



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

GENE-6330

Reliability Prediction Report

(MTBF)

Release Date: Feb , 18 , 2003

02-18-2003

Issue Stamp

Wayne Chen

A.V.P

Rex Chang

Test Engineer

Reliability Prediction (MTBF)

- . Model Name: GENE-6330 (Rev.A0.2)
- . Description: Low-power SubCompact Board. Onboard Transmeta Crusoe TM5400 600MHz
- . Prediction Date: Feb. 18, 2003
- . Prediction Site: AAeon DV Dept.
- . Predicted by : Rex Chang
- . Equipment: Relx Ver.7.2 Visual Reliability Software
- . Simulation Environment:
 - Temperature: 25 degrees C
 - 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.

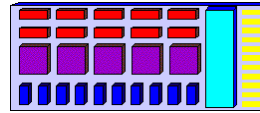
IX. Prediction Result:

Failure Rate: 7.427205ppm
MTBF: 134,640Hours (about 15.37 years)

X. Prediction Table:

AAEON Reliability Prediction Report

Part Number System
Reference Des
Date 02. 17, 2003
Environment GB, GC - Ground Benign, Controlled
Temperature 30.00

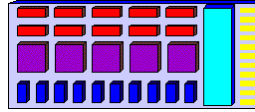


Description Top-level assembly
File Name GENE-6330 A0.2
Time 2:05 PM
Failure Rate 7.427205
MTBF 134,640

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	7.427205	134,640

AAEON Reliability Prediction Report

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Temperature 30.00

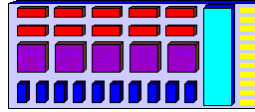


Description Top-level assembly
File Name GENE-6330 A0.2
Time 2:05 PM
Failure Rate 7.427205
MTBF 134,640

Part Number	Category	Location	Calculation Model	Quality	Tem. Rise	Failure Rate, Unit	Quantity	Failure Rate, %	Failure Rate	MTBF, Unit
1653005100	Connection	CN4	Bellcore Issue 6	Level I		0.001839	1.00	.0248	0.001839	543718873.40
1654409103	Connection	CN9	Bellcore Issue 6	Level I		0.003311	1.00	.0446	0.003311	302066040.78
1652512203	Connection	CN10	Bellcore Issue 6	Level I		0.004414	1.00	.0594	0.004414	226549530.58
1653005201	Connection	CN12,CN15	Bellcore Issue 6	Level I		0.003678	2.00	.0991	0.007357	271859436.70
1656304020	Connection	CN17	Bellcore Issue 6	Level I		0.001471	1.00	.0198	0.001471	679648591.75
1655306020	Connection	CN13	Bellcore Issue 6	Level I		0.002207	1.00	.0297	0.002207	453099061.16
