EM DIVISION

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REVISION PAGE

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1	• Redefine System Overview • Redefine the paragraph 4.1 • Add Test case for robustness, and time contraint
2	
3	
4	
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6	

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1 SCOPE

1.1 Identification

This Software Test Report (STRp) is applied to a system described as follows:

System identification number	: ARTISt_System_001
System title	: Airborne Real Time Instrumentation System
System abbreviation	: ARTISt
CSCI number	: ARTISt_CSCI_001
CSCI title	: Airborne Real Time Instrumentation System
CSCI abbreviation	: ARTISt

1.2 System Overview

Purpose of system :

ARTISt system is an instrumentation system based on Personal Computer (PC) which is installed on board the prototype aircraft to perform presentation of flight test data in real time. The presentation consists of display the data in table mode, display the data in graphic mode, display the data in mixed mode (table and graphic), and display the data in xplot mode (graphic between 2 parameters), and also print and record the data. The data which has been recorded by ARTISt, can be used by other software through the Disk Management System (DMS). The PC equipped with an interface for Pulse Code Modulation (PCM) decoder called ARTISt Card.

The following figure describes the system architecture of the ARTISt :

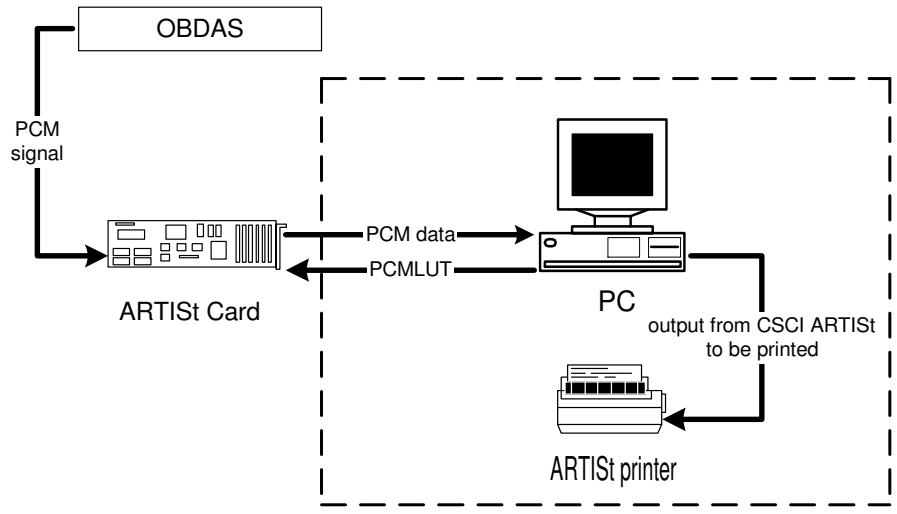
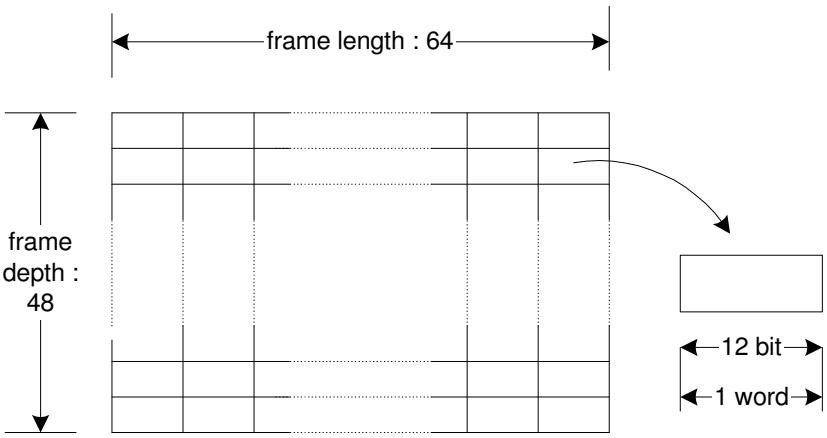


Figure 1 : "The ARTISt System Architecture"

On Board Data Acquisition System (OBDAS) is an instrumentation system which is installed on the prototype aircraft directly acquires analog and digital signals from various flight test sensors and other measurement sub system and convert them into a format suitable for real time display, telemetry and recording.

ARTISt card is an instrumentation system which is installed inside the PC which must receive a serial PCM bit stream output incoming from OBDAS, decoding it, and then transferring the data to the PC memory based on Pulse Code Modulation Look Up Table (PCMLUT). One PCM data is 12 bits (1 word) long. There are parameters which have 1 word data and Aeronautical Radio Incorporated (ARINC) parameters which has 3 words data. PCMLUT is array of PCM word position, means parameter position inside PCM data stream, which is arranged according to calibration file.PCM frame size is equal the size of PCM bit stream decoded by OBDAS which has specific frame length and frame depth, and position of frame number.

The following figure describes PCM data generated out from OBDAS and received by ARTISt.

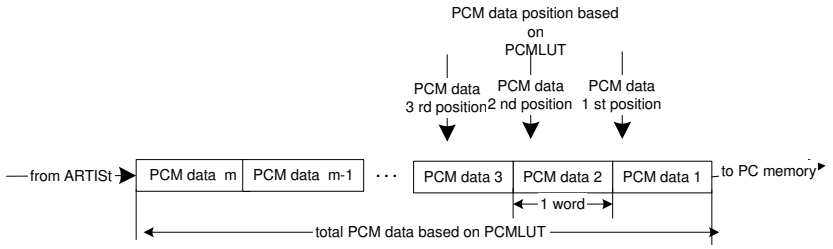


Note :
frame size : frame depth x frame length

Figure 2 :"PCM Data Output from OBDAS to ARTISt "

After passing through ARTISt card, the PCM data which goes out depending on PCMLUT. To regulate PCM data in PC memory, it is performed by the Non-Developmental Software (NDS) files. The NDS files are Artbuf and ISRPCM files.

The following figure represents PCM data which goes to PC memory.



Note :
m : total pcm_data which goes out to PC memory based on PCMLUT.
(It can be said that **m** is sum pcm_data position)

Figure 3 :"PCM Data from ARTISt Card to The PC Memory"

Purpose of the CSCI :

ARTISt CSCI is a configuration item that is installed inside the PC and access the PCM data in the PC memory.

ARTISt CSCI should perform the following functions :
1. collect electrical data from ARTISt card
2. process the data : process to translate electrical data into engineering data and extended parameters calculation
3. present the data :
    a. on-line displaying with status (displayed electrical data or engineering data in table mode or graphic mode or mixed mode or xplot mode),
    b. on-line recording (electrical data and/or engineering data)
    c. on-line printing (electrical data or engineering data)

ARTISt CSCI is able to process the all safety parameters used in prototype aircraft of IPTN. Total parameters which can be processed, will be described at calculation of memory and time allocation in the Software Design Document.

Electrical data is occurred because of a measurement device produce specific electrical voltage. PCM data is electrical data format. Then it is allocated in memory within hexadecimal value. Engineering data is readable data from engineering view. Actually, this engineering data will be got from calculation electrical data with specific formula based on calibration data (this data occurs from laboratory test).

Data collection is to select and to take electrical data which needed via ARTISt card. Data processing means that PCM data from ARTISt card will be translated from electrical data into engineering data and extended parameters calculation, based on calibration data which saved on calibration file with specific formula. Data presentation means, either electrical data or engineering data can be displayed on screen monitor (table mode and/or graphic mode), printed on printer and saved electrical data to the harddisk of PC.

1.3 Document Overview

This document describes the formal qualification test plan and description for ARTISt. This document identifies the software test environment resources required for formal qualification testing (FQT) and provides schedule for FQT activities. This document also include the scenario of testing will be done.

1.4 Relationship to Other Plans

The following table describes the relationship of software test report (STRp) to other plans :

Aspect	Other plans	Paragraph concerned
General means for testing	SDP	Paragraph 5.3

Table 1 :Relationship STRp to other plans

2 REFERENCED DOCUMENTS

2.1 International documents

None.

2.2 THOMSON-CSF documents

None.

2.3 IPTN Documents

[1] EM/000/SDP/DD/001	Software Development Plan for ARTISt November 2000, rev. : 1
[2] EM/000/IRS/DD/002	Interface Requirements Specification for ARTISt November 2000, rev. : 1
[3] EM/000/SRS/DD/003	Software Requirements Specification for ARTISt November 2000, rev. : 1
[4] EM/000/SDD/DD/004	Software Design Document for ARTISt November 2000, rev. : 1

2.4 Other Documents

[5] -	Drafting Guide for Software Test Report (STRp) September 1999, RTSE IF–ITB

3 SOFTWARE TEST ENVIRONMENT

3.1 Software Items

See SDP paragraph 4.1.3.1. [1]

3.2 Hardware And Firmware Items

See SDP paragraph 4.1.3.2. [1]

3.3 Proprietary Nature, and Government Rights

See SDP paragraph 4.1.3.3. [1]

3.4 Installation, Testing, and Control

See SDP paragraph 4.1.3.4. [1]

4 FORMAL QUALIFICATION TEST IDENTIFICATION

4.1 General Test Requirements

The formal qualification tests performed on the ARTISt are using simulation data. There are two type of simulation data, as follows:

1. The simulation data which is generated by ARTISt CSCI. This data is not PCM data and have a trend like sinusoidal.
2. The simulation data which is generated by PCM Simulator which is available on the ARTISt Card but the PCM Simulator runs at independently module. The ARTISt Card has a transmitter and a receiver. The transmitter is able to transmit PCM data from PCM Simulator module. The receiver has responsible for receiveing PCM data from transmitter due to ARTISt cable (in software testing environment) or from OBDAS (in real environment). After the PCM data has been received, it will be processed further according to PCMLUT. Then this PCM data is sent to PC in order to be accomplished by ARTISt CSCI. This PCM data is a real PCM data as like the one from OBDAS which is the real environment of ARTISt.

4.2 Test Classes

a. Installation
   This test class consists in checking the compilation of the software.
b. Environment
   This test class involves checking the CSCI interfaces against its external environment
c. Functionality
   This test class involves checking that the CSCI meets the requirements in term of capabilities
d. Robustness and degraded mode
   This test class involves testing the behavior of the software when it is subjected to incorrect inputs, the activation of residual errors or confronted with environmental faults.
e. Test under load
   This test class involves checking that the CSCI meets the expected performance in term of time.

4.3 Test Levels

The level in which the formal qualification test shall be performed is:

- The CSCI level,
  The test in this level is intended to evaluate the compliance with CSCI requirements.

