

COM-965 Reliability Prediction Report (MTBF)

Report NO : 08E070024

8-01-2008

Issue Date

Wenyuan Yang

Manager

Jessica Chou

Test Engineer

Reliability Prediction (MTBF)

I . **Model Name:** COM-965

II . **Prediction Date:** Aug. 1st, 2008

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

IV . **Predicted by :** Jessica Chou

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

VI. Simulation Environment:

- Temperature: 25.1 degree 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:

- COM-965
 - Failure Rate: 9.188216 ppm
 - MTBF: 108,835 Hours

AAEON Reliability Prediction Report

Part Number 9697965000
Reference Des
Date 08. 1, 2008
Environment GF, GU - Ground Fixed, Uncontrolled
Temp. (°C) 25.10

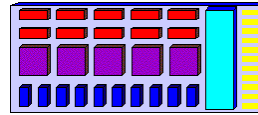


Description Top-level assembly
File Name COM-965.RPJ
Time 10:28 上午
Failure Rate 9.188216
MTBF 108,835

Assembly Name	Part Number	Model	Method	Environment	Duty Cycle	Qty	Failure Rate	MTBF
COM-965	9697965000	Bellcore	Method I Case 3	GF, GU - Ground Fixed,	100.00	1.00	9.188216	108,835

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Description Top-level assembly
File Name COM-965.RPJ
Time 10:28 上午
Failure Rate 9.188216
MTBF 108,835

Part Number	Category	Location	Calculation Model	Quality	Tem. Rise	Failure Rate, Unit	Quantity	Failure Rate, %	Failure Rate	MTBF, Unit
105A512103	Resistor	R545	Bellcore Issue 6	Level I		0.002272	1.00	.0247	0.002272	440111121.05
105A700003	Resistor	R109,R174,R175,R232,R237,R259-R261,R264,R279,R280,R283,R330-R442	Bellcore Issue 6	Level I		0.002272	14.00	.3462	0.031810	440111121.05
105A701053	Resistor	R103,R231,R336	Bellcore Issue 6	Level I		0.002272	3.00	.0742	0.006816	440111121.05
105A704723	Resistor	R402,R424	Bellcore Issue 6	Level I		0.002272	2.00	.0495	0.004544	440111121.05
105A708223	Resistor	R335,R351	Bellcore Issue 6	Level I		0.002272	2.00	.0495	0.004544	440111121.05
1059700001	Resistor	R173,R203	Bellcore Issue 6	Level I		0.002272	2.00	.0495	0.004544	440111121.05
105A710053	Resistor	R89	Bellcore Issue 6	Level I		0.013633	1.00	.1484	0.013633	73351853.51
