



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

PCM-5896

Reliability Prediction Report

(MTBF)

Release Date: Dec. 18, 1999

Issue Stamp

QA Manager

QE Manager

Test Engineer

Reliability Prediction (MTBF)

I . Model Name: PCM-5896

II . Description: Super7 Little Board with LCD, Ethernet, Audio, & 4 COMs

III . Prediction Date: Dec. 18, 1999

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:

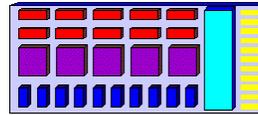
- **Failure Rate: 11.763536 ppm**
- **MTBF: 85,008. hours**

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 9697589614-15
Reference Des
Date 12. 18, 1999
Environment GF, GU - Ground Fixed, Uncontrolled
Temperature 25.00

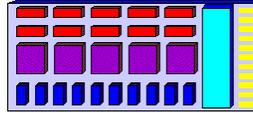


Description Top-level assembly
File Name 5896b13.RPJ
Time 11:14 AM
Failure Rate 11.763536
MTBF 85,008

Assembly Name	Part Number	Model	Method	Environment	Duty Cycle	Qty	Failure Rate	MTBF
PCM-5896	9697589614-15	Bellcore	Method I Case 3	GF, GU - Ground Fixed,	100.00	1.00	11.763536	85,008

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Temperature 25.00

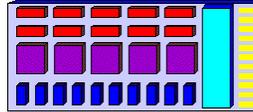


Description Top-level assembly
File Name 5896b13.RPJ
Time 11:14 AM
Failure Rate 11.763536
MTBF 85,008

Part Number	Category	Location	Calculation Model	Quality	Tem. Rise	Failure Rate, Unit	Quantity	Failure Rate, %	Failure Rate	MTBF, Unit
1211100100	Inductor	L2	Bellcore Issue 6	Level I	9.00	0.102262	1.00	.8693	0.102262	9778758.51
1211102762	Inductor	L1	Bellcore Issue 6	Level I	11.00	0.106084	1.00	.9018	0.106084	9426502.32
1231124550	Miscellaneous	Y2	Bellcore Issue 6	Level I		0.150000	1.00	1.2751	0.150000	6666666.67
1231143180	Miscellaneous	Y1	Bellcore Issue 6	Level I		0.150000	1.00	1.2751	0.150000	6666666.67
1231232720	Miscellaneous	Y3	Bellcore Issue 6	Level I		0.150000	1.00	1.2751	0.150000	6666666.67
14S6202000	Integrated Circuit	U21	Bellcore Issue 6	Level I		0.136173	1.00	1.1576	0.136173	7343591.05
1651003222	Connection	U23	Bellcore Issue 6	Level I		0.018207	1.00	.1548	0.018207	54923766.92
1651203291	Connection	U21	Bellcore Issue 6	Level I		0.018207	1.00	.1548	0.018207	54923766.92