4.4 Test Schedule

NO.	TEST NAME	LOCATION	DURATION	DATE
1	Installation_ARTISt_T1	IF–ITB or FTC-IPTN	11’	November 2000
2	Environmental_ARTISt_T2	IF–ITB or FTC-IPTN	13’	November 2000
3	Initiate_Program_ARTISt_T3	IF–ITB or FTC-IPTN	18’	November 2000
4	Collect_Electrical_Data_ARTISt_T4	IF–ITB or FTC-IPTN	30’	November 2000
5	Translate_To_Engineering_Data_ARTISt_T5	IF–ITB or FTC-IPTN	16’	November 2000
6	Show_Data_ARTISt_T6	IF–ITB or FTC-IPTN	16’	November 2000
7	Record_Data_ARTISt_T7	IF–ITB or FTC-IPTN	20’	November 2000
8	Mode_ARTISt_T8	IF–ITB or FTC-IPTN	12’	November 2000
9	Robustness_ARTISt_T9	IF–ITB or FTC-IPTN	12’	November 2000
10	Time_Constraint_ARTISt_T10	IF–ITB or FTC-IPTN	12’	November 2000

4.5 Test Definitions

The following table describes each formal qualification test to be conducted on the OBA CSCI

TEST CLASS	TEST NAME	TEST CASE
INSTALLATION	Installation_ARTISt_T1	Compilation_ARTISt_T1.1
ENVIRONMENT	Environmental_ ARTISt _T2	CSCI_connectivity_ ARTISt _T2.1 Programming_language_ ARTISt _T2.2 Operating_system_ ARTISt _T2.3
FUNCTIONALITY	Initiate_Program_ARTISt_T3	Initiate_System_Configuration_ ARTISt _T3.1 Define_Global_Parameter_ ARTISt _T3.2 Select_Local_parameters_ ARTISt _T3.3 Setup_Presentation_ ARTISt _T3.4 Generate_PCMLUT_ ARTISt _T3.5 Select_Extended_Formula_ ARTISt _T3.6 Report_AC_Config_ ARTISt _T3.7
	Collect_Electrical_Data_ARTISt_T4	Find_Buffer_Location_ ARTISt _T4.1 Find_ISRPCM_ ARTISt _T4.2 Put_Electrical_Data_ ARTISt _T4.3
	Translate_To_Engineering_Data_ARTISt_T5	Calculate_Liniear_ ARTISt _T5.1 Calculate_Polynom_ ARTISt _T5.2 Calculate_Bit_Mask_ ARTISt _T5.3 Calculate_Extended_ ARTISt_T5.4
	Show_Data_ARTISt_T6	Display_Table_ ARTISt _T6.1 Display_Graphic_ ARTISt _T6.2 Display_Mixed_ ARTISt _T6.3 Print_Parameter_Data_ ARTISt_T6.4
	Record_Data_ARTISt_T7	Record_Electrical_Data_ ARTISt _T7.1 Record_Engineering_Data_ ARTISt _T7.2
	Mode_ARTISt_T8	Waiting_Mode_ ARTISt _T8.1 Setting_Mode_ ARTISt_T8.2 Running_Mode_ ARTISt_T8.3
ROBUSTNESS	Robustness_ARTISt_T9	CableCard_Connection_Fail_ARTISt_T9.1
		Incorrect_Input_ARTISt_T9.2
UNDER LOAD	Time_Constraint_ARTISt_T10	Processing_Time_ARTISt_T10.1

4.5.1 Installation_ARTISt_T1

Objective:
The objective of this test is to check the compilation of the ARTISt CSCI. It also assure that all files (*.c and *.h) required are stored in the proper directory.

Test Level:
CSCI Level

4.5.1.1 Installation_ ARTISt _T1 Schedule

NO	TEST NAME	LOCATION	DURATION	DATE
1	Briefings	IF–ITB or FTC-IPTN	2’	November 2000
2	Pre–test activities		3’	November 2000
3	Test		3’	November 2000
4	Debriefings		2’	November 2000
5	Data reduction and analysis		3’	November 2000

4.5.1.2 Installation_ ARTISt _T1 Pre–test Procedures

4.5.1.2.1 Hardware Preparation

The hardware required in this test are:
- Minimum PC AT-486 DX4-120

4.5.1.2.2 Software Preparation

1. The operating system of the development and integration environment :
- DOS 6.2
2. The compiler and linker :
- Turbo C++ ver. 3.0

4.5.1.2.3 Other Pre–Test Preparations

Not Applicable

4.5.1.3 Installation_ ARTISt _T1

The following table describes all of test cases dedicated to this test and the qualification method used.

NO.	TEST CASE	QUALIFICATION METHOD
1	Compilation_ ARTISt _T1.1	Demonstration

4.5.1.3.1 Compilation_ ARTISt _T1.1

The purpose of this test is to assure that the compilation of CSCI is done using C compiler.
The following table describes the initialization, test input, test procedure, and expected results of this test.

INITIALIZATION	TEST INPUT	TEST PROCEDURE	EXPECTED RESULTS
Set all necessary files In project file	*.c, *.h	Compile the files	All files are completely compiled

The following table describes the requirements traceability, criteria for evaluating results, assumption & constraints and test results.

REQUIREMENT TRACEABILITY	EVALUATION CRITERIA	ASSUMPTION & CONSTRAINTS	TEST RESULTS
SRS_REQ_92000	–No error is occur –Executable file is built	None	[√] OK [ ] Not_OK

4.5.2 Environmental_ ARTISt _T2

Objective:
The objective of this test is to check the ARTISt CSCI is connect with other environment.

Test Level:
CSCI level

4.5.2.1 Environmental_ ARTISt _T2 Schedule

NO	ACTIVITY	LOCATION	DURATION	DATE
1	Briefings	IF–ITB or FTC-IPTN	2’	November 2000
2	Pre–test activities		3’	November 2000
3	Test		3’	November 2000
4	Debriefings		2’	November 2000
5	Data reduction and analysis		3’	November 2000

4.5.2.2 Environmental_ARTISt_T2 Pre–test Procedures

4.5.2.2.1 Hardware Preparation

The hardware required in this test are:
- Minimum PC AT-486 DX4-120
- ARTISt Card & ARTISt cable
- Dot matrix printer LQ series
- Screen monitor minimum EGA/VGA resolution

4.5.2.2.2 Software Preparation

The following software shall be provided for the test:
- ISRPCM.com
- ARTBUF.com
- sim.exe to generate simulation data in the ARTISt card.

4.5.2.2.3 Other Pre–Test Preparations

None

4.5.2.3 Environmental_ARTISt_T2

The following table describes all of test cases dedicated to this test and the qualification method used.

NO.	TEST CASE	QUALIFICATION METHOD
1	CSCI_connectivity_ ARTISt _T2.1	Demonstration
2	Programming_language_ ARTISt _T2.2	Inspection
3	Operating_system_ ARTISt _T2.3	Inspection

4.5.2.3.1 CSCI_connectivity_ ARTISt _T2.1

The purpose of this test is to verify that the ARTISt CSCI and the ISRPCM.com and ARTBUF.com is logically connected.
The following table describes the initialization, test input, test procedure, and expected results of this test

INITIALIZATION	TEST INPUT	TEST PROCEDURE	EXPECTED RESULTS
ISRPCM.com is not installed	none	–Run the ARTISt Software –Observe the message	Message “ISRPCM.com is not loaded” is occured
ISRPCM.com is installed			There is no “ISRPCM.com is not loaded” message
ARTBUF.com is not installed			Message “ARTBUF.com is not loaded” is occured
ARTBUF.com is installed			There is no “ARTBUF.com is not loaded” message
ARTISt Card is not installed			Message “ARTISt Card is not loaded” is occured
ARTISt Card is installed			There is no “ARTISt Card is not loaded” message

The following table describes the requirements traceability, criteria for evaluating results, assumption & constraints and test results.

REQUIREMENT TRACEABILITY	EVALUATION CRITERIA	ASSUMPTION & CONSTRAINTS	TEST RESULTS
SRS_REQ_21000 SRS_REQ_22000 SRS_REQ_66000 SRS_REQ_67000 SRS_REQ_68000 SRS_REQ_70000	Message "ISRPCM.com is not installed" is occured	none	[√] OK [ ] Not_OK
	There is no "ISRPCM.com is not installed" message	ISRPCM.com is installed correcly (resident in memory)	[√] OK [ ] Not_OK
	Message "ARTBUF.com is not installed" is occured	none	[√] OK [ ] Not_OK
	There is no "ARTBUF.com is not installed" message	ARTBUF.com is installed correcly (resident in memory)	[√] OK [ ] Not_OK
	Message "ARTISt Card is not installed" is occured	none	[√] OK [ ] Not_OK
	There is no "ARTISt Card is not installed" message	ARTISt card is installed correctly at ISA of CPU bus	[√] OK [ ] Not_OK

4.5.2.3.2 Programming_language_ARTISt_T2.2

The purpose of this test is to check the programming language used in coding.
The following table describes the initialization, test input, test procedure, and expected results of this test

INITIALIZATION	TEST INPUT	TEST PROCEDURE	EXPECTED RESULTS
None	All C language files	Inspect the language used	The programming language used is C

The following table describes the requirements traceability, criteria for evaluating results, assumption & constraints and test results.

REQUIREMENT TRACEABILITY	EVALUATION CRITERIA	ASSUMPTION & CONSTRAINTS	TEST RESULTS
SRS_REQ_92000	Inspection results shows that the programming language is C language	None	[√] OK [ ] Not_OK

4.5.2.3.3 Operating_system_ARTISt_T2.3

The purpose of this test is to check the operating system used.
The following table describes the initialization, test input, test procedure, and expected results of this test

INITIALIZATION	TEST INPUT	TEST PROCEDURE	EXPECTED RESULTS
None	None	Inspect the operating system used	The inspection shows that the operating system used is DOS min. ver. 4.00

The following table describes the requirements traceability, criteria for evaluating results, assumption & constraints and test results.

REQUIREMENT TRACEABILITY	EVALUATION CRITERIA	ASSUMPTION & CONSTRAINTS	TEST RESULTS
SRS_REQ_90000	The inspection shows that the operating system used is DOS min. ver. 4.00	None	[√] OK [ ] Not_OK

4.5.3 Initiate_Program_ARTISt_T3

Objective:
The objective of this test is to check that the initiate the program is working properly.

Test Level:
CSCI Level

4.5.3.1 Initiate_Program_ARTISt_T3 Schedule

NO	ACTIVITY	LOCATION	DURATION	DATE
1	Briefings	IF–ITB or FTC-IPTN	2’	November 2000
2	Pre–test activities		3’	November 2000
3	Test		8’	November 2000
4	Debriefings		2’	November 2000
5	Data reduction and analysis		3’	November 2000

4.5.3.2 Initiate_Program_ARTISt_T3 Pre–test Procedures

4.5.3.2.1 Hardware Preparation

See paragraph 4.5.2.2.1

4.5.3.2.2 Software Preparation

- See paragraph 4.5.2.2.2

4.5.3.2.3 Other Pre–Test Preparations

Used the file initialization (artist.ini).

4.5.3.3 Initiate_Program_ARTISt_T3

The following table describes all of test cases dedicated to this test and the qualification method used.

NO.	TEST CASE	QUALIFICATION METHOD
1	Initiate_System_Configuration_ ARTISt _T3.1	Demonstration
2	Define_Global_Parameter_ ARTISt _T3.2	Demonstration
3	Select_Local_parameters_ ARTISt _T3.3	Demonstration
4	Setup_Presentation_ ARTISt _T3.4	Demonstration
5	Generate_PCMLUT_ ARTISt _T3.5	Demonstration
6	Select_Extended_Formula_ ARTISt _T3.6	Demonstration
7	Report_AC_Config_ ARTISt _T3.7	Demonstration

4.5.3.3.1 Initiate_System_Configuration_ ARTISt _T3.1

The purpose of this test is to check that the CSCI has the capability to initiate system configuration.
The following table describes the initialization, test input, test procedure, and expected results of this test

INITIALIZATION	TEST INPUT	TEST PROCEDURE	EXPECTED RESULTS
The configuration file (Slave.ini) shall be provided in the same directory of ARTISt.exe file. For example : Dismod = eng, means that display mode is in engineering value		- Run the artist software - Check the setup presentation value (-Select "Setting" from Main Menu -Select "Setting Global" from Setting Menu -Select PA2A.DES file -Select local parameters - Select "Display Table"	Parameters selected in will be displayed in engineering data

The following table describes the requirements traceability, criteria for evaluating results, assumption & constraints and test results.

REQUIREMENT TRACEABILITY	EVALUATION CRITERIA	ASSUMPTION & CONSTRAINTS	TEST RESULTS
SRS_REQ_11000 IRS_REQ_41000 IRS_REQ_41100 SRS_REQ_59000 SRS_REQ_59100 SRS_REQ_59200 SRS_REQ_59300 SRS_REQ_59400	The setup presentation value is according to the configuration file.	The contents of configuration file (slave.ini) is correct	[√] OK [ ] Not_OK

4.5.3.3.2 Define_Global_Parameter_ ARTISt _T3.2

The purpose of this test is to check the capability for defining global parameter.
The following table describes the initialization, test input, test procedure, and expected results of this test

INITIALIZATION	TEST INPUT	TEST PROCEDURE	EXPECTED RESULTS
- The calibration file (ex. PA2A.DES) shall be available in the same directory of ARTISt.exe - Software in "Setting Mode"	none	- Select the "Setting Global" from menu - Select "PA2A.DES" - Check the list of par_name displayed in monitor	the par_name displayed in monitor are same with PA2A.DES file that was printed in paper. (ex. : first par_name AILTRIM, second 523010, third 523030, etc.)

