

GENE-1425

Reliability Prediction Report (MTBF)

Report NO : 05E070021

11-07-2005

Issue Date

Wenyuan Yang

Manager

Liping Hsieh

Test Engineer

Reliability Prediction (MTBF)

I . **Model Name:** Gene-1425 (Intel IXP 422/425 Sub Compact Board)

II . **Prediction Date:** Nov. 07, 2005

III . **Prediction Site:** AAEON Q.E. Dept.

IV . **Predicted by:** Liping Hsieh

V . **Equipment:** Relex Ver.7.3 Visual Reliability Software

VI. Simulation Environment:

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

VII. Term and Definition:

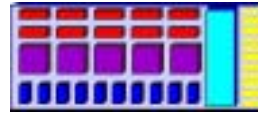
- Unit : An assembly of device.
- Duty Cycle : Used to specify the percentage of time that the element is in an on state, and it is equal to the percentage of total time the item is in the active environment.
- Quantity : The quantity of the selected item.
- Failure Rate : Used to specify that the failure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

VIII. Prediction Result:

- Failure Rate: 11.712990 ppm
- MTBF: 85,375 Hours

AAEON Reliability Prediction Report

Part Number 9697142502
Reference Des
Date 11. 7, 2005
Environment GF, GU - Ground Fixed, Uncontrolled
Temperature 25.00

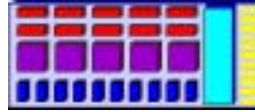


Description Top-level assembly
File Name GENE-1425.RPJ
Time 1:29 下午
Failure Rate 11.712990
MTBF 85,375

Assembly Name	Part Number	Model	Method	Environment	Duty Cycle	Qty	Failure Rate	MTBF
GENE-1425	9697142502	Bellcore	Method I Case 3	GF, GU - Ground Fixed,	100.00	1.00	11.712990	85,375

AAEON Reliability Prediction Report

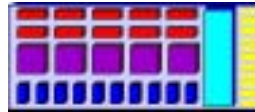
Part Number 9697142502
Reference Des
Date 11. 7, 2005
Environment GF, GU - Ground Fixed, Uncontrolled
Temperature 25.00



Description Top-level assembly
File Name GENE-1425.RPJ
Time 1:29 下午
Failure Rate 11.712990
MTBF 85,375

