



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

# **SBC-598**

## **Reliability Prediction Report**

### **(MTBF)**

**Release Date: MAY.26, 2000**

---

**Issue Stamp**

---

**QA Manager**

---

**QE Manager**

---

**Test Engineer**

# Reliability Prediction (MTBF)

---

**I . Model Name: SBC-598**

**II . Description: Full-size CPU Card with VGA,High Drive, & SSD**

**III. Prediction Date:MAY. 26, 2000**

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

**V. Predicted by : Milo Wang**

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

**VII. Simulation Environment:**

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

**VIII. Prediction Result:**

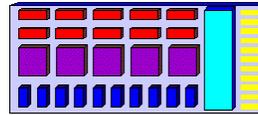
- **Failure Rate: 7.618650 ppm**
- **MTBF: 131,257. hours**

**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

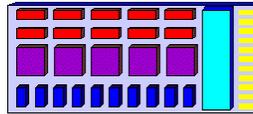
**Part Number** 9697598006  
**Reference Des**  
**Date** 05. 26, 2000  
**Environment** GF, GU - Ground Fixed, Uncontrolled  
**Temperature** 25.00



**Description** Top-level assembly  
**File Name** Sbc-598.rpj  
**Time** 1:39 PM  
**Failure Rate** 7.618650  
**MTBF** 131,257

Assembly Name	Part Number	Model	Method	Environment	Duty Cycle	Qty	Failure Rate	MTBF
SBC-598	9697598006	Bellcore	Method I Case 3	GF, GU - Ground Fixed,	100.00	1.00	7.618650	131,257

**AAEON Reliability Prediction Report**



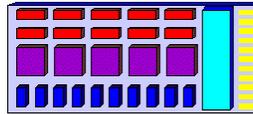
**Part Number** 9697598006  
**Reference Des**  
**Date** 05. 26, 2000  
**Environment** GF, GU - Ground Fixed, Uncontrolled  
**Temperature** 25.00

**Description** Top-level assembly  
**File Name** Sbc-598.rpj  
**Time** 1:39 PM  
**Failure Rate** 7.618650  
**MTBF** 131,257

Part Number	Category	Location	Calculation Model	Quality	Tem. Rise	Failure Rate, Unit	Quantity	Failure Rate, %	Failure Rate	MTBF, Unit
105A590923	Resistor	R92	Bellcore Issue 6	Level I	.00	0.002268	1.00	.0298	0.002268	440974090.03
105A700003	Resistor	L63,R110,R12,R124,R134,R147,R-206,R211,R6	Bellcore Issue 6	Level I	.00	0.002268	9.00	.2679	0.020409	440974090.03
105A701003	Resistor	R120-121,R128-129,R148-153,R1-64-181,R194-202,R65,R72,R75-76-,R82,R9,R94	Bellcore Issue 6	Level I	.00	0.002268	44.00	1.3097	0.099779	440974090.03