- The calibration file (ex. FBW.DES) shall be available in the same directory of ARTISt.exe - Software in "Setting Mode"	none	- Select the "Setting Global" from menu - Select "FBW.DES" - See the message	Message "error in line 1 of file FBW.DES"
- There is no calibration file (*.DES) in the same directory of ARTISt.exe - Software in "Setting Mode"	none	- Select the "Setting Global" from menu - Check in the monitor	There is no list of calibration file in the monitor

The following table describes the requirements traceability, criteria for evaluating results, assumption & constraints and test results.

REQUIREMENT TRACEABILITY	EVALUATION CRITERIA	ASSUMPTION & CONSTRAINTS	TEST RESULTS
SRS_REQ_12100 IRS_REQ_22000 IRS_REQ_22100 IRS_REQ_41000 IRS_REQ_41200 SRS_REQ_56000 SRS_REQ_57000 SRS_REQ_58000 SRS_REQ_60000	the par_name displayed in monitor are same with PA2A.DES file that was printed in paper.	The PA2A.DES file is valid.	[√] OK [ ] Not_OK
	Error message is occured.	The FBW.DES file is not valid.	[√] OK [ ] Not_OK
	There is no list of calibration file in the monitor	none	[√] OK [ ] Not_OK

4.5.3.3.3 Select_Local_parameters_ ARTISt _T3.3

The purpose of this test is to check the capability select local parameter.
The following table describes the initialization, test input, test procedure, and expected results of this test

INITIALIZATION	TEST INPUT	TEST PROCEDURE	EXPECTED RESULTS
- The Define Global Parameter has been running - Software in "Setting Mode"	Local parameters (ex. AILTRIM, 523010, 523030)	- Select the "Setting Local" from menu - Select "Table Parameters" - Select the parameters in test input. - Back to "Setting Menu" - Select "Running" from menu - Select "Display Table" - See the parameters displayed in table mode.	the parameters (AILTRIM, 523010, 523030) are displayed in table mode
- The Define Global Parameter has been running - Software in "Setting Mode"	Local parameters selected over the limit allowed. For example : local parameters for displaying in table mode are 10 parameters. The selection reaches 11 parameters	- Select the "Setting Local" from main menu - Select "Table Parameters" - Select the parameters in test input.	Only 10 parameters will be displayed
- The Define Global Parameter has not been running yet. - Software in "Setting Mode"	none	- Select the "Setting Local" from menu - See the message.	Message "Global Parameter is not define" is occured

The following table describes the requirements traceability, criteria for evaluating results, assumption & constraints and test results.

REQUIREMENT TRACEABILITY	EVALUATION CRITERIA	ASSUMPTION & CONSTRAINTS	TEST RESULTS
SRS_REQ_12200 IRS_REQ_22000 IRS_REQ_22400 IRS_REQ_22410	the parameters displayed in table mode and the selected parameters are same.	None.	[√] OK [ ] Not_OK
IRS_REQ_22420 IRS_REQ_22430 IRS_REQ_22440	Message "Global Parameter is not define" is occured	None	[√] OK [ ] Not_OK

IRS_REQ_22450 IRS_REQ_22460 SRS_REQ_74000 SRS_REQ_75000	The parameters displayed in table mode and the selected parameters are same. The 11th parameter can not be accessed	All parameters name written in *.DES file are displayed as a list. Selection will be done by arrow keys on the keyboard.	[√] OK [ ] Not_OK

4.5.3.3.4 Setup_Presentation_ ARTISt _T3.4

The purpose of this test is to check the capability setup presentation.
The following table describes the initialization, test input, test procedure, and expected results of this test

INITIALIZATION	TEST INPUT	TEST PROCEDURE	EXPECTED RESULTS
- Software in "Setting Mode" - Global Parameters Definitions has been performed	Setup presentation value DisMod = elect	- Select the "Setting Local" from menu - Select "Table Parameters" - Select the parameters in test input. - Back to "Setting Menu" - Select the "Setting presentation" from setting menu - Select "DisMod"- - Select "Electrical Data" - Check the parameter displayed in table.	The parameters displayed in table are same according to the setup presentation value. Valuec of parameters displayed are in electrical value.
- Software in "Setting Mode" - Global Parameters Definitions has been performed	Setup presentation value DisMod = eng	- Select the "Setting Local" from menu - Select "Table Parameters" - Select the parameters in test input. - Back to "Setting Menu" - Select the "Setting presentation" from setting menu - Select "DisMod"- - Select "Engineering Data" - Check the parameter displayed in table.	The parameters displayed in table are same according to the setup presentation value. Valuec of parameters displayed are in engineering value.

- Software in "Setting Mode" - Global Parameters Definitions has been performed	Setup presentation value FrameRed = with_framred	- Select the "Setting Local" from menu - Select "Table Parameters" - Select the parameters in test input. - Back to "Setting Menu" - Select the "Setting presentation" from setting menu - Select "FramRed" - Select "With Frame Reduction" - Check the parameter displayed in table.	The parameters displayed in table are same according to the setup presentation value. Valuec of parameters displayed are not according to incoming frame
- Software in "Setting Mode" - Global Parameters Definitions has been performed	Setup presentation value FrameRed = without_framred	- Select the "Setting Local" from menu - Select "Table Parameters" - Select the parameters in test input. - Back to "Setting Menu" - Select the "Setting presentation" from setting menu - Select "FramRed" - Select "Without Frame Reduction" - Check the parameter displayed in table.	The parameters displayed in table are same according to the setup presentation value. Valuec of parameters displayed are according to incoming frame

- Software in "Setting Mode" - Global Parameters Definitions has been performed	Setup presentation value NumSym = par_name For example : There are three parameters selected. Those have name and symbol. Their name are AILTRIM, 523010, 523030 , and their each symbol are AILTAP, AOANB and AOSNB.	- Select the "Setting Local" from menu - Select "Table Parameters" - Select the parameters in test input. - Back to "Setting Menu" - Select the "Setting presentation" from setting menu - Select "NumSym" - Select "Parameter Number" - Check the parameter displayed in table.	The parameters displayed in table are same according to the setup presentation value. Name of parameters are displayed, such as AILTRIM, 523010, 523030
- Software in "Setting Mode" - Global Parameters Definitions has been performed	Setup presentation value NumSym = par_sym For example : There are three parameters selected. Those have name and symbol. Their name are AILTRIM, 523010, 523030 , and their each symbol are AILTAP, AOANB and AOSNB.	- Select the "Setting Local" from menu - Select "Table Parameters" - Select the parameters in test input. - Back to "Setting Menu" - Select the "Setting presentation" from setting menu - Select "NumSym" - Select "Parameter "Parameter Symbol" - Check the parameter displayed in table.	The parameters displayed in table are same according to the setup presentation value. Symbol of parameters are displayed, such as AILTAP, AOANB and AOSNB

The following table describes the requirements traceability, criteria for evaluating results, assumption & constraints and test results.

REQUIREMENT TRACEABILITY	EVALUATION CRITERIA	ASSUMPTION & CONSTRAINTS	TEST RESULTS
SRS_REQ_13000 SRS_REQ_13100 SRS_REQ_13200 SRS_REQ_13300 SRS_REQ_13400 IRS_REQ_22200 IRS_REQ_22210 IRS_REQ_22220 IRS_REQ_22230 IRS_REQ_22240 SRS_REQ_54000 SRS_REQ_54100 SRS_REQ_54200 SRS_REQ_54300 SRS_REQ_55000 SRS_REQ_60000	The parameters are displayed in table according to the setup presentation value.	File *.DES is valid Electrical data is valid	[√] OK [ ] Not_OK
	The parameters are displayed in table according to the setup presentation value.	File *.DES is valid The calculation is correct then the engineering data may be valid	[√] OK [ ] Not_OK
	The parameters are displayed in table according to the setup presentation value. When data comes, its direcly displays	File *.DES is valid Time for incoming frame is valid	[√] OK [ ] Not_OK
	The parameters are displayed in table according to the setup presentation value. Not all incoming frames will display	File *.DES is valid Time for incoming frame is valid	[√] OK [ ] Not_OK
	The parameters are displayed in table according to the setup presentation value. The identity of parameter displayed is only the name	File *.DES is valid	[√] OK [ ] Not_OK
	The parameters are displayed in table according to the setup presentation value. The identity of parameter displayed is only the symbol	File *.DES is valid	[√] OK [ ] Not_OK

4.5.3.3.5 Generate_PCMLUT_ ARTISt _T3.5

The purpose of this test is to check the capability Generate PCMLUT.
The following table describes the initialization, test input, test procedure, and expected results of this test

INITIALIZATION	TEST INPUT	TEST PROCEDURE	EXPECTED RESULTS
- Software is in "Setting Mode"	File *.DES For example : PA2A.DES	-Select the "Global Parameter Initialization" from setting menu -Select PA2A.DES file from the list -Back toSetting menu -Check word_pos of PCMLUT	the word_pos of PCMLUT is same according to the calibration file.

The following table describes the requirements traceability, criteria for evaluating results, assumption & constraints and test results.

REQUIREMENT TRACEABILITY	EVALUATION CRITERIA	ASSUMPTION & CONSTRAINTS	TEST RESULTS
SRS_REQ_14000 SRS_REQ_14100 SRS_REQ_14200 SRS_REQ_14300 SRS_REQ_14400 SRS_REQ_14500 SRS_REQ_14600 IRS_REQ_12000 SRS_REQ_60000	Inspections	PA2A.DES is valid	[√] OK [ ] Not_OK

4.5.3.3.6 Select_Extended_Formula_ ARTISt _T3.6

The purpose of this test is to check the capability select extended formula.
The following table describes the initialization, test input, test procedure, and expected results of this test

INITIALIZATION	TEST INPUT	TEST PROCEDURE	EXPECTED RESULTS
- Software in "Setting Mode" - File Extd.FML is available in the same directory	Selected Extended parameters (ex. DEL, DER, TOTDEF)	- Select the "Setting Global" from menu - Select the local parameter - Display in the table mode - Check the extended parameter	the extended parameter is correct according to the extended file.
- Software in "Setting Mode"	none	- Select the "Setting Global" from menu - Check the result	There is message which formula file is not available

The following table describes the requirements traceability, criteria for evaluating results, assumption & constraints and test results.

REQUIREMENT TRACEABILITY	EVALUATION CRITERIA	ASSUMPTION & CONSTRAINTS	TEST RESULTS
SRS_REQ_15100 IRS_REQ_41000 IRS_REQ_41300 SRS_REQ_76000	the extended parameter is correct according to the extended file	File *.FML is valid	[√] OK [ ] Not_OK
	No formula file in the same directory		[√] OK [ ] Not_OK

4.5.3.3.7 Report_ACConfig_ ARTISt _T3.7

The purpose of this test is to check the capability report ACConfig.
The following table describes the initialization, test input, test procedure, and expected results of this test

INITIALIZATION	TEST INPUT	TEST PROCEDURE	EXPECTED RESULTS
- Software in "Setting Mode"	Aircraft configuration data, such as mission number, run number, etc	- Select the "Setting AC Config" from menu - Observe the display - Fill the data of ACConfig - Select "Print" from menu - Observe the result	The AC Config menu is displayed. The aircraft configuration data printed is the same as which has been filled by user.
- Software in "Setting Mode"	Aircraft configuration data, such as mission number, run number, etc	- Select the "Setting AC Config" from menu - Observe the display - Fill the data of ACConfig - Select "Save" from menu - Observe the result	The AC Config menu is displayed. The aircraft configuration data recorded is the same as which has been filled by user.

The following table describes the requirements traceability, criteria for evaluating results, assumption & constraints and test results.

