COS DCE BOOT FSW v1.09 Component Test Results
Requirement 5.5.4.2 HST Memory Monitor Commanding

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THE UNIVERSITY OF COLORADO
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1. INTRODUCTION

1.1 PURPOSE

This document presents the Cosmic Origins Spectrograph (COS) Device Control Electronics (DCE) Flight Software (FSW) certification procedure. The purpose of this procedure is to verify that the FSW satisfies Software Requirements according to the method specified in the DCE FSW Test Plan (STP).

1.2 SCOPE

This test procedure comprises the steps necessary to verify that the FSW satisfies Software Requirements Document (SRD) paragraph 5.5.4.2 — HST Memory Monitor Commanding.

1.3 LIMITATIONS AND CONSTRAINTS

This test cannot be run in parallel with any other commanding activity directed at the DCE FSW (such as, for example, the periodic transmission of NOOP commands). Test hardware shall be visually inspected, and its configuration noted, prior to conducting this test.

1.4 PROCEDURE OVERVIEW

The procedure requires the **hks** tools running on the Sun SparcStation Electronic Ground Support Equipment (EGSE) whose network IP address is one of

shorty.ssl.berkeley.edu
taiyo.ssl.berkeley.edu
ginger.ssl.berkeley.edu.

Test time shall be scheduled in advance. The Test Conductor must be logged into the Unix system as user **eagcos**, and be commanding from the appropriate directory. This directory contains both the test script file and the shell script file; these two files control test execution. The test is conducted by invoking the shell script. This shell script in turn invokes the Perl 5 program **UniScript.pl**, which resides in its own distinct directory. The test procedure steps have been pre-recorded in the test script file, and are executed interpretively by the **UniScript** program. The shell script and test script are attached to this document as appendices. As **UniScript** executes the test script it sends results to the operator console and to two report files, which are also placed in the current directory. After completion of the test script, the Test Conductor can certify successful test

execution by examining the contents of the report files and determining that required outputs are present in them. Printed copies of the report files are attached to the manually completed checklist (Paragraph 4 below) as documentation of the test.

1.5 THEORY OF TEST

The script uses **LFDMADDR** to set monitor addresses 0xC000 through 0xC007, then generates a sequence of eight pseudo-random eight-bit numbers into Buffer 1 and uploads them to the scratch addresses 0xC000…0xC007. After waiting one second, the script waits for the HK data corresponding to the **LFDUPLOD** command that uploaded the pseudo-random data. Finally, the eight elements of the **LFDMONS** array are compared for equality with the eight generated data bytes in Buffer 1.

1.6 TEST SCRIPT IMPLEMENTATION

1.6.1 Test Script Arguments

The script is parameterized as shown in the following Table:

Table 1-1: Parameters/Arguments for stp5_5_4_2.tst

Parameter	Meaning	Correct Argument for Version 1.09
#0	Absolute hex storage address of first of eight monitored 8051 storage locations C000…C007	C000

This parameter must be encoded into the shell script **u** (see Appendix A).

1.6.2 Test Script Coding

The script uses standard **UniScript** commands and directives. Note that the eight generated numbers are referenced in the **CHECK** directives as **hex(substr($B1,0,2))**, **hex(substr($B1,2,2))**, etc.

2. SPECIAL INSTRUCTIONS

2.1 QUALITY ASSURANCE

QA support is required to verify the configuration and setup environment as well as monitoring test steps and verifying results.

2.2 SAFETY

2.2.1 Personal Safety

To ensure the safety of the test personnel during test execution the guidelines contained in Paragraph 3.4, Reference [1] will be adhered to.

2.2.2 Test Article and Equipment Safety

- If access within one (1) meter of COS bench electronics is necessary, wrist straps attached to technical ground shall be used by all personnel involved in handling of any COS test article. Overcurrent and overvoltage shall be set to remove power if nominal limits are exceeded.
- Emergency Power Shutdown — If, during the COS DCE FSW test, power is ON and a severe test equipment failure results in the power system exceeding specified limits, the Test Conductor shall direct or perform shutdown of power.

