



AAEON Technology INC.  
ISO-9001/ISO-14001 Certified  
Industrial Automation PCs

# SBC-657 A0.2 (ATX Power) Reliability Prediction Report (MTBF)

Release Date: JAN. 17, 2003

01-17-2003

Issue Stamp

Wayne Chen

DV Manager

Rex Chang

Test Engineer

# Reliability Prediction (MTBF)

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- . Model Name: SBC-657A0.2 (VIA 667MHz CPU)
- .Description: Half-size CPU Card.
- . Prediction Date: JAN. 17. 2003
- . Prediction Site: AAEON DV Dept.
- . Predicted by : Rex Chang
- . Equipment: Relex Ver.7.2 Visual Reliability Software

## . Simulation Environment:

Temperature: 25 degrees C(No temperature rise condition )  
Standard: Telcordia (Bellcore) Standard

## . Term and Definition:

Unit	An assembly of device.
Duty Cycle	Used to specify the percentage of time that the element is in an on state, and it is equal to the percentage of total time the item is in the active environment.
Quantity	The quantity of the selected item.
Failure Rate	Used to specify that the failure rate is to be calculated based the selected Calculation models. The multiplier is 1,000,000.
MTBF	MTBF is always specified in hours.

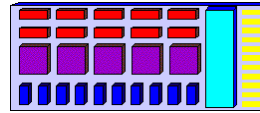
## IX. Prediction Result:

Failure Rate: 4.558679ppm  
MTBF: 219,362Hours ( about 25.0 years )

## X. Prediction Table:

**AAEON Reliability Prediction Report**

**Part Number** System  
**Reference Des**  
**Date** 01. 16, 2003  
**Environment** GB, GC - Ground Benign, Controlled  
**Temperature** 30.00

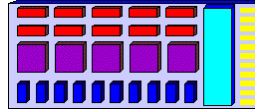


**Description** Top-level assembly  
**File Name** SBC-657ATXA02.RPJ  
**Time** 3:08 PM  
**Failure Rate** 4.558679  
**MTBF** 219,362

Assembly Name	Part Number	Model	Method	Environment	Duty Cycle	Qty	Failure Rate	MTBF
System	System	Bellcore	Method I Case 3	GB, GC - Ground Benign,	100.00	1.00	4.558679	219,362



**AAEON Reliability Prediction Report**



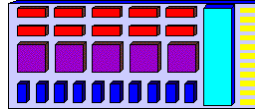
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**Reference Des**  
**Date** 01. 16, 2003  
**Environment** GB, GC - Ground Benign, Controlled  
**Temperature** 30.00

**Description** Top-level assembly  
**File Name** SBC-657ATXA02.RPJ  
**Time** 3:08 PM  
**Failure Rate** 4.558679  
**MTBF** 219,362