105A501323	Resistor	R419	Bellcore Issue 6	Level I		0.002272	1.00	.0247	0.002272	440111121.05
105A501633	Resistor	R14	Bellcore Issue 6	Level I		0.002272	1.00	.0247	0.002272	440111121.05
105A511503	Resistor	R443	Bellcore Issue 6	Level I		0.002272	1.00	.0247	0.002272	440111121.05
105A518703	Resistor	R441	Bellcore Issue 6	Level I		0.002272	1.00	.0247	0.002272	440111121.05
105A702033	Resistor	R326,R388	Bellcore Issue 6	Level I		0.002272	2.00	.0495	0.004544	440111121.05
105A751003	Resistor	R64	Bellcore Issue 6	Level I		0.002272	1.00	.0247	0.002272	440111121.05
105A564903	Resistor	R307	Bellcore Issue 6	Level I		0.002272	1.00	.0247	0.002272	440111121.05
1231332721	Miscellaneous	Y1	Bellcore Issue 6	Level I		0.150000	1.00	1.6325	0.150000	6666666.67
1124518180	Capacitor	C156	Bellcore Issue 6	Level I		0.004544	1.00	.0495	0.004544	220055560.52
1124522280	Capacitor	C73	Bellcore Issue 6	Level I		0.004544	1.00	.0495	0.004544	220055560.52
1124427080	Capacitor	C108,C74	Bellcore Issue 6	Level I		0.004544	2.00	.0989	0.009089	220055560.52
1124533080	Capacitor	C369,C370	Bellcore Issue 6	Level I		0.004544	2.00	.0989	0.009089	220055560.52
1124533280	Capacitor	C183	Bellcore Issue 6	Level I		0.004544	1.00	.0495	0.004544	220055560.52
1124539180	Capacitor	C2	Bellcore Issue 6	Level I		0.004544	1.00	.0495	0.004544	220055560.52
1124547280	Capacitor	C142	Bellcore Issue 6	Level I		0.004544	1.00	.0495	0.004544	220055560.52
1301005440	Semiconductor	D13,D15,D16	Bellcore Issue 6	Level I		0.023950	3.00	.7820	0.071849	41754194.40
1310390410	Semiconductor	Q17,Q34-Q37	Bellcore Issue 6	Level I		0.023950	5.00	1.3033	0.119748	41754194.40
1311390610	Semiconductor	Q16	Bellcore Issue 6	Level I		0.023950	1.00	.2607	0.023950	41754194.40
1301005442	Semiconductor	D1,D14,D5,D6	Bellcore Issue 6	Level I		0.023950	4.00	1.0426	0.095799	41754194.40
1212306033	Inductor	FB1,FB7	Bellcore Issue 6	Level I		0.002272	2.00	.0495	0.004544	440111121.05
14S5A00700	Integrated Circuit	U22	Bellcore Issue 6	Level I		0.038112	1.00	.4148	0.038112	26238222.86
105A520003	Resistor	R168,R453,R474,R476-R478	Bellcore Issue 6	Level I		0.002272	6.00	.1484	0.013633	440111121.05