1651584490	Connection	DIMM1	Bellcore Issue 6	Level I		0.095587	1.00	.8126	0.095587	10461669.89
1651605920	Connection	U1	Bellcore Issue 6	Level I		0.182640	1.00	1.5526	0.182640	5475266.48
1652508204	Connection	CN15	Bellcore Issue 6	Level I		0.004552	1.00	.0387	0.004552	219695067.68
1653002100	Connection	J2,J4	Bellcore Issue 6	Level I		0.001138	2.00	.0193	0.002276	878780270.71
1653002101	Connection	J15	Bellcore Issue 6	Level I		0.001138	1.00	.0097	0.001138	878780270.71
1653003101	Connection	J7-9,J14,J16	Bellcore Issue 6	Level I		0.001707	5.00	.0726	0.008535	585853513.81
1653003200	Connection	LED1	Bellcore Issue 6	Level I		0.003414	1.00	.0290	0.003414	292926756.90
1653003201	Connection	J5,J10-12,J6*2	Bellcore Issue 6	Level I		0.003414	6.00	.1741	0.020483	292926756.90
1653004101	Connection	J3	Bellcore Issue 6	Level I		0.002276	1.00	.0193	0.002276	439390135.35
1653004200	Connection	CN3,CN6,J13	Bellcore Issue 6	Level I		0.004552	3.00	.1161	0.013655	219695067.68
1653004205	Connection	CN11	Bellcore Issue 6	Level I		0.003983	1.00	.0339	0.003983	251080077.35
1653005100	Connection	CN7	Bellcore Issue 6	Level I		0.002845	1.00	.0242	0.002845	351512108.28
1653020200	Connection	CN16	Bellcore Issue 6	Level I		0.022759	1.00	.1935	0.022759	43939013.54
1653025201	Connection	CN9	Bellcore Issue 6	Level I		0.028449	1.00	.2418	0.028449	35151210.83
1653120225	Connection	CN4	Bellcore Issue 6	Level I		0.022759	1.00	.1935	0.022759	43939013.54
1653132220	Connection	CN2	Bellcore Issue 6	Level I		0.036414	1.00	.3096	0.036414	27461883.46
1653207200	Connection	CN13	Bellcore Issue 6	Level I		0.007966	1.00	.0677	0.007966	125540038.67
1653208200	Connection	CN12	Bellcore Issue 6	Level I		0.009104	1.00	.0774	0.009104	109847533.84
1653213201	Connection	CN14	Bellcore Issue 6	Level I		0.014793	1.00	.1258	0.014793	67598482.36
1653217202	Connection	CN17	Bellcore Issue 6	Level I		0.019345	1.00	.1644	0.019345	51692957.10
1653222200	Connection	CN5	Bellcore Issue 6	Level I		0.025035	1.00	.2128	0.025035	39944557.76
16542C0200	Connection	PCI1	Bellcore Issue 6	Level I		0.068276	1.00	.5804	0.068276	14646337.85
1655003000	Connection	CN1	Bellcore Issue 6	Level I		0.001707	1.00	.0145	0.001707	585853513.81