2.3 CONTAMINATION

All flight hardware shall be handled with clean latex gloves; it shall be covered with clean ESD material and/or stored in a clean flow-bench.

3. SUPPORT REQUIREMENTS

3.1 PERSONNEL

Execution of the COS DCE FSW certification procedure requires the following personnel (to be completed at the Test Readiness Review (TRR):

Test Director: _____

Test Conductor: _____

Test Technician: _____

QA: _____

3.2 TOOLS, EQUIPMENT, AND MATERIALS

The following is a list of tools, equipment, or materials required in this test. Record manufacturer and model, metrology, or property numbers of equipment used, where appropriate. Record calibration due dates where appropriate.

Boot Mode ROM: schematic **27C256**

Engineering Ground Support Equipment (see paragraph 1.4). Indicate specific configuration:

EGSE			DCE		
taiyo	**shorty**	**ginger**	**ETU**	**DCE #1**	**DCE #2**
	X			X	

3.3 DATA/SOFTWARE

The following files must be present:

Table 3-1: Required Program and Data Files

EGSE (shorty) Directory	File	Description
\disks\galex\users\galex\tcs\uniscript	**UniScript.pl**	**UniScript** interpreter
\disks\galex\users\galex\tcs\uniscript\stp5_5_4_2	**u**	Shell script for this procedure
Ditto	**stp5_5_4_2.tst**	Test script for this procedure (Appendix B)

In addition, the **hks** tools must be active. Directions for activating **hks** are given in UCB-COS-DOC-1118 (Paragraph 3.4, Reference [4]).

3.4 REQUIRED DOCUMENTATION

Reference	Document Number	Title
1	NHB 1700.1(V1-A)	*NASA Basic Safety Manual*
2	COS-03-0037	*DCE FSW Test Procedure 5.5.4.2* (this document)
3	UCB-COS-008	*COS FUV Detector Software Test Plan*
4	UCB-COS-DOC-1118	*COS EGSE Startup Procedure*

4. PROCEDURE/TASK STEPS

4.1 PRE-OPERATION ACTIVITIES

4.1.1 Make Sure that **hks** Tools Are Active

Follow the procedure given in Paragraph 3.4, Reference [4].

4.1.2 Make Sure that the Proper ROM Is Installed

Visually verify that the ROM under test is installed: if EEPROM, in U18: if PROM, in U2 and U7.

4.1.3 Log In to the EGSE

Step	QA	Operator Entry/System Response	Description
1		C:\tcs\us> **telnet shorty.ssl.berkely.edu**	Establish connection to shorty via Telnet client program
2		Login: **tcs** Password:	Using telnet window, login as user **tcs**

4.1.4 Set Current Directory

Step	QA	Operator Entry/System Response	Description
3		tcs@shorty% **cd ~galex/tcs** tcs@shorty% **pwd** /disks/galex/users/galex/tcs	Change current directory as shown

4.1.5 Slogin as eagcos

Step	QA	Operator Entry/System Response	Description
4		tcs@shorty% **slogin –l eagcos shorty.ssl.berkeley.edu** eagcos@shorty.ssl.berkeley.edu's password: ***(get from SSL personnel)*** Last login: Sat Oct 7 10:41:05 2000 from auntem.ssl.berke Sun Microsystems Inc. SunOS 5.8 Generic February 2000 You have mail. COS EGSE software version: devel	slogin as **eagcos**; get password from SSL personnel

4.1.6 Set Current Directory

Step	QA	Operator Entry/System Response	Description

Step	QA	Operator Entry/System Response	Description
5		eagcos:shorty% **cd /disks/galex/users/galex/tcs/uniscript/stp5_5_4_2** eagcos:shorty% **pwd** /disks/galex/users/galex/tcs/uniscript/stp5_5_4_2	Change current directory as shown