Part Number	Category	Location	Calculation Model	Quality	Tem. Rise	Failure Rate, Unit	Quantity	Failure Rate, %	Failure Rate	MTBF, Unit
1129701080	Capacitor	BC40,BC49,BC59-60,C100-102,C1-3,C144-151,C155,C161,C163,C17,-C170,C173-180,C20,C23-24,C32,C-35,C49-55,C57-71,C84-89,C91,C97-C99	Bellcore Issue 6	Level I		0.001406	65.00	2.0042	0.091363	711449301.06
1759100006	Miscellaneous	BUZZ1	Bellcore Issue 6	Level I		0.075000	1.00	1.6452	0.075000	13333333.33
1653005202	Connection	CN11,CN14,CN21-22,CN9	Bellcore Issue 6	Level I		0.003678	5.00	.4034	0.018392	271859436.70
1654040000	Connection	CN16	Bellcore Issue 6	Level I		0.014713	1.00	.3228	0.014713	67964859.17
1654020000	Connection	CN17	Bellcore Issue 6	Level I		0.007357	1.00	.1614	0.007357	135929718.35
105A704733	Resistor	R187	Bellcore Issue 6	Level I		0.001249	1.00	.0274	0.001249	800930098.66
105A524363	Resistor	R193	Bellcore Issue 6	Level I		0.001249	1.00	.0274	0.001249	800930098.66
1653010203	Connection	CN18	Bellcore Issue 6	Level I		0.007357	1.00	.1614	0.007357	135929718.35
1653009201	Connection	CN19	Bellcore Issue 6	Level I		0.006621	1.00	.1452	0.006621	151033020.39
14S3000201	Inductor	TR1	Bellcore Issue 6	Level I		0.074913	1.00	1.6433	0.074913	13348834.98
105A703303	Resistor	R126-127,R70,R72	Bellcore Issue 6	Level I		0.001249	4.00	.1096	0.004994	800930098.66
105A701003	Resistor	R103-104,R192,R197,R204-207	Bellcore Issue 6	Level I		0.001249	8.00	.2191	0.009988	800930098.66
105A747033	Resistor	R122-123,R134-135	Bellcore Issue 6	Level I		0.001249	4.00	.1096	0.004994	800930098.66
105A756033	Resistor	R124-125,R137-138	Bellcore Issue 6	Level I		0.001249	4.00	.1096	0.004994	800930098.66
105A501823	Resistor	R142	Bellcore Issue 6	Level I		0.001249	1.00	.0274	0.001249	800930098.66
105A718003	Resistor	R152	Bellcore Issue 6	Level I		0.001249	1.00	.0274	0.001249	800930098.66
105A502233	Resistor	R157-158,R227	Bellcore Issue 6	Level I		0.001249	3.00	.0822	0.003746	800930098.66
14S4070610	Integrated Circuit	U7	Bellcore Issue 6	Level I		0.042535	1.00	.9330	0.042535	23510284.61
14S3128420	Integrated Circuit	U10	Bellcore Issue 6	Level I		0.042535	1.00	.9330	0.042535	23510284.61
14S3020200	Integrated Circuit	U13	Bellcore Issue 6	Level I	22.50	0.086315	1.00	1.8934	0.086315	11585506.57
14S6334610	Integrated Circuit	U15	Bellcore Issue 6	Level I		0.021923	1.00	.4809	0.021923	45614435.26
1129610260	Capacitor	C182	Bellcore Issue 6	Level I		0.000368	1.00	.0081	0.000368	2718958522.59
1301005443	Semiconductor	D10-11,D2,D6-7	Bellcore Issue 6	Level I		0.013753	5.00	1.5084	0.068765	72710998.66
1300581740	Semiconductor	D5,D8	Bellcore Issue 6	Level I		0.013753	2.00	.6034	0.027506	72710998.66
1653003202	Connection	JP1,JP5	Bellcore Issue 6	Level I		0.002207	2.00	.0968	0.004414	453099061.16
1212306033	Inductor	L10-17,L2,L22-23,L25-26,L3-9	Bellcore Issue 6	Level I		0.001249	20.00	.5478	0.024971	800930098.66
14S4021300	Integrated Circuit	U17-18,U27-28	Bellcore Issue 6	Level I		0.042535	4.00	3.7322	0.170138	23510284.61
14S4048501	Integrated Circuit	U19,U21	Bellcore Issue 6	Level I		0.042535	2.00	1.8661	0.085069	23510284.61

**AAEON Reliability Prediction Report**

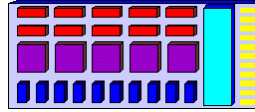
**Part Number** System  
**Reference Des**  
**Date** 01. 16, 2003  
**Environment** GB, GC - Ground Benign, Controlled  
**Temperature** 30.00



**Description** Top-level assembly  
**File Name** SBC-657ATXA02.RPJ  
**Time** 3:08 PM  
**Failure Rate** 4.558679  
**MTBF** 219,362