Part Number	Category	Location	Calculation Model	Quality	Tem. Rise	Failure Rate, Unit	Quantity	Failure Rate, %	Failure Rate	MTBF, Unit
1652532200	Connection	CN10	Bellcore Issue 6	Level I		0.018207	1.00	.1554	0.018207	54923766.92
1111610192	Capacitor	EC9	Bellcore Issue 6	Level I	12.30	0.079108	1.00	.6754	0.079108	12641004.35
1111610192	Capacitor	EC1, EC2, EC3, EC4, EC5, EC7	Bellcore Issue 6	Level I		0.042673	6.00	2.1859	0.256037	23434140.55
1114622110	Capacitor	EC10	Bellcore Issue 6	Level I		0.042673	1.00	.3643	0.042673	23434140.55
1112633190	Capacitor	EC11	Bellcore Issue 6	Level I		0.042673	1.00	.3643	0.042673	23434140.55
1304200250	Semiconductor	D1~D3	Bellcore Issue 6	Level I		0.004877	3.00	.1249	0.014630	205063180.81
1304200350	Semiconductor	D5~D9	Bellcore Issue 6	Level I		0.004877	5.00	.2082	0.024383	205063180.81
1652508213	Connection	CN8,CN9	Bellcore Issue 6	Level I		0.022759	2.00	.3886	0.045518	43939013.54
1653007101	Connection	CN1	Bellcore Issue 6	Level I		0.001138	1.00	.0097	0.001138	878780270.71
1652503103	Connection	CN7	Bellcore Issue 6	Level I		0.042673	1.00	.3643	0.042673	23434140.55
1654804301	Connection	CN11	Bellcore Issue 6	Level I		0.001138	1.00	.0097	0.001138	878780270.71
1300140010	Semiconductor	D11	Bellcore Issue 6	Level I		0.023881	1.00	.2039	0.023881	41874327.58
1119610291	Capacitor	EC8	Bellcore Issue 6	Level I	10.10	0.118493	1.00	1.0116	0.118493	8439332.45
1601123600	Switching Device	SW1	Bellcore Issue 6	Level I		4.080000	1.00	34.8331	4.080000	245098.04
1653900034	Connection	CFD1	Bellcore Issue 6	Level I		0.034138	1.00	.2915	0.034138	29292675.69
1653032200	Connection	CN4	Bellcore Issue 6	Level I		0.036414	1.00	.3109	0.036414	27461883.46
1304100053	Semiconductor	D4	Bellcore Issue 6	Level I		0.004877	1.00	.0416	0.004877	205063180.81
14S6212851	Integrated Circuit	U10	Bellcore Issue 6	Level I	9.80	0.061254	1.00	.5230	0.061254	16325361.90
1124420080	Capacitor	C14,C15	Bellcore Issue 6	Level I		0.004535	2.00	.0774	0.009071	220487045.01
1129610260	Capacitor	C125, C126, C127, C42, C43, C44	Bellcore Issue 6	Level I		0.004535	6.00	.2323	0.027212	220487045.01
1124568180	Capacitor	C107	Bellcore Issue 6	Level I		0.004535	1.00	.0387	0.004535	220487045.01
1124582280	Capacitor	C116	Bellcore Issue 6	Level I		0.004535	1.00	.0387	0.004535	220487045.01
1124556180	Capacitor	C123	Bellcore Issue 6	Level I		0.004535	1.00	.0387	0.004535	220487045.01
1752001600	Miscellaneous	F1	Bellcore Issue 6	Level I		0.030000	1.00	.2561	0.030000	33333333.33
1211103361	Inductor	L1	Bellcore Issue 6	Level I		0.086173	1.00	.7357	0.086173	11604581.32
1233333050	Miscellaneous	OSC1	Bellcore Issue 6	Level I		0.360000	1.00	3.0735	0.360000	2777777.78
14S4621200	Integrated Circuit	U8	Bellcore Issue 6	Level I	13.60	0.084412	1.00	.7207	0.084412	11846650.03
14S3003200	Inductor	U14	Bellcore Issue 6	Level I	10.40	0.165676	1.00	1.4145	0.165676	6035887.78
14S3000300	Inductor	U16	Bellcore Issue 6	Level I		0.136062	1.00	1.1616	0.136062	7349568.17
131503351	Semiconductor	Q1	Bellcore Issue 6	Level I		0.047762	1.00	.4078	0.047762	20937163.79
1311118810	Semiconductor	Q4	Bellcore Issue 6	Level I		0.023881	1.00	.2039	0.023881	41874327.58

AAEON Reliability Prediction Report



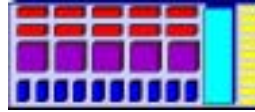
Part Number 9697142502
Reference Des
Date 11. 7, 2005
Environment GF, GU - Ground Fixed, Uncontrolled
Temperature 25.00

Description Top-level assembly
File Name GENE-1425.RPJ
Time 1:29 下午
Failure Rate 11.712990
MTBF 85,375