4.1.7 Ensure that Proper Files are Present

Step	QA	Operator Entry/System Response	Description
6		eagcos@shorty% **ls –l** Total 12 -rw-r--r-- 1 tcs eag 1398 Oct 8 18:03 stp5_5_4_2.tst -rw-r--r-- 1 tcs eag 62 Oct 9 17:44 u eagcos@shorty% **more < u** #!/bin/sh perl ../UniScript.pl stp5_5_4_2 "C000,0,0,0,0,0,0,0"	List files; the **.tst** file and the shell script **u** should be present

4.2 OPERATION EXECUTION

4.2.1 Establish Initial Test Conditions

Step	QA	Operator Entry/System Response	Description
7		eagcos:shorty% **set path=($path ~dbb/scripts/bin)**	Set path as shown to enable access to **hks** tools

4.2.2 Execute the Script

Step	QA	Operator Entry/System Response	Description
8		**eagcos:shorty%** sh u **$pstring=C000,0,0,0,0,0,0,0** **Parameters are: Script File: stp5_5_4_2** **#0: C000** **#1: 0** **#2: 0** **#3: 0** **#4: 0** **#5: 0** **#6: 0**	Shell to **u**. You should see the accompanying output as **UniScript** executes

Step	QA	Operator Entry/System Response	Description
		#7: 0 **Report file** **>/disks/galex/users/galex/tcs/uniscript/stp5_5_4_2/stp5_5_4_2.rp1** **successfully opened.** **Report file** **>/disks/galex/users/galex/tcs/uniscript/stp5_5_4_2/stp5_5_4_2.rp2** **successfully opened.** **Script file** **/disks/galex/users/galex/tcs/uniscript/stp5_5_4_2/stp5_5_4_2.tst** **successfully opened at level 0.** **"Sending POR, WAIT"** **"Setting monitor 0"** **LFDMADDR 0,BYTE0,0** **"Setting monitor 1"** **LFDMADDR 1,BYTE1,0** **"Setting monitor 2"** **LFDMADDR 2,BYTE2,0** **"Setting monitor 3"** **LFDMADDR 3,BYTE3,0** **"Setting monitor 4"** **LFDMADDR 4,BYTE4,0** **"Setting monitor 5"**	

Step	QA	Operator Entry/System Response	Description
		LFDMADDR 5,BYTE5,0 **"Setting monitor 6"** **LFDMADDR 6,BYTE6,0** **"Setting monitor 7"** **LFDMADDR 7,BYTE7,0** **"Uploading random data to C000...C007"** **LFDUPLOD SCRATCH,8,CRC1** **"Verifying monitor values"** **WAIT 0: HKV0=9; HKV1=8; wc=5** **WAIT 1: HKV1=8; wc=4** **WAIT 1: HKV1=9; wc=3** **"Test 5.5.4.2. completed successfully"**	

4.3 POST-OPERATION ACTIVITIES

4.3.1 Copy Reports to PC Files and Print Them

Using an FTP client, copy the **u**, **stp5_5_4_2.tst**, **stp5_5_4_2.rp1**, and **stp5_5_4_2.rp2** files to appropriate PC files. Include these files as Appendices A, B, C, and D with this completed form.

4.3.2 Complete The Test Procedure Form

Ensure that all blank fields in this report are completed correctly and submit the completed report to QA.

