

HSB-800P Reliability Prediction Report (MTBF)

Report NO : 09I070014

10-22-2009

Issue Date

Wenyuan Yang

Manager

Jessica Chou

Test Engineer

Reliability Prediction (MTBF)

I . **Model Name:** HSB-800P (9697B80002-D)

II . **Prediction Date:** Oct. 22, 2009

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 degrees C
- Standard: Telcordia (Bellcore) Standard

VII. Term and Definition:

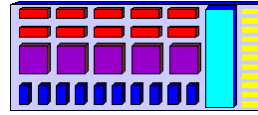
- Unit : An assembly of device.
- Duty Cycle : Used to specify the percentage of time that the element is in an on state, and it is equal to the percentage of total time the item is in the active environment.
- Quantity : The quantity of the selected item.
- Failure Rate : Used to specify that the failure 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:

- HSB-800P (9697B80002-D):
Failure Rate: 12.681395 ppm
MTBF: 78,856 Hours

AAEON Reliability Prediction Report

Part Number 9697B80002-D
Reference Des
Date 10. 22, 2009
Environment GF, GU - Ground Fixed, Uncontrolled
Temp. (°C) 25.10

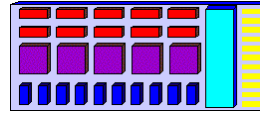


Description Top-level assembly
File Name HSB-800P-A10.RPJ
Time 6:07 下午
Failure Rate 12.681395
MTBF 78,856

Assembly Name	Part Number	Model	Method	Environment	Duty Cycle	Qty	Failure Rate	MTBF
HSB-800P-A10	9697B80002-D	Telcordia Issue 1	Method I Case 3	GF, GU - Ground Fixed, Uncontrolled	100.00	1.00	12.68	78855.68

AAEON Reliability Prediction Report

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Reference Des
Date 10. 22, 2009
Environment GF, GU - Ground Fixed, Uncontrolled
Temp. (°C) 25.10



Description Top-level assembly
File Name HSB-800P-A10.RPJ
Time 6:07 下午
Failure Rate 12.681395
MTBF 78,856

Part Number	Category	Location	Calculation Model	Quality	Tem. Rise	Quantity	Failure Rate, Unit	Failure Rate, %	MTBF, Unit
1129610051	Capacitor	C102,C108,C11,C12, C120,C123,C125, C136,C138,C141, C147,C149,C16,C160, C164,C167,C169, C175,C177,C184, C199,C205,C206,C22, C24,C25,C26,C28, C29,C37,C39,C52, C72,C74,C77,C78, C84,C86,C90,C98	Telcordia Issue 1	Level I		40.00	0.004544	1.4334	220055560.52
1189633181	Capacitor	C187,C45	Telcordia Issue 1	Level I		2.00	0.004544	.0717	220055560.52
1129722060	Capacitor	C121,C161,C47	Telcordia Issue 1	Level I		3.00	0.004544	.1075	220055560.52
1122501780	Capacitor	C100,C110,C111, C113,C115,C117, C118,C119,C126, C128,C132,C135, C140,C152,C18,C3, C36,C85	Telcordia Issue 1	Level I		18.00	0.004544	.6450	220055560.52
1124533080	Capacitor	C31,C64,C65,C66, C67,C68,C69,C71	Telcordia Issue 1	Level I		8.00	0.004544	.2867	220055560.52
1124522280	Capacitor	C32,C70	Telcordia Issue 1	Level I		2.00	0.004544	.0717	220055560.52
1189615187	Capacitor	C109,C139,C73,C76, C82	Telcordia Issue 1	Level I		5.00	0.004544	.1792	220055560.52
11E9610190	Capacitor	C13,C14,C8,C9	Telcordia Issue 1	Level I		4.00	0.004544	.1433	220055560.52
1121533480	Capacitor	C171,C172	Telcordia Issue 1	Level I		2.00	0.004544	.0717	220055560.52
1124433680	Capacitor	C30,C35	Telcordia Issue 1	Level I		2.00	0.004544	.0717	220055560.52
11A4901090	Capacitor	C97	Telcordia Issue 1	Level I		1.00	0.004544	.0358	220055560.52
1129722091	Capacitor	C79,C92	Telcordia Issue 1	Level I		2.00	0.004544	.0717	220055560.52
1189622183	Capacitor	C19	Telcordia Issue 1	Level I		1.00	0.004544	.0358	220055560.52
1124427090	Capacitor	C146,C150	Telcordia Issue 1	Level I		2.00	0.004544	.0717	220055560.52
1124510280	Capacitor	C20,C21	Telcordia Issue 1	Level I		2.00	0.005469	.0863	182842274.63
1121722090	Capacitor	C185	Telcordia Issue 1	Level I		1.00	0.004544	.0358	220055560.52
1124547180	Capacitor	C191,C192,C193, C194	Telcordia Issue 1	Level I		4.00	0.005469	.1725	182842274.63
1124410080	Capacitor	C4,C59,C60	Telcordia Issue 1	Level I		3.00	0.004544	.1075	220055560.52
1122722780	Capacitor	C53	Telcordia Issue 1	Level I		1.00	0.004544	.0358	220055560.52
1124547080	Capacitor	C58,C63	Telcordia Issue 1	Level I		2.00	0.004544	.0717	220055560.52
1124418090	Capacitor	C43,C44	Telcordia Issue 1	Level I		2.00	0.004544	.0717	220055560.52
16515A0993	Connection	DIMM1	Telcordia Issue 1	Level I		1.00	0.114390	.9020	8742017.77
1301005440	Semiconductor	D15,D16	Telcordia Issue 1	Level I		2.00	0.023950	.3777	41754194.40
1301000340	Semiconductor	D12,D4	Telcordia Issue 1	Level I		2.00	0.023950	.3777	41754194.40