Part Number	Category	Location	Calculation Model	Quality	Tem. Rise	Failure Rate, Unit	Quantity	Failure Rate, %	Failure Rate	MTBF, Unit
1300034040	Semiconductor	D10	Bellcore Issue 6	Level I	12.40	0.033623	1.00	.2871	0.033623	29741298.92
1540710380	Resistor	RP18, RP19, RP21, RP34, RP36, RP38	Bellcore Issue 6	Level I		0.012492	6.00	.6399	0.074952	80051386.00
1540782280	Resistor	RP29, RP32, RP33	Bellcore Issue 6	Level I		0.012492	3.00	.3200	0.037476	80051386.00
105A733003	Resistor	R4, R49, R50	Bellcore Issue 6	Level I		0.002268	3.00	.0581	0.006803	440974090.03
105A722003	Resistor	R10, R115, R5, R6, R9	Bellcore Issue 6	Level I		0.002268	6.00	.1162	0.013606	440974090.03
105A708223	Resistor	R116, R119, R122, R23, R65, R66	Bellcore Issue 6	Level I		0.002268	6.00	.1162	0.013606	440974090.03
105A703303	Resistor	R145, R31, R47, R51, R54	Bellcore Issue 6	Level I		0.002268	5.00	.0968	0.011339	440974090.03
105A704723	Resistor	R135, R142, R159, R202, R225, R40	Bellcore Issue 6	Level I		0.002268	6.00	.1162	0.013606	440974090.03
105A710033	Resistor	R171, R62, R83, R86	Bellcore Issue 6	Level I		0.002268	4.00	.0774	0.009071	440974090.03
105A700133	Resistor	R191, R198, R203, R68	Bellcore Issue 6	Level I		0.002268	4.00	.0774	0.009071	440974090.03
105A702723	Resistor	R89	Bellcore Issue 6	Level I		0.002268	1.00	.0194	0.002268	440974090.03
105A702263	Resistor	R107, R187, R208	Bellcore Issue 6	Level I		0.002268	3.00	.0581	0.006803	440974090.03
14S4911216	Integrated Circuit	U20	Bellcore Issue 6	Level I		0.039296	1.00	.3355	0.039296	25448028.36
14S2303700	Integrated Circuit	U26	Bellcore Issue 6	Level I		0.059366	1.00	.5068	0.059366	16844654.92
14S2162400	Integrated Circuit	U27	Bellcore Issue 6	Level I		0.059366	1.00	.5068	0.059366	16844654.92
14S5A00702	Integrated Circuit	U28, U32	Bellcore Issue 6	Level I		0.037889	2.00	.6470	0.075778	26392869.26
1315992601	Semiconductor	U30	Bellcore Issue 6	Level I		0.159207	1.00	1.3592	0.159207	6281149.14
14S3172800	Integrated Circuit	U31	Bellcore Issue 6	Level I		0.059366	1.00	.5068	0.059366	16844654.92
1315442010	Semiconductor	U33	Bellcore Issue 6	Level I		0.079603	1.00	.6796	0.079603	12562298.27
1231324050	Miscellaneous	Y1	Bellcore Issue 6	Level I		0.150000	1.00	1.2806	0.150000	6666666.67
1231325050	Miscellaneous	Y2, Y3	Bellcore Issue 6	Level I		0.150000	2.00	2.5613	0.300000	6666666.67
1124701680	Capacitor	CB1~CB49, CB51~CB59, CB61~CB102, CB104~CB127,	Bellcore Issue 6	Level I		0.004535	124.00	4.8014	0.562391	220487045.01
1653925216	Connection	CFD1	Bellcore Issue 6	Level I		0.028449	1.00	.2429	0.028449	35151210.83
1653005202	Connection	CN2, CN3, CN5, CN6	Bellcore Issue 6	Level I		0.005690	4.00	.1943	0.022759	175756054.14
1174522180	Capacitor	CP1, CP2, CP3	Bellcore Issue 6	Level I		0.004535	3.00	.1162	0.013606	220487045.01
1124501780	Capacitor	C1, C6, C7, C11, C13, C16~C18, C23~C29, C31~C34, C37, C50, C52~C56, C58, C59, C60, C64, C66, C67, C69~C71, C73, C75, C77, C78, C80~C82, C87~C94, C98, C100, C101, C103~C106,	Bellcore Issue 6	Level I		0.004535	57.00	2.2071	0.258519	220487045.01

AAEON Reliability Prediction Report

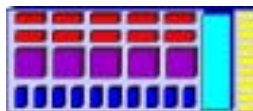
Part Number 9697142502
Reference Des
Date 11. 7, 2005
Environment GF, GU - Ground Fixed, Uncontrolled
Temperature 25.00



Description Top-level assembly
File Name GENE-1425.RPJ
Time 1:29 下午
Failure Rate 11.712990
MTBF 85,375