Part Number	Category	Location	Calculation Model	Quality	Tem. Rise	Failure Rate, Unit	Quantity	Failure Rate, %	Failure Rate	MTBF, Unit
14S5A00401	Integrated Circuit	U23	Bellcore Issue 6	Level I		0.026234	1.00	.5755	0.026234	38118760.86
14S3115000	Integrated Circuit	U25	Bellcore Issue 6	Level I	18.20	0.143337	1.00	3.1443	0.143337	6976561.95
14S4397702	Integrated Circuit	U29	Bellcore Issue 6	Level I	7.50	0.039774	1.00	.8725	0.039774	25142124.58
1231314350	Miscellaneous	Y2	Bellcore Issue 6	Level I		0.075000	1.00	1.6452	0.075000	13333333.33
1651203291	Connection	U12	Bellcore Issue 6	Level I		0.011771	1.00	.2582	0.011771	84956073.97
105A538303	Resistor	R184	Bellcore Issue 6	Level I		0.001249	1.00	.0274	0.001249	800930098.66
1174547080	Capacitor	NC1-3,NC8-9	Bellcore Issue 6	Level I		0.000547	5.00	.0600	0.002737	1826769085.82
1213103008	Inductor	NL1-10	Bellcore Issue 6	Level I		0.001249	10.00	.2739	0.012485	800930098.66
1310390410	Semiconductor	Q1-Q4,Q8,Q14,Q16	Bellcore Issue 6	Level I		0.013753	7.00	2.1118	0.096272	72710998.66
1315993310	Semiconductor	Q7	Bellcore Issue 6	Level I		0.091687	1.00	2.0113	0.091687	10906649.80
1314108412	Integrated Circuit	Q13	Bellcore Issue 6	Level I	19.00	0.150724	1.00	3.3063	0.150724	6634649.94
1540727080	Resistor	RN12,RN4	Bellcore Issue 6	Level I		0.003910	2.00	.1716	0.007821	255730457.04
1540715380	Resistor	RN13,RN5	Bellcore Issue 6	Level I		0.003910	2.00	.1716	0.007821	255730457.04
1540775080	Resistor	RN14	Bellcore Issue 6	Level I		0.003910	1.00	.0858	0.003910	255730457.04
15407560A0	Resistor	RP3-16	Bellcore Issue 6	Level I		0.004888	14.00	1.5011	0.068431	204584365.63
15407331A0	Resistor	RP17,RP23	Bellcore Issue 6	Level I		0.004888	2.00	.2144	0.009776	204584365.63
15407472A0	Resistor	RP19-22	Bellcore Issue 6	Level I		0.004888	4.00	.4289	0.019552	204584365.63
105A507503	Resistor	R1,R19,R208-209,R210-211	Bellcore Issue 6	Level I		0.001249	6.00	.1643	0.007491	800930098.66
105A515003	Resistor	R2,R20	Bellcore Issue 6	Level I		0.001249	2.00	.0548	0.002497	800930098.66
105A711003	Resistor	R150,R5-6,R89	Bellcore Issue 6	Level I		0.001249	4.00	.1096	0.004994	800930098.66
105A514003	Resistor	R16	Bellcore Issue 6	Level I		0.001249	1.00	.0274	0.001249	800930098.66
105A704723	Resistor	R132-133,R136,R156,R166-170,R-172,R199,R201-202,R224-225,R23-,R231,R24,R241,R27,R30,R33,R39-,R45-46,R49-50,R53,R61,R65-66,R-71,R73	Bellcore Issue 6	Level I		0.001249	33.00	.9038	0.041202	800930098.66
105A702203	Resistor	R100-101,R105-111,R146,R32,R55-,R69,R94-99	Bellcore Issue 6	Level I		0.001249	19.00	.5204	0.023722	800930098.66
105A702723	Resistor	R147,R35,R37-38	Bellcore Issue 6	Level I		0.001249	4.00	.1096	0.004994	800930098.66
105A502833	Resistor	R51	Bellcore Issue 6	Level I		0.001249	1.00	.0274	0.001249	800930098.66
105A560423	Resistor	R52	Bellcore Issue 6	Level I		0.001249	1.00	.0274	0.001249	800930098.66
105A553623	Resistor	R57	Bellcore Issue 6	Level I		0.001249	1.00	.0274	0.001249	800930098.66

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**Temperature** 30.00

**Description** Top-level assembly  
**File Name** SBC-657ATXA02.RPJ  
**Time** 3:08 PM  
**Failure Rate** 4.558679  
**MTBF** 219,362

