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P/N C024673-103



		DRAWN BY	DATE	 <p>Atari, Inc. 30 E. Plumaria Drive San Jose, CA 95134</p> <p> A Warner Communications Company</p>
		CHECKED		
NEXT ASSY	USED ON	ENGINEER		TITLE 3600 Design Validation Test Plan ER-3600-B
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		<i>KAL</i> 10/17/83		



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1.0 PURPOSE

The Design Validation Test Plan Task is to define the prototype tests to be conducted and provide capability for verifying conformance to the 3600 product specification.

2.0 SCOPE

This test plan shall apply to all lab and production prototype 3600 units being submitted for test.

3.0 REFERENCES

- 1. C0-24507-001 ATARI CX3600 Product Specification
- 2. C0-24673-102 ATARI CX3600 Reliability Guidelines
- 3. C0-61616 ATARI Environmental Engineering Manual
- 4. C021703 ESD Sensitivity Specification Product Level

4.0 ENVIRONMENTAL TESTS

All tests will comply with the Environmental Engineering Manual except as noted. The following tests are to be performed with no damage imparted to the 3600. All functional specifications of the 3600 will remain applicable.

- 1. Storage mode (non-operating) thermal shock per Atari Specification Environmental Engineering Manual C061616, Revision A.
- 2. Operating mode (Thermal Cycling) per Atari Specification Environmental Engineering Manual C061616, Rev. A.
- 3. Temperature and Humidity. The 3600 will be subject to the following temperature and humidity extremes:

Operational Mode

Maximum: 80% R.H. (@ 10 degrees C and 40 degrees C:
One hour minimum @ each temperature.)

Minimum: 20% R.H. (@ 10 degrees C and 40 degrees C:
One hour minimum @ each temperature.)



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Storage Mode

Maximum: 90% R.H. (@ 10 degrees C and 55 degrees C:
One hour minimum @ each temperature.)

Minimum: 10% R.H. (@ -20 degrees C and 55 degrees C:
One hour minimum at each temperature.)

4. Mechanical Shock and Vibration (unpackaged) per Atari Specification Environmental Engineering Manual C061616, Revision A.

5. EMI

The 3600 will meet with any compliances that are required. These will include the following: UL 114 and 94HB, CSA C22.2 No. 154, FCC Docket 20780, Part 15, Subpart I and J, Class B,

6. ESD

The 3600 will be subjected to the following electrostatic discharge test: External surfaces are subjected to at least 50 discharges up to 25KV from a 100pf capacitor through a 1,500 ohm resistance. No physical damage to the 3600 is allowed. (ESD sensitivity specification/product level, C021703.)

7. PACKAGE TESTS (PER ENVIRONMENTAL ENGINEERING MANUAL C061616, REV. A.)

The 3600 packaging will undergo the following tests:

Package Vibration: This will include a secured and non-secured package vibration test. This will be used to determine the ability of the packing to protect the product during shipping and handling.

Package Drop: The packaging will be subjected to twelve drops. These will be on six faces, four edges and two corners from a height appropriate to the packout weight per NSTA specification.

5.0 FUNCTIONAL TESTING

The prime references for this testing will be the 3600 Functional Specification, contained within the Product Specification, and the Reliability Guidelines.



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Test and verify the following:

1. Power Supply Adaptor will be verified to comply with the functional specification and the following. Power Adaptor A.C. input and D.C. output under full load of AMP for compliance is:

<u>Input</u>	<u>Output</u>
o Low Line (108VAC) @ 60 HZ	8.2VDC \pm 5%; 1 AMP \pm 5%
o Normal line (120VAC) @ 60HZ	9.9VDC \pm 5%; 1 AMP \pm 5%
o High Line (132VAC) @ 60 HZ	11.6VDC \pm 5%, 1 AMP \pm 5%

NOTE: Maximum input power T.B.D.

2. Thermal Mapping

Monitor, for conformance to specifications, critical ICs, including linear devices, passive components, etc.

3. Controller Ports

Controller ports will be verified to comply with all Atari controller products per functional specification requirements.

4. RF Output

The RF modulator output will be verified to comply with the functional specification.