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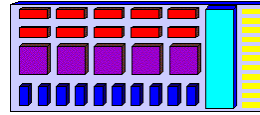


Description Top-level assembly
File Name COM-965.RPJ
Time 10:28 上午
Failure Rate 9.188216
MTBF 108,835

Part Number	Category	Location	Calculation Model	Quality	Tem. Rise	Failure Rate, Unit	Quantity	Failure Rate, %	Failure Rate	MTBF, Unit
105A701009	Resistor	R135,R136,R15,R209,R212,R213,-R215,R230,R332,R333,R338,R379-R395,R6,R7	Bellcore Issue 6	Level I		0.002272	15.00	.3709	0.034082	440111121.05
105A702229	Resistor	R167,R27,R308,R344,R457	Bellcore Issue 6	Level I		0.002272	5.00	.1236	0.011361	440111121.05
1540782282	Resistor	RP1-RP7	Bellcore Issue 6	Level I		0.002272	7.00	.1731	0.015905	440111121.05
1129701690	Capacitor	C1,C100,C103-C106,C113,C114,C-116,C118,C122-C125,C13,C141,C-144-C149,C158,C167-C174,C186,-C188-C193,C195,C196,C198,C20	Bellcore Issue 6	Level I		0.004544	43.00	2.1267	0.195405	220055560.52
1129701690	Capacitor	C201-C207,C209,C210,C217,C218-,C22,C23,C232,C237,C24,C25,C25-0-C253,C26,C263,C264,C266,C268-C269,C27,C270,C273,C274	Bellcore Issue 6	Level I		0.004544	31.00	1.5332	0.140874	220055560.52
1129701690	Capacitor	C276-C280,C287,C289,C292-C295-,C298,C299,C301,C302,C308,C309-,C313,C316,C317,C319,C320,C330-C332,C334,C335,C337,C342	Bellcore Issue 6	Level I		0.004544	29.00	1.4343	0.131785	220055560.52
1129701690	Capacitor	C343,C345-C348,C35,C355,C357,-C358,C361,C364,C367,C368,C371-C373,C377-C384,C386,C387,C399-C4,C400,C401,C404-C408	Bellcore Issue 6	Level I		0.004544	35.00	1.7310	0.159051	220055560.52
1129701690	Capacitor	C41,C413,C414,C417-C448,C44,C-45,C450,C46-C55,C57,C58,C6,C61-,C63,C64,C77,C78,C8,C81,C82,C8-4,C85,C89,C92,C94,C96-C98	Bellcore Issue 6	Level I		0.004544	67.00	3.3137	0.304469	220055560.52
1129710090	Capacitor	C102,C162,C17,C21,C76	Bellcore Issue 6	Level I		0.004544	5.00	.2473	0.022722	220055560.52
1129710390	Capacitor	C11,C110,C119,C87,C88	Bellcore Issue 6	Level I		0.004544	5.00	.2473	0.022722	220055560.52
105A539203	Resistor	R57	Bellcore Issue 6	Level I		0.002272	1.00	.0247	0.002272	440111121.05
1121733380	Capacitor	C134,C166	Bellcore Issue 6	Level I		0.004544	2.00	.0989	0.009089	220055560.52
1301053040	Semiconductor	D17-D19,D2,D4	Bellcore Issue 6	Level I		0.047899	5.00	2.6066	0.239497	20877097.20
105A547503	Resistor	R169,R439,R451,R461	Bellcore Issue 6	Level I		0.002272	4.00	.0989	0.009089	440111121.05
1121610060	Capacitor	C107,C130,C131,C199,C200,C208-C215,C219,C336,C360,C415	Bellcore Issue 6	Level I		0.004544	11.00	.5440	0.049987	220055560.52
105A561923	Resistor	R139	Bellcore Issue 6	Level I		0.002272	1.00	.0247	0.002272	440111121.05
1314108412	Semiconductor	Q30	Bellcore Issue 6	Level I		0.047899	1.00	.5213	0.047899	20877097.20
105A575033	Resistor	R202	Bellcore Issue 6	Level I		0.002272	1.00	.0247	0.002272	440111121.05
1311006910	Semiconductor	Q9	Bellcore Issue 6	Level I	13.90	0.035071	1.00	.3817	0.035071	28513309.50

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Time 10:28 上午
Failure Rate 9.188216
MTBF 108,835

