HSO/FIRST-DPU

CARLO GAVAZZI SPACE S.p.A.

DOCUMENT TYPE : TEST PROCEDURE   **DRD :** -

TITLE: EM PAYLOAD & SPACECRAFT INTERFACE BOARD TEST PROCEDURE

DOCUMENT No: DPU-PR-CGS-002   **PAGE:** 1 **OF** 85

ISSUE No: 3   **DATE:** 06/02/2002

PREPARED BY: HSO TEAM

APPROVED BY: V. CHIAVERINI

THIS DOCUMENT IS SUBJECT TO THE APPROVAL OF:

	YES	NO	Approval Signature	Date
Product Assurance	X			
Configuration Control	X			
Project Control		X		
Engineering	X			
Managing Director		X		
CGS Program Manager	X			

	YES	NO	Approval Signature	Date
Higher Level Contractor				
Customer				

Data Management

| | | Signature | Date |

DOCUMENT CHANGE RECORD

ISSUE N°	DATE	CHANGE AUTHORITY	PAGES AFFECTED	REMARKS
1	24/09/2001			
2	30/10/2001	Document upgrading after preliminary test running	All	
3	06/02/2002	Document upgrading: serial links have to be tested with IFSI simulator	All	

LIST OF VALID PAGES

PAGE	ISSUE N°	PAGE	ISSUE N°	PAGE	ISSUE N°	PAGE	ISSUE N°	PAGE	ISSUE N°
1-85	3								

TABLE OF CONTENTS

LIST OF ACRONYMS

AD#	Applicable Document number #
CGS	Carlo Gavazzi Space SpA
DM	Data Memory
DPU	Data Processing Unit
DDC	Data Device Corporation
DM	Data Memory
DPR	Dual Port Ram
EEPROM	Electrically Erasable Programmable Read Only Memory
EF	Empty FIFO
EM	Engineering Model
EPROM	Erasable Programmable Read Only Memory
EQM	Engineering Qualification Model
FIRST	Far Infra-Red and Sub-millimeter Telescope
FF	Full FIFO
FM	Flight Model
FPGA	Field Programmable Gate Array
FS	Flight Spare
FSDL	Fast Science Data Link
HF	Half Full FIFO
HIFI	Heterodyne Instrument for First
HSO	Herschel Space Observatory
IFSI	Istituto per la Fisica dello Spazio Interplanetario
IF	Interface
LSL	Low Speed Link
PA	Product Assurance
PACS	Photoconductor Array Camera and Spectrometer
PCB	Printed Circuit Board
PM	Program Memory
PROM	Programmable Read Only Memory
PL	Payload
P/N	Part Number
RAM	Random Access Memory

RD#	Reference Document number #
S/N	Serial Number
SPIRE	Spectral and Photometric Imaging Receiver
TE	Test Equipment

1 SCOPE

The aim of the present document is to define a procedure to test the EM version of the "Payload & Spacecraft Interface" board to be used in the Data Processing Units, developed in the framework of the HSO/FIRST program. Particularly it must be tested each of the following functions:

1. Power-On Reset generation.

2. External Hardware Reset generation

3. Control Logic Reset generation

4.a Fast Science Data Link interfaces (FSDL) (Only for HIFI)

4.b Fast Science Data Link interfaces (FSDL) (Only for SPIRE)

5.a Low Speed Link interface (LSL) (Only for HIFI)

5.b Low Speed Link interface (LSL) (Only for SPIRE)

6. Analog inputs

7. MIL-STD-1553 Clock generation

8. MIL-STD-1553 interface

With reference to point 8, it must be emphasized that this test procedure covers only MIL-STD-1553 functional tests and interface signals electrical characteristics (rise and fall times and voltage levels), without covering any verification aspect included in MIL-HBK-1553.

The test results shall be collected in a test report.

2   DOCUMENTS

2.1 Applicable Documents

The current issue of the following documents is applicable:

[AD1]:   DPU-SP-CGS-002 "Payload & Spacecraft Interface Board Specification"

[AD2]:   DPU-PL-CGS-001 "Product Assurance Plan for FIRST-DPU"

2.2 Reference Documents

To test the board the user needs the current issue of the following documents:

[RD1]:   Radiation Tolerant 32/40-BIT IEEE Floating Point DSP Microprocessor Data Book Temic

[RD2]:   DPU-SP-CGS-001 "First CPU Board Specification"

[RD3]:   Space Level MIL-STD-1553 BC/RT/MT Advanced Communication Engine Terminal BU-61582 Data Book   ILC Data Device Corporation 1995

[RD4]:   MIL-STD-1553 BC/RT/MT Advance Communication Engine (ACE) Data Book ILC Data Device Corporation

3   PARTICIPANTS REQUIRED

3.1 General

All tests shall be performed under QA surveillance in accordance with and following detailed procedure of CGS PA Plan [AD2].
The test shall be notified to the Customer as applicable.

3.2 Responsibility

The technical responsibilities for testing and test results is of the Engineering department.
Project and test managers are responsible for the test program. The test engineer is responsible for the correct execution of the test program and for the fulfilment of the requirements, for measurement and recording and for the preparation of the test report.

QA is responsible for ensuring that all the agreed procedures are carefully observed, that test equipment and instrumentation used during testing are calibrated and within validity date, that the test results are recorded in the relative Test Report and signed by the operators and QA witness, that all non conforming condition and test results are properly documented and notified to the customer and that all requirements of applicable PA Plan, Specification and Statement Of Work pertaining to the acceptance tests, are fully satisfied.

3.3 QA witness of Tests and Sign-off

QA inspector, or its delegate, shall witness the tests described in this procedure in accordance to the requirement specified in the applicable PA Plans.

3.4 Non-conformance and failures

Any malfunction occurred during the tests shall be processed according to the Non-Conformance Procedure.

3.5 Calibration Requirements

All instruments used for testing shall be calibrated.
Evidence of certification shall be provided by a label attached to the instruments itself, showing the calibration date, the expire date and the signature of the operator.

4 TEST CONDITIONS

- The Unit shall be tested in its defined configuration: it shall be properly mounted, all the electrical loads (if any) shall be present and the unit interface function(s) shall be simulated.
- Unless otherwise specified, all the measurements are to be performed at the following ambient conditions:

  - Temperature :   22°C ±3°C
  - Relative humidity: 55% ±10% RH
  - Pressure   :   Ambient
  - Cleanliness :   NA

- All tests, unless otherwise specified, shall be performed internally to CGS laboratories in a proper clean area.
  General disposition shall be applied to maximise personnel safety from potential hazards.

- Skilled personnel shall be employed.

- All used instruments shall meet the necessary accuracy and shall not degrade the UUT performance.

5   TEST ARTICLE

The test article consists of:

- PL IF Board, P/N DPU-EM-200.00-0, Model EM.

Before starting the test, the P/N and S/N of the test article to be tested shall be recorded on the step-by-step procedure sheets under the table cell "UNIT UNDER TEST".

6 INSTRUMENTATION AND TEST EQUIPMENT

The complete list of the instruments used during the test shall be reported in the following table. The list shall be filled up during tests and reported in Test Report.

PROJECT: HSO/FIRST-DPU							
N.	EQUIPMENT	MANUFACTURER	P/N	S/N	ACCURACY	NEXT CAL. DATE	REMARKS

Table 6-1

To test serial links (FSDL and LSL) will be used a custom TE. It shall be called, in this document, as IFSI Simulator.

7 TEST CONFIGURATION

Test set up is provided on Picture 7-1.

