



**System Verification Test Plan for
Advanced Color Module**

Rev 2.0

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1. Objectives of the Test

This document describes the test plan for the 9000 Advanced Color Module and includes information on what is to be tested, and how the testing is to be accomplished (test methodology). Specifically, this document describes the tests to be performed, the testing schedule, resources required, entry criteria, exit criteria, dependencies, test tools, metrics and the Test Plan Requirements Matrix. This is a living test plan and must be changed to reflect Core Team needs and requirements as they arise.

The main purpose of this test is to verify the requirements for the 9000 Advanced Color Module as set forth in References 2 and 3 (Advanced Color Module SRS and Common Image Generator SRS).

2. Test Description

2.1 Description

Much of the functionality that was handled by the module firmware and DLL has been relegated to the Common Image Generator, and much of what is in the CIG is being tested by the UltraGraphics Module tests. Thus every attempt will be made not to overlap too much with what is being covered by UltraGraphics. For example, all the image positioning commands are handled by the CIG and will be tested by UltraGraphics, making it unnecessary to stress this aspect of color photo printing here.

System Verification Test will be broken into three phases:

- Entrance Testing will verify that the new Advanced Color Module can process a standard set of color images that use the 4 hybrids of Version A and B headers. See Appendix B.2 for a description of the Entrance Test cases.
- Main Test will thoroughly verify the operation of the Advanced Color Module software and hardware. Main Test determines that all the requirements in the SRS have been satisfied. The Main Tests will consist of both new tests written for this SVT effort as well as tests selected from the current 9000 Library of test cases. The following types of testing, as specified in Reference 4, will be included:
 - Specification testing
 - Functional testing
 - Compatibility testing
 - Documentation review

See Appendix B.3 for a description of the Main Testing test cases.

- Regression Test will be performed as a subset of Main Test to verify the integrity of the Advanced Color Module after all problems found during Main Testing have been attended to. This means that all Severity 1 and 2 defects have been fixed and verified and that the product is ready for release. See Appendix B.4 for a description of the Regression Test cases.

2.2 References

1. Software Development Process Handbook (no revision, no date)
2. Software Requirements Specification for the Advanced Color Module, May 13, 1999
3. Software Requirements Specification for the Common Image Generator, May 28, 1999
4. Structured Software Test Planning at DataCard, participant manual from Benchmark Laboratories Incorporated, August 1996

3. Schedule

The testing defined in this document shall be completed according to the following schedule

Test Sequence	Start	Finish
1. Test Development	7-6-99	9-21-99
2. Module Availability	9-20-99	---
3. SVT Entrance Testing	9-22-99	9-28-99
4. SVT Main Testing	9-29-99	10-26-99
5. SVT Regression Testing	10-27-99	11-2-99

The testing defined in this document was completed as follows:

Test Sequence	Start	Finish
1. Test Development	7-6-99*	12-17-99
2. Module Availability		
3. SVT Entrance Testing	1-10-00	1-14-00
4. SVT Main Testing	1-17-00	2-22-00
5. SVT Regression Testing	2-15-00	3-15-00

* Finalized Test Plan began on this date. A preliminary Test Plan (in lieu of a Test Strategy) had been used for scheduling purposes.

4. Resources Required

System Verification Test will require the following resources:

- a High Speed Advanced Color Module
- a Standard Speed Advanced Color Module
- a 9000 System dedicated to Advanced Color Module testing
- the latest version of the CIG DLL and the Advanced Color DLL
- a fully-loaded 9000, with a High Speed Advanced Color Module, for Endurance and Performance testing
- two SVT test personnel with at least 80% of his/her time available for this effort.

The following consumables are required in order to complete testing:

Item	Description	Quantity
1. Ribbons	Tonal, black	1 ribbon
2. Ribbon	Color	5 ribbons
3. Cards	Blank / White MagStripe	1 case (4000 Cards)

5. Dependencies

In order to begin testing of the Advanced Color Module, the following needs to happen:

- an Advanced Color Module is available and is installed in a lab 9000
- the Common Image Generator DLL is available and is loaded on the 9000 Controller
- the CIG Entrance Test has been run
- a good portion (to be identified) of the UltraGraphics SVT has been run
- the required Image and Module Profiles have been created and are available

6. Entry Criteria

All entry criteria defined in Reference 1 (PEAQ) must be satisfied for entry into this test to occur. In addition, it is expected that a good portion of the UltraGraphics SVT test cases will have been run, since they are being used to check out the Common Image Generator.