105A701053	Resistor	R145,R71	Bellcore Issue 6	Level I	.00	0.002268	2.00	.0595	0.004535	440974090.03
105A701503	Resistor	R205,R73-74	Bellcore Issue 6	Level I	.00	0.002268	3.00	.0893	0.006803	440974090.03
105A702203	Resistor	R13-14,R133,R146,R28,R89	Bellcore Issue 6	Level I	.00	0.002268	6.00	.1786	0.013606	440974090.03
105A702223	Resistor	R104,R113,R116,R132	Bellcore Issue 6	Level I	.00	0.002268	4.00	.1191	0.009071	440974090.03
105A703303	Resistor	R138-142,R154-155,R163,R182-1-83,R186,R20,R22-27,R37,RR39-40-,R58,R63-64	Bellcore Issue 6	Level I	.00	0.002268	25.00	.7441	0.056693	440974090.03
105A703323	Resistor	R103,R19,R32	Bellcore Issue 6	Level I	.00	0.002268	3.00	.0893	0.006803	440974090.03
105A704723	Resistor	R100-102,R114,R125,R131,R135,-R143,R159-162,R188,R190,R192--193,R30,R38,R4,R41,R44,R5,R52,-R57,R62,R68,R77-78,R8,R84-87,R-99	Bellcore Issue 6	Level I	.00	0.002268	34.00	1.0120	0.077102	440974090.03
105A707503	Resistor	R118,R127,R130	Bellcore Issue 6	Level I	.00	0.002268	3.00	.0893	0.006803	440974090.03
105A710003	Resistor	R187	Bellcore Issue 6	Level I	.00	0.002268	1.00	.0298	0.002268	440974090.03
105A700133	Resistor	R144,R31,R51,R53,R60,R67,R70,-R79	Bellcore Issue 6	Level I	.00	0.002268	8.00	.2381	0.018142	440974090.03
105A701033	Resistor	R107,R109,R117,R156-158,R191,-R208-209,R45-46,R50,R54-56,R90-,R95	Bellcore Issue 6	Level I	.00	0.002268	17.00	.5060	0.038551	440974090.03
105A715003	Resistor	R136	Bellcore Issue 6	Level I	.00	0.002268	1.00	.0298	0.002268	440974090.03
105A701533	Resistor	R15-18	Bellcore Issue 6	Level I	.00	0.002268	4.00	.1191	0.009071	440974090.03
105A733003	Resistor	R1,R112,R184,-185,R189,R2-3,R69-,R88	Bellcore Issue 6	Level I	.00	0.002268	9.00	.2679	0.020409	440974090.03
105A747003	Resistor	R96	Bellcore Issue 6	Level I	.00	0.002268	1.00	.0298	0.002268	440974090.03
1059700001	Resistor	L13,L16,L20	Bellcore Issue 6	Level I	.00	0.002268	3.00	.0893	0.006803	440974090.03
105A501323	Resistor	R93	Bellcore Issue 6	Level I	.00	0.002268	1.00	.0298	0.002268	440974090.03
105A512413	Resistor	R47	Bellcore Issue 6	Level I	.00	0.002268	1.00	.0298	0.002268	440974090.03
105A524913	Resistor	R48	Bellcore Issue 6	Level I	.00	0.002268	1.00	.0298	0.002268	440974090.03
105A549513	Resistor	R49	Bellcore Issue 6	Level I	.00	0.002268	1.00	.0298	0.002268	440974090.03

