



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

# **SBC-557**

## **Reliability Prediction Report**

### **(MTBF)**

**Release Date: Jan. 24, 2000**

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**Issue Stamp**

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**QA Manager**

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**QE Manager**

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**Test Engineer**

# Reliability Prediction (MTBF)

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**I . Model Name: SBC-557**

**II . Description: Super7 Half-size CPU Card with LCD, Ethernet, & SSD**

**III. Prediction Date: Jan. 24, 2000**

**IV. Prediction Site: AAEON QE Dept.**

**V. Predicted by : Chasel Wang**

**VI. Equipment: Relx Ver.7.0 Visual Reliability Software**

**VII. Simulation Environment:**

- **Temperature: 25 degrees C**
- **Standard: Telcordia (Bellcore) Standard**

**VIII. Prediction Result:**

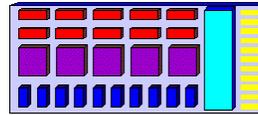
- **Failure Rate: 8.541523 ppm**
- **MTBF: 117,075. hours**

**IX. 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.**

### AAEON Reliability Prediction Report

**Part Number** 9697557000-1  
**Reference Des**  
**Date** 01. 24, 2000  
**Environment** GF, GU - Ground Fixed, Uncontrolled  
**Temperature** 25.00

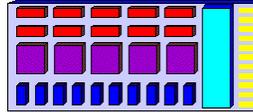


**Description** Top-level assembly  
**File Name** 557a1.rpj  
**Time** 8:52 AM  
**Failure Rate** 8.541523  
**MTBF** 117,075

Assembly Name	Part Number	Model	Method	Environment	Duty Cycle	Qty	Failure Rate	MTBF
SBC-557	9697557000-1	Bellcore	Method I Case 3	GF, GU - Ground Fixed,	100.00	1.00	8.541523	117,075

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**Environment** GF, GU - Ground Fixed, Uncontrolled  
**Temperature** 25.00

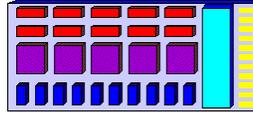


**Description** Top-level assembly  
**File Name** 557a1.rpj  
**Time** 8:52 AM  
**Failure Rate** 8.541523  
**MTBF** 117,075