To supply power to the boards, use the apposite male connector to be plugged in slot 3 (P1) of the motherboard and make the following connections between Power Suppliers and wires:

- Red wire: +5V

- Orange wire: +2.5V

- Green wire: -15V

- Blue wire: +15V

- Brown wire: GROUND

Each connector of IFSI Simulator has to be connected with the correspondent connector wired to the motherboard (the name of sub-system which the link is referred is indicated on each connector).
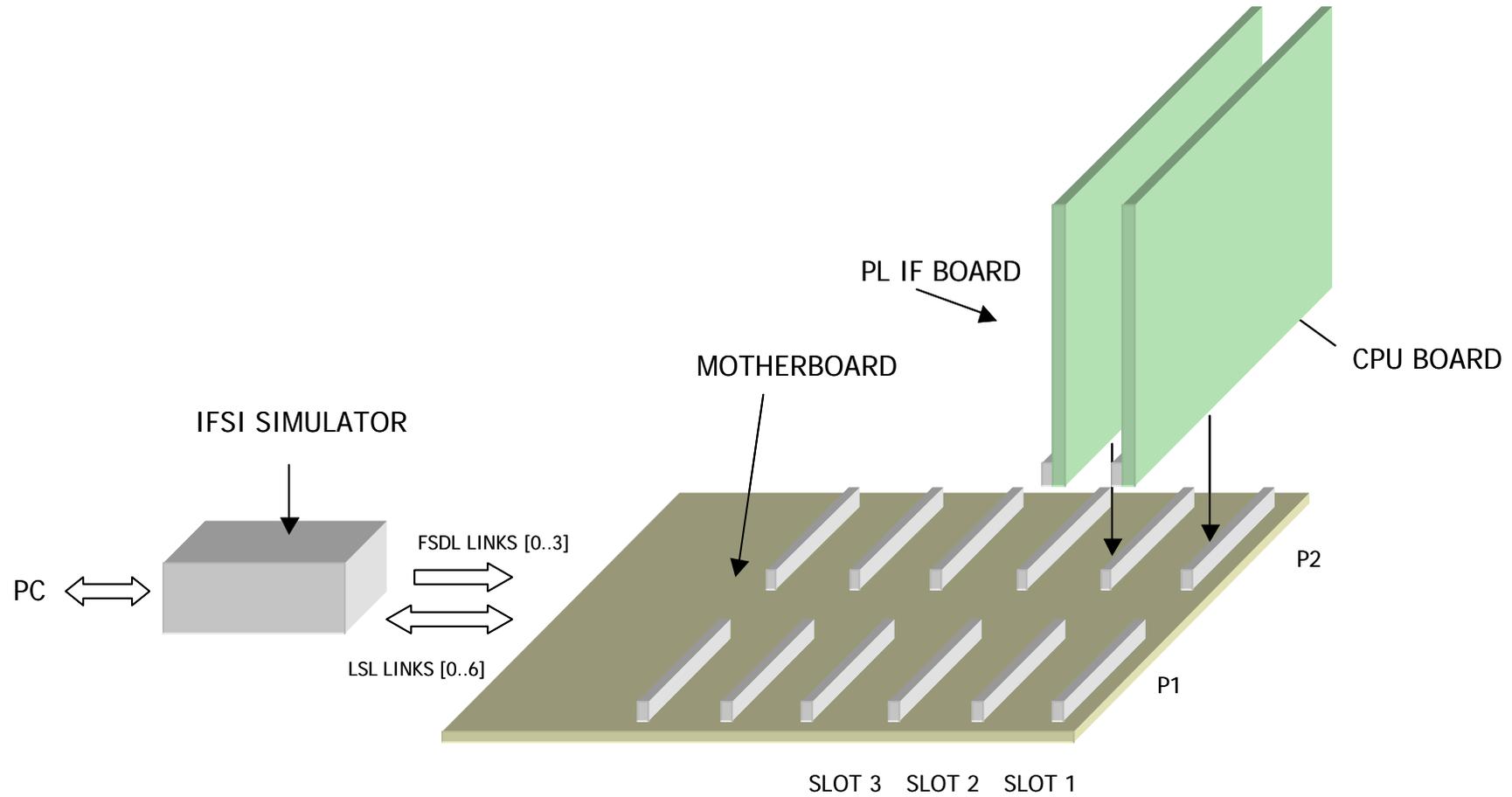
PL IF BOARD

CPU BOARD

MOTHERBOARD

IFSI SIMULATOR

PC

FSDL LINKS [0..3]

LSL LINKS [0..6]

P2

P1

SLOT 3   SLOT 2   SLOT 1

Picture 7-1

8   TEST DATA SHEETS

The step-by-step procedure sheets are provided in the following pages[1].

8.1 *Data Sheets filling up*

The following fields of the data sheets:

- UUT DATA (including Model, Item, P/N, S/N)

- Measured value

shall be filled up during the test performances and shall be part of the Test Report together with printouts, photographs, etc. eventually useful to document the test execution/result.

Remarks field shall be used as a minimum to provide, where appropriate, reference to NCRs and PVS.

Test Report reference data shall be added in the relevant field.

Each data sheet (including the attachments) shall be certified by QA stamp and signature together with the Test Conductor signature and date.

---

[1] Components, connectors, jumpers, etc. are referred, where not indicated, to the PL IF Board. When all the boards are considered the word "unit" is used.

TITLE: PAYLOAD & SPACECRAFT INTERFACE BOARD TEST PROCEDURE		UNIT UNDER TEST:	S/N:	
STEP N°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
1	**Power-On Reset generation**			
1.1	Connect the probe channel 1 of the digital scope to the RES_1553 signal CN1 pin 36. Select positive slope trigger on CH1. Set acquisition mode NORMAL			
1.2	Supply electrical power to the unit			
1.3	Verify the negative pulse width	> 20 ms		

DATE	TEST CONDUCTOR	PRODUCT ASSURANCE	CUSTOMER

TITLE: PAYLOAD & SPACECRAFT INTERFACE BOARD TEST PROCEDURE		UNIT UNDER TEST: S/N:		
STEP N°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
2	**External Hardware Reset generation**			
2.1	Insert the EZ ICE probe in the JTAG plug (JP12) of CPU Board			
2.2	Supply electrical power to the unit	Green led on (CPU Board)		
2.3	Open the program ADSP-21020 Emulator			
2.4	Type Enter two times to end Row JTAG and Opcode Scan Test			
2.5	From menu Memory select "Program"	PM window appears		
2.6	From menu Memory select "Data"	DM window appears		
2.7	From menu File select "Load File…"	A prompt window appears		
2.8	In the HSO folder select "hsoconf.ach"	"RAM" (left side mem. loc.)		

DATE	TEST CONDUCTOR	PRODUCT ASSURANCE	CUSTOMER

TITLE: PAYLOAD & SPACECRAFT INTERFACE BOARD TEST PROCEDURE		UNIT UNDER TEST: S/N:		
STEP N°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
2.9	Select Data Memory Windows			
2.10	Write 0000000800 in the address location 82000000			
2.11	Connect the probe channel 1 oscilloscope with pin 7 of U2 (or pin 36 of CN1)			
2.12	Verify signal on channel 1 of the oscilloscope	Low		
2.13	Connect the probe channel 1 oscilloscope with pin 22 of U17			
2.14	Verify signal on channel 1 of the oscilloscope	Low		
2.15	Connect the probe channel 1 oscilloscope with pin 22 of U16			
2.16	Verify signal on channel 1 of the oscilloscope	Low		
2.17	Connect the probe channel 1 oscilloscope with pin 22 of U24			

DATE	TEST CONDUCTOR	PRODUCT ASSURANCE	CUSTOMER

TITLE: PAYLOAD & SPACECRAFT INTERFACE BOARD TEST PROCEDURE		UNIT UNDER TEST:		S/N:
STEP N°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
2.18	Verify signal on channel 1 of the oscilloscope	Low		
2.19	Connect the probe channel 1 oscilloscope with pin 22 of U23			
2.20	Verify signal on channel 1 of the oscilloscope	Low		
2.21	Select Data Memory Windows			
2.22	Write 0000000000 in the address location 82000000			
2.23	Connect the probe channel 1 oscilloscope with pin 7 of U2 (or pin 36 of CN1)			
2.24	Verify signal on channel 1 of the oscilloscope	High		
2.25	Connect the probe channel 1 oscilloscope with pin 22 of U17			
2.26	Verify signal on channel 1 of the oscilloscope	High		

DATE	TEST CONDUCTOR	PRODUCT ASSURANCE	CUSTOMER

TITLE: PAYLOAD & SPACECRAFT INTERFACE BOARD TEST PROCEDURE		UNIT UNDER TEST:		S/N:
STEP N°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
2.27	Connect the probe channel 1 oscilloscope with pin 22 of U16			
2.28	Verify signal on channel 1 of the oscilloscope	High		
2.29	Connect the probe channel 1 oscilloscope with pin 22 of U24			
2.30	Verify signal on channel 1 of the oscilloscope	High		
2.31	Connect the probe channel 1 oscilloscope with pin 22 of U23			
2.32	Verify signal on channel 1 of the oscilloscope	High		
DATE	TEST CONDUCTOR	PRODUCT ASSURANCE		CUSTOMER

TITLE: PAYLOAD & SPACECRAFT INTERFACE BOARD TEST PROCEDURE		UNIT UNDER TEST: S/N:		
STEP N°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
3	**Control Logic Reset generation**			
3.1	Insert the EZ ICE probe in the JTAG plug (JP12) of CPU Board			
3.2	Supply electrical power to the unit	Green led on (CPU Board)		
3.3	Open the program ADSP-21020 Emulator			
3.4	Type Enter two times to end Row JTAG and Opcode Scan Test			
3.5	From menu Memory select "Program"	PM window appears		
3.6	From menu Memory select "Data"	DM window appears		
3.7	From menu File select "Load File…"	A prompt window appears		
3.8	In the HSO folder select "hsoconf.ach"	"RAM" (left side mem. loc.)		
3.9	Select Data Memory Windows			