**AAEON Reliability Prediction Report**

**Part Number** 9697598006  
**Reference Des**  
**Date** 05. 26, 2000  
**Environment** GF, GU - Ground Fixed, Uncontrolled  
**Temperature** 25.00

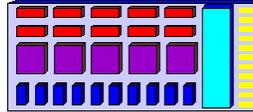


**Description** Top-level assembly  
**File Name** Sbc-598.rpj  
**Time** 1:39 PM  
**Failure Rate** 7.618650  
**MTBF** 131,257

Part Number	Category	Location	Calculation Model	Quality	Tem. Rise	Failure Rate, Unit	Quantity	Failure Rate, %	Failure Rate	MTBF, Unit
105A580603	Resistor	R91	Bellcore Issue 6	Level I	.00	0.002268	1.00	.0298	0.002268	440974090.03
105A702723	Resistor	R97	Bellcore Issue 6	Level I	.00	0.002268	1.00	.0298	0.002268	440974090.03
105A705133	Resistor	R81,R83	Bellcore Issue 6	Level I	.00	0.002268	2.00	.0595	0.004535	440974090.03
105A708203	Resistor	R29,R42-43,R59,R61,R80	Bellcore Issue 6	Level I	.00	0.002268	6.00	.1786	0.013606	440974090.03
105A722033	Resistor	R105	Bellcore Issue 6	Level I	.00	0.002268	1.00	.0298	0.002268	440974090.03
105A751033	Resistor	R106	Bellcore Issue 6	Level I	.00	0.002268	1.00	.0298	0.002268	440974090.03
1121701050	Capacitor	C26	Bellcore Issue 6	Level I	.00	0.002539	1.00	.0333	0.002539	393852661.82
1121747660	Capacitor	C104,C105,C132-133,C162-163,C-82-83	Bellcore Issue 6	Level I	.00	0.002539	8.00	.2666	0.020312	393852661.82
1122701680	Capacitor	C1,C102-103,C107-108,C11,C112,-C115,C12,C122-124,C126-128,C1-30-131,C136,C141-161,C166,C168-169,C172,C174-177,C179,C183,C-186-191,C196,C198-200,C2,C202,-C207-208,C210,C213-214,C216-2-19,C222-225,C23,C230-C233,C236-,C239-C247,C24,C253,C255-C265-,C267-271,C274-275	Bellcore Issue 6	Level I	.00	0.001598	107.00	2.2437	0.170939	625953979.55
1122701680(1)	Capacitor	C277,-279,C281,C287,C289,C291--296,C299,C3,C300,C303,C305-306-,C308,C310,C313-314,C316,C320,-C322,C324-326,C4,C41-42,C45,C5-,C58,C65-68,C70-71,C8-9,C87,C89-,C90-93	Bellcore Issue 6	Level I	.00	0.001598	48.00	1.0065	0.076683	625953979.55
1122722780	Capacitor	C125	Bellcore Issue 6	Level I	.00	0.001598	1.00	.0210	0.001598	625953979.55
1124501780	Capacitor	C110-C111,C13-14,C195,C197,C2-09,C220,C266,C27,C276,C280,C48-,C6,C80-81,C97-99	Bellcore Issue 6	Level I	.00	0.001060	19.00	.2644	0.020144	943198589.05
1124400080	Capacitor	C113-114,C116-117,C16-C22,C211-,C28,C47,C84-85	Bellcore Issue 6	Level I	.00	0.001060	16.00	.2227	0.016964	943198589.05
1124510180	Capacitor	C184,C249	Bellcore Issue 6	Level I	.00	0.001060	2.00	.0278	0.002120	943198589.05
1124518180	Capacitor	C119-120,C134-135,C138-139,C1-64-165,C29-37,C49-56,C72-79	Bellcore Issue 6	Level I	.00	0.001060	33.00	.4592	0.034987	943198589.05
1124420080	Capacitor	C193,C203,C215,C226,C234-235,-C282-283,C94,C96	Bellcore Issue 6	Level I	.00	0.001060	10.00	.1392	0.010602	943198589.05
1124422080	Capacitor	C101,C95	Bellcore Issue 6	Level I	.00	0.001060	2.00	.0278	0.002120	943198589.05
1124522180	Capacitor	C173,C185,C194,C250-251	Bellcore Issue 6	Level I	.00	0.001060	5.00	.0696	0.005301	943198589.05

**AAEON Reliability Prediction Report**

**Part Number** 9697598006  
**Reference Des**  
**Date** 05. 26, 2000  
**Environment** GF, GU - Ground Fixed, Uncontrolled  
**Temperature** 25.00

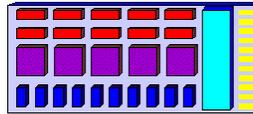


**Description** Top-level assembly  
**File Name** Sbc-598.rpj  
**Time** 1:39 PM  
**Failure Rate** 7.618650  
**MTBF** 131,257