5. Cartridge Interface

- o Verify all pinouts as to conformance to functional specification requirements.
- o Utilize test cartridge, or equivalent, to verify conformance when running environmental tests.

6. Timing

The prime timing concerns are the MARIA chip inputs and outputs and DMA. Console must conform to timing requirement of MARIA and DMA (Figure I).



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A. QP BUSS INTERFACE TIMING:

1. XTAL1 FREQ.	14.32 Mhz
2. Pclk0 (slow)	1.19 Mhz 50% Duty Cycle
3. Pclk0 (fast)	1.79 Mhz 50% Duty Cycle
4. TRWS (Read/Write setup from uP)	300 nSec. max.
5. TADS (Address setup time from uP)	300 nSec. max.
6. TACC (Memory read access time)	320 nSec. max.
7. TDSU (Data valid time)	100 nSec. min.
8. THR (Data hold time, read)	10 nSec. min.
9. THW (Data hold time, write)	30 nSec. min.
10. DAB (Address out delay)	140 nSec. max.
11. DDB (Data out delay)	280 nSec. max.
12. TRDY (Ready setup time)	100 nSec. min.

B. VIDEO OUTPUT TIMING:

1. BLANK Delay	180 nSec. max.
2. LUMn Delay	180 nSec. max.
3. SYNC Delay	180 nSec. max.
4. COLOR Shift (From Ref.)	0-265 nSec.
a. Delay voltage 0 to 5 volts	

NOTE: All timing is referenced from falling edge of PCLK0.



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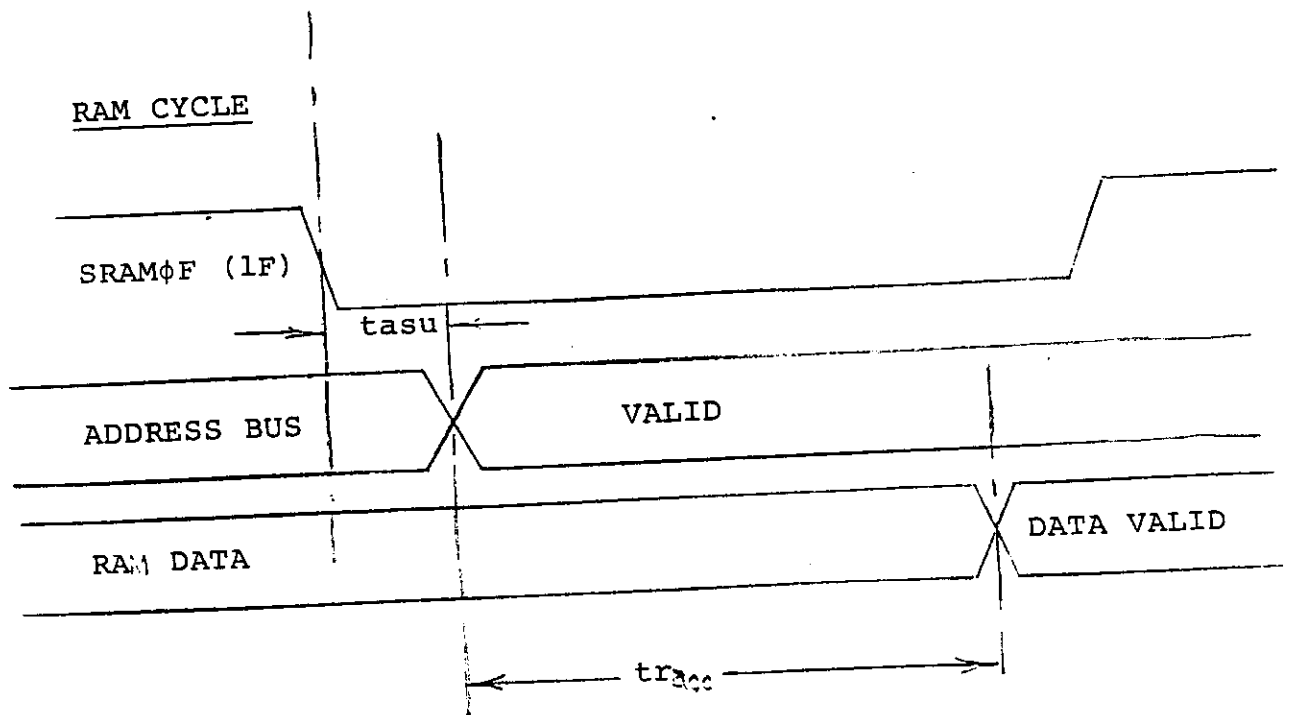
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DMA TIMING