Part Number	Category	Location	Calculation Model	Quality	Tem. Rise	Failure Rate, Unit	Quantity	Failure Rate, %	Failure Rate	MTBF, Unit
105A700233	Resistor	R232,R68	Bellcore Issue 6	Level I		0.001249	2.00	.0548	0.002497	800930098.66
1124547080	Capacitor	C1-8	Bellcore Issue 6	Level I		0.000547	8.00	.0961	0.004379	1826769085.82
1189615181	Capacitor	C157	Bellcore Issue 6	Level I		0.002716	1.00	.0596	0.002716	368200063.66
1122710080	Capacitor	C106-113,C118,C120-123,C152,C-36,C90,C92	Bellcore Issue 6	Level I		0.000547	16.00	.1921	0.008759	1826769085.82
1129747650	Capacitor	C134-137,C37-48,C56,F5	Bellcore Issue 6	Level I		0.001406	18.00	.5550	0.025300	711449301.06
1189622181	Capacitor	C81	Bellcore Issue 6	Level I		0.044041	1.00	.9661	0.044041	22705938.43
1124422080	Capacitor	C132-133	Bellcore Issue 6	Level I		0.000547	2.00	.0240	0.001095	1826769085.82
1124582280	Capacitor	C160,C166	Bellcore Issue 6	Level I		0.000547	2.00	.0240	0.001095	1826769085.82
1124522880	Capacitor	C165	Bellcore Issue 6	Level I		0.000547	1.00	.0120	0.000547	1826769085.82
1651572990	Connection	DIMM1	Bellcore Issue 6	Level I		0.052969	1.00	1.1619	0.052969	18879127.55
14S3006000	Integrated Circuit	DN1	Bellcore Issue 6	Level I		0.042535	1.00	.9330	0.042535	23510284.61
1304100540	Semiconductor	D3	Bellcore Issue 6	Level I		0.003823	1.00	.0839	0.003823	261592266.64
1752311000	Miscellaneous	FS1-2	Bellcore Issue 6	Level I		0.015000	2.00	.6581	0.030000	66666666.67
1315970110	Semiconductor	F1-4	Bellcore Issue 6	Level I		0.091687	4.00	8.0451	0.366749	10906649.80
1211102200	Inductor	L1	Bellcore Issue 6	Level I		0.047445	1.00	1.0408	0.047445	21077107.86
1212306031	Inductor	L18-21,L34-41,L46	Bellcore Issue 6	Level I		0.001249	13.00	.3560	0.016231	800930098.66
1212308054	Inductor	L27-L33	Bellcore Issue 6	Level I		0.001249	7.00	.1917	0.008740	800930098.66
14S5824500	Integrated Circuit	U8,U9	Bellcore Issue 6	Level I		0.025581	2.00	1.1223	0.051162	39091356.93
14S5A01400	Integrated Circuit	U11,U20	Bellcore Issue 6	Level I		0.042535	2.00	1.8661	0.085069	23510284.61
14S5824401	Integrated Circuit	U14	Bellcore Issue 6	Level I		0.025393	1.00	.5570	0.025393	39380581.49
14S4813904	Integrated Circuit	U16	Bellcore Issue 6	Level I	11.90	0.050306	1.00	1.1035	0.050306	19878179.96
14S2652000	Integrated Circuit	U26	Bellcore Issue 6	Level I		0.042535	1.00	.9330	0.042535	23510284.61
1231332721	Miscellaneous	Y1	Bellcore Issue 6	Level I		0.075000	1.00	1.6452	0.075000	13333333.33
1231325050	Miscellaneous	Y3	Bellcore Issue 6	Level I		0.075000	1.00	1.6452	0.075000	13333333.33
1174522180	Capacitor	NC4-7	Bellcore Issue 6	Level I		0.000547	4.00	.0480	0.002190	1826769085.82
1314101010	Integrated Circuit	Q5	Bellcore Issue 6	Level I		0.042535	1.00	.9330	0.042535	23510284.61
1315603110	Semiconductor	Q11	Bellcore Issue 6	Level I	20.30	0.077799	1.00	1.7066	0.077799	12853711.45
1540747282	Resistor	RN1-3	Bellcore Issue 6	Level I		0.003910	3.00	.2573	0.011731	255730457.04
1540733082	Resistor	RN10-11,RN6-9	Bellcore Issue 6	Level I		0.003910	6.00	.5147	0.023462	255730457.04
15407222A0	Resistor	RP1-2	Bellcore Issue 6	Level I		0.004888	2.00	.2144	0.009776	204584365.63