SUMMARY SHEET

OPERATION TITLE:_____ WOA#_____

TEST ARTICLES IDENTIFICATION (including serial and/or part numbers):

_____

TASKS/STEPS COMPLETED: _____

_____

LOCATION: _____

TEST STARTED: TEST TERMINATED

TIME: _____ Hr/Min TIME: _____ Hr/Min

DATE:_____ DATE:_____

LOGS USED: _____

ANOMALY REPORTS GENERATED: _____

_____

COMMENTS:_____

_____

_____

_____

_____

TEST CONDUCTOR: _____

Signature/Date

QA REPRESENTATIVE:_____

Signature/Date

Appendix A. Shell Script u

```
#!/bin/sh
pkill cosnoopy
perl ../UniScript.pl stp5_5_4_2 "C000,0,0,0,0,0,0,0"
cosnoopy&
```

Appendix B. Test Script stp5_5_4_2.tst

```
; ***************************************************************************
; * STP 5.5.4.2 -- HST Memory Monitor Commanding                             *
; * ------------------------------------------------------------------------ *
; * Set 8 adjacent memory monitors by means of LFDMADDR commands; by means of *
; * an LFDUPLOD command, set the 8 designated memory locations to known      *
; * values; verify these values in the HK telemetry.                        *
; ***************************************************************************
;
ECHO     2
;
SYM      SCRATCH=0x#0
SYM      BYTE0  =SCRATCH
SYM      BYTE1  =BYTE0+1
SYM      BYTE2  =BYTE1+1
SYM      BYTE3  =BYTE2+1
SYM      BYTE4  =BYTE3+1
SYM      BYTE5  =BYTE4+1
SYM      BYTE6  =BYTE5+1
SYM      BYTE7  =BYTE6+1
;
DTG      3,"(0) Sending POR, WAIT"
WTO      "Sending POR, WAIT"
;
POR
WAIT     1
;
DTG      3,"(1) Setting monitor 0"
WTO      "Setting monitor 0"
;
LFDMADDR 0,BYTE0,0
WAIT     1
;
DTG      3,"(2) Setting monitor 1"
WTO      "Setting monitor 1"
;
LFDMADDR 1,BYTE1,0
WAIT     1
;
DTG      3,"(3) Setting monitor 2"
WTO      "Setting monitor 2"
;
LFDMADDR 2,BYTE2,0
WAIT     1
;
DTG      3,"(4) Setting monitor 3"
WTO      "Setting monitor 3"
;
LFDMADDR 3,BYTE3,0
WAIT     1
;
DTG      3,"(5) Setting monitor 4"
WTO      "Setting monitor 4"
;
LFDMADDR 4,BYTE4,0
WAIT     1
;
DTG      3,"(6) Setting monitor 5"
WTO      "Setting monitor 5"
;
LFDMADDR 5,BYTE5,0
WAIT     1
;
DTG      3,"(7) Setting monitor 6"
WTO      "Setting monitor 6"
;
LFDMADDR 6,BYTE6,0
WAIT     1
```

```
;
DTG      3,"(8) Setting monitor 7"
WTO      "Setting monitor 7"
;
LFDMADDR 7,BYTE7,0
WAIT     1
;
DTG      3,"(9) Uploading random data to C000...C007"
WTO      "Uploading random data to C000...C007"
;
DATA     1,0,8,RAND=31
LOG      1,1
XMIT     1,8
LFDUPLOD SCRATCH,8,CRC1
WAIT     1
;
DTG      3,"(10) Verifying monitor values"
WTO      "Verifying monitor values"
;
WAIT     5,HK
LOG      1,1,LFDMONS,LFDMADD
;
CHECK    1,(hex(substr($B1, 0,2)) == $LFDMONS[0])
CHECK    1,(hex(substr($B1, 2,2)) == $LFDMONS[1])
CHECK    1,(hex(substr($B1, 4,2)) == $LFDMONS[2])
CHECK    1,(hex(substr($B1, 6,2)) == $LFDMONS[3])
CHECK    1,(hex(substr($B1, 8,2)) == $LFDMONS[4])
CHECK    1,(hex(substr($B1,10,2)) == $LFDMONS[5])
CHECK    1,(hex(substr($B1,12,2)) == $LFDMONS[6])
CHECK    1,(hex(substr($B1,14,2)) == $LFDMONS[7])
;
DTG      3,"(11) Test 5.5.4.2. completed successfully"
WTO      "Test 5.5.4.2. completed successfully"
```