1653003201	Connection	J1,J2*2	Bellcore Issue 6	Level I		0.002207	3.00	.0891	0.006621	453099061.16
1750119014	Miscellaneous	BAT1	Bellcore Issue 6	Level I		0.450000	1.00	6.0588	0.450000	2222222.22
1654606303	Connection	CN1	Bellcore Issue 6	Level I		0.002207	1.00	.0297	0.002207	453099061.16
1653017202	Connection	CN3	Bellcore Issue 6	Level I		0.012506	1.00	.1684	0.012506	79958657.85
1654515302	Connection	CN11	Bellcore Issue 6	Level I		0.005518	1.00	.0743	0.005518	181239624.47
1653007201	Connection	CN14	Bellcore Issue 6	Level I		0.005150	1.00	.0693	0.005150	194185311.93
1653003101	Connection	J3-5	Bellcore Issue 6	Level I		0.001104	3.00	.0446	0.003311	906198122.33
1653013203	Connection	CN2	Bellcore Issue 6	Level I		0.009564	1.00	.1288	0.009564	104561321.81
1653222200	Connection	CN5	Bellcore Issue 6	Level I		0.016185	1.00	.2179	0.016185	61786235.61
105A501823	Resistor	R317	Bellcore Issue 6	Level I		0.001249	1.00	.0168	0.001249	800930098.66
1315700212	Semiconductor	Q6,Q9	Bellcore Issue 6	Level I		0.045844	2.00	1.2345	0.091687	21813299.60
1314108412	Integrated Circuit	Q10	Bellcore Issue 6	Level I		0.042535	1.00	.5727	0.042535	23510284.61
1311119710	Semiconductor	Q12	Bellcore Issue 6	Level I		0.013753	1.00	.1852	0.013753	72710998.66
1540722084	Resistor	RN1-8,RN10,RN12,RN14-18,RN20	Bellcore Issue 6	Level I		0.003910	16.00	.8424	0.062566	255730457.04
1540710082	Resistor	RN9,RN11,RN13,RN19,RN21	Bellcore Issue 6	Level I		0.003910	5.00	.2632	0.019552	255730457.04
1540710380	Resistor	RN22-23	Bellcore Issue 6	Level I		0.003910	2.00	.1053	0.007821	255730457.04
1540747282	Resistor	RN24-25,RN49-51	Bellcore Issue 6	Level I		0.003910	5.00	.2632	0.019552	255730457.04
1540733082	Resistor	RN29-34,RN38-48	Bellcore Issue 6	Level I		0.003910	17.00	.8950	0.066476	255730457.04
15407331A0	Resistor	RP1,RP7	Bellcore Issue 6	Level I		0.003910	2.00	.1053	0.007821	255730457.04
106B501031	Resistor	RT1	Bellcore Issue 6	Level I		0.007357	1.00	.0991	0.007357	135929718.35
105A700003	Resistor	L47,R110,R115,R134-135,R138,R1-50-151,R189,R197-198,R206,R208-,R215,R221,R225,R228,R230-231,-R260-261,R272-273,R281,R288,R-290,R294,R298,R315,R5,R60,R65,-R67-68,R81	Bellcore Issue 6	Level I		0.001249	35.00	.5884	0.043699	800930098.66