AAEON Reliability Prediction Report

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Date 10. 22, 2009
Environment GF, GU - Ground Fixed, Uncontrolled
Temp. (°C) 25.10



Description Top-level assembly
File Name HSB-800P-A10.RPJ
Time 6:07 下午
Failure Rate 12.681395
MTBF 78,856

Part Number	Category	Location	Calculation Model	Quality	Tem. Rise	Quantity	Failure Rate, Unit	Failure Rate, %	MTBF, Unit
1301053040	Semiconductor	D10,D11	Telcordia Issue 1	Level I		2.00	0.023950	.3777	41754194.40
1301005442	Semiconductor	D1,D17,D2,D7	Telcordia Issue 1	Level I		4.00	0.023950	.7554	41754194.40
1300001440	Semiconductor	D8,D9	Telcordia Issue 1	Level I		2.00	0.023950	.3777	41754194.40
1302001040	Semiconductor	D13	Telcordia Issue 1	Level I		1.00	0.027266	.2150	36675926.75
1300414843	Semiconductor	D3	Telcordia Issue 1	Level I		1.00	0.023950	.1889	41754194.40
1212306030	Inductor	FB1,FB12,FB13,FB17, FB18,FB19,FB21, FB22,FB27,FB30, FB32,FB33,FB34, FB37,FB38,FB39, FB40,FB41	Telcordia Issue 1	Level I		18.00	0.002272	.3225	440111121.05
121230805D	Inductor	FB31	Telcordia Issue 1	Level I		1.00	0.002272	.0179	440111121.05
1212306032	Inductor	FB14,FB15,FB16, FB23,FB24,FB25, FB26	Telcordia Issue 1	Level I		7.00	0.002272	.1254	440111121.05
1212308054	Inductor	FB35,FB36	Telcordia Issue 1	Level I		2.00	0.002272	.0358	440111121.05
121110336L	Inductor	L4	Telcordia Issue 1	Level I		1.00	0.086342	.6809	11581871.61
121110010T	Inductor	L3	Telcordia Issue 1	Level I		1.00	0.002272	.0179	440111121.05
121110476G	Inductor	L1	Telcordia Issue 1	Level I		1.00	0.086342	.6809	11581871.61
121110476G	Inductor	L2	Telcordia Issue 1	Level I	11.80	1.00	0.107833	.8503	9273586.93
1315700211	Semiconductor	Q13,Q15,Q16,Q18, Q19,Q2,Q20,Q21,Q22, Q3,Q4	Telcordia Issue 1	Level I		11.00	0.079832	6.9248	12526258.32
1311119710	Semiconductor	Q7	Telcordia Issue 1	Level I		1.00	0.023950	.1889	41754194.40
14S3524700	Integrated Circuit	Q17	Telcordia Issue 1	Level I		1.00	0.059802	.4716	16721916.86
1310390410	Semiconductor	Q11,Q12,Q14	Telcordia Issue 1	Level I		3.00	0.023950	.5666	41754194.40
1315230300	Semiconductor	Q1	Telcordia Issue 1	Level I		1.00	0.079832	.6295	12526258.32
1540710380	Resistor	RP53,RP62,RP63, RP64,RP65,RP66	Telcordia Issue 1	Level I		6.00	0.012549	.5937	79686328.81
1540710084	Resistor	RP10,RP11,RP12, RP13,RP14,RP17, RP18,RP19,RP20, RP21,RP22,RP23, RP24,RP7,RP8,RP9	Telcordia Issue 1	Level I		16.00	0.006275	.7917	159372657.61
1540733085	Resistor	RP27,RP28,RP29, RP30,RP31,RP32, RP33,RP35,RP36, RP37,RP38,RP39, RP40,RP41,RP42, RP43	Telcordia Issue 1	Level I		16.00	0.006275	.7917	159372657.61
1540733082	Resistor	RP25,RP26,RP44, RP45,RP46,RP47, RP48,RP49,RP5,RP50, RP51,RP52,RP54, RP55,RP6	Telcordia Issue 1	Level I		15.00	0.006275	.7422	159372657.61