Appendix C. Test Report stp5_5_4_2.rp1

```
                                        55555         55555         4  4
222
                                        5             5             4  4          2
2
                         ssss  ttttt  pppp   555           555           4  4
2
                        s        t    p   p     5             5          44444
2
                        sssss    t    pppp       5             5            4
2
                            s    t    p      5   5         5   5            4           2
                        ssss     t    p       555   _____   555   _____     4    _____
22222

Ver 01.09  Sat Nov 18 05:21:43 2000    "(0) Sending POR, WAIT"

Ver 01.09  Sat Nov 18 05:21:44 2000    "(1) Setting monitor 0"

LFDMADDR 0,BYTE0,0

Ver 01.09  Sat Nov 18 05:21:45 2000    "(2) Setting monitor 1"

LFDMADDR 1,BYTE1,0

Ver 01.09  Sat Nov 18 05:21:47 2000    "(3) Setting monitor 2"

LFDMADDR 2,BYTE2,0

Ver 01.09  Sat Nov 18 05:21:48 2000    "(4) Setting monitor 3"

LFDMADDR 3,BYTE3,0

Ver 01.09  Sat Nov 18 05:21:49 2000    "(5) Setting monitor 4"

LFDMADDR 4,BYTE4,0

Ver 01.09  Sat Nov 18 05:21:50 2000    "(6) Setting monitor 5"

LFDMADDR 5,BYTE5,0

Ver 01.09  Sat Nov 18 05:21:51 2000    "(7) Setting monitor 6"

LFDMADDR 6,BYTE6,0

Ver 01.09  Sat Nov 18 05:21:52 2000    "(8) Setting monitor 7"

LFDMADDR 7,BYTE7,0

Ver 01.09  Sat Nov 18 05:21:53 2000    "(9) Uploading random data to C000...C007"

Len  CRC  Buffer         Data
---- ---- ------         ----
0008 05F7 1              EE 05 CB 17 6C 7B 52 5B

LFDUPLOD SCRATCH,8,CRC1

Ver 01.09  Sat Nov 18 05:21:54 2000    "(10) Verifying monitor values"

Len  CRC  Buffer         Data
---- ---- ------         ----
0008 05F7 1              EE 05 CB 17 6C 7B 52 5B

Addr Addr HK-Name        Value
---- ---- -------------- -----
1738-173F LFDMONS        EE 05 CB 17 6C 7B 52 5B

1740-174F LFDMADD        C000  C001  C002  C003  C004  C005  C006  C007
```

```
CHECK:   (hex(substr($B1, 0,2)) == $LFDMONS[0])
eval:    (hex(substr(EE05..., 0,2)) == 0000[0])

S U C C E S S

CHECK:   (hex(substr($B1, 2,2)) == $LFDMONS[1])
eval:    (hex(substr(EE05..., 2,2)) == 0000[1])

S U C C E S S

CHECK:   (hex(substr($B1, 4,2)) == $LFDMONS[2])
eval:    (hex(substr(EE05..., 4,2)) == 0000[2])

S U C C E S S

CHECK:   (hex(substr($B1, 6,2)) == $LFDMONS[3])
eval:    (hex(substr(EE05..., 6,2)) == 0000[3])

S U C C E S S

CHECK:   (hex(substr($B1, 8,2)) == $LFDMONS[4])
eval:    (hex(substr(EE05..., 8,2)) == 0000[4])

S U C C E S S

CHECK:   (hex(substr($B1,10,2)) == $LFDMONS[5])
eval:    (hex(substr(EE05...,10,2)) == 0000[5])

S U C C E S S

CHECK:   (hex(substr($B1,12,2)) == $LFDMONS[6])
eval:    (hex(substr(EE05...,12,2)) == 0000[6])

S U C C E S S

CHECK:   (hex(substr($B1,14,2)) == $LFDMONS[7])
eval:    (hex(substr(EE05...,14,2)) == 0000[7])

S U C C E S S

Ver 01.09  Sat Nov 18 05:21:56 2000    "(11) Test 5.5.4.2. completed successfully"
```