Part Number	Category	Location	Calculation Model	Quality	Tem. Rise	Failure Rate, Unit	Quantity	Failure Rate, %	Failure Rate	MTBF, Unit
1129710050	Capacitor	C102, C111, C112, C114, C115, C121, C2, C20, C21, C22, C35, C45, C51, C57, C76, C79, C8, C95, C97, C99	Bellcore Issue 6	Level I		0.004535	20.00	.7744	0.090708	220487045.01
1124510080	Capacitor	C4, C5, C74, C83, C86	Bellcore Issue 6	Level I		0.004535	5.00	.1936	0.022677	220487045.01
1129722060	Capacitor	C30, C38	Bellcore Issue 6	Level I		0.004535	2.00	.0774	0.009071	220487045.01
1124527080	Capacitor	C39, C40	Bellcore Issue 6	Level I		0.004535	2.00	.0774	0.009071	220487045.01
1124510280	Capacitor	C108, C128, C46, C47, C48, C49	Bellcore Issue 6	Level I		0.004535	6.00	.2323	0.027212	220487045.01
1121701080	Capacitor	C110, C119, C124	Bellcore Issue 6	Level I		0.004535	3.00	.1162	0.013606	220487045.01
1124510180	Capacitor	C113, C122	Bellcore Issue 6	Level I		0.004535	2.00	.0774	0.009071	220487045.01
1124418080	Capacitor	C117, C120	Bellcore Issue 6	Level I		0.004535	2.00	.0774	0.009071	220487045.01
14S6334610	Integrated Circuit	U17	Bellcore Issue 6	Level I		0.030598	1.00	.2612	0.030598	32681842.61
1124547080	Capacitor	C129, C130	Bellcore Issue 6	Level I		0.004535	2.00	.0774	0.009071	220487045.01
1301005443	Semiconductor	D13	Bellcore Issue 6	Level I		0.023881	1.00	.2039	0.023881	41874327.58
1301005442	Semiconductor	D15	Bellcore Issue 6	Level I		0.023881	1.00	.2039	0.023881	41874327.58
121230603H	Inductor	FB1, FB10, FB11, FB12, FB13, FB14, FB16, FB18, FB2, FB21, FB22, FB23, FB24, FB25, FB26, FB27, FB28, FB3, FB32, FB33, FB34, FB4, FB5, FB6, FB7, FB8, FB9	Bellcore Issue 6	Level I		0.002268	27.00	.5227	0.061228	440974090.03
121230603E	Inductor	FB29, FB30, FB31	Bellcore Issue 6	Level I		0.002268	3.00	.0581	0.006803	440974090.03
1213160008	Inductor	LN1, LN2	Bellcore Issue 6	Level I		0.086173	2.00	1.4714	0.172346	11604581.32
1211101007	Inductor	L2	Bellcore Issue 6	Level I		0.002268	1.00	.0194	0.002268	440974090.03
1654262300	Connection	MPC11, MPC12	Bellcore Issue 6	Level I		0.070552	2.00	1.2047	0.141105	14173875.33
105A702703	Resistor	R215, R216	Bellcore Issue 6	Level I		0.002268	2.00	.0387	0.004535	440974090.03
105A530003	Resistor	R217	Bellcore Issue 6	Level I		0.002268	1.00	.0194	0.002268	440974090.03
1073503389	Resistor	R221	Bellcore Issue 6	Level I		0.002268	1.00	.0194	0.002268	440974090.03
105A532423	Resistor	R224	Bellcore Issue 6	Level I		0.002268	1.00	.0194	0.002268	440974090.03
14S9360100	Integrated Circuit	U2	Bellcore Issue 6	Level I		0.039296	1.00	.3355	0.039296	25448028.36
14S2201200	Semiconductor	U3	Bellcore Issue 6	Level I		0.023881	1.00	.2039	0.023881	41874327.58
14S4255100	Integrated Circuit	U12	Bellcore Issue 6	Level I		0.039296	1.00	.3355	0.039296	25448028.36
14S4830500	Integrated Circuit	U13	Bellcore Issue 6	Level I	11.90	0.077000	1.00	.6574	0.077000	12987003.40
14S3000201	Inductor	U15	Bellcore Issue 6	Level I		0.136062	1.00	1.1616	0.136062	7349568.17

