REV	REVISIONS DESCRIPTION	DATE	APPROVED
1A	ENG REL PER ERC E0204Q	4/11/84	JJ

DESIGN ASSURANCE

1450XLD(TONG)

DESIGN VALIDATION TEST PLAN (A)

ENGINEERING RELEASED

		DRAWN BY DATE	Atari San Jose, CA A Warner Communications Company
	1450XLD		
NEXT ASSY	USED ON	ENGINEER 4-6-84	
		ENGINEER 4/6/84	TITLE: 1450XLD(TONG) TEST PLAN
		APPROVED April 6, 1984	SIZE A / DRAWING NO. C024673-166 / REV 1A
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1.0 PURPOSE

The "A" test plan, design validation tests, task is to define the prototype tests to be conducted and provide capability for verifying conformance to the 1450XLD product specification.

2.0 SCOPE

This test plan shall apply to all lab and production prototype 1450XLD computers being submitted for test.

3.0 REFERENCES

1. CO61908 - ATARI 1450XLD Product Specification.
2. CO61616 - ATARI Environmental Engineering Manual.
3. CO21703 - ESD Product Level.
4. CO62297 - 1450XLD Power Supply.

4.0 ENVIRONMENTAL TESTS

All tests will comply with the Environmental Engineering Manual CO61616 and FCC part 68 environmental requirements.

1. Storage Mode (non-operating).

   - Temperature and humidity per FCC part 68.302 Environmental requirements.

2. Operating Mode.

   Temperature and humidity per ATARI Environmental Engineering Manual CO61616.

3. Humidity.

   In addition to the humidity tests in 1 and 2, perform the standard 96 hours operating test per ATARI Environmental Engineering Manual CO61616.

4. Unpackaged mechanical shock and vibration per ATARI Environmental Engineering Manual CO61616.

5. Packaged mechanical shock and vibration per FCC part 68.302 environmental requirements.

6. EMI

The 1450XLD 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 J, Class B and Part 68.

7. ESD

The 1450XLD 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 1450XLD is allowed. (ESD sensitivity specification/product level, CO21703.)

8. Acoustic Noise.

Per ATARI Environmental Engineering Manual CO61616.

5.0 FUNCTIONAL TESTING AND DESIGN VALIDATION

1. Test and verify the following:

a) Power supply will be verified to comply with the functional specifications and the following:

AC input range and DC power supply output for compliance.

- Input voltage range of 100 - 129VAC @ 60Hz
- +5VDC (Vcc) ± 5% @ 4.0 Amps (max.)
- -5VDC (Vbb) ± 5% @ 300MA (max.)
- +12VDC (Vdd) ± 5% @ 1.5 Amp
  Under normal operation and 2.2 Amp peak for 500 msec. max. @ 6 pulses per hour.

b) Peripheral Compatibility

Complete hardware regression (downward compatible) testing will be done with all existing and new peripheral products to determine conformance to functional specifications. (See hardware regression matrix.)

c) Thermal Mapping

Monitor, for conformance to specifications, critical IC's, including linear devices, passive components, etc.

d) Serial I/O

Verify all pinouts as to conformance to functional specification requirements.

e) Parallel Port

- Exercise unit with a modified SALT cartridge to verify conformance.
- Verify all pinouts as to conformance to functional specification requirement.
- AC characteristics - The worst case timing requirements for the parallel bus interface (PBI) are shown in figure 1, 2 and Table 1.