Part Number	Category	Location	Calculation Model	Quality	Tem. Rise	Failure Rate, Unit	Quantity	Failure Rate, %	Failure Rate	MTBF, Unit
106B501030	Resistor	J2	Bellcore Issue 6	Level I		0.011379	1.00	.1332	0.011379	87878027.07
1119610291	Capacitor	C9,C11-12,C14-16	Bellcore Issue 6	Level I		0.075338	6.00	5.2921	0.452029	13273483.15
1119610293	Capacitor	C8,C10	Bellcore Issue 6	Level I		0.071121	2.00	1.6653	0.142243	14060484.33
1211100101	Inductor	L1	Bellcore Issue 6	Level I	17.00	0.118096	1.00	1.3826	0.118096	8467693.01
1211102764	Inductor	L2	Bellcore Issue 6	Level I	12.00	0.108029	1.00	1.2647	0.108029	9256804.75
1231314321	Miscellaneous	Y1	Bellcore Issue 6	Level I		0.150000	1.00	1.7561	0.150000	6666666.67
1233314350	Miscellaneous	X2	Bellcore Issue 6	Level I		0.360000	1.00	4.2147	0.360000	2777777.78
1314108301	Integrated Circuit	Q1	Bellcore Issue 6	Level I	22.00	0.265735	1.00	3.1111	0.265735	3763147.73
14D4042800	Miscellaneous	U12	Bellcore Issue 6	Level I		0.600000	1.00	7.0245	0.600000	1666666.67
1651003222	Connection	U20	Bellcore Issue 6	Level I		0.018207	1.00	.2132	0.018207	54923766.92
1651584490	Connection	DIMM1	Bellcore Issue 6	Level I		0.095587	1.00	1.1191	0.095587	10461669.89
1651605920	Connection	U5	Bellcore Issue 6	Level I		0.182640	1.00	2.1383	0.182640	5475266.48
1652512200	Connection	CN14	Bellcore Issue 6	Level I		0.006828	1.00	.0799	0.006828	146463378.45
1653003101	Connection	J7-8	Bellcore Issue 6	Level I		0.001707	2.00	.0400	0.003414	585853513.81
1653003201	Connection	J5,J6-1,J6-2	Bellcore Issue 6	Level I		0.003414	3.00	.1199	0.010241	292926756.90
1653004200	Connection	J1	Bellcore Issue 6	Level I		0.004552	1.00	.0533	0.004552	219695067.68
1653005201	Connection	CN7	Bellcore Issue 6	Level I		0.005690	1.00	.0666	0.005690	175756054.14
1653120225	Connection	CN5	Bellcore Issue 6	Level I		0.022759	1.00	.2664	0.022759	43939013.54
1653132220	Connection	CN3	Bellcore Issue 6	Level I		0.036414	1.00	.4263	0.036414	27461883.46
1654106020	Connection	CN11	Bellcore Issue 6	Level I		0.004552	1.00	.0533	0.004552	219695067.68
1655003000	Connection	CN4	Bellcore Issue 6	Level I		0.001707	1.00	.0200	0.001707	585853513.81
1655112010	Connection	PWR1	Bellcore Issue 6	Level I		0.006828	1.00	.0799	0.006828	146463378.45
1659254005	Connection	CN8	Bellcore Issue 6	Level I		0.002845	1.00	.0333	0.002845	351512108.28
1759400002	Miscellaneous	BZ1	Bellcore Issue 6	Level I		0.150000	1.00	1.7561	0.150000	6666666.67
1019722007	Resistor	R101	Bellcore Issue 6	Level I		0.002268	1.00	.0265	0.002268	440974090.03
101A501039	Resistor	R6,R11,R13-14,R17,R34-35,R39,R-43,R48,R50,R52,R54,R57-59,R61--66,R68,R70,R72-73,R75-77,R91,R-105,R137-138,R140-142,R144-145-,R153,R159-163,R166,R171,R177,-R186,R197-199,R201,R208-209,R-212,R214-219,R221,R223,R231	Bellcore Issue 6	Level I		0.002268	66.00	1.7522	0.149669	440974090.03
101A590929	Resistor	R229	Bellcore Issue 6	Level I		0.002268	1.00	.0265	0.002268	440974090.03

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**Temperature** 25.00

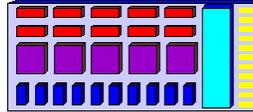


**Description** Top-level assembly  
**File Name** 557a1.rpj  
**Time** 8:52 AM  
**Failure Rate** 8.541523  
**MTBF** 117,075