Appendix D. Test Report stp5_5_4_2.rp2

```
                                        55555         55555         4  4
222
                                        5             5             4  4          2
2
                         ssss  ttttt  pppp   555           555           4  4
2
                        s        t    p   p     5             5          44444
2
                        sssss    t    pppp       5             5            4
2
                            s    t    p      5   5         5   5            4          2
                        ssss     t    p       555   _____   555   _____     4   _____
22222

Ver 01.09  Sat Nov 18 05:21:43 2000    "(0) Sending POR, WAIT"

-------------------------------------------------------------------
                          P O R   P A C K E T
-------------------------------------------------------------------
80000000
-------------------------------------------------------------------

Ver 01.09  Sat Nov 18 05:21:44 2000    "(1) Setting monitor 0"

-----------------------------------------------------------------------------------------
                               C O M M A N D   P A C K E T
-----------------------------------------------------------------------------------------
            PARM4             PARM3             PARM2             PARM1             PARM0
045AFFFF 04580000 0456FFFF 04540000 0452FFFF 04500000 044E3FFF 044CC000 044AFFFF 04480000
-----------------------------------------------------------------------------------------
               SN            OPCODE
0446FFFE 04440001 04427E7E 04408181
-----------------------------------------------------------------------------------------


Ver 01.09  Sat Nov 18 05:21:45 2000    "(2) Setting monitor 1"

-----------------------------------------------------------------------------------------
                               C O M M A N D   P A C K E T
-----------------------------------------------------------------------------------------
            PARM4             PARM3             PARM2             PARM1             PARM0
045AFFFF 04580000 0456FFFF 04540000 0452FFFF 04500000 044E3FFE 044CC001 044AFFFE 04480001
-----------------------------------------------------------------------------------------
               SN            OPCODE
0446FFFD 04440002 04427E7E 04408181
-----------------------------------------------------------------------------------------


Ver 01.09  Sat Nov 18 05:21:47 2000    "(3) Setting monitor 2"

-----------------------------------------------------------------------------------------
                               C O M M A N D   P A C K E T
-----------------------------------------------------------------------------------------
            PARM4             PARM3             PARM2             PARM1             PARM0
045AFFFF 04580000 0456FFFF 04540000 0452FFFF 04500000 044E3FFD 044CC002 044AFFFD 04480002
-----------------------------------------------------------------------------------------
               SN            OPCODE
0446FFFC 04440003 04427E7E 04408181
-----------------------------------------------------------------------------------------


Ver 01.09  Sat Nov 18 05:21:48 2000    "(4) Setting monitor 3"

-----------------------------------------------------------------------------------------
```

```
                              C O M M A N D   P A C K E T
--------------------------------------------------------------------------------------------
            PARM4             PARM3             PARM2             PARM1             PARM0
045AFFFF 04580000 0456FFFF 04540000 0452FFFF 04500000 044E3FFC 044CC003 044AFFFC 04480003
--------------------------------------------------------------------------------------------
               SN            OPCODE
0446FFFB 04440004 04427E7E 04408181
--------------------------------------------------------------------------------------------


Ver 01.09  Sat Nov 18 05:21:49 2000    "(5) Setting monitor 4"

--------------------------------------------------------------------------------------------
                              C O M M A N D   P A C K E T
--------------------------------------------------------------------------------------------
            PARM4             PARM3             PARM2             PARM1             PARM0
045AFFFF 04580000 0456FFFF 04540000 0452FFFF 04500000 044E3FFB 044CC004 044AFFFB 04480004
--------------------------------------------------------------------------------------------
               SN            OPCODE
0446FFFA 04440005 04427E7E 04408181
--------------------------------------------------------------------------------------------