Part Number	Category	Location	Calculation Model	Quality	Tem. Rise	Failure Rate, Unit	Quantity	Failure Rate, %	Failure Rate	MTBF, Unit
1311006910	Semiconductor	Q10	Bellcore Issue 6	Level I		0.023950	1.00	.2607	0.023950	41754194.40
1304001340	Semiconductor	LED2	Bellcore Issue 6	Level I		0.004921	1.00	.0536	0.004921	203197151.95
105A710039	Resistor	R107,R234,R256,R33,R337,R341,-R397,R429,R449	Bellcore Issue 6	Level I		0.002272	9.00	.2226	0.020449	440111121.05
1124547190	Capacitor	C375,C376,C389,C393,C5	Bellcore Issue 6	Level I		0.004544	5.00	.2473	0.022722	220055560.52
105A500139	Resistor	R23,R255,R273,R275,R278,R291,-R340,R352,R36,R37,R387,R394,R414,R430,R435,R45,R456,R475,R479,R54,R81	Bellcore Issue 6	Level I		0.002272	21.00	.5193	0.047715	440111121.05
105A501039	Resistor	R205,R214,R236,R26,R281	Bellcore Issue 6	Level I		0.002272	5.00	.1236	0.011361	440111121.05
121230603G	Inductor	FB2	Bellcore Issue 6	Level I		0.002272	1.00	.0247	0.002272	440111121.05
105A500239	Resistor	R102,R134,R137,R146,R43,R432,-R438,R96	Bellcore Issue 6	Level I		0.002272	8.00	.1978	0.018177	440111121.05
105A705609	Resistor	R150-R163,R185-R198,R216-R228,-R241-R254,R297,R324,R401	Bellcore Issue 6	Level I		0.002272	58.00	1.4343	0.131785	440111121.05
105A515009	Resistor	R399,R400,R405,R406,R412,R413	Bellcore Issue 6	Level I		0.002272	6.00	.1484	0.013633	440111121.05
105A510009	Resistor	R285,R292,R293,R295,R314,R322,-R327,R347,R375,R376,R392,R409,-R410,R444,R473,R67,R68	Bellcore Issue 6	Level I		0.002272	17.00	.4204	0.038627	440111121.05
105A700109	Resistor	R142,R177,R181,R206,R207,R34,-R386,R433,R437,R90-R92	Bellcore Issue 6	Level I		0.002272	12.00	.2967	0.027266	440111121.05
105A522669	Resistor	R112,R114,R115,R116,R426	Bellcore Issue 6	Level I		0.002272	5.00	.1236	0.011361	440111121.05
105A554969	Resistor	R309,R320,R321,R328,R329,R56,-R63,R65	Bellcore Issue 6	Level I		0.002272	8.00	.1978	0.018177	440111121.05
1315441012	Semiconductor	Q12,Q27	Bellcore Issue 6	Level I		0.079832	2.00	1.7377	0.159665	12526258.32
105A532413	Resistor	R319,R44	Bellcore Issue 6	Level I		0.002272	2.00	.0495	0.004544	440111121.05
105A501133	Resistor	R208	Bellcore Issue 6	Level I		0.002272	1.00	.0247	0.002272	440111121.05
1315700310	Semiconductor	Q4,Q5	Bellcore Issue 6	Level I		0.079832	2.00	1.7377	0.159665	12526258.32
1121701790	Capacitor	C132,C138,C139,C143,C150,C159,-C18,C181,C187,C212,C341,C39,C40,C56	Bellcore Issue 6	Level I		0.004544	14.00	.6924	0.063620	220055560.52
121110010F	Inductor	L11,L13,L7,L8	Bellcore Issue 6	Level I		0.002272	4.00	.0989	0.009089	440111121.05
105A586603	Resistor	R149	Bellcore Issue 6	Level I		0.002272	1.00	.0247	0.002272	440111121.05
1315230111	Semiconductor	Q13	Bellcore Issue 6	Level I		0.079832	1.00	.8689	0.079832	12526258.32
105A501233	Resistor	R436	Bellcore Issue 6	Level I		0.002272	1.00	.0247	0.002272	440111121.05
1315013810	Semiconductor	Q26	Bellcore Issue 6	Level I		0.079832	1.00	.8689	0.079832	12526258.32

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Failure Rate 9.188216
MTBF 108,835

