0\_002" TC Verify \_\_\_\_\_
  2. Start the ITOS procedure "imgr\_ssr\_data\_dwc(60). When the procedure is ready to play back, push the "Save to File" button on SSRM. TC Verify \_\_\_\_\_
  3. Wait for the playback to finish. Verify that the performance meter on the computer running SSRM reduces to about 50%. Turn off the "Save to File" TC Verify \_\_\_\_\_
  4. On SSRM, push the Replay File button and select the most recent file (just collected). Record File Name:
  5. File Name: \_\_\_\_\_
- f. Transfer the file collected on the SSRN above to the sunny~/tmp/psi/ site and e-mail Alex Zehnder and Martin Fivian their locations. TC Verify \_\_\_\_\_
- g. Send the ITOS command "dlsetrate rate125kbps". Verify that ITOS telemetry is discontinued and the BitSync on the signal rack loses lock. TC Verify: \_\_\_\_\_
- h. Set the BitSync to 125kbps HL (use the preset file). Verify that the BitSync regains lock and ITOS telemetry returns. TC Verify: \_\_\_\_\_

## 5.6 Imager Heaters

### Skip this test if the RAS/Grid tray heaters are being used.

- a. Bring up the ITOS "SOH Thermal" page TC Verify\_\_\_\_\_
- b. Snap and print the Thermal SOH ITOS page. TC Verify\_\_\_\_\_
- c. Send the ITOS command "/IPWMMODE CP=0,RAS=On, UGT=Primary, LGT=Primary". Verify that the following on the Thermal page:
  - UGTPWM =Primary TC Verify\_\_\_\_\_
  - LGTPWM = Primary
  - IRASPWM = Enabled
- d. Send the ITOS command "/IDPUARM HTR". Verify HTR on the Thermal page shows "ENABLED" TC Verify\_\_\_\_\_
- e. Send the ITOS command "/IRASSETPT VALUE=0". Verify that IRASSETPT on the Thermal page reads 0 TC Verify\_\_\_\_\_
- f. Send the ITOS command "/IUGTSETPT VALUE=30". Verify that IUGTSETPT on the Thermal page reads 30 TC Verify\_\_\_\_\_
- g. Send the ITOS command "/ILGTSETPT VALUE=30". Verify that ILGTSETPT on the Thermal page reads 30 TC Verify\_\_\_\_\_
- h. Verify that, after a few minutes, the IRASHTRV, IUGTHTRPV, and ILGTHTRPV read 28V periodically TC Verify\_\_\_\_\_
- i. Verify that the temperatures are rising from the initial snap. Snap and print the Thermal SOH ITOS page. TC Verify\_\_\_\_\_
- j. Send the ITOS command "/IPWMMODE CP=0, RAS=OFF, UGT=OFF, LGT=OFF". Verify that the following on the Thermal page:
  - UGTPWM =Off TC Verify\_\_\_\_\_
  - LGTPWM = Off
  - IRASPWM = Off