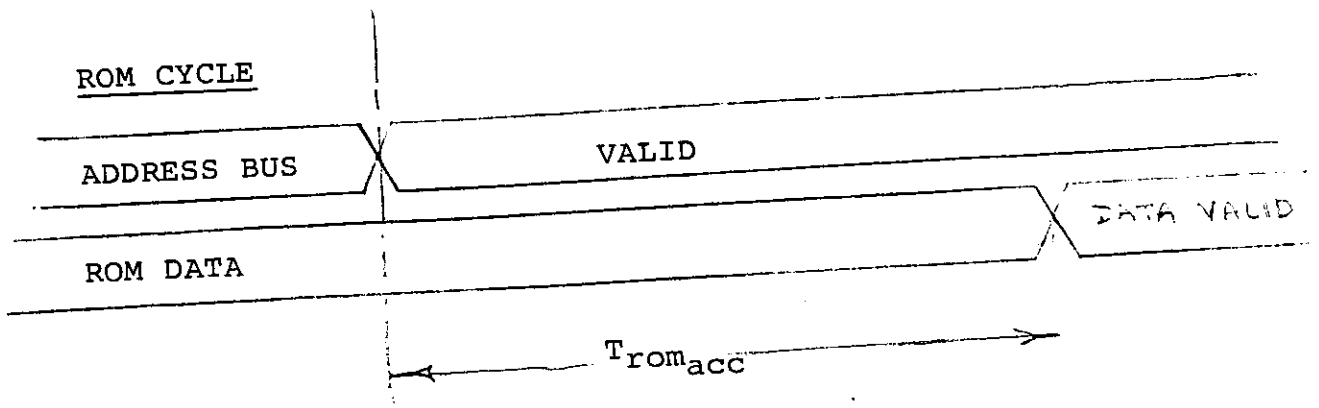


$t_{asu} \approx$ Address set up time

10ns to -20ns

$t_{racc} \approx$ External RAM access time

$T_{racc} \text{ max} = 150\text{ns}$



$T_{romacc} =$ ROM Access time

$T_{romacc} \text{ MAX} = 250\text{ns}$

FIGURE I



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7. Software Testing and Validation

Complete software regression (downward compatible) testing will be done with the existing and new interfaces, operating system, and cartridges to determine conformance to the software external reference specifications portion of the functional specification.

6.0 SAFETY

The 3600 product must comply and be verified to all Atari Engineering product specifications and Corporate Product Safety requirements. In the event of a conflict with any other document, vendor/manufacturer is responsible to notify Atari Engineering and Corporate Product Safety of the conflict for written disposition from Atari, Inc.

7.0 MECHANICAL CHARACTERIZATION AND LIFE TESTS

1. Mechanical Characterization: Each unit will be fully reviewed for conformance to Engineering product and quality specifications.
2. Mechanical Life: Utilizing special exerciser fixtures, all moving parts will be operated on a continuous basis while outputs are monitored. Purpose of this test is to determine life expectancy of mechanical parts. Failing parts will be replaced and test continued. Number of actuations (or time) will be logged on each failure along with amount of time required to repair or replace the failed part.

8.0 DOCUMENTATION

Detailed logs and charts will be maintained during every test listing, test number, unit number, test condition, time measurement and recommendations.

Failure data will also include the following:

- o Number of DC Parametric failures
- o Number of functional failures
- o Number of catastrophic failures



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9. TEST RESPONSIBILITIES

ITEM	Env./Rel. Eng.	Transfer Engineering	Design Eng. Hardware Software	Corporate Product Safety
All Environmental Tests Less EMI	X			
EMI		X		
Functional Testing	X		X	
Safety	X	X	X	X
Mechanical Characterization and Life Tests	X			
Documentation	X	X	X	X



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