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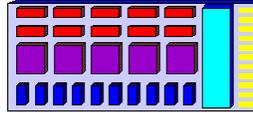


Description Top-level assembly
File Name 5896b13.RPJ
Time 11:14 AM
Failure Rate 11.763536
MTBF 85,008

Part Number	Category	Location	Calculation Model	Quality	Tem. Rise	Failure Rate, Unit	Quantity	Failure Rate, %	Failure Rate	MTBF, Unit
1655304020	Connection	CN10	Bellcore Issue 6	Level I		0.002276	1.00	.0193	0.002276	439390135.35
1655420021	Connection	CN8	Bellcore Issue 6	Level I		0.284485	1.00	2.4184	0.284485	3515121.08
1759400002	Miscellaneous	BZ1	Bellcore Issue 6	Level I		0.150000	1.00	1.2751	0.150000	6666666.67
1019556107	Resistor	R228	Bellcore Issue 6	Level I		0.002268	1.00	.0193	0.002268	440974090.03
1019722007	Resistor	R40	Bellcore Issue 6	Level I		0.002268	1.00	.0193	0.002268	440974090.03
101A501039	Resistor	R173,R191,R197,R200,R337	Bellcore Issue 6	Level I		0.002268	5.00	.0964	0.011339	440974090.03
101A518009	Resistor	R135,R334-335	Bellcore Issue 6	Level I		0.002268	3.00	.0578	0.006803	440974090.03
101A527009	Resistor	R132	Bellcore Issue 6	Level I		0.002268	1.00	.0193	0.002268	440974090.03
101A590929	Resistor	R194	Bellcore Issue 6	Level I		0.002268	1.00	.0193	0.002268	440974090.03
101A700009	Resistor	R62,R169,R192,R241,R251,R261,- R269,R274,R333	Bellcore Issue 6	Level I		0.002268	9.00	.1735	0.020409	440974090.03
101A701009	Resistor	R11-13,R15-17,R39,R43-44,R46,R- 49,R28,R51,R54,R70,R128,R198,L- 37-42	Bellcore Issue 6	Level I		0.002268	23.00	.4434	0.052157	440974090.03
101A701059	Resistor	R247	Bellcore Issue 6	Level I		0.002268	1.00	.0193	0.002268	440974090.03
101A702209	Resistor	R29,R74,R98,R100,R102,R137	Bellcore Issue 6	Level I		0.002268	6.00	.1157	0.013606	440974090.03
101A702229	Resistor	R272	Bellcore Issue 6	Level I		0.002268	1.00	.0193	0.002268	440974090.03
101A703309	Resistor	R5-6,R36-38,R45,R47-48,R50,R60- ,R63,R69,R76,R82,R99,R149,R164- ,R201,R213,R215-216,R218,R226,- R230,R252,R255,R260,R262,R270- -271,R277,R280,R282,R286,R290,- R331	Bellcore Issue 6	Level I		0.002268	36.00	.6940	0.081637	440974090.03
101A704729	Resistor	R42,R55,R57,R81,R83-85,R88,R91- ,R107,R115-116,R131,R140,R150,- R154,R170-171,R182,R184,R203,- R210-211,R214,R223,R238,R263,- R267-268,R295-296,R303,R324-3- 27,R332	Bellcore Issue 6	Level I		0.002268	37.00	.7133	0.083905	440974090.03
101A705629	Resistor	R239,R338	Bellcore Issue 6	Level I		0.002268	2.00	.0386	0.004535	440974090.03
101A707509	Resistor	R109-112,R317-319,R321-323	Bellcore Issue 6	Level I		0.002268	10.00	.1928	0.022677	440974090.03
101A708209	Resistor	R246,R276	Bellcore Issue 6	Level I		0.002268	2.00	.0386	0.004535	440974090.03
101A708229	Resistor	R8-10,R14,R18-22,R26,R61,R119,- R126-127,R134,R136,R143-144,R- 160,R175	Bellcore Issue 6	Level I		0.002268	20.00	.3855	0.045354	440974090.03
101A710009	Resistor	R25,R103,R177,R279	Bellcore Issue 6	Level I		0.002268	4.00	.0771	0.009071	440974090.03

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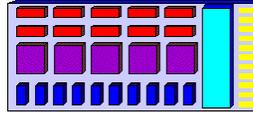


Description Top-level assembly
File Name 5896b13.RPJ
Time 11:14 AM
Failure Rate 11.763536
MTBF 85,008