Part Number	Category	Location	Calculation Model	Quality	Tem. Rise	Failure Rate, Unit	Quantity	Failure Rate, %	Failure Rate	MTBF, Unit
101A700009	Resistor	R27,R129,R132,R194,R220	Bellcore Issue 6	Level I		0.002268	5.00	.1327	0.011339	440974090.03
101A701009	Resistor	R12,R15,R18-21,R23,R49,R98,R1-08,R116,R121-123,R126-128,R130-R151,R156,R164,R178,R180,R224	Bellcore Issue 6	Level I		0.002268	24.00	.6372	0.054425	440974090.03
101A702209	Resistor	R46,R104,R106-107,R150	Bellcore Issue 6	Level I		0.002268	5.00	.1327	0.011339	440974090.03
101A702229	Resistor	R22	Bellcore Issue 6	Level I		0.002268	1.00	.0265	0.002268	440974090.03
101A703309	Resistor	R24-26,R28-30,R36,R67,R86,R97,-R109-110,R112,R117-119,R124-1-25,R131,R154,R176,R183,R185,R-189	Bellcore Issue 6	Level I		0.002268	24.00	.6372	0.054425	440974090.03
101A704729	Resistor	R16,R40-42,R69,R78,R85,R87-89,-R100,R111,R114,R120,R134-135,-R143,R146,R152,R175,R179,R182-,R184,R187-188,R190-192,R206-2-07,R211,R238	Bellcore Issue 6	Level I		0.002268	32.00	.8496	0.072567	440974090.03
101A705629	Resistor	R37,R170	Bellcore Issue 6	Level I		0.002268	2.00	.0531	0.004535	440974090.03
101A707509	Resistor	R92-93,R233-237	Bellcore Issue 6	Level I		0.002268	7.00	.1858	0.015874	440974090.03
101A708209	Resistor	R169,R181	Bellcore Issue 6	Level I		0.002268	2.00	.0531	0.004535	440974090.03
101A708229	Resistor	R31-33,R136,R139,R158	Bellcore Issue 6	Level I		0.002268	6.00	.1593	0.013606	440974090.03
101A710019	Resistor	R5,R44,R71,R157,R173,R195	Bellcore Issue 6	Level I		0.002268	6.00	.1593	0.013606	440974090.03
101A715029	Resistor	R94-95	Bellcore Issue 6	Level I		0.002268	2.00	.0531	0.004535	440974090.03
101A718009	Resistor	R167	Bellcore Issue 6	Level I		0.002268	1.00	.0265	0.002268	440974090.03
101A727009	Resistor	R172	Bellcore Issue 6	Level I		0.002268	1.00	.0265	0.002268	440974090.03
101A733009	Resistor	R1,R47,R51,R74,R90,R102,R193,-R213	Bellcore Issue 6	Level I		0.002268	8.00	.2124	0.018142	440974090.03
101A747009	Resistor	R38,R79-80,R103	Bellcore Issue 6	Level I		0.002268	4.00	.1062	0.009071	440974090.03
1059700301	Resistor	R149,R165	Bellcore Issue 6	Level I		0.002268	2.00	.0531	0.004535	440974090.03
1059710059	Resistor	R60	Bellcore Issue 6	Level I		0.013606	1.00	.1593	0.013606	73495681.67
105A502833	Resistor	R222	Bellcore Issue 6	Level I		0.002268	1.00	.0265	0.002268	440974090.03
105A510003	Resistor	R200,R232	Bellcore Issue 6	Level I		0.002268	2.00	.0531	0.004535	440974090.03
105A511503	Resistor	R240	Bellcore Issue 6	Level I		0.002268	1.00	.0265	0.002268	440974090.03
105A518703	Resistor	R241-243	Bellcore Issue 6	Level I		0.002268	3.00	.0796	0.006803	440974090.03
105A521033	Resistor	R230	Bellcore Issue 6	Level I		0.002268	1.00	.0265	0.002268	440974090.03
105A549963	Resistor	R81-84	Bellcore Issue 6	Level I		0.002268	4.00	.1062	0.009071	440974090.03

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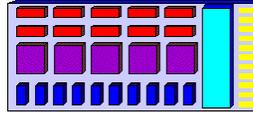


**Description** Top-level assembly  
**File Name** 557a1.rpj  
**Time** 8:52 AM  
**Failure Rate** 8.541523  
**MTBF** 117,075