Part Number	Category	Location	Calculation Model	Quality	Tem. Rise	Failure Rate, Unit	Quantity	Failure Rate, %	Failure Rate	MTBF, Unit
14S4081110	Integrated Circuit	U6	Bellcore Issue 6	Level I		0.059802	1.00	.6509	0.059802	16721916.86
105A535713	Resistor	R8	Bellcore Issue 6	Level I		0.002272	1.00	.0247	0.002272	440111121.05
11E9647680	Capacitor	C101,C157,C228,C233,C265,C340- C363,C374,C385,C390,C402,C68,- C69,C75	Bellcore Issue 6	Level I		0.004544	14.00	.6924	0.063620	220055560.52
121230603S	Inductor	FB6	Bellcore Issue 6	Level I		0.002272	1.00	.0247	0.002272	440111121.05
121230805X	Inductor	FB8	Bellcore Issue 6	Level I		0.002272	1.00	.0247	0.002272	440111121.05
1315446310	Semiconductor	Q11	Bellcore Issue 6	Level I	33.50	0.189590	1.00	2.0634	0.189590	5274540.94
1315446310	Semiconductor	Q15	Bellcore Issue 6	Level I		0.079832	1.00	.8689	0.079832	12526258.32
105A522103	Resistor	R415	Bellcore Issue 6	Level I		0.002272	1.00	.0247	0.002272	440111121.05
1129522790	Capacitor	C163,C164,C211,C213,C214,C231- C234,C275,C283,C285,C288	Bellcore Issue 6	Level I		0.004544	11.00	.5440	0.049987	220055560.52
123131435B	Miscellaneous	Y3	Bellcore Issue 6	Level I		0.150000	1.00	1.6325	0.150000	6666666.67
1231325058	Miscellaneous	Y2	Bellcore Issue 6	Level I		0.150000	1.00	1.6325	0.150000	6666666.67
121110336B	Inductor	L1,L2	Bellcore Issue 6	Level I		0.002272	2.00	.0495	0.004544	440111121.05
1315700214	Semiconductor	Q14,Q21,Q22,Q24,Q25,Q29,Q31	Bellcore Issue 6	Level I		0.079832	7.00	6.0820	0.558826	12526258.32
1315731310	Semiconductor	Q6	Bellcore Issue 6	Level I	18.80	0.132667	1.00	1.4439	0.132667	7537679.72
1315731310	Semiconductor	Q1	Bellcore Issue 6	Level I		0.079832	1.00	.8689	0.079832	12526258.32
14S2712000	Integrated Circuit	U13	Bellcore Issue 6	Level I		0.059802	1.00	.6509	0.059802	16721916.86
105A536513	Resistor	R262,R265	Bellcore Issue 6	Level I		0.002272	2.00	.0495	0.004544	440111121.05
105A510523	Resistor	R434	Bellcore Issue 6	Level I		0.002272	1.00	.0247	0.002272	440111121.05
1315600210	Semiconductor	Q3	Bellcore Issue 6	Level I	22.20	0.144507	1.00	1.5727	0.144507	6920059.73
1315600210	Semiconductor	Q2	Bellcore Issue 6	Level I		0.079832	1.00	.8689	0.079832	12526258.32
106B501032	Resistor	RT2	Bellcore Issue 6	Level I		0.011439	1.00	.1245	0.011439	87420177.69
106B747030	Resistor	RT1	Bellcore Issue 6	Level I		0.011439	1.00	.1245	0.011439	87420177.69
1189610150	Capacitor	TC10,TC28	Bellcore Issue 6	Level I		0.004544	2.00	.0989	0.009089	220055560.52
1189622150	Capacitor	TC1,TC15,TC20,TC22,TC25,TC26,- TC3	Bellcore Issue 6	Level I		0.004544	7.00	.3462	0.031810	220055560.52
1189633160	Capacitor	TC12-TC14,TC16-TC19,TC2,TC21,- TC23,TC24,TC4,TC7-TC9	Bellcore Issue 6	Level I		0.004544	15.00	.7419	0.068165	220055560.52
14S3626200	Integrated Circuit	U1	Bellcore Issue 6	Level I	17.90	0.205515	1.00	2.2367	0.205515	4865835.10
1129622050	Capacitor	C160,C161,C194,C220,C221,C230- C245,C246,C255,C258,C271,C282- C284,C297,C38,C42,C60	Bellcore Issue 6	Level I		0.004544	17.00	.8408	0.077253	220055560.52