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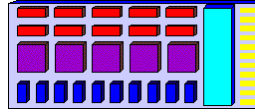


Description Top-level assembly
File Name GENE-6330 A0.2
Time 2:05 PM
Failure Rate 7.427205
MTBF 134,640

Part Number	Category	Location	Calculation Model	Quality	Tem. Rise	Failure Rate, Unit	Quantity	Failure Rate, %	Failure Rate	MTBF, Unit
105A701003	Resistor	R11-26,R118,R124,R126	Bellcore Issue 6	Level I		0.001249	19.00	.3194	0.023722	800930098.66
105A704723	Resistor	R100-101,R104,R107,R165-170,R-177,R179-181,R210-213,R234,R24-1-244,R263,R278,R286-287,R296,-R3,R30,R301,R303-306,R320-321,-R34,R49,R58-59,R63-64,R79-80,R-85,R87,R99	Bellcore Issue 6	Level I		0.001249	48.00	.8069	0.059930	800930098.66
105A733003	Resistor	R141,R146,R61-62	Bellcore Issue 6	Level I		0.001249	4.00	.0672	0.004994	800930098.66
105A502833	Resistor	R66	Bellcore Issue 6	Level I		0.001249	1.00	.0168	0.001249	800930098.66
105A702203	Resistor	R183,R233,R250,R307-309,R317,R-72,R83	Bellcore Issue 6	Level I		0.001249	9.00	.1513	0.011237	800930098.66
105A553623	Resistor	R74	Bellcore Issue 6	Level I		0.001249	1.00	.0168	0.001249	800930098.66
105A547003	Resistor	R157-160,R162-163,R280,R318-3-19,R88	Bellcore Issue 6	Level I		0.001249	10.00	.1681	0.012485	800930098.66
105A756033	Resistor	R105-106,R92-93	Bellcore Issue 6	Level I		0.001249	4.00	.0672	0.004994	800930098.66
105A705623	Resistor	R10,R97-98	Bellcore Issue 6	Level I		0.001249	3.00	.0504	0.003746	800930098.66
105A505103	Resistor	R142-145	Bellcore Issue 6	Level I		0.001249	4.00	.0672	0.004994	800930098.66
105A704733	Resistor	R184-185,R217-218,R232,R236,R-245,R251	Bellcore Issue 6	Level I		0.001249	8.00	.1345	0.009988	800930098.66
105A575003	Resistor	R203	Bellcore Issue 6	Level I		0.001249	1.00	.0168	0.001249	800930098.66
105A512103	Resistor	R270	Bellcore Issue 6	Level I		0.001249	1.00	.0168	0.001249	800930098.66
105A702723	Resistor	R274-276	Bellcore Issue 6	Level I		0.001249	3.00	.0504	0.003746	800930098.66
14S4268601	Integrated Circuit	U3	Bellcore Issue 6	Level I	16.10	0.062573	1.00	.8425	0.062573	15981353.55
14S4070610	Integrated Circuit	U5	Bellcore Issue 6	Level I		0.042535	1.00	.5727	0.042535	23510284.61
14S3128420	Integrated Circuit	U8	Bellcore Issue 6	Level I		0.042535	1.00	.5727	0.042535	23510284.61
14S5824401	Integrated Circuit	U10	Bellcore Issue 6	Level I		0.026234	1.00	.3532	0.026234	38118760.86
14S4021300	Integrated Circuit	U12	Bellcore Issue 6	Level I		0.042535	1.00	.5727	0.042535	23510284.61
14S6334610	Integrated Circuit	U20	Bellcore Issue 6	Level I		0.021923	1.00	.2952	0.021923	45614435.26
14S6202002	Integrated Circuit	U21	Bellcore Issue 6	Level I		0.106747	1.00	1.4372	0.106747	9367974.40
14S4071200	Integrated Circuit	U30	Bellcore Issue 6	Level I	12.70	0.052465	1.00	.7064	0.052465	19060404.86
1315942410	Semiconductor	U39	Bellcore Issue 6	Level I		0.045844	1.00	.6172	0.045844	21813299.60
1231325050	Miscellaneous	Y2	Bellcore Issue 6	Level I		0.075000	1.00	1.0098	0.075000	13333333.33
1231324551	Miscellaneous	Y3	Bellcore Issue 6	Level I		0.075000	1.00	1.0098	0.075000	13333333.33

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Temperature 30.00

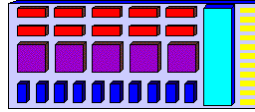


Description Top-level assembly
File Name GENE-6330 A0.2
Time 2:05 PM
Failure Rate 7.427205
MTBF 134,640