Part Number	Category	Location	Calculation Model	Quality	Tem. Rise	Failure Rate, Unit	Quantity	Failure Rate, %	Failure Rate	MTBF, Unit
105A556003	Resistor	R53	Bellcore Issue 6	Level I		0.002268	1.00	.0265	0.002268	440974090.03
105A560423	Resistor	R226-227	Bellcore Issue 6	Level I		0.002268	2.00	.0531	0.004535	440974090.03
105A700333	Resistor	R3	Bellcore Issue 6	Level I		0.002268	1.00	.0265	0.002268	440974090.03
105A701823	Resistor	R210	Bellcore Issue 6	Level I		0.002268	1.00	.0265	0.002268	440974090.03
105A702723	Resistor	R174,R202-203,R205,R239	Bellcore Issue 6	Level I		0.002268	5.00	.1327	0.011339	440974090.03
105A704763	Resistor	R113,R115	Bellcore Issue 6	Level I		0.002268	2.00	.0531	0.004535	440974090.03
105A705103	Resistor	R2	Bellcore Issue 6	Level I		0.002268	1.00	.0265	0.002268	440974090.03
105A705133	Resistor	R204	Bellcore Issue 6	Level I		0.002268	1.00	.0265	0.002268	440974090.03
105A707523	Resistor	R4	Bellcore Issue 6	Level I		0.002268	1.00	.0265	0.002268	440974090.03
105A710033	Resistor	R45	Bellcore Issue 6	Level I		0.002268	1.00	.0265	0.002268	440974090.03
105A720053	Resistor	R56	Bellcore Issue 6	Level I		0.013606	1.00	.1593	0.013606	73495681.67
105A747033	Resistor	R228	Bellcore Issue 6	Level I		0.002268	1.00	.0265	0.002268	440974090.03
105A756033	Resistor	R225	Bellcore Issue 6	Level I		0.002268	1.00	.0265	0.002268	440974090.03
1122701680	Capacitor	M1-146	Bellcore Issue 6	Level I		0.001598	146.00	2.7307	0.233244	625953979.55
1122747880	Capacitor	C62,C73	Bellcore Issue 6	Level I		0.001598	2.00	.0374	0.003195	625953979.55
1124501780	Capacitor	C48,C66,C76	Bellcore Issue 6	Level I		0.001060	3.00	.0372	0.003181	943198589.05
1124510080	Capacitor	C19-20,C37,C57,C69,C87	Bellcore Issue 6	Level I		0.001060	6.00	.0745	0.006361	943198589.05
1124510180	Capacitor	C5	Bellcore Issue 6	Level I		0.001060	1.00	.0124	0.001060	943198589.05
1124510280	Capacitor	C108	Bellcore Issue 6	Level I		0.001060	1.00	.0124	0.001060	943198589.05
1124515080	Capacitor	C2,C4,C23-24	Bellcore Issue 6	Level I		0.001060	4.00	.0497	0.004241	943198589.05
1124515180	Capacitor	CC1-CC17	Bellcore Issue 6	Level I		0.001060	17.00	.2110	0.018024	943198589.05
1124522180	Capacitor	C6	Bellcore Issue 6	Level I		0.001060	1.00	.0124	0.001060	943198589.05
1124547080	Capacitor	C113-116	Bellcore Issue 6	Level I		0.001060	4.00	.0497	0.004241	943198589.05
1124547180	Capacitor	C102-103	Bellcore Issue 6	Level I		0.001060	2.00	.0248	0.002120	943198589.05
1124547280	Capacitor	C7	Bellcore Issue 6	Level I		0.001060	1.00	.0124	0.001060	943198589.05
1129610290	Capacitor	C112	Bellcore Issue 6	Level I		0.000712	1.00	.0083	0.000712	1403854368.14
1129701080	Capacitor	C1	Bellcore Issue 6	Level I		0.005466	1.00	.0640	0.005466	182961702.19
1129747650	Capacitor	C3,C17-18,C21-22,C25-27,C29,C3-1-33,C35-36,C38-39,C43-44,C58-6-1,C63-65,C67-68,C70-72,C74-75,C-77-86,C88-101,C104-107,C109-111	Bellcore Issue 6	Level I		0.005466	63.00	4.0313	0.344334	182961702.19
1141610050	Capacitor	F1-11	Bellcore Issue 6	Level I		0.002357	11.00	.3035	0.025928	424256814.77

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**Temperature** 25.00



**Description** Top-level assembly  
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**Time** 8:52 AM  
**Failure Rate** 8.541523  
**MTBF** 117,075