Part Number	Category	Location	Calculation Model	Quality	Tem. Rise	Failure Rate, Unit	Quantity	Failure Rate, %	Failure Rate	MTBF, Unit
101A710019	Resistor	R23,R59,R96-97,R130,R133,R165- R190,R204,R232-233,R256,R273,- R285,R288,R306,R309	Bellcore Issue 6	Level I		0.002268	17.00	.3277	0.038551	440974090.03
101A710029(1)	Resistor	R3-4,R7,R24,R31-32,R56,R64-65,- R73,R79-80,R89-90,R101,R104-10- 5,R108,R113-114,R117-118,R138-- 139,R141-142,R146,R148,R151-15- 3,R155-156,R158-159,R161-163,R- 167,R174,R178,R180-181,R183,R- 185-186,R189,R202,R206,R209,R- 224,R227,R236-237,R240,R242-24- 3,R245,R253-254	Bellcore Issue 6	Level I		0.002268	60.00	1.1566	0.136062	440974090.03
101A710029(2)	Resistor	R266,R284,R289,R298-299,R302,- R307,R311-312,R219-222,R328-3- 30	Bellcore Issue 6	Level I		0.002268	16.00	.3084	0.036283	440974090.03
101A715029	Resistor	R92-95,R259,R264,R308,R316	Bellcore Issue 6	Level I		0.002268	8.00	.1542	0.018142	440974090.03
101A733009	Resistor	R71,R75,R106,R217,R244,R283,R- 287,R304,R225	Bellcore Issue 6	Level I		0.002268	9.00	.1735	0.020409	440974090.03
101A747009	Resistor	R265,R313-315	Bellcore Issue 6	Level I		0.002268	4.00	.0771	0.009071	440974090.03
1059501001	Resistor	R234	Bellcore Issue 6	Level I		0.002268	1.00	.0193	0.002268	440974090.03
1059511501	Resistor	R2	Bellcore Issue 6	Level I		0.002268	1.00	.0193	0.002268	440974090.03
1059519601	Resistor	R1	Bellcore Issue 6	Level I		0.002268	1.00	.0193	0.002268	440974090.03
1059700001	Resistor	L15	Bellcore Issue 6	Level I		0.002268	1.00	.0193	0.002268	440974090.03
1059700301	Resistor	R129,R145	Bellcore Issue 6	Level I		0.002268	2.00	.0386	0.004535	440974090.03
1059710059	Resistor	R301	Bellcore Issue 6	Level I		0.013606	1.00	.1157	0.013606	73495681.67
105A502833	Resistor	R199	Bellcore Issue 6	Level I		0.002268	1.00	.0193	0.002268	440974090.03
105A504763	Resistor	R34-35	Bellcore Issue 6	Level I		0.002268	2.00	.0386	0.004535	440974090.03
105A521033	Resistor	R66	Bellcore Issue 6	Level I		0.002268	1.00	.0193	0.002268	440974090.03
105A528713	Resistor	R86	Bellcore Issue 6	Level I		0.002268	1.00	.0193	0.002268	440974090.03
105A549963	Resistor	R176,R179,R195-196	Bellcore Issue 6	Level I		0.002268	4.00	.0771	0.009071	440974090.03
105A560423	Resistor	R67,R193	Bellcore Issue 6	Level I		0.002268	2.00	.0386	0.004535	440974090.03
105A571533	Resistor	R87	Bellcore Issue 6	Level I		0.002268	1.00	.0193	0.002268	440974090.03
105A700333	Resistor	R30	Bellcore Issue 6	Level I		0.002268	1.00	.0193	0.002268	440974090.03
105A701823	Resistor	R58	Bellcore Issue 6	Level I		0.002268	1.00	.0193	0.002268	440974090.03
105A702033	Resistor	R291-294,R297,R310	Bellcore Issue 6	Level I		0.002268	6.00	.1157	0.013606	440974090.03

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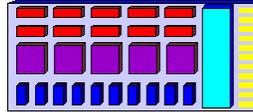


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File Name 5896b13.RPJ
Time 11:14 AM
Failure Rate 11.763536
MTBF 85,008