Part Number	Category	Location	Calculation Model	Quality	Tem. Rise	Failure Rate, Unit	Quantity	Failure Rate, %	Failure Rate	MTBF, Unit
1122701680	Capacitor	BCBC1-10,BC13-20,BC25,BC29,B-C34-35,BC39-42,BC44,C101-103,C-109-110,C112-115,C125-126,C129-130,C151-156,C158-164,C166-170,C178-192,C194-199,C202,C206,-C209,C211,C302-305,C45-53,C55,-C98	Bellcore Issue 6	Level I		0.000825	98.00	1.0884	0.080836	1212335760.74
1124547180	Capacitor	BC22-24,BC26-28,BC31-32	Bellcore Issue 6	Level I		0.000547	8.00	.0590	0.004379	1826769085.82
1654020000	Connection	CN19	Bellcore Issue 6	Level I		0.007357	1.00	.0991	0.007357	135929718.35
14S6208100	Integrated Circuit	U36	Bellcore Issue 6	Level I	24.60	0.095661	1.00	1.2880	0.095661	10453598.85
1174510180	Capacitor	CP2	Bellcore Issue 6	Level I		0.000547	1.00	.0074	0.000547	1826769085.82
1124510280	Capacitor	C127-128,C131-133,C80-81,C84-85	Bellcore Issue 6	Level I		0.000547	9.00	.0663	0.004927	1826769085.82
1124422080	Capacitor	C104-105,C136-137	Bellcore Issue 6	Level I		0.000547	4.00	.0295	0.002190	1826769085.82
1129610260	Capacitor	C140,C306	Bellcore Issue 6	Level I		0.000368	2.00	.0099	0.000736	2718958522.59
14S3006000	Integrated Circuit	DN1	Bellcore Issue 6	Level I		0.042535	1.00	.5727	0.042535	23510284.61
1304100540	Semiconductor	D4	Bellcore Issue 6	Level I		0.003823	1.00	.0515	0.003823	261592266.64
1212308054	Inductor	FB12,FB17,FB5,L1,L27-34	Bellcore Issue 6	Level I		0.001249	12.00	.2017	0.014983	800930098.66
1315970110	Semiconductor	F1-F4	Bellcore Issue 6	Level I		0.091687	4.00	4.9379	0.366749	10906649.80
1310390410	Semiconductor	Q1-2,Q5,Q7-8,Q11	Bellcore Issue 6	Level I		0.013753	6.00	1.1110	0.082518	72710998.66
105A502233	Resistor	R108-109,R310	Bellcore Issue 6	Level I		0.001249	3.00	.0504	0.003746	800930098.66
105A702223	Resistor	R172	Bellcore Issue 6	Level I		0.001249	1.00	.0168	0.001249	800930098.66
105A507503	Resistor	R237-R240	Bellcore Issue 6	Level I		0.001249	4.00	.0672	0.004994	800930098.66
105A520003	Resistor	R271	Bellcore Issue 6	Level I		0.001249	1.00	.0168	0.001249	800930098.66
14S5A00700	Integrated Circuit	U2	Bellcore Issue 6	Level I		0.025295	1.00	.3406	0.025295	39534043.95
14S5824500	Integrated Circuit	U6-7	Bellcore Issue 6	Level I		0.025581	2.00	.6888	0.051162	39091356.93
14S5A01400	Integrated Circuit	U14,U31,U9	Bellcore Issue 6	Level I		0.042535	3.00	1.7181	0.127604	23510284.61
14S4048501	Integrated Circuit	U13,U15	Bellcore Issue 6	Level I		0.042535	2.00	1.1454	0.085069	23510284.61
14S4813905	Integrated Circuit	U19	Bellcore Issue 6	Level I		0.026234	1.00	.3532	0.026234	38118760.86
1540727080	Resistor	RN27,RN35	Bellcore Issue 6	Level I		0.003910	2.00	.1053	0.007821	255730457.04
1540775080	Resistor	RN37	Bellcore Issue 6	Level I		0.003910	1.00	.0526	0.003910	255730457.04
15407103A0	Resistor	RP2	Bellcore Issue 6	Level I		0.004888	1.00	.0658	0.004888	204584365.63

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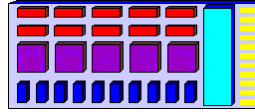


Description Top-level assembly
File Name GENE-6330 A0.2
Time 2:05 PM
Failure Rate 7.427205
MTBF 134,640