REQUIREMENT TRACEABILITY	EVALUATION CRITERIA	ASSUMPTION & CONSTRAINTS	TEST RESULTS
SRS_REQ_16100 SRS_REQ_16200 IRS_REQ_21800 IRS_REQ_22600 IRS_REQ_32000	The AC Config is displayed and printed	The filling is correctly performed	[√] OK [ ] Not_OK

SRS_REQ_16100 SRS_REQ_16200 IRS_REQ_21900 IRS_REQ_22600 IRS_REQ_41100 IRS_REQ_43000	The AC Config is displayed and recorded		[√] OK [ ] Not_OK

4.5.4 Collect_Electrical_Data_ARTISt_T4

Objective:
The objective of this test is to check the capability collect electrical data.

Test Level:
CSCI Level

4.5.4.1 Collect_Electrical_Data_ARTISt_T4 Schedule

NO	ACTIVITY	LOCATION	DURATION	DATE
1	Briefings	IF–ITB or FTC-IPTN	2’	November 2000
2	Pre–test activities		8’	November 2000
3	Test		15’	November 2000
4	Debriefings		2’	November 2000
5	Data reduction and analysis		3’	November 2000

4.5.4.2 Collect_Electrical_Data_ARTISt_T4 Pre–test Procedures

4.5.4.2.1 Hardware Preparation

See paragraph 4.5.2.2.1

4.5.4.2.2 Software Preparation

See paragraph 4.5.2.2.2

4.5.4.2.3 Other Pre–Test Preparations

Not Applicable

4.5.4.3 Collect_Electrical_Data_ARTISt_T4

The following table describes all of test cases dedicated to this test and the qualification method used.

NO.	TEST CASE	QUALIFICATION METHOD
1	Find_Buffer_Location_ ARTISt _T4.1	Inspection
2	Find_ISRPCM_ ARTISt _T4.2	Inspection
3	Put_Electrical_Data_ ARTISt _T4.3	Inspection

4.5.4.3.1 Find_Buffer_Location_ ARTISt _T4.1

The purpose of this test is to check the capability of ARTISt CSCI in find buffer location.
The following table describes the initialization, test input, test procedure, and expected results of this test

INITIALIZATION	TEST INPUT	TEST PROCEDURE	EXPECTED RESULTS
ARTBUF.com is not installed yet	none	–Run the ARTISt Software –Observe the message	Message "ARTBUF.COM is not installed" will be occured.
ARTBUF.com has been installed	none	–Run the ARTISt Software –Observe the message	The message is not occurred.

The following table describes the requirement traceability, criteria for evaluating results, assumption & constraints and test results.

REQUIREMENT TRACEABILITY	EVALUATION CRITERIA	ASSUMPTION & CONSTRAINTS	TEST RESULTS
SRS_REQ_21000 SRS_REQ_66000 SRS_REQ_67000	ARTBUF.com is not installed" is occured	ARTBUF.COM file is valid	[√] OK [ ] Not_OK
	The message is not occurred.		[√] OK [ ] Not_OK

4.5.4.3.2 Find_ISRPCM_ ARTISt _T4.2

The purpose of this test is to check the capability find isrpcm
The following table describes the initialization, test input, test procedure, and expected results of this test

INITIALIZATION	TEST INPUT	TEST PROCEDURE	EXPECTED RESULTS
ISRPCM.com is not installed	none	–Run the ARTISt Software –Observe the message	Message "ISRPCM.com is not installed" will be occured
ISRPCM.com has been installed	none	–Run the ARTISt Software –Observe the message	The message is not occurred.

The following table describes the requirements traceability, criteria for evaluating results, assumption & constraints and test results.

REQUIREMENT TRACEABILITY	EVALUATION CRITERIA	ASSUMPTION & CONSTRAINTS	TEST RESULTS
SRS_REQ_22000 SRS_REQ_68000 SRS_REQ_70000	Message "ISRPCM.com is not installed" is occured	ISRPCM.COM file is valid	[√] OK [ ] Not_OK
	The message is not occurred.		[√] OK [ ] Not_OK

4.5.4.3.3 Put_Electrical_Data_ ARTISt _T4.3

The purpose of this test is to that the CSCI capability to put electrical data is working properly.
The following table describes the initialization, test input, test procedure, and expected results of this test

INITIALIZATION	TEST INPUT	TEST PROCEDURE	EXPECTED RESULTS
Software is in "Running Mode"	There is incoming electrical data which is from ARTISt card	-Run the "DisplayTable" from menu -Observe the result	The electrical data will be displayed
Software is in "Running Mode"	There is not incoming electrical data from ARTISt card	-Run the "DisplayTable" from menu -Observe the result	The electrical data will not be displayed

The following table describes the requirements traceability, criteria for evaluating results, assumption & constraints and test results.

REQUIREMENT TRACEABILITY	EVALUATION CRITERIA	ASSUMPTION & CONSTRAINTS	TEST RESULTS
SRS_REQ_24000 IRS_REQ_11000 SRS_REQ_56000 SRS_REQ_61000 SRS_REQ_67000	There is electrical data occured which has specific value for each incoming frame	Software is running with real data The electrical data is valid ARTISt card is available installed ARTISt card is connected with OBDAS	[√] OK [ ] Not_OK
		Software is running with simulation data. The simulation data is resulted from sine and cosine calculation. ARTISt card is available installed	[√] OK [ ] Not_OK
	There is not electrical data occured.	Software is running with simulation data. The simulation data is resulted from sine and cosine calculation. ARTISt card is not available installed	[√] OK [ ] Not_OK

4.5.5 Calculate_To_Engineering_Data_ARTISt_T5

Objective:
The objective of this test is to assure that the engineering data calculation is working.

Test Level:
CSCI Level

4.5.5.1 Calculate_To_Engineering_Data_ARTISt_T5 Schedule

NO	ACTIVITY	LOCATION	DURATION	DATE
1	Briefings	IF–ITB or FTC-IPTN	2'	November 2000
2	Pre–test briefings		3'	November 2000
3	Test		6'	November 2000
4	Debriefings		2'	November 2000
5	Data reduction and analysis		3'	November 2000

4.5.5.2 Calculate_To_Engineering_Data_ARTISt_T5 Pre–test Procedures

4.5.5.2.1 Hardware Preparation

See paragraph 4.5.2.2.1

4.5.5.2.2 Software Preparation

See paragraph 4.5.2.2.2

4.5.5.2.3 Other Pre–Test Preparations

Use the driver to perform this test.

4.5.5.3 Calculate_To_Engineering_Data_ARTISt_T5

The following table describes all of test cases dedicated to this test and the qualification method used.

NO.	TEST CASE	QUALIFICATION METHOD
1	Calculate_Linear_ ARTISt _T5.1	Demonstration, Analysis
2	Calculate_Polynom_ ARTISt _T5.2	Demonstration, Analysis
3	Calculate_Bit_Mask_ ARTISt _T5.3	Demonstration, Analysis
4	Calculate_Extended_ ARTISt_T5.4	Demonstration, Analysis

4.5.5.3.1 Calculate_Linear_ ARTISt _T5.1

The purpose of this test is to check that the capability Calculate Linear is working.
The following table describes the initialization, test input, test procedure, and expected results of this test

INITIALIZATION	TEST INPUT	TEST PROCEDURE	EXPECTED RESULTS
- Software is in the "Setting" Menu - The global parameter has been defined (ex. PA2A.DES) - The setting of display_mode is electrical	Selected linear parameters (ex. DAL, DAR, DEL, DER) to be displayed, printed, and recorded engineering.	- Select "Local parameters" from menu - Select "Graphic parameters" from menu - Select the test input parameters - Select "Print parameters" from menu - Select the test input parameters - Select "Rec. Eng parameters" from menu - Select the test input parameters - Back to main menu - Run the display graphic - See the trend data of graphic - Print the selected parameter by press	- The trend data of graphic is like triangle. - The printed data of parameters and the recorded engineering data is associated according to the calibration data

		F5 key for start print and F6 key for stop print - Record eng data of the selected parameter by press F7 key for start record and F8 key for stop record - Analyze the result	

The following table describes the requirements traceability, criteria for evaluating results, assumption & constraints and test results.

REQUIREMENT TRACEABILITY	EVALUATION CRITERIA	ASSUMPTION & CONSTRAINTS	TEST RESULTS
SRS_REQ_35000 SRS_REQ_57000 SRS_REQ_62000	- The correct value of calculate linear can be seen with the trend of graphic data. - The printed data of parameter and the recorded data can be analysis to determine the data is correct or not.	S/w running with simulation data in triangle	[√] OK [ ] Not_OK

4.5.5.3.2 Calculate_Polynom_ ARTISt _T5.2

The purpose of this test is to check that the capability calculate polynom is working.
The following table describes the initialization, test input, test procedure, and expected results of this test

INITIALIZATION	TEST INPUT	TEST PROCEDURE	EXPECTED RESULTS
- Software is in the "Setting" Menu - The global parameter has been defined (ex. PA2A.DES) - The setting of display_mode is electrical	Selected polynom parameters (ex. DFL, DFR) to be displayed, printed, and recorded engineering	- Select "Local parameters" from menu - Select "Graphic parameters" from menu - Select the test input parameters - Select "Print parameters" from menu - Select the test input parameters - Select "Record eng parameters" from menu - Select the test input parameters - Back to main	- The trend data of graphic is like sinusoidal. - The printed data of parameters and the recorded engineering data is associated according to the calibration data

		menu - Run the display graphic - See the trend data of graphic - Print the selected parameter by press F5 key for start print and F6 key for stop print - Record engineering data of the selected parameter by press F7 key for start record and F8 key for stop record - Analyze the result	

The following table describes the requirements traceability, criteria for evaluating results, assumption & constraints and test results.

REQUIREMENT TRACEABILITY	EVALUATION CRITERIA	ASSUMPTION & CONSTRAINTS	TEST RESULTS
SRS_REQ_36000 SRS_REQ_57000 SRS_REQ_62000	- The correct value of calculate polynom can be seen with the trend of graphic data. - The printed data of parameter and the recorded data can be analysis to determine the data is correct or not..	S/w running with simulation data in triangle	[√] OK [ ] Not_OK

4.5.5.3.3 Calculate_Bit_Mask_ ARTISt _T5.3

The purpose of this test is to check that the capability calculate bit mask is working.
The following table describes the initialization, test input, test procedure, and expected results of this test

INITIALIZATION	TEST INPUT	TEST PROCEDURE	EXPECTED RESULTS
- Software is in the "Setting" Menu - The global parameter has been defined (ex. PA2A.DES) - The setting of display_mode is electrical	Selected Bit Mask parameters (ex. FICAL, FICAR, FICBL, FICAR) to be displayed, printed, and recorded engineering	- Select "Local parameters" from menu - Select "Table parameters" from menu - Select the test input parameters - Select "Print parameters" from menu - Select the test input parameters - Select "Record eng parameters" from menu - Select the test input parameters - Back to main menu - Run the display table - See the data displayed in table mode - Print the selected parameter by press F5 key for start print and F6 key for stop print - Record eng the selected parameter by press F6 key for start record and F7 key for stop record - Analyze the result	- The data displayed is 0 or 1 value. - The printed data of parameters and the recorded engineering data is associated according to the calibration data

The following table describes the requirements traceability, criteria for evaluating results, assumption & constraints and test results.

REQUIREMENT TRACEABILITY	EVALUATION CRITERIA	ASSUMPTION & CONSTRAINTS	TEST RESULTS
SRS_REQ_37000 SRS_REQ_57000	- The correct value of calculate Bit Mask can be seen on the value of table data. - The printed data of parameter and the recorded data can be analysis to determine the data is correct or not.	S/W running with simulation data in triangle	[√] OK [ ] Not_OK

4.5.5.3.4 Calculate_Extended_ ARTISt _T5.4

The purpose of this test is to check that the capability calculate extended is working.
The following table describes the initialization, test input, test procedure, and expected results of this test

INITIALIZATION	TEST INPUT	TEST PROCEDURE	EXPECTED RESULTS
- Software is in the "Setting" Menu - The global parameter has been defined (ex. PA2A.DES)	Selected Extended parameters (ex. DEL, DER, TOTDEF)	- Select "Local parameters" from menu - Select "Table parameters" from menu - Select the test input parameters - Select "Print parameters" from menu - Select the test input parameters - Back to main menu - Run the display table - See the data displayed in table mode - Print the selected parameter by press F5 key for start print and F6 key for stop print - Analyze the result	- The data displayed of TOTDEF = DEL+DER - The printed data of parameters is the correct value (TOTDEF = DEL+DER)

The following table describes the requirements traceability, criteria for evaluating results, assumption & constraints and test results.