DATE	TEST CONDUCTOR	PRODUCT ASSURANCE	CUSTOMER

TITLE: PAYLOAD & SPACECRAFT INTERFACE BOARD TEST PROCEDURE		UNIT UNDER TEST:	S/N:	
STEP N°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
3.10	Write 0000000100 in the address location 8d000000			
3.11	Connect the probe channel 1 oscilloscope with pin 22 of U17			
3.12	Verify signal on channel 1 of the oscilloscope	Low		
3.13	Write 0000000200 in the address location 8d000000			
3.14	Connect the probe channel 1 oscilloscope with pin 22 of U16			
3.15	Verify signal on channel 1 of the oscilloscope	Low		
3.16	Write 0000000400 in the address location 8d000000			
3.17	Connect the probe channel 1 oscilloscope with pin 22 of U24			
3.18	Verify signal on channel 1 of the oscilloscope	Low		

DATE	TEST CONDUCTOR	PRODUCT ASSURANCE	CUSTOMER

TITLE: PAYLOAD & SPACECRAFT INTERFACE BOARD TEST PROCEDURE		UNIT UNDER TEST:	S/N:	
STEP N°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
3.19	Write 0000000800 in the address location 8d000000			
3.20	Connect the probe channel 1 oscilloscope with pin 22 of U23			
3.21	Verify signal on channel 1 of the oscilloscope	Low		
3.22	Write 0000001000 in the address location 8d000000			
3.23	Connect the probe channel 1 oscilloscope with pin 7of U2 (or pin 36 of CN1)			
3.24	Verify signal on channel 1 of the oscilloscope	Low		
3.25	Write 0000800000 in the address location 8d000000			
3.26	Connect the probe channel 1 oscilloscope with pin 7 of U2 (or pin 36 of CN1)			
3.27	Verify signal on channel 1 of the oscilloscope	Low		
DATE	TEST CONDUCTOR	PRODUCT ASSURANCE		CUSTOMER

TITLE: PAYLOAD & SPACECRAFT INTERFACE BOARD TEST PROCEDURE		UNIT UNDER TEST:	S/N:	
STEP N°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
3.28	Connect the probe channel 1 oscilloscope with pin 22 of U17			
3.29	Verify signal on channel 1 of the oscilloscope	Low		
3.30	Connect the probe channel 1 oscilloscope with pin 22 of U16			
3.31	Verify signal on channel 1 of the oscilloscope	Low		
3.32	Connect the probe channel 1 oscilloscope with pin 22 of U24			
3.33	Verify signal on channel 1 of the oscilloscope	Low		
3.34	Connect the probe channel 1 oscilloscope with pin 22 of U23			
3.35	Verify signal on channel 1 of the oscilloscope	Low		

DATE	TEST CONDUCTOR	PRODUCT ASSURANCE	CUSTOMER

TITLE: PAYLOAD & SPACECRAFT INTERFACE BOARD TEST PROCEDURE		UNIT UNDER TEST: S/N:		
STEP N°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
4.a	**Fast Science Data Link interfaces (HIFI configuration)**			
4.a.1	Insert the EZ ICE probe in the JTAG plug (JP12) of CPU Board			
4.a.2	Supply electrical power to the unit	Green led on (CPU Board)		
4.a.3	Open the program ADSP-21020 Emulator			
4.a.4	Type Enter two times to end Row JTAG and Opcode Scan Test			
4.a.5	From menu Memory select "Program"	PM window appears		
4.a.6	From menu Memory select "Data"	DM window appears		
4.a.7	From menu File select "Load File…"	A prompt window appears		
4.a.8	In the HSO folder select "hsoconfc.ach"	"RAM" (left side mem. loc.)		
4.a.9	From menu File select "Load File…"	A prompt window appears		

DATE	TEST CONDUCTOR	PRODUCT ASSURANCE	CUSTOMER

TITLE: PAYLOAD & SPACECRAFT INTERFACE BOARD TEST PROCEDURE		UNIT UNDER TEST: S/N:		
STEP N°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
4.a.10	In the HSO folder select "fifot0.exe"			
4.a.11	From menu Execute select "CBUG"	CBUG window appears		
4.a.12	From menu Execution select "Restart"			
4.a.13	Search line " // === BREAK POINT to load FIFO " in the program			
4.a.14	Double click on "for (i=0; i<1200; ++i) { "	" * " appears		
4.a.15	Search line " // === BREAK POINT to read i and j" in the program			
4.a.16	Double click on " * Fifodat[0][k]= * fifoadd0 "	" * " appears		
4.a.17	From menu Execution of emulator select "Continue"			
4.a.18	Search line " // === BREAK POINT to load FIFO " in the program			
DATE	TEST CONDUCTOR	PRODUCT ASSURANCE		CUSTOMER

TITLE: PAYLOAD & SPACECRAFT NTERFACE BOARD TEST PROCEDURE		UNIT UNDER TEST: S/N:		
STEP N°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
4.a.19	Double click on "for (i=0; i<1200; ++i) { "	" * " disappears		
4.a.20	Open the program HIFI1.exe on IFSI Simulator	A DOS window appears		
4.a.21	Press "L"			
4.a.22	Type "D1" and press "Enter"			
4.a.23	Press "R"	FIFO TX		
4.a.24	Press "R"	FIFO TX		
4.a.25	Press "L"			
4.a.26	Type "D4" and press "Enter"			
4.a.27	Press "R"	FIFO TX		
4.a.28	From menu Execution of emulator select "Continue"			
4.a.29	From menu Data of emulator select "Print"			

DATE	TEST CONDUCTOR	PRODUCT ASSURANCE	CUSTOMER

TITLE: PAYLOAD & SPACECRAFT INTERFACE BOARD TEST PROCEDURE		UNIT UNDER TEST: S/N:		
STEP N°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
4.a.30	Type "i"			
4.a.31	Select "OK"	2048		
4.a.32	From menu Data of emulator select "Print"			
4.a.33	Type "j"			
4.a.34	Select "OK"	2048		
4.a.35	Close the "CBUG" window			
4.a.36	From menu Execution select "Chip Reset"			
4.a.37	Select "OK"			
4.a.38	From menu Execution select "Assembly Breaks"			
4.a.39	Select "Delete All"			
4.a.40	From menu File select "Load File…"	A prompt window appears		
DATE	TEST CONDUCTOR	PRODUCT ASSURANCE		CUSTOMER

TITLE: PAYLOAD & SPACECRAFT INTERFACE BOARD TEST PROCEDURE		UNIT UNDER TEST: S/N:		
STEP N°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
4.a.41	In the HSO folder select "hsoconfc.ach"	"RAM" (left side mem. loc.)		
4.a.42	From menu File select "Load File…"	A prompt window appears		
4.a.43	In the HSO folder select "fifot1.exe"			
4.a.44	From menu Execute select "CBUG"	CBUG window appears		
4.a.45	From menu Execution select "Restart"			
4.a.46	Search line " // === BREAK POINT to load FIFO " in the program			
4.a.47	Double click on "for (i=0; i<1200; ++i) { "	" * " appears		
4.a.48	Search line " // === BREAK POINT to read i and j" in the program			
4.a.49	Double click on " * Fifodat[1][k]= * fifoadd1 "	" * " appears		
4.a.50	From menu Execution of emulator select "Continue"			

DATE	TEST CONDUCTOR	PRODUCT ASSURANCE	CUSTOMER

TITLE: PAYLOAD & SPACECRAFT INTERFACE BOARD TEST PROCEDURE		UNIT UNDER TEST: S/N:		
STEP N°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
4.a.51	Search line " // === BREAK POINT to load FIFO " in the program			
4.a.52	Double click on "for (i=0; i<1200; ++i) { "	" * " disappears		
4.a.53	Open the program HIFI1.exe on IFSI Simulator	A DOS window appears		
4.a.54	Press "F"			
4.a.55	Type "1" and press "Enter"			
4.a.56	Press "L"			
4.a.57	Type "D1" and press "Enter"			
4.a.58	Press "R"	FIFO TX		
4.a.59	Press "R"	FIFO TX		
4.a.60	Press "L"			