Part Number	Category	Location	Calculation Model	Quality	Tem. Rise	Failure Rate, Unit	Quantity	Failure Rate, %	Failure Rate	MTBF, Unit
105A703303	Resistor	R119-123,R129,R161,R204,R7,R84-R94-95	Bellcore Issue 6	Level I		0.001249	12.00	.2017	0.014983	800930098.66
105A501033	Resistor	R116-117,R127-128,R147-149,R153-156,R164,R262,R27-29,R302,R31,R314,R32-33,R51-52,R54,R71,-R75-77	Bellcore Issue 6	Level I		0.001249	28.00	.4707	0.034959	800930098.66
105A500133	Resistor	R133,R136,R205,R235,R55,R78,R89,R96	Bellcore Issue 6	Level I		0.001249	8.00	.1345	0.009988	800930098.66
105A560423	Resistor	R69	Bellcore Issue 6	Level I		0.001249	1.00	.0168	0.001249	800930098.66
105A501633	Resistor	R73	Bellcore Issue 6	Level I		0.001249	1.00	.0168	0.001249	800930098.66
105A700233	Resistor	R277,R82	Bellcore Issue 6	Level I		0.001249	1.00	.0168	0.001249	800930098.66
105A747033	Resistor	R102-103,R90-91	Bellcore Issue 6	Level I		0.001249	4.00	.0672	0.004994	800930098.66
14S4540000	Integrated Circuit	U1	Bellcore Issue 6	Level I	27.30	0.108970	1.00	1.4672	0.108970	9176855.69
14S6863300	Integrated Circuit	UB1	Bellcore Issue 6	Level I	22.30	0.308331	1.00	4.1514	0.308331	3243270.27
14S6335600	Integrated Circuit	U24	Bellcore Issue 6	Level I	18.30	0.085457	1.00	1.1506	0.085457	11701794.11
14S3924802	Integrated Circuit	U17	Bellcore Issue 6	Level I	20.20	0.077005	1.00	1.0368	0.077005	12986205.97
1654262300	Connection	CN21	Bellcore Issue 6	Level I		0.045612	1.00	.6141	0.045612	21924148.12
14S824A302	Integrated Circuit	U16	Bellcore Issue 6	Level I	15.20	0.059744	1.00	.8044	0.059744	16738221.04
1653925216	Connection	CN7	Bellcore Issue 6	Level I		0.018392	1.00	.2476	0.018392	54371887.34
1311390610	Semiconductor	Q3	Bellcore Issue 6	Level I		0.013753	1.00	.1852	0.013753	72710998.66
105A510033	Resistor	R1,R20,R24,R6	Bellcore Issue 6	Level I		0.001249	4.00	.0672	0.004994	800930098.66
105A516513	Resistor	R10,R14,R2,R4	Bellcore Issue 6	Level I		0.001249	4.00	.0672	0.004994	800930098.66
105A510133	Resistor	R22,R26,R3,R9	Bellcore Issue 6	Level I		0.001249	4.00	.0672	0.004994	800930098.66
105A705623	Resistor	R5	Bellcore Issue 6	Level I		0.001249	1.00	.0168	0.001249	800930098.66
105A501033	Resistor	R13,R18-19,R7	Bellcore Issue 6	Level I		0.001249	4.00	.0672	0.004994	800930098.66
105A702263	Resistor	R16,R8	Bellcore Issue 6	Level I		0.001249	2.00	.0336	0.002497	800930098.66
105A512103	Resistor	R11,R12	Bellcore Issue 6	Level I		0.001249	2.00	.0336	0.002497	800930098.66
105A564903	Resistor	R15	Bellcore Issue 6	Level I		0.001249	1.00	.0168	0.001249	800930098.66
105A701003	Resistor	R17,R23,R29	Bellcore Issue 6	Level I		0.001249	3.00	.0504	0.003746	800930098.66
105A514723	Resistor	R21	Bellcore Issue 6	Level I		0.001249	1.00	.0168	0.001249	800930098.66
105A700003	Resistor	R25,R28	Bellcore Issue 6	Level I		0.001249	2.00	.0336	0.002497	800930098.66
14S2039300	Integrated Circuit	U1	Bellcore Issue 6	Level I	30.10	0.228753	1.00	3.0799	0.228753	4371518.63

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Temperature 30.00



Description Top-level assembly
File Name GENE-6330 A0.2
Time 2:05 PM
Failure Rate 7.427205
MTBF 134,640