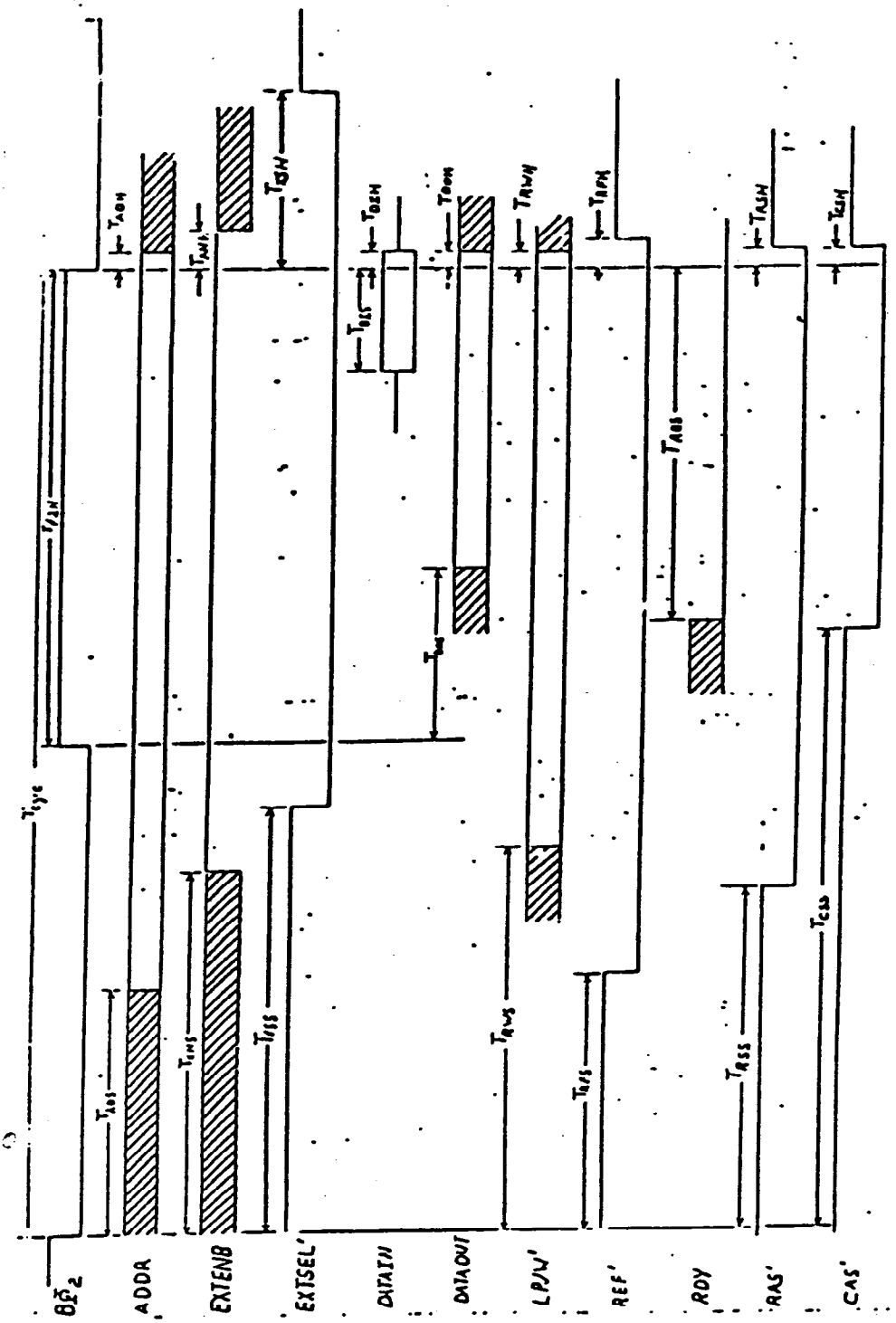

FIGURE 1 Worst Case Timing Requirements For the Parallel Bus Interface (PBI)

	GND	1	2	EXT SEL		
	A0	3	4	A1		
	A2	5	6	A3		
	A4	7	8	A5		
	A6	9	10	GND		
	A7	11	12	A8		
	A9	13	14	A10		
	A11	15	16	A12		
	A13	17	18	A14		
	GND	19	20	A15		
	D0	21	22	D1		
	D2	23	24	D3		
CONSOLE TOP	D4	25	26	D5	CONSOLE BOTTOM	
	D6	27	28	D7		
	GND	29	30	GND		
	B02	31	32	GND		
	Reserved	33	34	$\overline{RST}$		
	$\overline{IRQ}$	35	36	RDY		
	Reserved	37	38	EXTENB		
	Reserved	39	40	$\overline{REF}$		
	CAS	41	42	GND		
	$\overline{MPD}$	43	44	$\overline{RAS}$		
	GND	45	46	$LR/\overline{W}$		
	Reserved	47	48	Reserved		
	AUDIO	49	50	GND		

FIGURE 2 PBI CONNECTOR
(Looking out from the CPU Connector)

SYMBOL	MIN	MAX	UNITS	DESCRIPTION
T_{CYC}			nS	CLK period
T_{02H}	219	297	nS	Phase 2 duty cycle
T_{ADS}		145	nS	Address setup
T_{ADH}	10		nS	Address Hold
T_{XNS}		215	nS	EXTENB setup
T_{XNH}	15		nS	EXTENB hold
T_{XSS}		253	nS	EXTSEL' setup
T_{XSH}	100		nS	EXTSEL' hold
T_{DIS}	62		nS	Data in setup
T_{DIH}	10		nS	Data in hold
T_{DOS}		112	nS	Data out setup
T_{DOH}	10		nS	Data out hold
T_{RWS}		228	nS	R/W' setup
T_{RWH}	10		nS	R/W' hold
T_{RFS}		150	nS	Refresh setup
T_{RFH}	15		nS	Refresh hold
T_{RDS}	200		nS	Ready setup
T_{RSS}	187	305	nS	RAS' setup
T_{RSH}	10		nS	RAS' hold
T_{CSS}	295	385	nS	CAS' setup on read cycle
T_{CSS}	409	522	nS	CAS' setup on write cycle
T_{CSH}	10		nS	CAS' hold read or write