Part Number	Category	Location	Calculation Model	Quality	Tem. Rise	Failure Rate, Unit	Quantity	Failure Rate, %	Failure Rate	MTBF, Unit
1124427080	Capacitor	C318	Bellcore Issue 6	Level I	.00	0.001060	1.00	.0139	0.001060	943198589.05
1124447080	Capacitor	C248,C272-273,C301,C61-64	Bellcore Issue 6	Level I	.00	0.001060	8.00	.1113	0.008482	943198589.05
1124547180	Capacitor	C25	Bellcore Issue 6	Level I	.00	0.001060	1.00	.0139	0.001060	943198589.05
1141601090	Capacitor	C180	Bellcore Issue 6	Level I	.00	0.002357	1.00	.0309	0.002357	424256814.77
1141610050	Capacitor	C10,C109,C118,C121,C129,C140,- C15,C170,C181-182,C192,C201,C- 221,C229,C237-238,C254,C288,C- 290,C302,C304,C307,C309,C311-- 312,C315,C317,C319,C321,C323,- C38,C40,C46,C57,C59,C69,C7,C86- C88	Bellcore Issue 6	Level I	.00	0.002357	39.00	1.2066	0.091925	424256814.77
1142610060	Capacitor	C100	Bellcore Issue 6	Level I	.00	0.001587	1.00	.0208	0.001587	630075050.70
1149610180	Capacitor	C106,C156-157,C204-206,C252,C- 284-286,C39	Bellcore Issue 6	Level I	.00	0.004535	11.00	.6548	0.049890	220487045.01
1212306030	Inductor	L22-25,L30-62	Bellcore Issue 6	Level I	.00	0.002268	37.00	1.1013	0.083905	440974090.03
1212308050	Inductor	L1,L10-12,L14-15,L17-19,L21,L26-- 29,L3-5,L9	Bellcore Issue 6	Level I	.00	0.002268	18.00	.5358	0.040819	440974090.03
1212308052	Inductor	L6-L8	Bellcore Issue 6	Level I	.00	0.000756	3.00	.0298	0.002268	1322922270.09
1300001240	Semiconductor	D5	Bellcore Issue 6	Level I	.00	0.023881	1.00	.3135	0.023881	41874327.58
1300001440	Semiconductor	D3	Bellcore Issue 6	Level I	.00	0.023881	1.00	.3135	0.023881	41874327.58
1300414840	Semiconductor	D1,D10-17,D2,D4,D6-9	Bellcore Issue 6	Level I	.00	0.023881	15.00	4.7018	0.358215	41874327.58
1310390410	Semiconductor	Q2	Bellcore Issue 6	Level I	9.00	0.006545	1.00	.0859	0.006545	152789804.20
1311390610	Semiconductor	Q3	Bellcore Issue 6	Level I	11.00	0.032394	1.00	.4252	0.032394	30870154.04
1305045310	Integrated Circuit	Q1	Bellcore Issue 6	Level I	18.00	0.205515	1.00	2.6975	0.205515	4865835.10
14S5500800	Integrated Circuit	U13	Bellcore Issue 6	Level I	10.00	0.101068	1.00	1.3266	0.101068	9894315.61
14S5224410	Integrated Circuit	U23	Bellcore Issue 6	Level I	10.00	0.102329	1.00	1.3431	0.102329	9772424.95
14S5224510	Integrated Circuit	U25,U27,U6-7	Bellcore Issue 6	Level I	11.00	0.108459	4.00	5.6944	0.433835	9220105.49
14S5505401	Integrated Circuit	U12,U4	Bellcore Issue 6	Level I	13.00	0.115258	2.00	3.0257	0.230515	8676209.89
14S2007500	Integrated Circuit	U16	Bellcore Issue 6	Level I	.00	0.059366	1.00	.7792	0.059366	16844654.92
14S4021300	Integrated Circuit	U5,U9	Bellcore Issue 6	Level I	4.00	0.079239	2.00	2.0801	0.158478	12620044.05
14S4559800	Integrated Circuit	U18	Bellcore Issue 6	Level I	11.00	0.073313	1.00	.9623	0.073313	13640096.66
14S4866100	Integrated Circuit	U4	Bellcore Issue 6	Level I	4.00	0.049558	1.00	.6505	0.049558	20178332.80
14S5513800	Integrated Circuit	U31	Bellcore Issue 6	Level I	6.00	0.087049	1.00	1.1426	0.087049	11487807.10
14S5A24500	Integrated Circuit	U26,U28-30	Bellcore Issue 6	Level I	5.00	0.086275	4.00	4.5297	0.345101	11590817.91

**AAEON Reliability Prediction Report**

**Part Number** 9697598006  
**Reference Des**  
**Date** 05. 26, 2000  
**Environment** GF, GU - Ground Fixed, Uncontrolled  
**Temperature** 25.00



**Description** Top-level assembly  
**File Name** Sbc-598.rpj  
**Time** 1:39 PM  
**Failure Rate** 7.618650  
**MTBF** 131,257