Part Number	Category	Location	Calculation Model	Quality	Tem. Rise	Failure Rate, Unit	Quantity	Failure Rate, %	Failure Rate	MTBF, Unit
105A702723	Resistor	R120-125,R157,R229,R231,R248,-R257,R336	Bellcore Issue 6	Level I		0.002268	12.00	.2313	0.027212	440974090.03
105A705103	Resistor	R27	Bellcore Issue 6	Level I		0.002268	1.00	.0193	0.002268	440974090.03
105A705133	Resistor	R278	Bellcore Issue 6	Level I		0.002268	1.00	.0193	0.002268	440974090.03
105A705603	Resistor	R249	Bellcore Issue 6	Level I		0.002268	1.00	.0193	0.002268	440974090.03
105A707523	Resistor	R33	Bellcore Issue 6	Level I		0.002268	1.00	.0193	0.002268	440974090.03
105A710033	Resistor	R78,R320	Bellcore Issue 6	Level I		0.002268	2.00	.0386	0.004535	440974090.03
105A720053	Resistor	R300	Bellcore Issue 6	Level I		0.013606	1.00	.1157	0.013606	73495681.67
105A747033	Resistor	R208	Bellcore Issue 6	Level I		0.002268	1.00	.0193	0.002268	440974090.03
105A756033	Resistor	R212	Bellcore Issue 6	Level I		0.002268	1.00	.0193	0.002268	440974090.03
106B501030	Resistor	J1	Bellcore Issue 6	Level I		0.011379	1.00	.0967	0.011379	87878027.07
1119610291	Capacitor	C2-C7	Bellcore Issue 6	Level I		0.075338	6.00	3.8426	0.452029	13273483.15
1119610293	Capacitor	C15-16	Bellcore Issue 6	Level I		0.071121	2.00	1.2092	0.142243	14060484.33
1121747660	Capacitor	C144	Bellcore Issue 6	Level I		0.002539	1.00	.0216	0.002539	393852661.82
1122701680	Capacitor	M1-4,M6-193,C141-142	Bellcore Issue 6	Level I		0.001598	194.00	2.6346	0.309927	625953979.55
1122722705	Capacitor	C76	Bellcore Issue 6	Level I		0.001598	1.00	.0136	0.001598	625953979.55
1124501780	Capacitor	C9,C17,C19,C26-27,C38,C53	Bellcore Issue 6	Level I		0.001060	7.00	.0631	0.007422	943198589.05
1124510080	Capacitor	C24,C69-70,C133-135	Bellcore Issue 6	Level I		0.001060	6.00	.0541	0.006361	943198589.05
1124510180	Capacitor	C10,C47,C65,C67,C80,C86,C90-1-01,C103-C118	Bellcore Issue 6	Level I		0.001060	34.00	.3064	0.036048	943198589.05
1124510280	Capacitor	C36,C48,C54,C143	Bellcore Issue 6	Level I		0.001060	4.00	.0361	0.004241	943198589.05
1124515080	Capacitor	C29-32	Bellcore Issue 6	Level I		0.001060	4.00	.0361	0.004241	943198589.05
1124522080	Capacitor	C46,C56	Bellcore Issue 6	Level I		0.001060	2.00	.0180	0.002120	943198589.05
1124522180	Capacitor	C11	Bellcore Issue 6	Level I		0.001060	1.00	.0090	0.001060	943198589.05
1124522280	Capacitor	C50,C59	Bellcore Issue 6	Level I		0.001060	2.00	.0180	0.002120	943198589.05
1124522880	Capacitor	C25,C28	Bellcore Issue 6	Level I		0.001060	2.00	.0180	0.002120	943198589.05
1124547080	Capacitor	C37,C39,C41,C43,C57-58,C78-79,-C81-82,C87-89	Bellcore Issue 6	Level I		0.001060	13.00	.1172	0.013783	943198589.05
1124547180	Capacitor	C21-22,C72-75	Bellcore Issue 6	Level I		0.001060	6.00	.0541	0.006361	943198589.05
1124547280	Capacitor	C12	Bellcore Issue 6	Level I		0.001060	1.00	.0090	0.001060	943198589.05
1129610290	Capacitor	C77	Bellcore Issue 6	Level I		0.000712	1.00	.0061	0.000712	1403854368.14
1129701080	Capacitor	C1,C8,C23,C45,C49,C52,C55,C60-C83-85	Bellcore Issue 6	Level I		0.005466	11.00	.5111	0.060122	182961702.19