7. Exit Criteria

All exit criteria defined in Reference 1 (PEAQ) must be satisfied for the completion of this test.

8. Test Tools

Various hardware and software test tools apart from the deliverable product are used to assist in the testing process. These include:

- defect control reporting and tracking software (PVCS Tracker)
- hardware monitors

9. Owner

This test plan is owned and maintained by the Test/Tools Group.

10. Metrics

The status and progress of SVT will be recorded through the collection of various sets of data, and the Test Case Matrices in Appendix B will regularly be updated with the status of each test case. Thus, at any time one can see how many test cases have been attempted and, of those, how many have passed.

In addition, effort, size and defect data will be collected prior to and after product shipment. Once data from enough projects has been collected, estimates of testing progress and duration will become more meaningful.

11. Test Plan Requirements Matrix

The Test Plan Requirements Matrix lists all the testable requirements for the Advanced Color Module, as determined from Reference 2, and indicates which test cases verify those requirements. The complete test plan requirements matrix is in Appendix A; the associated Test Case Matrix is in Appendix B.3.

12. Document History

Rev. P1 - 07/08/99
Initial Draft

Rev. 1.0 - 07/30/99
Color Management requirements were pared down per a conversation with Colleen.
The entire Appendix B was filled in.
Entries in Appendix A were clarified.

Rev. 1.1 - 12/7/99
Updated the Main Test matrix in Section B.3

Rev. 1.2 - 12/16/99
Updated the schedule in Section 3.

Rev. 2.0 - 2/22/00

Updated the Test Cases in Appendix A's Test Plan Requirements Matrix.

Removed most of the matrices from Appendix B and substituted references to the appropriate documents.

13. Definitions and Acronyms

9000	DataCard Series 9000 Card Personalization System (or, an "embosser")
ACM	Advanced Color Module
CIG	Common Image Generator
DLL	Dynamically Linked Library
PEAQ	Product Excellence and Quality
SRS	Software Requirements Specification
SVT	System Verification Test

Appendix A Test Plan Requirements Matrix

Requirement number	Requirement name	Relevant section(s) of SRS	Notes
1	Hardware Setup selections		ACM-05, Section I
1-A	SSC-VerX Module Emulation File	3.3.1	ACM-05-3 through -12
1-B	HSC Module Emulation File	3.3.1	ACM-05-2
1-C	AC Module Emulation File	3.3.2, 3.3.3	ACM-05-1 and -3
2	Extended UltraGraphics Command Language		ACM-01, Section II
2-A	Color specification (Command CST)	3.4.1.1	ACM-01-108
2-B	Horizontal and Vertical scaling	3.4.1.4	ACM-01-82, -83, -92, -93, -102, -103
2-C	Background Color specification	3.4.1.5	ACM-01-114, -118, -122; ACM-03-193
2-D	Foreground Color specification	3.4.1.6	ACM-01-115, -119, -123; ACM-03-193
2-E	Opacity	3.4.1.7	ACM-01-85, -86, -95, -96; ACM-03-182, -184, -185, -186, -188, -189, -192
2-F	Z-order	3.4.1.8	ACM-01-87, -97, -107; ACM-03-183, -184, -185, -187, -188, -189, -192
2-G	Image Color Profile	3.4.1.9	ACM-01-113, -117, -121, plus ACM-02, Section II
2-H	Color Filter specification	3.4.1.10	ACM-01-112, -116, -120 plus ACM-02, Section II
3	ColorPrint card setup overrides		ACM-03, Section I
3-A	Overrides	3.5	ACM-03-19 through -180
4	Version A and B Header compatibility		ACM-01, Section I
4-A	Version A, embedded	3.6	ACM-01-31 through -45
4-B	Version A, file name	3.6	ACM-01-1 through -30
4-C	Version B, embedded	3.6	ACM-01-62 through -77
4-D	Version B, file name	3.6	ACM-01-46 through -61
5	Print Quality		ACM-02, Section I
5-A	Increased number of shades	3.8.1	ACM-02 -1 through -14
5-B	Reduced tiling	3.8.2	ACM-02-15 and -16
6	Color Management		ACM-02, Section II
6-A	Color Filter specified: Both Image profile and Module profile	3.9, 3.9.1, 3.9.2, 3.9.3	ACM-02-18 through -29
6-B	No Color Filter specified: No profiles	3.9	ACM-01, for example
6-C	No Color Filter specified: Both Image profile and Module profile	3.9, 3.9.1, 3.9.3	ACM-02-17
6-D	Default Image profile (sRGB)	3.9.1	Requirement is obsolete (2-11-00)
6-E	Default Image profile (CG1)	3.9.1	—
6-F	Default Image profile (HSC2)	3.9.1	—
6-G	Default Module profile	3.9.3	Part of the Manufacturing process