DATE	TEST CONDUCTOR	PRODUCT ASSURANCE	CUSTOMER

TITLE: PAYLOAD & SPACECRAFT INTERFACE BOARD TEST PROCEDURE		UNIT UNDER TEST: S/N:		
STEP N°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
4.a.61	Type "D4" and press "Enter"			
4.a.62	Press "R"	FIFO TX		
4.a.63	From menu Execution of emulator select "Continue"			
4.a.64	From menu Data of emulator select "Print"			
4.a.65	Type "i"			
4.a.66	Select "OK"	2048		
4.a.67	From menu Data of emulator select "Print"			
4.a.68	Type "j"			
4.a.69	Select "OK"	2048		
4.a.70	Close the "CBUG" window			
4.a.71	From menu Execution select "Chip Reset"			

DATE	TEST CONDUCTOR	PRODUCT ASSURANCE	CUSTOMER

TITLE: PAYLOAD & SPACECRAFT INTERFACE BOARD TEST PROCEDURE		UNIT UNDER TEST: S/N:		
STEP N°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
4.a.72	Select "OK"			
4.a.73	From menu Execution select "Assembly Breaks"			
4.a.74	Select "Delete All"			
4.a.75	From menu File select "Load File…"	A prompt window appears		
4.a.76	In the HSO folder select "hsoconfc.ach"	"RAM" (left side mem. loc.)		
4.a.77	From menu File select "Load File…"	A prompt window appears		
4.a.78	In the HSO folder select "fifot2.exe"			
4.a.79	From menu Execute select "CBUG"	CBUG window appears		
4.a.80	From menu Execution select "Restart"			
4.a.81	Search line " // === BREAK POINT to load FIFO " in the program			

DATE	TEST CONDUCTOR	PRODUCT ASSURANCE	CUSTOMER

TITLE: PAYLOAD & SPACECRAFT INTERFACE BOARD TEST PROCEDURE		UNIT UNDER TEST:	S/N:	
STEP N°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
4.a.82	Double click on "for (i=0; i<1200; ++i) { "	" * " appears		
4.a.83	Search line " // === BREAK POINT to read i and j" in the program			
4.a.84	Double click on "*Fifodat[2][k]=*fifoadd2 "	" * " appears		
4.a.85	From menu Execution of emulator select "Continue"			
4.a.86	Search line "// === BREAK POINT to load FIFO " in the program			
4.a.87	Double click on "for (i=0; i<1200; ++i) { "	" * " disappears		
4.a.88	Open the program HIFI1.exe on IFSI Simulator	A DOS window appears		
4.a.89	Press "F"			
4.a.90	Type "2" and press "Enter"			
4.a.91	Press "L"			
DATE	TEST CONDUCTOR	PRODUCT ASSURANCE		CUSTOMER

TITLE: PAYLOAD & SPACECRAFT INTERFACE BOARD TEST PROCEDURE		UNIT UNDER TEST: S/N:		
STEP N°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
4.a.92	Type "D1" and press "Enter"			
4.a.93	Press "R"	FIFO TX		
4.a.94	Press "R"	FIFO TX		
4.a.95	Press "L"			
4.a.96	Type "D4" and press "Enter"			
4.a.97	Press "R"	FIFO TX		
4.a.98	From menu Execution of emulator select "Continue"			
4.a.99	From menu Data of emulator select "Print"			
4.a.100	Type "i"			
4.a.101	Select "OK"	2048		
4.a.102	From menu Data of emulator select "Print"			

DATE	TEST CONDUCTOR	PRODUCT ASSURANCE	CUSTOMER

TITLE: PAYLOAD & SPACECRAFT INTERFACE BOARD TEST PROCEDURE		UNIT UNDER TEST: S/N:		
STEP N°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
4.a.103	Type "j"			
4.a.104	Select "OK"	2048		
4.a.105	Close the "CBUG" window			
4.a.106	From menu Execution select "Chip Reset"			
4.a.107	Select "OK"			
4.a.108	From menu Execution select "Assembly Breaks"			
4.a.109	Select "Delete All"			
4.a.110	From menu File select "Load File…"	A prompt window appears		
4.a.111	In the HSO folder select "hsoconfc.ach"	"RAM" (left side mem. loc.)		
4.a.112	From menu File select "Load File…"	A prompt window appears		
4.a.113	In the HSO folder select "fifot3.exe"			

DATE	TEST CONDUCTOR	PRODUCT ASSURANCE	CUSTOMER

TITLE: PAYLOAD & SPACECRAFT INTERFACE BOARD TEST PROCEDURE		UNIT UNDER TEST: S/N:		
STEP N°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
4.a.114	From menu Execute select "CBUG"	CBUG window appears		
4.a.115	From menu Execution select "Restart"			
4.a.116	Search line " // === BREAK POINT to load FIFO " in the program			
4.a.117	Double click on "for (i=0; i<1200; ++i) { "	" * " appears		
4.a.118	Search line " // === BREAK POINT to read i and j" in the program			
4.a.119	Double click on "*Fifodat[3][k]=*fifoadd3 "	" * " appears		
4.a.120	From menu Execution of emulator select "Continue"			
4.a.121	Search line " // === BREAK POINT to load FIFO " in the program			
4.a.122	Double click on "for (i=0; i<1200; ++i) { "	" * " disappears		

DATE	TEST CONDUCTOR	PRODUCT ASSURANCE	CUSTOMER

TITLE: PAYLOAD & SPACECRAFT INTERFACE BOARD TEST PROCEDURE		UNIT UNDER TEST:	S/N:

STEP N°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
4.a.123	Open the program HIFI1.exe on IFSI Simulator	A DOS window appears		
4.a.124	Press "F"			
4.a.125	Type "3" and press "Enter"			
4.a.126	Press "L"			
4.a.127	Type "D1" and press "Enter"			
4.a.128	Press "R"	FIFO TX		
4.a.129	Press "R"	FIFO TX		
4.a.130	Press "L"			
4.a.131	Type "D4" and press "Enter"			
4.a.132	Press "R"	FIFO TX		

DATE	TEST CONDUCTOR	PRODUCT ASSURANCE	CUSTOMER

TITLE: PAYLOAD & SPACECRAFT INTERFACE BOARD TEST PROCEDURE		UNIT UNDER TEST: S/N:		
STEP N°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
4.a.133	From menu Execution of emulator select "Continue"			
4.a.134	From menu Data of emulator select "Print"			
4.a.135	Type "i"			
4.a.136	Select "OK"	2048		
4.a.137	From menu Data of emulator select "Print"			
4.a.138	Type "j"			
4.a.139	Select "OK"	2048		
DATE	TEST CONDUCTOR	PRODUCT ASSURANCE		CUSTOMER

TITLE: PAYLOAD & SPACECRAFT INTERFACE BOARD TEST PROCEDURE		UNIT UNDER TEST:		S/N:	
STEP N°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS	
4.b	**Fast Science Data Link interfaces (SPIRE configuration)**				
4.b.1	Insert the EZ ICE probe in the JTAG plug (JP12) of CPU Board				
4.b.2	Supply electrical power to the unit	Green led on (CPU Board)			
4.b.3	Open the program ADSP-21020 Emulator				
4.b.4	Type Enter two times to end Row JTAG and Opcode Scan Test				
4.b.5	From menu Memory select "Program"	P.M. window appears			
4.b.6	From menu Memory select "Data"	D.M. window appears			
4.b.7	From menu File select "Load File…"	A prompt window appears			
4.b.8	In the HSO folder select "hsoconfc.ach"	"RAM" (left side mem. loc.)			

DATE	TEST CONDUCTOR	PRODUCT ASSURANCE	CUSTOMER

TITLE: PAYLOAD & SPACECRAFT INTERFACE BOARD TEST PROCEDURE

UNIT UNDER TEST: S/N:

STEP N°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
4.b.9	From menu File select "Load File…"	A prompt window appears		
4.b.10	In the HSO folder select "fifot0.exe"	"RAM" (left side mem. loc.)		
4.b.11	From menu Execute select "CBUG"	CBUG window appears		
4.b.12	From menu Execution select "Restart"			
4.b.13	Search line " // === BREAK POINT to load FIFO " in the program			
4.b.14	Double click on "for (i=0; i<1200; ++i) { "	" * " appears		
4.b.15	Search line " // === BREAK POINT to read i and j" in the program			
4.b.16	Double click on " * Fifodat[0][k]= * fifoadd0 "	" * " appears		
4.b.17	From menu Execution of emulator select "Continue"			
4.b.18				

DATE	TEST CONDUCTOR	PRODUCT ASSURANCE	CUSTOMER

TITLE: PAYLOAD & SPACECRAFT INTERFACE BOARD TEST PROCEDURE		UNIT UNDER TEST: S/N:		
STEP N°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
4.b.19	Search line " // === BREAK POINT to load FIFO " in the program			
4.b.20	Double click on "for (i=0; i<1200; ++i) { "	" * " disappears		
4.b.21	Open the program SPIRE.exe on IFSI Simulator	A DOS window appears		
4.b.22	Press "L"			
4.b.23	Type "D1" and press "Enter"			
4.b.24	Press "R"	FIFO TX		
4.b.25	Press "R"	FIFO TX		
4.b.26	Press "L"			
4.b.27	Type "D4" and press "Enter"			
4.b.28	Press "R"	FIFO TX		
DATE	TEST CONDUCTOR	PRODUCT ASSURANCE		CUSTOMER