Part Number	Category	Location	Calculation Model	Quality	Tem. Rise	Failure Rate, Unit	Quantity	Failure Rate, %	Failure Rate	MTBF, Unit
14S8257200	Integrated Circuit	U10	Bellcore Issue 6	Level I	5.00	0.067702	1.00	.8886	0.067702	14770704.99
14S9055500	Integrated Circuit	U14	Bellcore Issue 6	Level I	8.00	0.074589	1.00	.9790	0.074589	13406784.90
14S9486101	Integrated Circuit	U3	Bellcore Issue 6	Level I	5.00	0.085069	1.00	1.1166	0.085069	11755142.30
1540700080	Resistor	RN30-31,RN36-37	Bellcore Issue 6	Level I	.00	0.006246	4.00	.3279	0.024984	160102772.00
1540710080	Resistor	RN25-26,RN34-35	Bellcore Issue 6	Level I	.00	0.006246	4.00	.3279	0.024984	160102772.00
15407103A0	Resistor	RP10-15,RP2-4,RP18,RP20,RP22--26,RP6	Bellcore Issue 6	Level I	.00	0.007807	18.00	1.8446	0.140535	128082217.60
1540722080	Resistor	RN1,RN19,RN27,RN29	Bellcore Issue 6	Level I	.00	0.006246	4.00	.3279	0.024984	160102772.00
1540733082	Resistor	RN10-11,RN17-18,RN2,RN20-23,-RN3-9	Bellcore Issue 6	Level I	.00	0.006246	16.00	1.3117	0.099936	160102772.00
1540747081	Resistor	RN32-33	Bellcore Issue 6	Level I	.00	0.006246	2.00	.1640	0.012492	160102772.00
1540747282	Resistor	RN12-16,RN24,RN28	Bellcore Issue 6	Level I	.00	0.006246	7.00	.5739	0.043722	160102772.00
15407472A0	Resistor	RP1,RP16-17,RP19,RP5,RP7-9	Bellcore Issue 6	Level I	.00	0.006246	8.00	.6559	0.049968	160102772.00
1651203291	Connection	PLCC	Bellcore Issue 6	Level I	6.00	0.024758	1.00	.3250	0.024758	40391108.61
14S6025612	Integrated Circuit	U1	Bellcore Issue 6	Level I	7.00	0.283331	1.00	3.7189	0.283331	3529436.00
14S6058400	Integrated Circuit	U2	Bellcore Issue 6	Level I	9.00	0.382158	1.00	5.0161	0.382158	2616720.29
1119610291	Capacitor	C137,C178,C227-228,C43,C60	Bellcore Issue 6	Level I	.00	0.075338	6.00	5.9332	0.452029	13273483.15
1189633110	Capacitor	C212,C44	Bellcore Issue 6	Level I	.00	0.045203	2.00	1.1866	0.090406	22122471.91
1211102761	Inductor	L2	Bellcore Issue 6	Level I	.00	0.002268	1.00	.0298	0.002268	440974090.03
1231114350	Miscellaneous	X1	Bellcore Issue 6	Level I	.00	0.150000	1.00	1.9689	0.150000	6666666.67
1300164000	Semiconductor	U8	Bellcore Issue 6	Level I	21.00	0.041967	1.00	.5508	0.041967	23828192.50
1231232722	Miscellaneous	X2	Bellcore Issue 6	Level I	.00	0.150000	1.00	1.9689	0.150000	6666666.67
1304100200	Semiconductor	LED1	Bellcore Issue 6	Level I	.00	0.004877	1.00	.0640	0.004877	205063180.81
1315450300	Semiconductor	Q4	Bellcore Issue 6	Level I	18.00	0.038898	1.00	.5106	0.038898	25708582.41
14D1605200	Semiconductor	Q6	Bellcore Issue 6	Level I	10.00	0.031537	1.00	.4139	0.031537	31709191.24
14D2207500	Integrated Circuit	U19	Bellcore Issue 6	Level I	9.00	0.112485	1.00	1.4764	0.112485	8890058.82
1651032220	Connection	U21	Bellcore Issue 6	Level I	.00	0.018207	1.00	.2390	0.018207	54923766.92
1651572000	Connection	SIMM1-4	Bellcore Issue 6	Level I	.00	0.040966	4.00	2.1508	0.163863	24410563.08
1651584490	Connection	DIMM	Bellcore Issue 6	Level I	.00	0.095587	1.00	1.2546	0.095587	10461669.89
1651605920	Connection	U17	Bellcore Issue 6	Level I	.00	0.182640	1.00	2.3973	0.182640	5475266.48
1653003100	Connection	JP12	Bellcore Issue 6	Level I	.00	0.001707	1.00	.0224	0.001707	585853513.81
1653003200	Connection	JP11,JP6,JP8,JP9	Bellcore Issue 6	Level I	.00	0.003414	4.00	.1792	0.013655	292926756.90