Requirement number	Requirement name	Relevant section(s) of SRS	Notes
6-H	Ability to import an Image color profile	3.14.1	See File Management test cases
6-I	Ability to import a color filter	3.14.2	See File Management test cases
6-J	Ability to import a Module color profile	3.14.3	See File Management test cases
6-K	Specify Image color profile directory	3.15.1	ACM-02-30
6-L	Specify color filter directory	3.15.2	ACM-02-31
7	Test Card generation		ACM-06, Section I
7-A	Generate run-time image data records	3.10	ACM-06-1 through -4
8	File Types		ACM-03, Section I
8-A	DPG: Datacard proprietary	3.11	ACM-03-1, ACM-03-10, etc.
8-B	DPC: Datacard UltraGraphics proprietary	3.11	ACM-03-2, ACM-02-11, etc.
8-C	DIB: Device Independent Bitmap	3.11	ACM-03-3, ACM-03-12, etc.
8-D	GIF: Graphic Interchange Format	3.11	ACM-03-4, ACM-04-13, etc.
8-E	JPEG: Joint Photographic Experts Group	3.11	ACM-03-5, ACM-05-14, etc.
8-F	TIF: Tagged Image File	3.11	ACM-03-6, ACM-03-15, etc.
8-G	TGA: Targa	3.11	ACM-03-7, ACM-03-16, etc.
8-H	BMP: Bitmap	3.11	ACM-03-8, ACM-03-17, etc.
8-I	PCX: Paintbrush	3.11	ACM-03-9, ACM-03-18, etc.
9	Multiple Images		ACM-03, Section II
9-A	Multiple images	3.12	ACM-03-182 through -191
10	Image distribution		ACM-03, Section III
10-A	One Advanced Color module, no multi-image option	3.18.6	—
10-B	One Advanced Color module, multi-image option	3.18.6	Various
10-C	Two Advanced Color modules, no multi-image option	3.18.6	ACM-03-193
10-D	Two Advanced Color modules, multi-image option	3.18.6	ACM-03-193
11	Error Tests		ACM-04, Section I
11-A	Consistent error handling	3.18.7	ACM-04
12	Performance		ACM-06, Section II
12-A	Performance requirements	4	ACM-06-6 through -9
13	Documentation		ACM-06, Section IV
13-A	Advanced Color Module documentation	9	The documents affected are not listed anywhere that I can tell ACM-06-11 through -13
13-B	Help screens	9.1	ACM-06-14

Appendix B.1 Configuration/Installation Test

Requirement number	Requirement name	Relevant section(s) of SRS	Notes
Inst	Installation		ACM-06, Section V
Inst-A	Error message verification	None	ACM-06-15
Inst-B	Installation of Multi-image Option alone	None	ACM-06-16
Inst-C	Installation of Color Management Option alone	None	ACM-06-17
Inst-D	Installation of both options together	None	ACM-06-18
Inst-E	De-installation of both options	None	ACM-06-19
Inst-F	Re-installation of both options	None	ACM-06-20
Inst-G	Installing a 9000 Build removes both options	None	ACM-06-21

Appendix B.2 Entrance Test

The Entrance Test Case Matrix for the Advanced Color Module SVT is in a separate document titled acmentr.doc. There are a total of 72 test cases defined.

Appendix B.3 Main Test

The Main Test Case Matrix for this SVT is in a separate document titled acmsvt.doc. There are a total of 508 test cases defined.

Appendix B.4 Regression Test

Regression Testing will consist of a subset of Main Testing based on those areas where problems were found. The Test Case Matrix for ACM Regression Test is in a separate element titled acmreg.doc; a total of 132 test cases are defined.

Appendix B.5 Test Case Procedures

The Test Case Procedures for Entrance Testing and Main Testing are in ACM-nn.DOC where nn is 01, 02, 03, 04, 05 or 06, depending on the requirement.