TITLE: PAYLOAD & SPACECRAFT INTERFACE BOARD TEST PROCEDURE		UNIT UNDER TEST: S/N:		
STEP N°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
4.b.29	From menu Execution of emulator select "Continue"			
4.b.30	From menu Data of emulator select "Print"			
4.b.31	Type "i"			
4.b.32	Select "OK"	2048		
4.b.33	From menu Data of emulator select "Print"			
4.b.34	Type "j"			
4.b.35	Select "OK"	2048		
4.b.36	Close the "CBUG" window			
4.b.37	From menu Execution select "Chip Reset"			
4.b.38	Select "OK"			
4.b.39	From menu Execution select "Assembly Breaks"			

DATE	TEST CONDUCTOR	PRODUCT ASSURANCE	CUSTOMER

TITLE: PAYLOAD & SPACECRAFT INTERFACE BOARD TEST PROCEDURE		UNIT UNDER TEST: S/N:		
STEP N°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
4.b.40	Select "Delete All"			
4.b.41	From menu File select "Load File…"	A prompt window appears		
4.b.42	In the HSO folder select "hsoconfc.ach"	"RAM" (left side mem. loc.)		
4.b.43	From menu File select "Load File…"	A prompt window appears		
4.b.44	In the HSO folder select "fifot1.exe"	"RAM" (left side mem. loc.)		
4.b.45	From menu Execute select "CBUG"	CBUG window appears		
4.b.46	From menu Execution select "Restart"			
4.b.47	Search line " // === BREAK POINT to load FIFO " in the program			
4.b.48	Double click on "for (i=0; i<1200; ++i) { "	" * " appears		
4.b.49	Search line " // === BREAK POINT to read i and j" in the program			

DATE	TEST CONDUCTOR	PRODUCT ASSURANCE	CUSTOMER

TITLE: PAYLOAD & SPACECRAFT INTERFACE BOARD TEST PROCEDURE		UNIT UNDER TEST:		S/N:
STEP N°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
4.b.50	Double click on " * Fifodat[1][k]= * fifoadd1 "	" * " appears		
4.b.51	From menu Execution of emulator select "Continue"			
4.b.52	Search line " // === BREAK POINT to load FIFO " in the program			
4.b.53	Double click on "for (i=0; i<1200; ++i) { "	" * " disappears		
4.b.54	Open the program SPIRE.exe on IFSI Simulator	A DOS window appears		
4.b.55	Press "F"			
4.b.56	Type "1" and press "Enter"			
4.b.57	Press "L"			
4.b.58	Type "D1" and press "Enter"			
4.b.59	Press "R"	FIFO TX		

DATE	TEST CONDUCTOR	PRODUCT ASSURANCE	CUSTOMER

TITLE: PAYLOAD & SPACECRAFT INTERFACE BOARD TEST PROCEDURE		UNIT UNDER TEST: S/N:		
STEP N°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
4.b.60	Press "R"	FIFO TX		
4.b.61	Press "L"			
4.b.62	Type "D4" and press "Enter"			
4.b.63	Press "R"	FIFO TX		
4.b.64	From menu Execution of emulator select "Continue"			
4.b.65	From menu Data of emulator select "Print"			
4.b.66	Type "i"			
4.b.67	Select "OK"	2048		
4.b.68	From menu Data of emulator select "Print"			
4.b.69	Type "j"			
4.b.70	Select "OK"	2048		

DATE	TEST CONDUCTOR	PRODUCT ASSURANCE	CUSTOMER

TITLE: PAYLOAD & SPACECRAFT INTERFACE BOARD TEST PROCEDURE		UNIT UNDER TEST: S/N:		
STEP N°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
4.b.71	Close the "CBUG" window			
4.b.72	From menu Execution select "Chip Reset"			
4.b.73	Select "OK"			
4.b.74	From menu Execution select "Assembly Breaks"			
4.b.75	Select "Delete All"			
4.b.76	From menu File select "Load File…"	A prompt window appears		
4.b.77	In the HSO folder select "hsoconfc.ach"	"RAM" (left side mem. loc.)		
4.b.78	From menu File select "Load File…"	A prompt window appears		
4.b.79	In the HSO folder select "fifot2.exe"	"RAM" (left side mem. loc.)		
4.b.80	From menu Execute select "CBUG"	CBUG window appears		
4.b.81	From menu Execution select "Restart"			

DATE	TEST CONDUCTOR	PRODUCT ASSURANCE	CUSTOMER

TITLE: PAYLOAD & SPACECRAFT INTERFACE BOARD TEST PROCEDURE		UNIT UNDER TEST:		S/N:
STEP N°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
4.b.82	Search line " // === BREAK POINT to load FIFO " in the program			
4.b.83	Double click on "for (i=0; i<1200; ++i) { "	" * " appears		
4.b.84	Search line " // === BREAK POINT to read i and j" in the program			
4.b.85	Double click on "*Fifodat[2][k]=*fifoadd2 "	" * " appears		
4.b.86	From menu Execution of emulator select "Continue"			
4.b.87	Search line "// === BREAK POINT to load FIFO " in the program			
4.b.88	Double click on "for (i=0; i<1200; ++i) { "	" * " disappears		
4.b.89	Open the program SPIRE.exe on IFSI Simulator	A DOS window appears		
4.b.90	Press "F"			

DATE	TEST CONDUCTOR	PRODUCT ASSURANCE	CUSTOMER

TITLE: PAYLOAD & SPACECRAFT INTERFACE BOARD TEST PROCEDURE		UNIT UNDER TEST: S/N:		
STEP N°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
4.b.91	Type "2" and press "Enter"			
4.b.92	Press "L"			
4.b.93	Type "D1" and press "Enter"			
4.b.94	Press "R"	FIFO TX		
4.b.95	Press "R"	FIFO TX		
4.b.96	Press "L"			
4.b.97	Type "D4" and press "Enter"			
4.b.98	Press "R"	FIFO TX		
4.b.99	From menu Execution of emulator select "Continue"			
4.b.100	From menu Data of emulator select "Print"			
4.b.101	Type "i"			

DATE	TEST CONDUCTOR	PRODUCT ASSURANCE	CUSTOMER

TITLE: PAYLOAD & SPACECRAFT INTERFACE BOARD TEST PROCEDURE		UNIT UNDER TEST:	S/N:	
STEP N°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
4.b.102	Select "OK"	2048		
4.b.103	From menu Data of emulator select "Print"			
4.b.104	Type "j"			
4.b.105	Select "OK"	2048		

DATE	TEST CONDUCTOR	PRODUCT ASSURANCE	CUSTOMER

TITLE: PAYLOAD & SPACECRAFT INTERFACE BOARD TEST PROCEDURE		UNIT UNDER TEST: S/N:		
STEP N°	**TEST SEQUENCE**	**EXPECTED VALUE**	**MEASURED VALUE**	**REMARKS**
5.a	**Low Speed Link interface (HIFI configuration)**			
5.a.1	Insert the EZ ICE probe in the JTAG plug (JP12) of CPU Board			
5.a.2	Supply electrical power to the unit	Green led on (CPU Board)		
5.a.3	Open the program ADSP-21020 Emulator			
5.a.4	Type Enter two times to end Row JTAG and Opcode Scan Test			
5.a.5	From menu Memory select "Program"	P.M. window appears		
5.a.6	From menu Memory select "Data"	D.M. window appears		
5.a.7	From menu File select "Load File…"	A prompt window appears		
5.a.8	In the HSO folder select "hsoconfc.ach"	"RAM" (left side mem. loc.)		
5.a.9	From menu File select "Load File…"	A prompt window appears		
DATE	TEST CONDUCTOR	PRODUCT ASSURANCE		CUSTOMER

TITLE: PAYLOAD & SPACECRAFT INTERFACE BOARD TEST PROCEDURE		UNIT UNDER TEST: S/N:		
STEP N°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
5.a.10	In the HSO folder select "memtest.exe"	"RAM" (left side mem. loc.)		
5.a.11	From menu Execute select "CBUG"	CBUG window appears		
5.a.12	From menu Execution select "Restart"			
5.a.13	Search line " //Test LowSpeed I/F " in the program			
5.a.14	Double click on "for (i=0; i<10; ++i) { "	" * " appears		
5.a.15	Search end of the program			
5.a.16	Double click on "}"	" * " appears		
5.a.17	Open the program HIFI1.exe	A DOS window appears		
5.a.18	From menu Execution of emulator select "Continue"			
5.a.19	From menu Execution of emulator select "Continue"			
5.a.20	From menu Data of emulator select "Print"			
DATE	TEST CONDUCTOR	PRODUCT ASSURANCE	CUSTOMER	