REQUIREMENT TRACEABILITY	EVALUATION CRITERIA	ASSUMPTION & CONSTRAINTS	TEST RESULTS
SRS_REQ_38000 SRS_REQ_57000 SRS_REQ_76000	- The correct value of calculate Extended can be seen on the value of table data. - The printed data of parameter can be analysis to determine the data is correct or not.	- S/w running with simulation data in triangle - TOTDEF = DEL+DER	[√] OK [ ] Not_OK

4.5.6 Show_Data_ARTISt_T6

Objective:
The objective of this test is to assure that capability show data is working properly.

Test Level:
CSCI Level

4.5.6.1 Show_Data_ARTISt_T6 Schedule

Table below shows Show_Data_ARTISt_T6 Schedule of ARTISt CSCI

NO	ACTIVITY	LOCATION	DURATION	DATE
1	Briefings	IF–ITB or FTC-IPTN	2’	November 2000
2	Pre–test activities		3’	November 2000
3	Test		6’	November 2000
4	Debriefings		2’	November 2000
5	Data reduction and analysis		3’	November 2000

4.5.6.2 Show_Data_ARTISt_T6 Pre–test Procedures

4.5.6.2.1 Hardware Preparation

See paragraph 4.5.2.2.1

4.5.6.2.2 Software Preparation

- See paragraph 4.5.2.2.2

4.5.6.2.3 Other Pre–Test Preparations

Not Applicable

4.5.6.3 Show_Data_ARTISt_T6

The following table describes all of test cases dedicated to this test and the qualification method used.

NO.	TEST CASE	QUALIFICATION METHOD
1	Display_Table_ ARTISt _T6.1	Demonstration
2	Display_Graphic_ ARTISt _T6.2	Demonstration
3	Display_Mixed_ ARTISt _T6.3	Demonstration
4	Print_Parameter_Data_ ARTISt_T6.4	Demonstration

4.5.6.3.1 Display_Table_ ARTISt _T6.1

The purpose of this test is to check the capability display table.
The following table describes the initialization, test input, test procedure, and expected results of this test

INITIALIZATION	TEST INPUT	TEST PROCEDURE	EXPECTED RESULTS
- Software is in the "Setting" Menu - The global parameter has been defined (ex. PA2A.DES)	Selected parameters (ex. DEL, DER, DFL, DFR)	- Select "Local parameters" from menu - Select "Table parameters" from menu - Select the test input parameters - Back to main menu - Run the display table - See the monitor	The parameters DEL, DER, DFL, DFR are displayed in table mode
- Software is in the "Running" Menu	None.	- Run the display table - See the monitor	Message "TABDIS : Parameters are not selected" is occured

The following table describes the requirements traceability, criteria for evaluating results, assumption & constraints and test results.

REQUIREMENT TRACEABILITY	EVALUATION CRITERIA	ASSUMPTION & CONSTRAINTS	TEST RESULTS
SRS_REQ_41100 IRS_REQ_21000 IRS_REQ_21300	Selected parameters are displayed in table	Software is running with simulation data	[√] OK [ ] Not_OK
IRS_REQ_22400 IRS_REQ_22410 IRS_REQ_23000 IRS_REQ_23100 SRS_REQ_54000 SRS_REQ_55000 SRS_REQ_56000 SRS_REQ_74000	The error message is occured		[√] OK [ ] Not_OK

4.5.6.3.2 Display_Graphic_ ARTISt _T6.2

The purpose of this test is to check the capability display graphic.
The following table describes the initialization, test input, test procedure, and expected results of this test

INITIALIZATION	TEST INPUT	TEST PROCEDURE	EXPECTED RESULTS
- Software is in the "Setting" Menu - The global parameter has been defined (ex. PA2A.DES)	Selected parameters (ex. DEL, DER, DFL, DFR)	- Select "Local parameters" from menu - Select "Graphic parameters" from menu - Select the test input parameters - Back to main menu - Run the display graphic - See the monitor	The parameters DEL, DER, DFL, DFR are displayed in graphic mode
- Software is in the "Running" Menu	None.	- Run the display graphic - See the monitor	Message "GRADIS : Parameters are not selected" is occured

The following table describes the requirements traceability, criteria for evaluating results, assumption & constraints and test results.

REQUIREMENT TRACEABILITY	EVALUATION CRITERIA	ASSUMPTION & CONSTRAINTS	TEST RESULTS
SRS_REQ_42100 IRS_REQ_21000 IRS_REQ_21300 IRS_REQ_22400 IRS_REQ_22420 IRS_REQ_23000 IRS_REQ_23200 SRS_REQ_54000 SRS_REQ_55000 SRS_REQ_56000 SRS_REQ_74000	Selected parameters are displayed in graphic	Software is running with simulation data	[√] OK [ ] Not_OK
	The error message is occured		[√] OK [ ] Not_OK

4.5.6.3.3 Display_Mixed_ ARTISt _T6.3

The purpose of this test is to check the display mixed.
The following table describes the initialization, test input, test procedure, and expected results of this test

INITIALIZATION	TEST INPUT	TEST PROCEDURE	EXPECTED RESULTS
- Software is in the "Setting" Menu - The global parameter has been defined (ex. PA2A.DES)	Selected parameters (ex. DEL, DER, DFL, DFR)	- Select "Local parameters" from menu - Select "Mixed parameters" from menu - Select the test input parameters - Back to main menu - Run the display mixed - See the monitor	The parameters DEL, DER are displayed in graphic mode and parameters DFL, DFR are displayed in table mode
- Software is in the "Running" Menu	None.	- Run the display mixed - See the monitor	Message "MIXDIS : Parameters are not selected" is occured

The following table describes the requirements traceability, criteria for evaluating results, assumption & constraints and test results.

REQUIREMENT TRACEABILITY	EVALUATION CRITERIA	ASSUMPTION & CONSTRAINTS	TEST RESULTS
SRS_REQ_43100 IRS_REQ_21000 IRS_REQ_21300 IRS_REQ_22400 IRS_REQ_22430 IRS_REQ_23000 IRS_REQ_23300 SRS_REQ_54000 SRS_REQ_55000 SRS_REQ_56000 SRS_REQ_74000	Selected parameters are displayed in mixed	Software is running with simulation data	[√] OK [ ] Not_OK
	The error message is occured		[√] OK [ ] Not_OK

4.5.6.3.4 Display_Xplot_ ARTISt _T6.4

The purpose of this test is to check the display xplot.
The following table describes the initialization, test input, test procedure, and expected results of this test

INITIALIZATION	TEST INPUT	TEST PROCEDURE	EXPECTED RESULTS
- Software is in the "Setting" Menu - The global parameter has been defined (ex. PA2A.DES)	Selected parameters (ex. DEL, DER, DFL, DFR, AOANB, AOSNB)	- Select "Local parameters" from menu - Select "Xplot parameters" from menu - Select the test input parameters - Back to main menu - Run the display xplot - See the monitor	The parameters DEL, DER, DFL, DFR are displayed in xplot mode and parameters AOANB, AOSNB are displayed in table mode
- Software is in the "Running" Menu	None.	- Run the display xplot - See the monitor	Message "XPLOT : Parameters are not selected" is occured

The following table describes the requirements traceability, criteria for evaluating results, assumption & constraints and test results.

REQUIREMENT TRACEABILITY	EVALUATION CRITERIA	ASSUMPTION & CONSTRAINTS	TEST RESULTS
SRS_REQ_44100 IRS_REQ_21000 IRS_REQ_21300 IRS_REQ_22400 IRS_REQ_22430 IRS_REQ_23000 IRS_REQ_23300 SRS_REQ_54000 SRS_REQ_55000 SRS_REQ_56000 SRS_REQ_74000	Selected parameters are displayed in mixed	Software is running with simulation data	[√] OK [ ] Not_OK
	The error message is occured		[√] OK [ ] Not_OK

4.5.6.3.5 Print_Parameter_Data_ ARTISt_T6.4

The purpose of this test is to check the capability print parameter data.
The following table describes the initialization, test input, test procedure, and expected results of this test

INITIALIZATION	TEST INPUT	TEST PROCEDURE	EXPECTED RESULTS
- Software is in the "Setting" Menu - The global parameter has been defined (ex. PA2A.DES) - The selected parameters for table have been defined	Selected parameters (ex. DEL, DER, DFL, DFR)	- Select "Local parameters" from menu - Select "printed parameters" from menu - Select the test input parameters - Back to main menu - Run the display table - Press F5 key for start print - See the result - Press F6 key for stop print	The parameters DEL, DER, DFL, and DFR are printed in table mode
- Software is in the "Display Table" - The selected parameters for printed have not been defined yet.	None.	- Press F5 key for start print - See the message	Message "printed parameters are not defined" is occured

The following table describes the requirements traceability, criteria for evaluating results, assumption & constraints and test results.

REQUIREMENT TRACEABILITY	EVALUATION CRITERIA	ASSUMPTION & CONSTRAINTS	TEST RESULTS
SRS_REQ_43000 IRS_REQ_21000 IRS_REQ_21200 IRS_REQ_22400 IRS_REQ_22440 IRS_REQ_31000 SRS_REQ_55000 SRS_REQ_56000 SRS_REQ_74000	The data of selected parameters are printed	Software is running with simulation data or real data	[√] OK [ ] Not_OK
	The error message is occured		[√] OK [ ] Not_OK

4.5.7 Record_Data_ARTISt_T7

Objective:
The objective of this test is to assure that the record data is working true.

Test Level:
CSCI Level

4.5.7.1 Record_Data_ARTISt_T7 Schedule

NO	ACTIVITY	LOCATION	DURATION	DATE
1	Briefings	IF–ITB or FTC-IPTN	2’	November 2000
2	Pre–test activities		3’	November 2000
3	Test		10’	November 2000
4	Debriefings		2’	November 2000
5	Data reduction and analysis		3’	November 2000

4.5.7.2 Record_Data_ARTISt_T7 Pre–test Procedures

4.5.7.2.1 Hardware Preparation

See paragraph 4.5.2.2.1

4.5.7.2.2 Software Preparation

- See paragraph 4.5.2.2.2

4.5.7.2.3 Other Pre–Test Preparations

Not Applicable

4.5.7.3 Record_Data_ARTISt_T7

The following table describes all of test cases dedicated to this test and the qualification method used.

NO.	TEST CASE	QUALIFICATION METHOD
1	Record_Electrical_Data_ ARTISt _T7.1	Demonstration, Inspection
2	Record_Engineering_Data_ ARTISt _T7.2	Demonstration, Inspection

4.5.7.3.1 Record_Electrical_Data_ ARTISt _T7.1

The purpose of this test is to check the capability record electrical data.
The following table describes the initialization, test input, test procedure, and expected results of this test

INITIALIZATION	TEST INPUT	TEST PROCEDURE	EXPECTED RESULTS
- Software in "Display Table" - The recording file name has been defined (ex. Test1)	None	- Press F1 key for start record - Observe the result (1) - Press F2 key to stop record - Check the recorded file.(2)	- The message of recording is occurred (1) - The data parameters are recorded in binary format, the test1.hea and test1.val file are available in disk (2)
- Software in "Display Table" - The recording file name has not been defined yet	None	- Press F1 key for start record - Observe the result	- The error message of recording is occurred

The following table describes the requirements traceability, criteria for evaluating results, assumption & constraints and test results.

