


REV	REVISIONS DESCRIPTION	DATE	APPROVED
1A	ENVIRONMENTAL/RELIABILITY ENGINEERING TEST REPORT	5/2/84	[Signature]

ENVIRONMENTAL/RELIABILITY ENGINEERING

TEST REPORT

5100 CONSOLE RELIABILITY PREDICTION

ENGINEERING RELEASED

		DRAWN BY	DATE	 <p>Atari, Inc. 30 E. Plumeria Drive San Jose, CA 95134</p> <p><small>© A Warner Communications Company</small></p>		
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				ENGINEER	DATE	5100 CONSOLE RELIABILITY PREDICTION
				APPROVED	DATE	
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		[Signature]	5/2/84	A	C024673-132	
		APPROVED	[Signature]	SCALE	SHEET 1 OF 4	

Inter Office Memo



Consumer Electronics Division

To: Pete Gerrard

From: Gil Seymour 

Subject: 5100 Console Reliability Prediction (C024673-132)

Date: 12/19/83

The present 5100 console predicted return rate is approximately 2.4% over an operating time of 180 hours with no IC burn-in. The basis of this prediction is as follows:

1. Reliability Guidelines C024673-131
2. Return Rate Summary - Table I
3. Cost/Benefit Analysis - Table II

Further analysis of component requirements, IC burn-in impact on return rate (Table I) and cost/benefit analysis of IC burn-in (Table II) show the following results:

1. Burn-in of the new 16K x 4 Bit D-RAMS, for the first six (6) months of production, provides a 5100 console predicted return rate of approximately 1.8% over an operating time of 180 hours.
2. Burn-in of the D-RAMS, Antic and GTIA provides a 5100 console predicted return rate of approximately 1.3% over an operating time of 180 hours.
3. The cost/benefit analysis, Table II, for enhanced 5100 console reliability, based on failure rates, repair cost and in-house burn-in cost indicates the D-RAMS require burn-in (Method II).

Method II is the most favorable based on a net savings of \$190,000 per million population of the 5100 console. Whereas, Method III, D-RAM, ANTIC and GTIA burn-in indicates a net loss of \$170,000 per million population of the 5100 console when compared to the non burn-in condition.

Conclusion:

The 1.8% return rate (Method II) for 180 hours of 5100 console operation is achievable provided burn-in and component requirement (Reliability Guidelines) are accomplished.

GS/rh

Attachments

cc: Gene Kuczynski
Ken Ashton
Bob Knapp
Arieh Strod
Project File

TABLE I

RETURN RATE SUMMARY

UNIVERSAL
PLANNING FORM



	FIRST SIX MONTHS OF PRODUCTION		AFTER SIX MONTHS OF PRODUCTION		MTBF (HOURS)	
	FAILURE RATE	RETURN RATE	FAILURE RATE	RETURN RATE	FIRST 6 MOS.	AFTER 6 MOS.
1 METHOD I						
2 NO BURN-IN					7,500	11,300
3						
4						
5			88.40			
6 O FAILURE RATE (F/ID ⁶ hrs.)	133.40					
7				1.6%		
8 O RETURN RATE (%)		2.4%				
9						
10						
11 METHOD II						
12 LIMITED BURN-IN					10,050	12,850
13						
14 (D-RAMS BURN-IN)						
15						
16			77.80			
17 O FAILURE RATE	92.30					
18				1.4%		
19 O RETURN RATE		1.8%				
20						
21						
22 METHOD III						
23					14,100	19,700
24 LIMITED BURN-IN						
25						
26 (D-RAMS, ANTIC & GTIA						
27 BURN-IN)						
28			50.80			
29 O FAILURE RATE	70.90					
30				0.92%		
31 O RETURN RATE		1.3%				
32						
33						
34						
35						
36						
37						
38						
39						
40						

Prepared By
GIL SEYMOUR

Date
12/16/83

Operating Unit: ENVIRONMENTAL/RELIABILITY ENGINEERING

COST/BENEFIT ANALYSIS

CONSOLE (4) RETURN RATE	PREDICTION		IN-HOUSE REPAIR COST	IN-HOUSE BURN-IN COST (3) PER UNIT	TOTAL UNIT COST	NET SAVINGS PER UNIT
	WARRANTY COST/UNIT	WARRANTY COST/UNIT				
Method I						
(No IC Burn-In)	2.4%	0.72	0.70	0	1.44	
Method II						
(Limited Burn-In)	1.8%	0.54	0.47	(2) D-RAM 24¢ Sub-Total 0.24	1.25	0.19
(D-RAM Static B/I)						
Method III						
(Limited Burn-In) (D-RAM Static B/I & Dynamic B/I Antic & GTIA)	1.3%	0.39	0.28	(2) LSI 70¢ (2) D-RAM 24¢ Sub-Total 0.94	1.61	(0.17)
(1) Warranty Repair - Labor and material approximately \$80/unit (console)						
(2) Approx. 2% savings on IC full IC burn-in.						
(3) In-house Burn-in costs taken from Joe Specht's Pam Burn-in proposals dated 5/16/82 and 6/16/82. (NOTE: One may consider first a device sample - 0.25% AQL - If lot does not pass, then provide for 100% burn-in.)						
(4) Warranty time is three months or 180 hours of operation.						

Operating Unit: ENVIRONMENTAL/RELIABILITY ENGINEERING
 Prepared By: GIL SEYMOUR
 Date: 12/16/83
 6A315 (1/81)