TITLE: PAYLOAD & SPACECRAFT INTERFACE BOARD TEST PROCEDURE		UNIT UNDER TEST: S/N:		
STEP N°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
5.a.21	Type "i"			
5.a.22	Select "OK"	8000		
5.a.23	From menu Data of emulator select "Print"			
5.a.24	Type "n_ lsTx"			
5.a.25	Select "OK"	16		
5.a.26	From menu Execution of emulator select "Restart"			
5.a.27	Select HIFI1.exe window			
5.a.28	Press "S"			
5.a.29	Type "1" and press "Enter"			
5.a.30	From menu Execution of emulator select "Continue"			
5.a.31	From menu Execution of emulator select "Continue"			

DATE	TEST CONDUCTOR	PRODUCT ASSURANCE	CUSTOMER

TITLE: PAYLOAD & SPACECRAFT INTERFACE BOARD TEST PROCEDURE		UNIT UNDER TEST: S/N:		
STEP N°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
5.a.32	From menu Data of emulator select "Print"			
5.a.33	Type "i"			
5.a.34	Select "OK"	8000		
5.a.35	From menu Data of emulator select "Print"			
5.a.36	Type "n_ IsTx"			
5.a.37	Select "OK"	16		
5.a.38	From menu Execution select "Restart"			
5.a.39	Select HIFI1.exe window			
5.a.40	Press "S"			
5.a.41	Type "2" and press "Enter"			
5.a.42	From menu Execution of emulator select "Continue"			

DATE	TEST CONDUCTOR	PRODUCT ASSURANCE	CUSTOMER

TITLE: PAYLOAD & SPACECRAFT INTERFACE BOARD TEST PROCEDURE		UNIT UNDER TEST:	S/N:	
STEP N°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
5.a.43	From menu Execution of emulator select "Continue"			
5.a.44	From menu Data of emulator select "Print"			
5.a.45	Type "i"			
5.a.46	Select "OK"	8000		
5.a.47	From menu Data of emulator select "Print"			
5.a.48	Type "n_ lsTx"			
5.a.49	Select "OK"	16		
5.a.50	From menu Execution select "Restart"			
5.a.51	Select HIFI1.exe window			
5.a.52	Press "S"			
5.a.53	Type "3" and press "Enter"			

DATE	TEST CONDUCTOR	PRODUCT ASSURANCE	CUSTOMER

TITLE: PAYLOAD & SPACECRAFT INTERFACE BOARD TEST PROCEDURE		UNIT UNDER TEST: S/N:		
STEP N°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
5.a.54	From menu Execution of emulator select "Continue"			
5.a.55	From menu Execution of emulator select "Continue"			
5.a.56	From menu Data of emulator select "Print"			
5.a.57	Type "i"			
5.a.58	Select "OK"	8000		
5.a.59	From menu Data of emulator select "Print"			
5.a.60	Type "n_ lsTx"			
5.a.61	Select "OK"	16		
5.a.62	From menu Execution select "Restart"			
5.a.63	Select HIFI1.exe window			
5.a.64	Press "S"			

DATE	TEST CONDUCTOR	PRODUCT ASSURANCE	CUSTOMER

TITLE: PAYLOAD & SPACECRAFT INTERFACE BOARD TEST PROCEDURE		UNIT UNDER TEST: S/N:		
STEP N°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
5.a.65	Type "4" and press "Enter"			
5.a.66	From menu Execution of emulator select "Continue"			
5.a.67	From menu Execution of emulator select "Continue"			
5.a.68	From menu Data of emulator select "Print"			
5.a.69	Type "i"			
5.a.70	Select "OK"	8000		
5.a.71	From menu Data of emulator select "Print"			
5.a.72	Type "n_ lsTx"			
5.a.73	Select "OK"	16		
5.a.74	From menu Execution select "Restart"			
5.a.75	Select HIFI1.exe window			

DATE	TEST CONDUCTOR	PRODUCT ASSURANCE	CUSTOMER

TITLE: PAYLOAD & SPACECRAFT INTERFACE BOARD TEST PROCEDURE		UNIT UNDER TEST:		S/N:
STEP N°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
5.a.76	Press "S"			
5.a.77	Type "5" and press "Enter"			
5.a.78	From menu Execution of emulator select "Continue"			
5.a.79	From menu Execution of emulator select "Continue"			
5.a.80	From menu Data of emulator select "Print"			
5.a.81	Type "i"			
5.a.82	Select "OK"	8000		
5.a.83	From menu Data of emulator select "Print"			
5.a.84	Type "n_ lsTx"			
5.a.85	Select "OK"	16		
5.a.86	From menu Execution select "Restart"			

DATE	TEST CONDUCTOR	PRODUCT ASSURANCE	CUSTOMER

TITLE: PAYLOAD & SPACECRAFT INTERFACE BOARD TEST PROCEDURE		UNIT UNDER TEST: S/N:		
STEP N°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
5.a.87	Select HIFI1.exe window			
5.a.88	Press "S"			
5.a.89	Type "6" and press "Enter"			
5.a.90	From menu Execution of emulator select "Continue"			
5.a.91	From menu Execution of emulator select "Continue"			
5.a.92	From menu Data of emulator select "Print"			
5.a.93	Type "i"			
5.a.94	Select "OK"	8000		
5.a.95	From menu Data of emulator select "Print"			
5.a.96	Type "n_ lsTx"			
5.a.97	Select "OK"	16		

DATE	TEST CONDUCTOR	PRODUCT ASSURANCE	CUSTOMER

TITLE: PAYLOAD & SPACECRAFT INTERFACE BOARD TEST PROCEDURE		UNIT UNDER TEST: S/N:		
STEP N°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
5.a.98	Close the "CBUG" window			
5.a.99	From menu Execution select "Chip Reset"			
5.a.100	Select "OK"			
5.a.101	From menu Execution select "Assembly Breaks"			
5.a.102	Select "Delete All"			
5.a.103	From menu File select "Load File…"	A prompt window appears		
5.a.104	In the HSO folder select "hsoconfc.ach"	"RAM" (left side mem. loc.)		
5.a.105	From menu File select "Load File…"	A prompt window appears		
5.a.106	In the HSO folder select "hk_test.exe"	"RAM" (left side mem. loc.)		
5.a.107	From menu Execute select "CBUG"	CBUG window appears		
5.a.108	From menu Execution select "Restart"			

DATE	TEST CONDUCTOR	PRODUCT ASSURANCE	CUSTOMER

TITLE: PAYLOAD & SPACECRAFT INTERFACE BOARD TEST PROCEDURE		UNIT UNDER TEST:		S/N:
STEP N°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
5.a.109	Search line " //Test LowSpeed I/F " in the program			
5.a.110	Double click on "for (i=0; i<10; ++i) { "	" * " appears		
5.a.111	Search end of the program			
5.a.112	Double click on "}"	" * " appears		
5.a.113	Select HIFI1.exe window	A DOS window appears		
5.a.114	Press "S"			
5.a.115	Type "0" and press "Enter"			
5.a.116	From menu Execution of emulator select "Continue"			
5.a.117	From menu Execution of emulator select "Continue"			
5.a.118	Check the DM content on address 8c000001	"835a5aa500"		
5.a.119	From menu Execute select "CBUG"	CBUG window appears		

DATE	TEST CONDUCTOR	PRODUCT ASSURANCE	CUSTOMER

TITLE: PAYLOAD & SPACECRAFT INTERFACE BOARD TEST PROCEDURE		UNIT UNDER TEST: S/N:		
STEP N°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
5.a.120	From menu Execution select "Restart"			
5.a.121	Search line " //Test LowSpeed I/F " in the program			
5.a.122	Double click on "for (i=0; i<10; ++i) { "	" * " appears		
5.a.123	Search end of the program			
5.a.124	Double click on "}"	" * " appears		
5.a.125	Select HIFI1.exe window	A DOS window appears		
5.a.126	Press "S"			
5.a.127	Type "1" and press "Enter"			
5.a.128	From menu Execution of emulator select "Continue"			
5.a.129	From menu Execution of emulator select "Continue"			
5.a.130	Check the DM content on address 8c000001	"835a5aa500"		