REQUIREMENT TRACEABILITY	EVALUATION CRITERIA	ASSUMPTION & CONSTRAINTS	TEST RESULTS
SRS_REQ_51000 IRS_REQ_21000 IRS_REQ_21100 IRS_REQ_22500 IRS_REQ_42100	The data parameters are recorded in binary format, the hea file and val file are available in disk	Software is running with simulation data or real data	[√] OK [ ] Not_OK
IRS_REQ_42110 IRS_REQ_42120 IRS_REQ_42130 IRS_REQ_42140 IRS_REQ_42200 SRS_REQ_55000 SRS_REQ_56000 SRS_REQ_57000 SRS_REQ_74000	The error message of recording is occured		[√] OK [ ] Not_OK

4.5.7.3.2 Record_Engineering_Data_ ARTISt _T7.2

The purpose of this test is to check the capability record engineering data.
The following table describes the initialization, test input, test procedure, and expected results of this test

INITIALIZATION	TEST INPUT	TEST PROCEDURE	EXPECTED RESULTS
- Software in "Display Table" - The recording file name has been defined (ex. Test1) - Selected parameter for record engineering (ex. DAL, DAR, DEL, DER, DFL, DFR) have been defined	none	- Press F7 key for start record - Observe the result (1) - Press F8 key to stop record - Check the recorded file (2)	- The message of recording is occurred (1) - The data parameters are recorded in text format, the test1.eng file are available in disk (2)
- Software in "Display Table" - The recording file name has been defined (ex. Test1) - Selected parameter for record have not been defined yet	none	- Press F7 key for start record - Observe the result (1)	- The error message indicate that recording parameters are not defined is occured
- Software in "Display Table" - The recording file name has not been defined yet	None.	- Press F7 key for start record - Observe the result (1)	- The error message indicate that recording file is not defined is occured

The following table describes the requirements traceability, criteria for evaluating results, assumption & constraints and test results.

REQUIREMENT TRACEABILITY	EVALUATION CRITERIA	ASSUMPTION & CONSTRAINTS	TEST RESULTS
SRS_REQ_52000 IRS_REQ_21000 IRS_REQ_21100	The data of selected parameters are recorded in text format	Software is running with simulation data or real data	[√] OK [ ] Not_OK
IRS_REQ_22500 IRS_REQ_22400 IRS_REQ_22460 SRS_REQ_55000	The error message indicate that recording parameters are not defined is occured		[√] OK [√] Not_OK
SRS_REQ_56000 SRS_REQ_57000 SRS_REQ_74000	The error message indicate that recording file is not defined is occured		[√] OK [ ] Not_OK

4.5.8 Mode_ARTISt_T8

Objective:
The objective of this test is to assure that all modes are works properly.

Test Level:
CSCI Level

4.5.8.1 Mode_ARTISt_T8 Schedule

NO	ACTIVITY	LOCATION	DURATION	DATE
1	Briefings	IF–ITB or FTC-IPTN	2’	November 2000
2	Pre–test activities		3’	November 2000
3	Test		15’	November 2000
4	Debriefings		2’	November 2000
5	Data reduction and analysis		3’	November 2000

4.5.8.2 Mode_ARTISt_T8 Pre–test Procedures

4.5.8.2.1 Hardware Preparation

See paragraph 4.5.2.2.1

4.5.8.2.2 Software Preparation

- See paragraph 4.5.2.2.2

4.5.8.2.3 Other Pre–Test Preparations

Not Applicable

4.5.8.3 Mode_ARTISt_T8

The following table describes all of test cases dedicated to this test and the qualification method used.

NO.	TEST CASE	QUALIFICATION METHOD
1	Waiting_Mode_T8.1	Demonstration
2	Setting_Mode_T8.2	Demonstration
3	Running_Mode_T8.3	Demonstration

4.5.8.3.1 Waiting_Mode_T8.1

The purpose of this test is to check that the CSCI is able to work in the waiting mode.
The following table describes the initialization, test input, test procedure, and expected results of this test
The following table describes the requirements traceability, criteria for evaluating results, assumption & constraints and test results.

INITIALIZATION	TEST INPUT	TEST PROCEDURE	EXPECTED RESULTS
■ ISRPCM.com and ARTBUF.com have been installed ■ ARTISt card is installed correctly.	Press Y key from keyboard	-Run the artist software -Observe the result	The waiting mode is displayed together with some messagees according to the status of ARTISt card and NDS files.
■ ISRPCM.com and ARTBUF.com have been installed ■ ARTISt card is not installed yet.	Press Y key from keyboard	-Run the artist software -Observe the result	The waiting mode is displayed together with some messagees according to the status of ARTISt card and NDS files.
■ ISRPCM.com and ARTBUF.com have not been installed yet ■ ARTISt card is installed correctly.	Press Y key from keyboard	-Run the artist software -Observe the result	The waiting mode is displayed together with some messagees according to the status of ARTISt card and NDS files.
■ ISRPCM.com and ARTBUF.com have not been installed yet ■ ARTISt card is not installed yet.	Press Y key from keyboard	-Run the artist software -Observe the result	The waiting mode is displayed together with some messagees according to the status of ARTISt card and NDS files.

REQUIREMENT TRACEABILITY	EVALUATION CRITERIA	ASSUMPTION & CONSTRAINTS	TEST RESULTS
SRS_REQ_20100	The waiting mode is displayed together with messages which indicate part of NDS files or ARTISt card working properly or not. If user wants to continue then press Y. Pressing any key except Y key, will cause software out of the waiting mode and program will end.	User presses “Y” or “y” key from keyboard.	[√] OK [ ] Not_OK
	The waiting mode is displayed together with messages which indicate part of NDS files or ARTISt card working properly or not. If user wants to continue then press Y. Pressing any key except Y key, will cause software out of the waiting mode and program will end.	User presses any key except “Y” or “y” key from keyboard.	[√] OK [ ] Not_OK

4.5.8.3.2 Setting_Mode_ARTISt_T8.2

The purpose of this test is to check that the CSCI is able to work in the setting mode.
The following table describes the initialization, test input, test procedure, and expected results of this test

INITIALIZATION	TEST INPUT	TEST PROCEDURE	EXPECTED RESULTS
Software is in “Waiting Mode”	Key from keyboard	- Select the “Setting Mode” from menu - Observe the result	Some menus will display

The following table describes the requirements traceability, criteria for evaluating results, assumption & constraints and test results.

REQUIREMENT TRACEABILITY	EVALUATION CRITERIA	ASSUMPTION & CONSTRAINTS	TEST RESULTS
SRS_REQ_20200 IRS_REQ_21000 IRS_REQ_21400 IRS_REQ_21500	Pressing "enter" key will continue to the next menu and pressing "escape" key will back to menu selected before. Pressing a key except mentioned above will take no effect to mode.	ARTISt software run in DOS program	[√] OK [ ] Not_OK

4.5.8.3.3 Running_Mode_T8.3

The purpose of this test is to check that the CSCI is able to work in the running mode.
The following table describes the initialization, test input, test procedure, and expected results of this test

INITIALIZATION	TEST INPUT	TEST PROCEDURE	EXPECTED RESULTS
Software is in "Waiting Mode"	None	- Select the "Running Mode" from menu - Observe the result	The running mode is displayed

The following table describes the requirements traceability, criteria for evaluating results, assumption & constraints and test results.

REQUIREMENT TRACEABILITY	EVALUATION CRITERIA	ASSUMPTION & CONSTRAINTS	TEST RESULTS
SRS_REQ_20300 IRS_REQ_21000 IRS_REQ_21600 IRS_REQ_21700	The running mode is displayed	None	[√] OK [ ] Not_OK

4.5.9 Robustness_ARTISt_T9

Objective:
The objective of this test is to check the ARTISt CSCI.when it is subjected to incorrect inputs, the activation of residual errors or confronted with environmental faults.

Test Level:
CSCI Level

4.5.9.1 Robustness _ ARTISt _T9 Schedule

NO	TEST NAME	LOCATION	DURATION	DATE
1	Briefings	IF–ITB or FTC-IPTN	2'	November 2000
2	Pre–test activities		3'	November 2000
3	Test		3'	November 2000
4	Debriefings		2'	November 2000
5	Data reduction and analysis		3'	November 2000

4.5.9.2 Robustness _ ARTISt _T9 Pre–test Procedures

4.5.9.2.1 Hardware Preparation

See paragraph 4.5.2.2.1

4.5.9.2.2 Software Preparation

See paragraph 4.5.2.2.2

4.5.9.2.3 Other Pre–Test Preparations

Not Applicable

4.5.9.3 Robustness_ ARTISt _T9

The following table describes all of test cases dedicated to this test and the qualification method used.

NO.	TEST CASE	QUALIFICATION METHOD
1	CableCard_Connection_Fail_ ARTISt _T9.1	Demonstration
2	Incorrect_Input_ARTISt_T9.2	Demonstration

4.5.9.3.1 CableCard_Connection_Fail_ ARTISt _T9.1

The purpose of this test is to check the software.when the connection of the cable to the ARTISt Card is fail.
The following table describes the initialization, test input, test procedure, and expected results of this test.

INITIALIZATION	TEST INPUT	TEST PROCEDURE	EXPECTED RESULTS
Software is displaying in the table mode	-	- Disconnect the ARTISt Card cable. - Observe the result	The S/W is still running. The data is displayed with another colour.

The following table describes the requirements traceability, criteria for evaluating results, assumption & constraints and test results.

REQUIREMENT TRACEABILITY	EVALUATION CRITERIA	ASSUMPTION & CONSTRAINTS	TEST RESULTS
SRS_REQ_41100	– The S/W is still running – The data is displayed with another colour	None	[√] OK [ ] Not_OK

4.5.9.3.2 Incorrect_Input_ ARTISt _T9.2

The purpose of this test is to check the software.when the incorrect input is occur.
The following table describes the initialization, test input, test procedure, and expected results of this test.

INITIALIZATION	TEST INPUT	TEST PROCEDURE	EXPECTED RESULTS
Software is running (ex. S/W is displaying in table mode)	All key except defined key (ex. key a, b, c, d, e)	- Press the test input key	The S/W is still running..
Software is running (ex. S/W is displaying in table mode)	- key number 1 - key number 2 - key number 3 - key number 4	- Press those key randomly and fast, ended with key number 3	The S/W will be running in MixDis mode with delay time as around 2 second.

The following table describes the requirements traceability, criteria for evaluating results, assumption & constraints and test results.

REQUIREMENT TRACEABILITY	EVALUATION CRITERIA	ASSUMPTION & CONSTRAINTS	TEST RESULTS
SRS_REQ_41100	The S/W is still running (no effect with pressing key)	Data is generated by ARTISt Card	[√] OK [ ] Not_OK
	At the same time the keys were pressed, screen monitor will display no menu or picture . After delay time for 2 seconds, it will display data in MixDis mode		[√] OK [ ] Not_OK

4.5.10 UnderLoad_ARTISt_T10

Objective:
The objective of this test is to verify that the process performed by ARTISt is met with the time requirements.

Test Level:
CSCI Level

4.5.10.1 UnderLoad_ARTISt_T10 Schedule

NO	TEST NAME	LOCATION	DURATION	DATE
1	Briefings	IF–ITB or FTC-IPTN	2’	November 2000
2	Pre–test activities		3’	November 2000
3	Test		3’	November 2000
4	Debriefings		2’	November 2000
5	Data reduction and analysis		3’	November 2000

4.5.10.2 UnderLoad_ARTISt_T10 Pre–test Procedures

4.5.10.2.1 Hardware Preparation

See paragraph 4.5.2.2.1

4.5.10.2.2 Software Preparation

See paragraph 4.5.2.2.2

4.5.10.2.3 Other Pre–Test Preparations
Not Applicable

4.5.10.3 UnderLoad_ARTISt_T10
The following table describes all of test cases dedicated to this test and the qualification method used.

NO.	TEST CASE	QUALIFICATION METHOD
1	Processing_Time_ ARTISt _T10.1	Demonstration

4.5.10.3.1 Processing_Time_ARTISt_T10.1
The purpose of this test is to verify that the processing time.which is performed by ARTISt is met with the time requirements

The following table describes the initialization, test input, test procedure, and expected results of this test.