TABLE 1 TIMING PARAMETERS

5.0 FUNCTIONAL TESTING AND DESIGN VALIDATION (cont.)

1. (cont.)

f) Controller Ports

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

g) RF Output

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

h) Modem

The full duplex, 300 bps modem transmitter, receiver and timing will be verified to comply with the functional specifications.

i) Speech Synthesizer

The speech synthesizer using 64 phonemes for sound generation, Table 2, will be verified to comply with the functional specifications.

j) Disk Drive Peripheral Interface

The double density disk drive peripheral device will be verified to comply with the functional specifications.

k) Keyboard and overall 1450XLD computer system will be verified to comply with the functional specification.

l) Software Testing and Validation

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

6.0 SAFETY

The 1450XLD 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:

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

HEX PHONEME CODE	PHONEME SYMBOL	DURATION (ms)	EXAMPLE WORD
00	EH3	59	jackgt
01	EH2	71	gnlist
02	EH1	121	heavy
03	PAO	47	no sound
04	DT	47	butter
05	A2	71	made
06	A1	103	made
07	ZH	90	azure
08	AH2	71	honest
09	I3	55	inhibit
0A	I2	80	inhibit
0B	I1	121	inhibit
0C	M	103	mat
0D	N	80	sun
0E	B	71	bag
0F	V	71	van
10	CH*	71	chip
11	SH	121	shop
12	Z	71	zoo
13	AW1	146	lawful
14	NG	121	thing
15	AH1	146	father
16	OO1	103	looking
17	OO	185	book
18	L	103	land
19	K	80	trick
1A	J*	47	judge
1B	H	71	hello
1C	G	71	get
1D	F	103	fast
1E	U	55	paid
1F	S	90	pass

HEX PHONEME CODE	PHONEME SYMBOL	DURATION (ms)	EXAMPLE WORD
20	A	185	day
21	AY	65	day
22	Y1	80	yard
23	UH3	47	miss
24	AH	250	mop
25	P	103	past
26	O	185	calc
27	I	185	pin
28	U	185	you
29	Y	103	any
2A	T	71	tap
2B	R	90	red
2C	E	185	red
2D	W	80	win
2E	AE	185	dad
2F	AE1	103	aft
30	AW2	90	sal
31	UH2	71	abc
32	UH1	103	unc
33	UH	185	cup
34	O2	80	for
35	O1	121	abc
36	IU	59	you
37	U1	90	you
38	THV	80	thi
39	TH	71	thi
3A	ER	146	bir
3B	EH	185	ge
3C	E1	121	be
3D	AW	250	ca
3E	PA1	185	no
3F	STOP	47	no

*/T/must precede /CH/ to produce CH sound
*/D/must precede /J/ to produce J sound

TABLE 2 SPEECH SYNTHESIZER PHONEMES

Atari, Inc.
30 E. Plumeria Drive
San Jose, CA 95134
A Warner Communications Company

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SCALE

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ATARI®

9.0 REGRESSION ANALYSIS, HARDWARE

UNIVERSAL PLANNING FORM

			810	1050	410	1010	820	822	1020	1025	1027	1029	1030	850	825	830	935	Joystick	[illegible] Joystick	Trakball	Touch Tab	Light Pen	CX85 Keypad	Sys1	Sys2	Sys3
1																										
2	System 1 - 1450XLD		X			X			X			X		X	X	X	X					X			X	
3																										
4																										
5	System 2 - 1450XLD				X		X				X		X					X		X			X			X
6	1025 Printer																									
7	1050 Drive ($10)																									
8																										
9																										
10	System 3 - 1450XLD			X				X		X									X		X			X		
11	850																									
12	825 Printer																									
13	810 Disk ($10)																									
14	410 Cassette																									
15	830 Modem																									
16																										
17																										
18																										
19																										
20																										
21	Software:																									
22																										
23	Visicalc (budget)																									
24																										
25	Pole Position Cart																									
26																										
27	3rd Party Diskette																									
28																										
29	Compuserve																									
30																										
31	Basic Loop																									
32																										
33																										
34																										
35																										
36																										
37																										
38																										
39																										
40																										

Operating Unit: Prepared By Date

10.0 TEST RESPONSIBILITIES

	DESIGN ASSURANCE	ELECTRICAL ENGINEERING	DESIGN ENG. HARDWARE SOFTWARE	CORPORATE PRODUCT SAFETY
All Environmental Tests Less EMI	X			
EMI	X	X		
Functional Testing & Design Validation	X		X	
Safety	X	X	X	X
Mechanical Characterization Preliminary Life Tests	X			
Documentation	X	X	X	X