AAEON Reliability Prediction Report



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Temperature 25.00

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Time 1:29 下午
Failure Rate 11.712990
MTBF 85,375

Part Number	Category	Location	Calculation Model	Quality	Tem. Rise	Failure Rate, Unit	Quantity	Failure Rate, %	Failure Rate	MTBF, Unit
1314111712	Integrated Circuit	Q2	Bellcore Issue 6	Level I		0.059366	1.00	.5068	0.059366	16844654.92
1314396510	Integrated Circuit	Q3	Bellcore Issue 6	Level I		0.059366	1.00	.5068	0.059366	16844654.92
1540733082	Resistor	RP14, RP16, RP17, RP20, RP31, RP37, RP39	Bellcore Issue 6	Level I		0.012492	7.00	.7466	0.087444	80051386.00
1540700080	Resistor	RP30, RP35	Bellcore Issue 6	Level I		0.012492	2.00	.2133	0.024984	80051386.00
1540733180	Resistor	RP23, RP24, RP25, RP26, RP27, RP28	Bellcore Issue 6	Level I		0.002268	6.00	.1162	0.013606	440974090.03
105A701033	Resistor	R2, R3, R11, R18, R19, R21, R27, R29, R41~R46, R48, R55~R57, R60, R67, R92, R109, R118, R120, R131, R136, R137, R141, R143, R147~R151, R154~R156, R160, R162, R166, R170, R179, R186, R190, R201, R204, R218, R219, R222, R226,	Bellcore Issue 6	Level I		0.002268	50.00	.9680	0.113385	440974090.03
105A702203	Resistor	R10, R115, R5, R6, R9	Bellcore Issue 6	Level I		0.002268	5.00	.0968	0.011339	440974090.03
105A502200	Resistor	R123, R124, R125, R130, R134, R138, R139, R140, R7, R8	Bellcore Issue 6	Level I		0.002268	10.00	.1936	0.022677	440974090.03
105A700003	Resistor	R117, R132, R144, R152, R153, R163, R175, R176, R177, R178, R185, R188, R194, R22, R227, R26, R28, R30, R63, R70	Bellcore Issue 6	Level I		0.002268	20.00	.3872	0.045354	440974090.03
105A702223	Resistor	R24	Bellcore Issue 6	Level I		0.002268	1.00	.0194	0.002268	440974090.03
105A700333	Resistor	R25	Bellcore Issue 6	Level I		0.002268	1.00	.0194	0.002268	440974090.03
105A701533	Resistor	R32, R34, R37, R39	Bellcore Issue 6	Level I		0.002268	4.00	.0774	0.009071	440974090.03
105A703333	Resistor	R172, R59	Bellcore Issue 6	Level I		0.002268	2.00	.0387	0.004535	440974090.03
105A703323	Resistor	R61	Bellcore Issue 6	Level I		0.002268	1.00	.0194	0.002268	440974090.03
105A561903	Resistor	R64	Bellcore Issue 6	Level I		0.002268	1.00	.0194	0.002268	440974090.03
105A554903	Resistor	R69	Bellcore Issue 6	Level I		0.002268	1.00	.0194	0.002268	440974090.03
105A549963	Resistor	R100, R180, R181, R182, R183, R196, R197, R71, R72, R73, R74, R75, R76, R77, R78, R79, R80, R81, R82, R84, R85, R87, R88, R99	Bellcore Issue 6	Level I		0.002268	24.00	.4647	0.054425	440974090.03
105A707503	Resistor	R101~R106, R209~R214, R90, R91, R93~R98	Bellcore Issue 6	Level I		0.002268	20.00	.3872	0.045354	440974090.03
1059518221	Resistor	R108	Bellcore Issue 6	Level I		0.002268	1.00	.0194	0.002268	440974090.03
105A503403	Resistor	R112	Bellcore Issue 6	Level I		0.002268	1.00	.0194	0.002268	440974090.03