INITIALIZATION	TEST INPUT	TEST PROCEDURE	EXPECTED RESULTS
- Software is in the "running mode" - frame_red is setted ONLINE (without frame_red) - the parameters for display table have been selected.	-	- Select "Display Table" from menu. - Observe the data displayed versus IRIG TIME	The data is displayed on table mode with 3 – 4 data per second

The following table describes the requirements traceability, criteria for evaluating results, assumption & constraints and test results.

REQUIREMENT TRACEABILITY	EVALUATION CRITERIA	ASSUMPTION & CONSTRAINTS	TEST RESULTS
SRS_REQ_36200	The data is displayed on table mode with 3 – 4 data per second	None	[√] OK [ ] Not_OK

5 CSCI EVALUATION AND RECOMMENDATIONS

5.1 CSCI Evaluation
Not Applicable

5.2 Recommended Improvements
Not Applicable

6 NOTES

ARTISt	: Airborne Real Time Instrumentation System
CSCI	: Computer Software Configuration Item
CSC	: Computer Software Component
CSU	: Computer Software Unit
FQT	: Formal Qualification Testing
IRS	: Interface Requirements Specification
RTSE	: Real Time Software Engineering
SDD	: Software Design Document
SDP	: Software Development Plan
SRS	: Software Requirements Specification
STRp	: Software Test Report

APPENDIX A : "Test Scenario of ARTISt"

1. Scenario for testing the ARTISt software which is used the simulation data generated by ARTISt Card

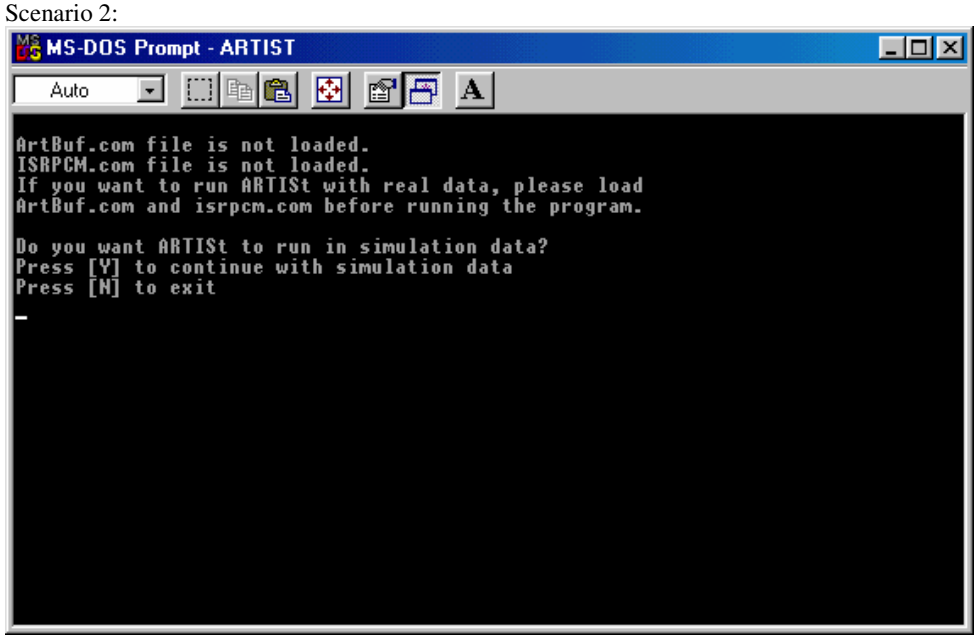
No.	Test sequence	Test Class				
		Instal-lation	Environt-ment	Functionality	Robust ness	Under Load
1	Compile the program	T1.1	T2.2, T2.3			
2	Run the artist.exe		T2.1(2,4,6)	T4.1 (with error message), T4.2 (with error message		
3	- Install ARTISt Card, ISRPCM.com, and ARTBUF.com - Run the artist.exe again		T2.1(1,3,5)	T8.1, T4.1 (no error message) T4.2 (no error message)		
4	Select "Running" from Menu			T8.3		
	4.1. Select "Display Table"			T6.1 (with error message)		
	4.2. Select "Display Graphic"			T6.2 (with error message)		
	4.3. Select "Display Mixed"			T6.3 (with error message)		
	4.4. Select "Display XPlot"			T6.4 (with error message)		
5	From Main Menu, select "Setting"			T8.2		
	5.1. Select "Local Parameters"			T3.3 (with error message)		
6	- From Setting Menu, select "Setting Global parameter" - Select the calibration file			T3.2, T3.5, T3.6		
7	7.1. Repeat sequence 5.1			T3.3 (no error message)		
	7.2. Select "Table parameters"					
	7.3. Select "Graphic parameters"					
	7.4. Select "Mixed parameters"					
	7.5. Select "Printed parameters"					
	7.6. Select "Record parameters"					
8	Repeat sequence 4.1			T3.1, T4.3,T6.1 (no error message)		T10.1
9	Press F1 key for start record elect, Press F2 key for stop record elect			T7.1		
10	Press F7 key for start record eng, Press F8 key for stop record eng			T7.2		
11	Press F5 key for start printing, Press F6 key for stop printing			T6.4, T5.3, T5.4		
12	-Disconnect the cable Card -Connect the cable again				T9.1	
13	Press the any key except functional key.				T9.2	

No.	Test sequence	Test Class				
		Instal-lation	Environt-ment	Functionality	Robust ness	Under Load
14	Repeat sequence 4.2			T6.2 (no error message)		
15	Repeat sequence 4.3			T6.3 (no error message)		
16	Repeat sequence 4.4			T6.4 (no error message)		
17	select “Setup Presentation”, select “Display Mode”, select “Elect Data”. Repeat sequence 4.1			T3.4		
18	Repeat sequence 4.2, 10, 11			T5.1, T5.2		
19	Back to Setting Menu, select “ACCONF”, select “Save ACCONF”, select “Print ACCONF”			T3.7		

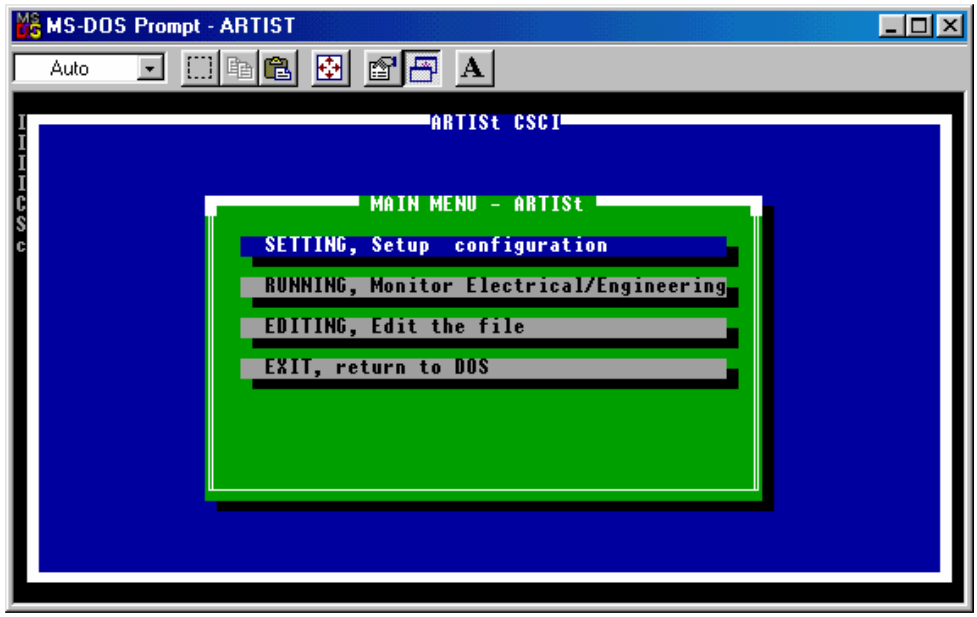
2. Scenario for testing the ARTISt software which is used the simulation data generated by ARTISt CSCI is same as scenario above except sequence number 3 and 12.

APPENDIX B : "Test Result"

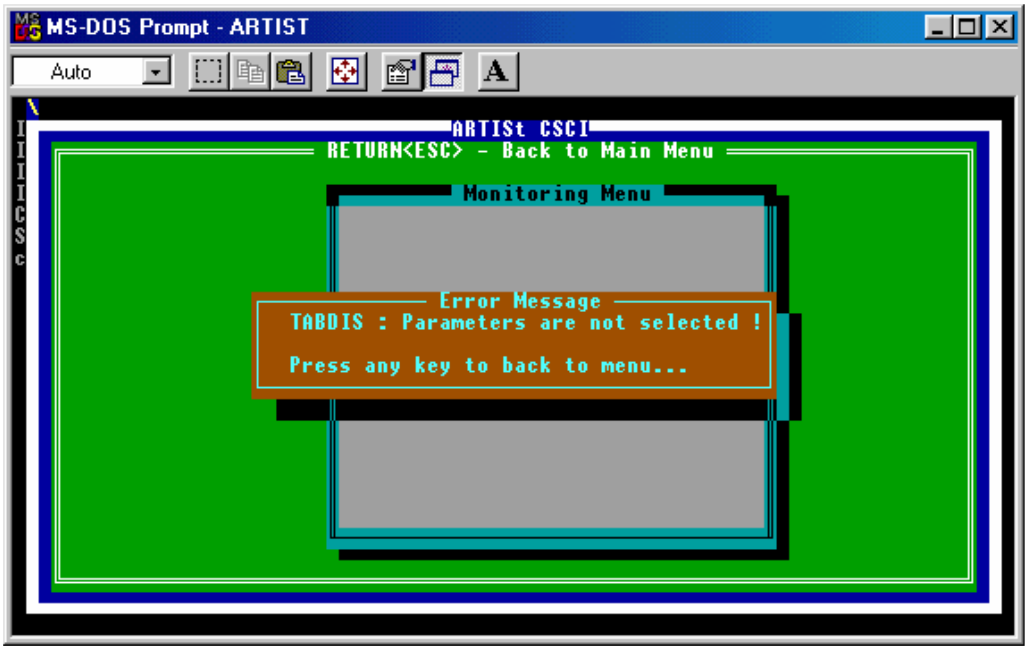
Scenario 2:



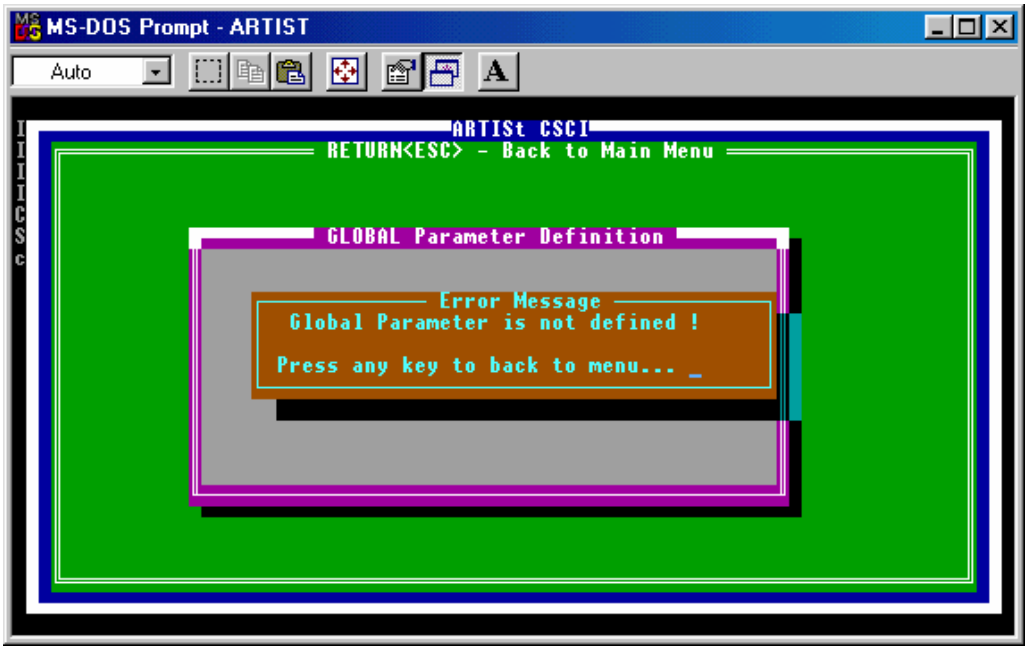
Scenario 3:



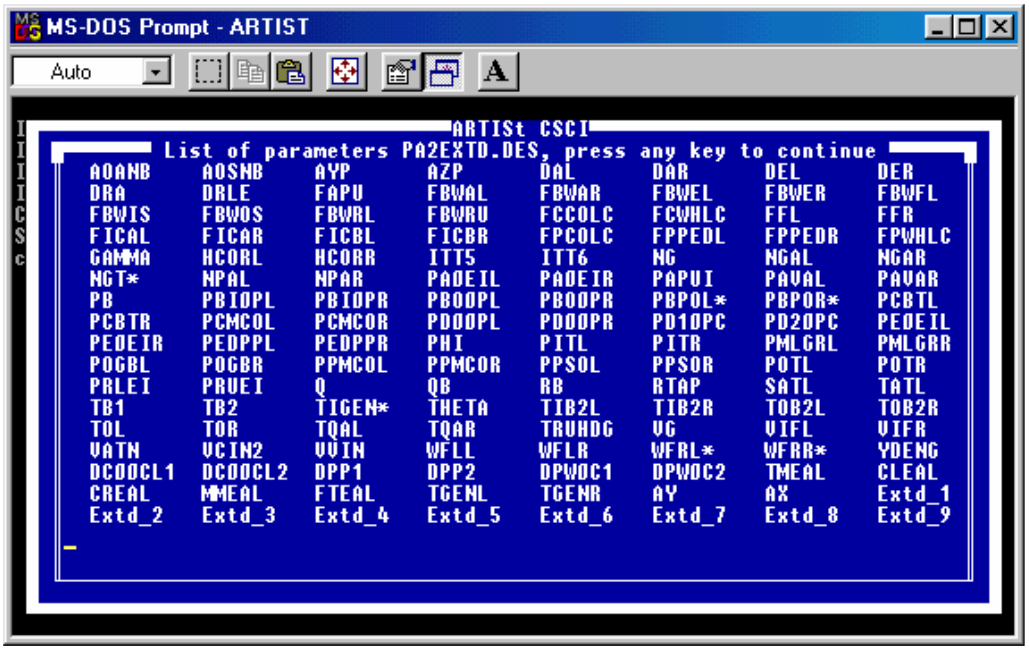
Scenario 4:



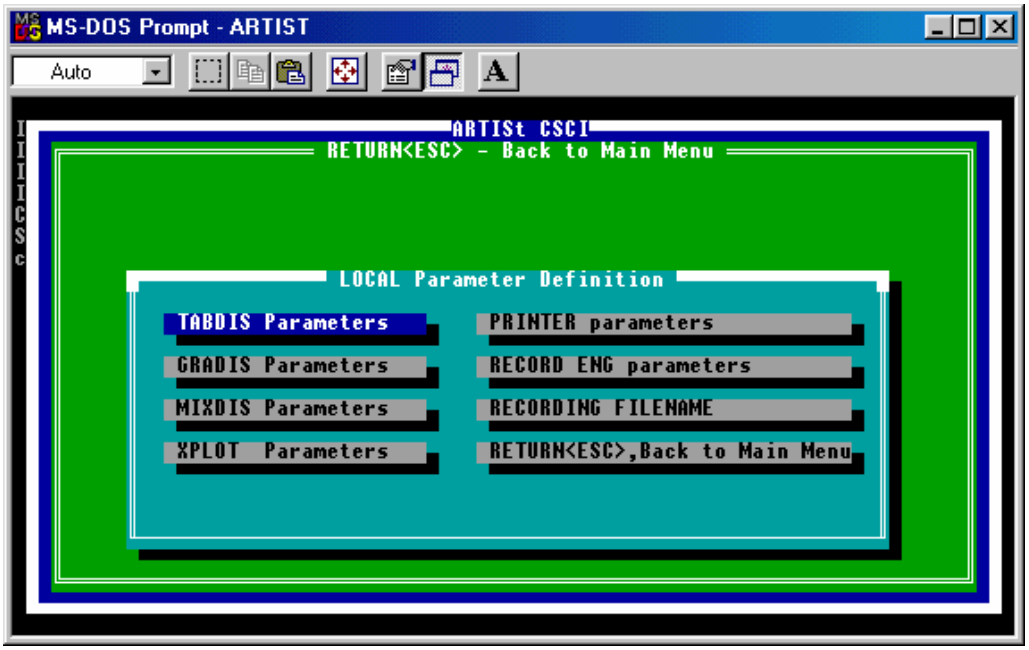
Scenario 5:



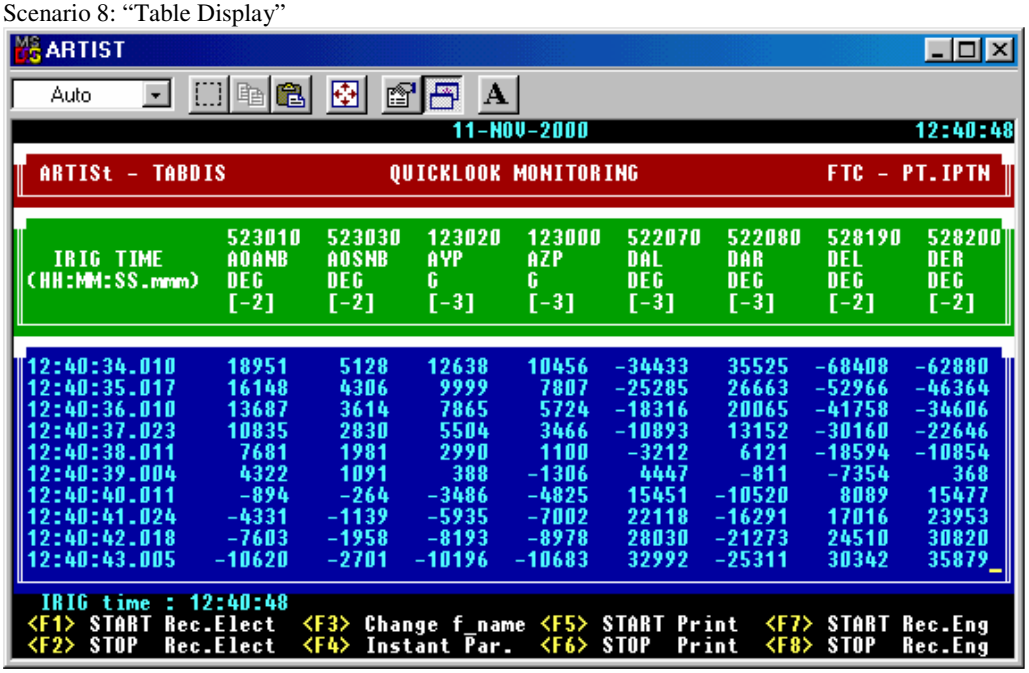
Scenario 6:



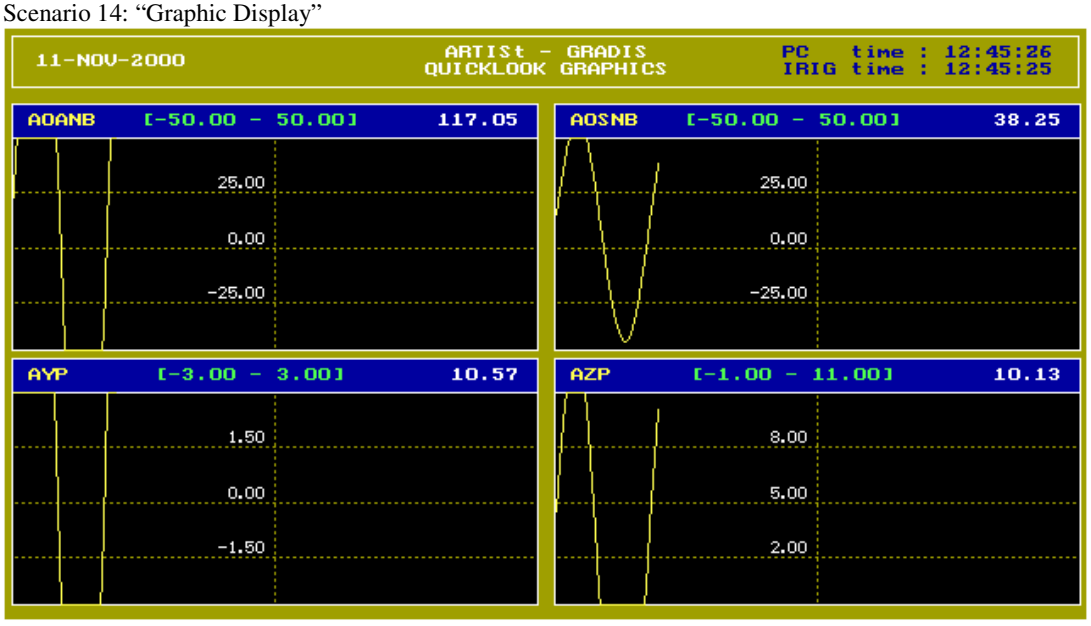
Scenario 7:



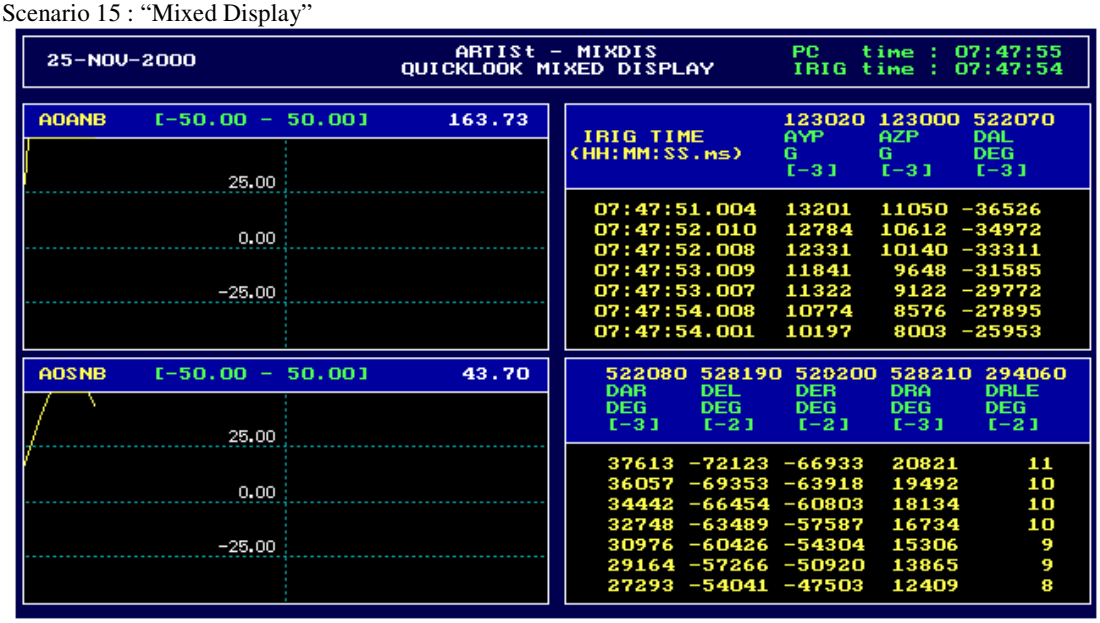
Scenario 8: "Table Display"



Scenario 14: "Graphic Display"



Scenario 15 : “Mixed Display”



Scenario 16: “Xplot Display”