DATE	TEST CONDUCTOR	PRODUCT ASSURANCE	CUSTOMER

TITLE: PAYLOAD & SPACECRAFT INTERFACE BOARD TEST PROCEDURE		UNIT UNDER TEST: S/N:		
STEP N°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
5.a.131	From menu Execute select "CBUG"	CBUG window appears		
5.a.132	From menu Execution select "Restart"			
5.a.133	Select HIFI1.exe window	A DOS window appears		
5.a.134	Press "S"			
5.a.135	Type "2" and press "Enter"			
5.a.136	From menu Execution of emulator select "Continue"			
5.a.137	From menu Execution of emulator select "Continue"			
5.a.138	Check the DM content on address 8c000001	"835a5aa500"		

DATE	TEST CONDUCTOR	PRODUCT ASSURANCE	CUSTOMER

TITLE: PAYLOAD & SPACECRAFT INTERFACE BOARD TEST PROCEDURE		UNIT UNDER TEST: S/N:		
STEP N°	**TEST SEQUENCE**	**EXPECTED VALUE**	**MEASURED VALUE**	**REMARKS**
5.b	**Low Speed Link interface (SPIRE configuration)**			
5.b.1	Insert the EZ ICE probe in the JTAG plug (JP12) of CPU Board			
5.b.2	Supply electrical power to the unit	Green led on (CPU Board)		
5.b.3	Open the program ADSP-21020 Emulator			
5.b.4	Type Enter two times to end Row JTAG and Opcode Scan Test			
5.b.5	From menu Memory select "Program"	P.M. window appears		
5.b.6	From menu Memory select "Data"	D.M. window appears		
5.b.7	From menu File select "Load File…"	A prompt window appears		
5.b.8	In the HSO folder select "hsoconfc.ach"	"RAM" (left side mem. loc.)		
5.b.9	From menu File select "Load File…"	A prompt window appears		
DATE	TEST CONDUCTOR	PRODUCT ASSURANCE		CUSTOMER

TITLE: PAYLOAD & SPACECRAFT INTERFACE BOARD TEST PROCEDURE		UNIT UNDER TEST: S/N:		
STEP N°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
5.b.10	In the HSO folder select "memtest.exe"	"RAM" (left side mem. loc.)		
5.b.11	From menu Execute select "CBUG"	CBUG window appears		
5.b.12	From menu Execution select "Restart"			
5.b.13	Search line " //Test LowSpeed I/F " in the program			
5.b.14	Double click on "for (i=0; i<10; ++i) { "	" * " appears		
5.b.15	Search end of the program			
5.b.16	Double click on "}"	" * " appears		
5.b.17	Open the program SPIRE.exe on IFSI Simulator	A DOS window appears		
5.b.18	From menu Execution of emulator select "Continue"			
5.b.19	From menu Execution of emulator select "Continue"			
5.b.20	From menu Data of emulator select "Print"			
DATE	TEST CONDUCTOR	PRODUCT ASSURANCE	CUSTOMER	

TITLE: PAYLOAD & SPACECRAFT INTERFACE BOARD TEST PROCEDURE		UNIT UNDER TEST:		S/N:
STEP N°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
5.b.21	Type "i"			
5.b.22	Select "OK"	8000		
5.b.23	From menu Data of emulator select "Print"			
5.b.24	Type "n_ lsTx"			
5.b.25	Select "OK"	16		
5.b.26	From menu Execution of emulator select "Restart"			
5.b.27	Select SPIRE.exe window			
5.b.28	Press "S"			
5.b.29	Type "1" and press "Enter"			
5.b.30	From menu Execution of emulator select "Continue"			
5.b.31	From menu Execution of emulator select "Continue"			

DATE	TEST CONDUCTOR	PRODUCT ASSURANCE	CUSTOMER

TITLE: PAYLOAD & SPACECRAFT INTERFACE BOARD TEST PROCEDURE		UNIT UNDER TEST: S/N:		
STEP N°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
5.b.32	From menu Data of emulator select "Print"			
5.b.33	Type "i"			
5.b.34	Select "OK"	8000		
5.b.35	From menu Data of emulator select "Print"			
5.b.36	Type "n_ lsTx"			
5.b.37	Select "OK"	16		
5.b.38	From menu Execution select "Restart"			
5.b.39	Select SPIRE.exe window			
5.b.40	Press "S"			
5.b.41	Type "2" and press "Enter"			
5.b.42	From menu Execution of emulator select "Continue"			

DATE	TEST CONDUCTOR	PRODUCT ASSURANCE	CUSTOMER

TITLE: PAYLOAD & SPACECRAFT INTERFACE BOARD TEST PROCEDURE		UNIT UNDER TEST: S/N:		
STEP N°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
5.b.43	From menu Execution of emulator select "Continue"			
5.b.44	From menu Data of emulator select "Print"			
5.b.45	Type "i"			
5.b.46	Select "OK"	8000		
5.b.47	From menu Data of emulator select "Print"			
5.b.48	Type "n_ lsTx"			
5.b.49	Select "OK"	16		
5.b.50	Close the "CBUG" window			
5.b.51	From menu Execution select "Chip Reset"			
5.b.52	Select "OK"			
5.b.53	From menu Execution select "Assembly Breaks"			

DATE	TEST CONDUCTOR	PRODUCT ASSURANCE	CUSTOMER

TITLE: PAYLOAD & SPACECRAFT INTERFACE BOARD TEST PROCEDURE		UNIT UNDER TEST:	S/N:	
STEP N°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
5.b.54	Select "Delete All"			
5.b.55	From menu File select "Load File…"	A prompt window appears		
5.b.56	In the HSO folder select "hsoconfc.ach"	"RAM" (left side mem. loc.)		
5.b.57	From menu File select "Load File…"	A prompt window appears		
5.b.58	In the HSO folder select "hk_test.exe"	"RAM" (left side mem. loc.)		
5.b.59	From menu Execute select "CBUG"	CBUG window appears		
5.b.60	From menu Execution select "Restart"			
5.b.61	Search line " //Test LowSpeed I/F " in the program			
5.b.62	Double click on "for (i=0; i<10; ++i) { "	" * " appears		
5.b.63	Search end of the program			
5.b.64	Double click on "}"	" * " appears		

DATE	TEST CONDUCTOR	PRODUCT ASSURANCE	CUSTOMER

TITLE: PAYLOAD & SPACECRAFT INTERFACE BOARD TEST PROCEDURE		UNIT UNDER TEST:	S/N:	
STEP N°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
5.b.65	Select HIFI1.exe window	A DOS window appears		
5.b.66	Press "S"			
5.b.67	Type "0" and press "Enter"			
5.b.68	From menu Execution of emulator select "Continue"			
5.b.69	From menu Execution of emulator select "Continue"			
5.b.70	Check the DM content on address 8c000001	"835a5aa5"		
5.b.71	From menu Execute select "CBUG"	CBUG window appears		
5.b.72	From menu Execution select "Restart"			
5.b.73	Search line " //Test LowSpeed I/F " in the program			
5.b.74	Double click on "for (i=0; i<10; ++i) { "	" * " appears		
5.b.75	Search end of the program			

DATE	TEST CONDUCTOR	PRODUCT ASSURANCE	CUSTOMER

TITLE: PAYLOAD & SPACECRAFT INTERFACE BOARD TEST PROCEDURE		UNIT UNDER TEST: S/N:		
STEP N°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
5.b.76	Double click on "}"	" * " appears		
5.b.77	Select SPIRE.exe window	A DOS window appears		
5.b.78	Press "S"			
5.b.79	Type "1" and press "Enter"			
5.b.80	From menu Execution of emulator select "Continue"			
5.b.81	From menu Execution of emulator select "Continue"			
5.b.82	Check the DM content on address 8c000001	"835a5aa5"		
5.b.83	From menu Execute select "CBUG"	CBUG window appears		
5.b.84	From menu Execution select "Restart"			
5.b.85	Select SPIRE.exe window	A DOS window appears		
5.b.86	Press "S"			

DATE	TEST CONDUCTOR	PRODUCT ASSURANCE	CUSTOMER

TITLE: PAYLOAD & SPACECRAFT INTERFACE BOARD TEST PROCEDURE		UNIT UNDER TEST: S/N:		
STEP N°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
5.b.87	Type "2" and press "Enter"			
5.b.88	From menu Execution of emulator select "Continue"			
5.b.89	From menu Execution of emulator select "Continue"			
5.b.90	Check the DM content on address 8c000001	"835a5aa5"		

DATE	TEST CONDUCTOR	PRODUCT ASSURANCE	CUSTOMER

TITLE: PAYLOAD & SPACECRAFT INTERFACE BOARD TEST PROCEDURE		UNIT UNDER TEST: S/N:		
STEP N°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
6	**Analog inputs**			
6.1	Insert the EZ ICE probe in the JTAG plug (JP12) of CPU Board			
6.2	Supply electrical power to the unit	Green led on (CPU Board)		
6.3	Open the program ADSP-21020 Emulator			
6.4	Type Enter two times to end Row JTAG and Opcode Scan Test			
6.5	From menu Memory select "Program"	P.M. window appears		
6.6	From menu Memory select "Data"	D.M. window appears		
6.7	From menu File select "Load File…"	A prompt window appears		
6.8	In the HSO folder select "hsoconf.ach"	"RAM" (left side mem. loc.)		