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Part Number	Category	Location	Calculation Model	Quality	Tem. Rise	Failure Rate, Unit	Quantity	Failure Rate, %	Failure Rate	MTBF, Unit
105A540213	Resistor	R263,R30	Bellcore Issue 6	Level I		0.002272	2.00	.0495	0.004544	440111121.05
105A514733	Resistor	R204	Bellcore Issue 6	Level I		0.002272	1.00	.0247	0.002272	440111121.05
105A526113	Resistor	R287	Bellcore Issue 6	Level I		0.002272	1.00	.0247	0.002272	440111121.05
121230603Z	Inductor	FB3-FB5	Bellcore Issue 6	Level I		0.002272	3.00	.0742	0.006816	440111121.05
14S9103200	Integrated Circuit	U11	Bellcore Issue 6	Level I		0.059802	1.00	.6509	0.059802	16721916.86
131411171C	Integrated Circuit	Q28	Bellcore Issue 6	Level I		0.059802	1.00	.6509	0.059802	16721916.86
14S4195710	Integrated Circuit	U3	Bellcore Issue 6	Level I		0.059802	1.00	.6509	0.059802	16721916.86
1124515880	Capacitor	C133	Bellcore Issue 6	Level I		0.004544	1.00	.0495	0.004544	220055560.52
1122522890	Capacitor	C310,C321,C79,C90,C91,C93,C95	Bellcore Issue 6	Level I		0.004544	7.00	.3462	0.031810	220055560.52
105A544213	Resistor	R138	Bellcore Issue 6	Level I		0.002272	1.00	.0247	0.002272	440111121.05
1211105673	Inductor	L4	Bellcore Issue 6	Level I	22.80	0.003440	1.00	.0374	0.003440	290695551.87
1211105673	Inductor	L5	Bellcore Issue 6	Level I		0.002272	1.00	.0247	0.002272	440111121.05
1050524904	Resistor	R310,R315,R325,R380,R423,R75	Bellcore Issue 6	Level I		0.002272	6.00	.1484	0.013633	440111121.05
105A511523	Resistor	R3	Bellcore Issue 6	Level I		0.002272	1.00	.0247	0.002272	440111121.05
105A501413	Resistor	R2,R22,R445,R448	Bellcore Issue 6	Level I		0.002272	4.00	.0989	0.009089	440111121.05
105A518213	Resistor	R140	Bellcore Issue 6	Level I		0.002272	1.00	.0247	0.002272	440111121.05
121110336L	Inductor	L12	Bellcore Issue 6	Level I	33.20	0.004078	1.00	.0444	0.004078	245194156.33
1129610080	Capacitor	C111,C112,C152-C154,C177,C179- C222-C227,C238-C243,C261,C262- C267,C272,C281,C290,C296,C303- C306,C307,C314,C323-C329	Bellcore Issue 6	Level I		0.004544	37.00	1.8299	0.168139	220055560.52
1129610080	Capacitor	C34,C349-C354,C356,C362,C365,- C366,C388,C394-C398,C403,C409- C410,C412,C43,C65,C71,C83	Bellcore Issue 6	Level I		0.004544	25.00	1.2364	0.113608	220055560.52
105A556213	Resistor	R179	Bellcore Issue 6	Level I		0.002272	1.00	.0247	0.002272	440111121.05
1655902122	Connection	BAT1	Bellcore Issue 6	Level I		0.001144	1.00	.0124	0.001144	874201776.95
14S5A00821	Integrated Circuit	U18-U20,U23	Bellcore Issue 6	Level I		0.038036	4.00	1.6559	0.152145	26290753.41
11E9501091	Capacitor	C10,C12,C120,C121,C137,C14,C15- C178,C182,C19,C216,C235,C236,- C256,C257,C259,C260,C286,C305- C311,C315,C322,C333,C344	Bellcore Issue 6	Level I		0.004544	24.00	1.1870	0.109063	220055560.52
11E9501091	Capacitor	C59,C7,C80	Bellcore Issue 6	Level I		0.004544	3.00	.1484	0.013633	220055560.52
1121533480	Capacitor	C135,C136,C165	Bellcore Issue 6	Level I		0.004544	3.00	.1484	0.013633	220055560.52
1211000180	Inductor	L3	Bellcore Issue 6	Level I	12.60	0.002879	1.00	.0313	0.002879	347337983.16