Ver 01.09  Sat Nov 18 05:21:50 2000    "(6) Setting monitor 5"

--------------------------------------------------------------------------------------------
                              C O M M A N D   P A C K E T
--------------------------------------------------------------------------------------------
            PARM4             PARM3             PARM2             PARM1             PARM0
045AFFFF 04580000 0456FFFF 04540000 0452FFFF 04500000 044E3FFA 044CC005 044AFFFA 04480005
--------------------------------------------------------------------------------------------
               SN            OPCODE
0446FFF9 04440006 04427E7E 04408181
--------------------------------------------------------------------------------------------


Ver 01.09  Sat Nov 18 05:21:51 2000    "(7) Setting monitor 6"

--------------------------------------------------------------------------------------------
                              C O M M A N D   P A C K E T
--------------------------------------------------------------------------------------------
            PARM4             PARM3             PARM2             PARM1             PARM0
045AFFFF 04580000 0456FFFF 04540000 0452FFFF 04500000 044E3FF9 044CC006 044AFFF9 04480006
--------------------------------------------------------------------------------------------
               SN            OPCODE
0446FFF8 04440007 04427E7E 04408181
--------------------------------------------------------------------------------------------


Ver 01.09  Sat Nov 18 05:21:52 2000    "(8) Setting monitor 7"

--------------------------------------------------------------------------------------------
                              C O M M A N D   P A C K E T
--------------------------------------------------------------------------------------------
            PARM4             PARM3             PARM2             PARM1             PARM0
045AFFFF 04580000 0456FFFF 04540000 0452FFFF 04500000 044E3FF8 044CC007 044AFFF8 04480007
--------------------------------------------------------------------------------------------
               SN            OPCODE
0446FFF7 04440008 04427E7E 04408181
--------------------------------------------------------------------------------------------


Ver 01.09  Sat Nov 18 05:21:53 2000    "(9) Uploading random data to C000...C007"

------------------------------------------------------------------------
                      U P L O A D   P A C K E T
------------------------------------------------------------------------
004005EE 004217CB 00447B6C 00465B52
------------------------------------------------------------------------
```

```
--------------------------------------------------------------------------------
                            C O M M A N D   P A C K E T
--------------------------------------------------------------------------------
            PARM4             PARM3             PARM2             PARM1             PARM0
045AFFFF 04580000 0456FFFF 04540000 0452FA08 045005F7 044EFFF7 044C0008 044A3FFF 0448C000
--------------------------------------------------------------------------------
               SN            OPCODE
0446FFF6 04440009 04425252 0440ADAD
--------------------------------------------------------------------------------


Ver 01.09  Sat Nov 18 05:21:54 2000    "(10) Verifying monitor values"

--------------------------------------------------------------------------------
                            C O M M A N D   P A C K E T
--------------------------------------------------------------------------------
            PARM4             PARM3             PARM2             PARM1             PARM0
045AFFFF 04580000 0456FFFF 04540000 0452FFFF 04500000 044EFFFF 044C0000 044AFFFF 04480000
--------------------------------------------------------------------------------
               SN            OPCODE
0446FFF5 0444000A 04427F7F 04408080
--------------------------------------------------------------------------------


--------------------------------------------------------------------------------
                            C O M M A N D   P A C K E T
--------------------------------------------------------------------------------
            PARM4             PARM3             PARM2             PARM1             PARM0
045AFFFF 04580000 0456FFFF 04540000 0452FFFF 04500000 044EFFFF 044C0000 044AFFFF 04480000
--------------------------------------------------------------------------------
               SN            OPCODE
0446FFF4 0444000B 04427F7F 04408080
--------------------------------------------------------------------------------

Ver 01.09  Sat Nov 18 05:21:56 2000    "(11) Test 5.5.4.2. completed successfully"
```