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MTBF 85,008

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1129747650	Capacitor	C64,C66	Bellcore Issue 6	Level I		0.005466	2.00	.0929	0.010931	182961702.19
1141601090	Capacitor	C18	Bellcore Issue 6	Level I		0.002357	1.00	.0200	0.002357	424256814.77
1141610050	Capacitor	C33,C35,C51,C61-62,C71,C102,T-C1,F1-41	Bellcore Issue 6	Level I		0.002357	49.00	.9818	0.115496	424256814.77
1142610060	Capacitor	C20,C42	Bellcore Issue 6	Level I		0.001587	2.00	.0270	0.003174	630075050.70
1149610180	Capacitor	C34,C40,C44,C63,C68	Bellcore Issue 6	Level I		0.004535	5.00	.1928	0.022677	220487045.01
1149633190	Capacitor	C13-14,C136-140	Bellcore Issue 6	Level I		0.004933	7.00	.2935	0.034530	202722669.92
1212303160	Inductor	L14	Bellcore Issue 6	Level I		0.002268	1.00	.0193	0.002268	440974090.03
1212306030	Inductor	L25-32,L34	Bellcore Issue 6	Level I		0.002268	9.00	.1735	0.020409	440974090.03
1212308050	Inductor	L3-13,L17-24,L33,L35-36,L43	Bellcore Issue 6	Level I		0.002268	23.00	.4434	0.052157	440974090.03
1233314350	Miscellaneous	OSC3	Bellcore Issue 6	Level I		0.360000	1.00	3.0603	0.360000	2777777.78
1233324050	Miscellaneous	OSC1	Bellcore Issue 6	Level I		0.360000	1.00	3.0603	0.360000	2777777.78
1233350050	Miscellaneous	OSC2	Bellcore Issue 6	Level I		0.360000	1.00	3.0603	0.360000	2777777.78
1300014040	Semiconductor	D7,D9	Bellcore Issue 6	Level I		0.023881	2.00	.4060	0.047762	41874327.58
1300034040	Semiconductor	D4	Bellcore Issue 6	Level I		0.023881	1.00	.2030	0.023881	41874327.58
1300414800	Semiconductor	D1,D5,D8,D10-12	Bellcore Issue 6	Level I		0.023881	6.00	1.2181	0.143286	41874327.58
1302000340	Semiconductor	D6	Bellcore Issue 6	Level I		0.027212	1.00	.2313	0.027212	36747840.84
1304100540	Semiconductor	D3	Bellcore Issue 6	Level I		0.004877	1.00	.0415	0.004877	205063180.81
1310390410	Semiconductor	Q5	Bellcore Issue 6	Level I		0.023881	1.00	.2030	0.023881	41874327.58
1314101010	Integrated Circuit	Q6	Bellcore Issue 6	Level I		0.059366	1.00	.5047	0.059366	16844654.92
1314108312	Integrated Circuit	Q1	Bellcore Issue 6	Level I	11.00	0.128997	1.00	1.0966	0.128997	7752127.40
1315500311	Semiconductor	Q2-3	Bellcore Issue 6	Level I	12.00	0.110895	2.00	1.8854	0.221790	9017555.43
1428274125	Integrated Circuit	U9	Bellcore Issue 6	Level I	13.00	0.114774	1.00	.9757	0.114774	8712810.69
1428474008	Integrated Circuit	U8	Bellcore Issue 6	Level I	13.00	0.114774	1.00	.9757	0.114774	8712810.69
14D4042800	Miscellaneous	U13	Bellcore Issue 6	Level I		0.600000	1.00	5.1005	0.600000	1666666.67
14S1486300	Integrated Circuit	U32	Bellcore Issue 6	Level I	16.00	0.180291	1.00	1.5326	0.180291	5546598.71
14S3128400	Integrated Circuit	U29,U31	Bellcore Issue 6	Level I	9.00	0.112485	2.00	1.9124	0.224970	8890058.82
14S3155300	Integrated Circuit	U3	Bellcore Issue 6	Level I	2.00	0.068653	1.00	.5836	0.068653	14566106.82
14S3200400	Integrated Circuit	T1	Bellcore Issue 6	Level I	13.00	0.147672	1.00	1.2553	0.147672	6771770.53
14S3914800	Integrated Circuit	U6	Bellcore Issue 6	Level I	15.00	0.168759	1.00	1.4346	0.168759	5925622.25
14S4021300	Integrated Circuit	U18,U22,U33,U34	Bellcore Issue 6	Level I	15.00	0.168759	4.00	5.7384	0.675035	5925622.25