Part Number	Category	Location	Calculation Model	Quality	Tem. Rise	Failure Rate, Unit	Quantity	Failure Rate, %	Failure Rate	MTBF, Unit
14S2303700	Integrated Circuit	U2	Bellcore Issue 6	Level I	31.10	0.312980	1.00	4.2140	0.312980	3195089.03
14S3115000	Integrated Circuit	U3	Bellcore Issue 6	Level I	28.10	0.262423	1.00	3.5333	0.262423	3810646.69
14S2525000	Integrated Circuit	U4	Bellcore Issue 6	Level I	28.40	0.267125	1.00	3.5966	0.267125	3743559.11
1129710050	Capacitor	C1,C16,C4-5	Bellcore Issue 6	Level I		0.005438	4.00	.2929	0.021753	183883822.47
1124582280	Capacitor	C2	Bellcore Issue 6	Level I		0.000547	1.00	.0074	0.000547	1826769085.82
1122701680	Capacitor	C10,C3,C6,C8-9	Bellcore Issue 6	Level I		0.000825	5.00	.0555	0.004124	1212335760.74
1129701080	Capacitor	C12,C7	Bellcore Issue 6	Level I		0.001406	2.00	.0378	0.002811	711449301.06
1189615181	Capacitor	C11	Bellcore Issue 6	Level I	30.00	0.004556	1.00	.0613	0.004556	219474492.46
1189622181	Capacitor	C14	Bellcore Issue 6	Level I	28.50	0.072159	1.00	.9716	0.072159	13858260.99
1301005443	Semiconductor	D1-2	Bellcore Issue 6	Level I		0.013753	2.00	.3703	0.027506	72710998.66
1314043210	Integrated Circuit	D3	Bellcore Issue 6	Level I		0.042535	1.00	.5727	0.042535	23510284.61
1300003240	Semiconductor	D4	Bellcore Issue 6	Level I		0.013753	1.00	.1852	0.013753	72710998.66
1653027100	Connection	J1-Bottom,J1-Top	Bellcore Issue 6	Level I		0.009932	2.00	.2674	0.019863	100688680.26
1211103362	Inductor	L1	Bellcore Issue 6	Level I	27.40	0.076389	1.00	1.0285	0.076389	13090921.29
1211102260	Inductor	L2	Bellcore Issue 6	Level I	29.10	0.078476	1.00	1.0566	0.078476	12742702.46
1315441011	Semiconductor	Q1	Bellcore Issue 6	Level I	28.60	0.094795	1.00	1.2763	0.094795	10549081.88
1315700212	Semiconductor	Q5,Q8	Bellcore Issue 6	Level I		0.045844	2.00	1.2345	0.091687	21813299.60
1653005201	Connection	,CN6,CN8	Bellcore Issue 6	Level I		0.003678	2.00	.0991	0.007357	271859436.70
1653003101	Connection	J6	Bellcore Issue 6	Level I		0.001104	1.00	.0149	0.001104	906198122.33
14S6863300	Integrated Circuit	UB2	Bellcore Issue 6	Level I	16.80	0.233966	1.00	3.1501	0.233966	4274126.84
14S6863300	Integrated Circuit	UB3	Bellcore Issue 6	Level I	19.00	0.261571	1.00	3.5218	0.261571	3823052.96
14S6863300	Integrated Circuit	UB4	Bellcore Issue 6	Level I	18.70	0.257646	1.00	3.4690	0.257646	3881292.23
1189647080	Capacitor	C16	Bellcore Issue 6	Level I	24.30	0.004160	1.00	.0560	0.004160	240384982.98
1189647080	Capacitor	C2	Bellcore Issue 6	Level I	21.90	0.004000	1.00	.0539	0.004000	250013568.00
14S4021300	Integrated Circuit	U11	Bellcore Issue 6	Level I	15.20	0.118452	1.00	1.5948	0.118452	8442221.86
1315441011	Semiconductor	Q4	Bellcore Issue 6	Level I	27.70	0.092830	1.00	1.2499	0.092830	10772376.95
1315441011	Semiconductor	Q6	Bellcore Issue 6	Level I	29.30	0.096344	1.00	1.2972	0.096344	10379426.42
1315441011	Semiconductor	Q7	Bellcore Issue 6	Level I	28.60	0.094795	1.00	1.2763	0.094795	10549081.88
1315700212	Semiconductor	Q2	Bellcore Issue 6	Level I	27.60	0.092614	1.00	1.2470	0.092614	10797554.12
1189615181	Capacitor	C13	Bellcore Issue 6	Level I	28.20	0.004429	1.00	.0596	0.004429	225796971.96
1189615181	Capacitor	C15	Bellcore Issue 6	Level I	27.50	0.004380	1.00	.0590	0.004380	228323694.20