Part Number	Category	Location	Calculation Model	Quality	Tem. Rise	Failure Rate, Unit	Quantity	Failure Rate, %	Failure Rate	MTBF, Unit
1142610060	Capacitor	C30,C34	Bellcore Issue 6	Level I		0.001587	2.00	.0372	0.003174	630075050.70
1149610180	Capacitor	C28	Bellcore Issue 6	Level I		0.004535	1.00	.0531	0.004535	220487045.01
1149633191	Capacitor	C13	Bellcore Issue 6	Level I		0.004535	1.00	.0531	0.004535	220487045.01
1174510180	Capacitor	NC3-6	Bellcore Issue 6	Level I		0.001060	16.00	.1986	0.016964	943198589.05
1174547080	Capacitor	NC1-2,NC7-8	Bellcore Issue 6	Level I		0.001060	16.00	.1986	0.016964	943198589.05
1212306031	Inductor	L5-13,L30-33	Bellcore Issue 6	Level I		0.002268	13.00	.3451	0.029480	440974090.03
1212308050	Inductor	L3-4,L14-29	Bellcore Issue 6	Level I		0.002268	18.00	.4779	0.040819	440974090.03
1231332721	Miscellaneous	Y2	Bellcore Issue 6	Level I		0.150000	1.00	1.7561	0.150000	6666666.67
1233350050	Miscellaneous	X1	Bellcore Issue 6	Level I		0.360000	1.00	4.2147	0.360000	2777777.78
1300003240	Inductor	D4	Bellcore Issue 6	Level I		0.002268	1.00	.0265	0.002268	440974090.03
1300283540	Semiconductor	D2	Bellcore Issue 6	Level I		0.023881	1.00	.2796	0.023881	41874327.58
1300414800	Semiconductor	D3,D5	Bellcore Issue 6	Level I		0.023881	2.00	.5592	0.047762	41874327.58
1304100540	Semiconductor	D1	Bellcore Issue 6	Level I		0.004877	1.00	.0571	0.004877	205063180.81
1310390410	Semiconductor	Q5	Bellcore Issue 6	Level I		0.023881	1.00	.2796	0.023881	41874327.58
1314108513	Integrated Circuit	Q2	Bellcore Issue 6	Level I	5.00	0.085069	1.00	.9959	0.085069	11755142.30
1315500310	Semiconductor	Q3-4	Bellcore Issue 6	Level I	10.00	0.105122	2.00	2.4614	0.210244	9512757.37
14S3000300	Integrated Circuit	TF1	Bellcore Issue 6	Level I		0.059366	1.00	.6950	0.059366	16844654.92
14S3006000	Integrated Circuit	DN1	Bellcore Issue 6	Level I		0.059366	1.00	.6950	0.059366	16844654.92
14S3128420	Integrated Circuit	U15	Bellcore Issue 6	Level I	6.00	0.091286	1.00	1.0687	0.091286	10954631.16
14S3155300	Integrated Circuit	U1	Bellcore Issue 6	Level I	11.00	0.128997	1.00	1.5102	0.128997	7752127.40
14S3914800	Integrated Circuit	U2	Bellcore Issue 6	Level I	19.00	0.219285	1.00	2.5673	0.219285	4560283.10
14S4021300	Integrated Circuit	U17,U21	Bellcore Issue 6	Level I	4.00	0.079239	2.00	1.8554	0.158478	12620044.05
14S4048500	Integrated Circuit	U18-19	Bellcore Issue 6	Level I	5.00	0.085069	2.00	1.9919	0.170138	11755142.30
14S4070610	Integrated Circuit	U9	Bellcore Issue 6	Level I		0.059366	1.00	.6950	0.059366	16844654.92
14S4154100	Integrated Circuit	U4	Bellcore Issue 6	Level I	16.00	0.095944	1.00	1.1233	0.095944	10422762.91
14S4154300	Integrated Circuit	U7	Bellcore Issue 6	Level I	17.00	0.101144	1.00	1.1841	0.101144	9886920.11
14S4378100	Integrated Circuit	U22	Bellcore Issue 6	Level I	1.00	0.063856	1.00	.7476	0.063856	15660198.22
14S4488601	Integrated Circuit	U12	Bellcore Issue 6	Level I	10.00	0.120485	1.00	1.4106	0.120485	8299772.79
14S4813902	Integrated Circuit	U11	Bellcore Issue 6	Level I	11.00	0.073313	1.00	.8583	0.073313	13640096.66
14S4900000	Integrated Circuit	U6	Bellcore Issue 6	Level I	17.00	0.101144	1.00	1.1841	0.101144	9886920.11
14S5324500	Integrated Circuit	U23	Bellcore Issue 6	Level I	2.00	0.073124	1.00	.8561	0.073124	13675320.33