DATE	TEST CONDUCTOR	PRODUCT ASSURANCE	CUSTOMER

TITLE: PAYLOAD & SPACECRAFT INTERFACE BOARD TEST PROCEDURE		UNIT UNDER TEST:	S/N:	
STEP N°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
6.9	Set the output of the Power supply to 100 mV			
6.10	Connect the output signal to the AINP0 input P2 pin A10 and short to AGND all the unused Analog inputs			
6.11	In the DM address 8f008000 write "0000000000"			
6.12	Check DM content on address 8f008001	48÷56		
6.13	Set the output of the Power supply to 2,5V			
6.14	In the DM address 8f008000 write "0000000000"			
6.15	Check DM content on address 8f008001	7E0÷81E		
6.16	Set the output of the Power supply to 5V			
6.17	In the DM address 8f008000 write "0000000000"			

DATE	TEST CONDUCTOR	PRODUCT ASSURANCE	CUSTOMER

TITLE: PAYLOAD & SPACECRAFT INTERFACE BOARD TEST PROCEDURE		UNIT UNDER TEST:		S/N:
STEP N°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
6.18	Check DM content on address 8f008001	FD0÷FFF		
6.19	Repeat the steps from 6.9 to 6.18 using signals AINP1, AINP2, AINP3, AINP4, AINP5 and AINP6 (P2 pin B10, C10, A12, B12, C12 and A14) and writing 1÷6 in the DM address 8f008000			
6.20	In the DM address 8f008000 write "0000000700"			
6.21	Check DM content on address 8f008001	7E0÷81E		

DATE	TEST CONDUCTOR	PRODUCT ASSURANCE	CUSTOMER

TITLE: PAYLOAD & SPACECRAFT INTERFACE BOARD TEST PROCEDURE	UNIT UNDER TEST:		S/N:
STEP N°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS

STEP N°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
7	**MIL-STD-1553 Clock generation**			
7.1	Connect the probe channel 1 of the digital scope to the pin 19 of U2			
7.2	Verify the clock frequency	16 MHz ± 1%		

DATE	TEST CONDUCTOR	PRODUCT ASSURANCE	CUSTOMER

TITLE: PAYLOAD & SPACECRAFT INTERFACE BOARD TEST PROCEDURE		UNIT UNDER TEST: S/N:		
STEP N°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
8	**MIL-STD-1553 interface**			
8.1	Insert CPU board in its own slot (1) on the motherboard			
8.2	Insert PL IF board in its own slot (2) on the motherboard			
8.3	Insert the EZ ICE probe in the JTAG plug of CPU board (JP12)			
8.4	Connect Channel A connector to 1553TE			
8.5	Supply electrical power to the unit	Green led on (CPU board)		
8.6	Open the program ADSP-21020 Emulator			
8.7	Type Enter two times to end Row JTAG and Opcode Scan Test			
8.8	From menu Memory select "Program"	PM window appears		
8.9	From menu Memory select "Data"	DM window appears		

DATE	TEST CONDUCTOR	PRODUCT ASSURANCE	CUSTOMER

TITLE: PAYLOAD & SPACECRAFT INTERFACE BOARD TEST PROCEDURE		UNIT UNDER TEST:		S/N:
STEP N°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
8.10	From menu File select "Load File…"	A prompt window appears		
8.11	In the HSO folder select "boot.ach"			
8.12	From menu File select "Load File…"	A prompt window appears		
8.13	In the HSO folder select "drv1553A.exe"			
8.14	From menu Execution select CBUG	CBUG window appears		
8.15	Open program "Bus-Tools 1553" on 1553TE			
8.16	Double click on BM icon in the Bus.btm window			
8.17	Select "Run" in the Bus Monitor Initialization window			
8.18	Select Channel A and enable RX and TX			
8.19	Select "No" in the Bus Tools Windows Application			

DATE	TEST CONDUCTOR	PRODUCT ASSURANCE	CUSTOMER

TITLE: PAYLOAD & SPACECRAFT INTERFACE BOARD TEST PROCEDURE	UNIT UNDER TEST: S/N:		
STEP N°	**TEST SEQUENCE**	**EXPECTED VALUE**	**MEASURED VALUE**	**REMARKS**
8.20	From menu Execution of Emulator select "Restart"			
8.21	From menu Execution of Emulator select "Continue"	Value received by Bus Tool increases from 0000 to AAAA		
8.22	Connect the probe channel 1 oscilloscope with pin 1 of T1			
8.23	Connect the probe channel 2 oscilloscope with pin 3 of T1			
8.24	In the "Math" menu of the oscilloscope set CH1-CH2			
8.25	Verify signal on channel M of the oscilloscope	Sequence of pulses (amplitude 36Vpp minimum, 54Vpp maximum)		
8.26	Connect the probe channel 1 oscilloscope with pin 5 of T1			
8.27	Connect the probe channel 2 oscilloscope with pin 7 of T1			

DATE	TEST CONDUCTOR	PRODUCT ASSURANCE	CUSTOMER

TITLE: PAYLOAD & SPACECRAFT INTERFACE BOARD TEST PROCEDURE		UNIT UNDER TEST: S/N:		
STEP N°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
8.28	Verify signal on channel M of the oscilloscope	Sequence of pulses (amplitude 18Vpp minimum 27Vpp maximum)		
8.29	Select "Stop" on "Bus Tools			
8.30	Stop the program on the emulator			
8.31	From menu Execution of Emulator select "Chip Reset"			
8.32	Select "OK"			
8.33	Connect Channel B connector to 1553TE			
8.34	Repeat step from 8.10 to 8.12			
8.35	In the HSO folder select "drv1553B.exe"			
8.36	From menu Execution select CBUG	CBUG window appears		

DATE	TEST CONDUCTOR	PRODUCT ASSURANCE	CUSTOMER

TITLE: PAYLOAD & SPACECRAFT NTERFACE BOARD TEST PROCEDURE		UNIT UNDER TEST: S/N:		
STEP N°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
8.37	From menu Execution of Emulator select "Restart"			
8.38	From menu Execution of Emulator select "Continue"	Value received by Bus Tool increases from 0000 to AAAA		
8.39	Connect the probe channel 1 oscilloscope with pin 1 of T2			
8.40	Connect the probe channel 2 oscilloscope with pin 3 of T2			
8.41	In the "Math" menu of the oscilloscope set CH1-CH2			
8.42	Verify signal on channel M of the oscilloscope	Sequence of pulses (amplitude 36Vpp minimum, 54Vpp maximum)		
8.43	Connect the probe channel 1 oscilloscope with pin 5 of T2			
8.44	Connect the probe channel 2 oscilloscope with pin 7 of T2			
DATE	TEST CONDUCTOR	PRODUCT ASSURANCE	CUSTOMER	

TITLE: PAYLOAD & SPACECRAFT INTERFACE BOARD TEST PROCEDURE

UNIT UNDER TEST: S/N:

STEP N°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
8.45	Verify signal on channel M of the oscilloscope	Sequence of pulses (amplitude 18Vpp minimum 27Vpp maximum)		

DATE	TEST CONDUCTOR	PRODUCT ASSURANCE	CUSTOMER

9 DEVIATION

In case that for any reason the test procedure has to be changed, the change shall be described in a Procedure Variation Sheet (PVS) attached to this document in Table 9-1.

The PVS shall contain:

- Reference to the procedure to be changed
- Reference to the relevant test, procedure page and paragraph
- Description of the change
- Reason for change
- Test Engineer, QA, Test conductor signatures and dates
- Customer signature and date (when required).

Each PVS shall be identified by a reference number provided in a sequential order.
All the generated PVS shall be collected in a dedicated section of the Test Report.

9.1 *Procedure variation sheet*

The Procedure Variation Sheet is shown in Table 9-1.

PROCEDURE VARIATION SHEET ref. N°:		
Test procedure Ref.:	Page revised	Para. revised
Description of changes:		
Reason for changes:		
CONCURRENCE			
Test Cond.	P.A.	System Eng.	Customer
Date	Date	Date	Date

Table 9-1

10 PRINTOUTS

Printouts obtained during the test shall be reported in the test report.