AAEON Reliability Prediction Report

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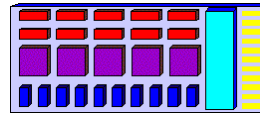


Description Top-level assembly
File Name HSB-800P-A10.RPJ
Time 6:07 下午
Failure Rate 12.681395
MTBF 78,856

Part Number	Category	Location	Calculation Model	Quality	Tem. Rise	Quantity	Failure Rate, Unit	Failure Rate, %	MTBF, Unit
105A505109	Resistor	R233,R234,R235, R236,R237,R242, R243,R244,R245, R246,R247,R248, R249,R250,R251, R252,R253,R254, R255,R256,R257, R258,R259,R260, R261,R262,R263, R264,R265,R266, R267,R268,R269, R270,R271,R272, R273,R274,R275,	Telcordia Issue 1	Level I		109.00	0.002272	1.9530	440111121.05
1059703623	Resistor	R158	Telcordia Issue 1	Level I		1.00	0.002272	.0179	440111121.05
105A505623	Resistor	R457,R470	Telcordia Issue 1	Level I		2.00	0.002272	.0358	440111121.05
105A515009	Resistor	R117,R153	Telcordia Issue 1	Level I		2.00	0.002272	.0358	440111121.05
105A554963	Resistor	R483	Telcordia Issue 1	Level I		1.00	0.002272	.0179	440111121.05
105A549969	Resistor	R438,R443,R448, R458	Telcordia Issue 1	Level I		4.00	0.002272	.0717	440111121.05
105A701533	Resistor	R133	Telcordia Issue 1	Level I		1.00	0.002272	.0179	440111121.05
105A502223	Resistor	R219,R321,R322,R39, R40,R440,R451	Telcordia Issue 1	Level I		7.00	0.002272	.1254	440111121.05
105A510053	Resistor	R17	Telcordia Issue 1	Level I		1.00	0.013633	.1075	73351853.51
105A701069	Resistor	R193	Telcordia Issue 1	Level I		1.00	0.013633	.1075	73351853.51
105A708223	Resistor	R228,R23,R284,R29, R306	Telcordia Issue 1	Level I		5.00	0.002272	.0896	440111121.05
105A501033	Resistor	R238,R239,R241, R297,R305,R310, R317	Telcordia Issue 1	Level I		7.00	0.002272	.1254	440111121.05
105A506823	Resistor	R289,R318	Telcordia Issue 1	Level I		2.00	0.002272	.0358	440111121.05
105A503033	Resistor	R286	Telcordia Issue 1	Level I		1.00	0.002272	.0179	440111121.05
105A705133	Resistor	R15	Telcordia Issue 1	Level I		1.00	0.002272	.0179	440111121.05
105A708229	Resistor	R36	Telcordia Issue 1	Level I		1.00	0.002272	.0179	440111121.05
105A507503	Resistor	R101,R107,R99	Telcordia Issue 1	Level I		3.00	0.002272	.0538	440111121.05
105A512403	Resistor	R482	Telcordia Issue 1	Level I		1.00	0.002272	.0179	440111121.05
105A520003	Resistor	R419,R501	Telcordia Issue 1	Level I		2.00	0.002272	.0358	440111121.05
105A747009	Resistor	R328,R332	Telcordia Issue 1	Level I		2.00	0.002272	.0358	440111121.05
105A700139	Resistor	R333,R392	Telcordia Issue 1	Level I		2.00	0.002272	.0358	440111121.05
105A704729	Resistor	R334,R393	Telcordia Issue 1	Level I		2.00	0.002272	.0358	440111121.05
11C2510190	Capacitor	TC2	Telcordia Issue 1	Level I		1.00	0.004544	.0358	220055560.52
1129710060	Capacitor	TC1	Telcordia Issue 1	Level I		1.00	0.004544	.0358	220055560.52
14S2303700	Integrated Circuit	U33	Telcordia Issue 1	Level I	11.30	1.00	0.132551	1.0452	7544255.57

AAEON Reliability Prediction Report

Part Number 9697B80002-D
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Environment GF, GU - Ground Fixed, Uncontrolled
Temp. (°C) 25.10

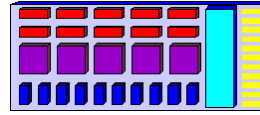


Description Top-level assembly
File Name HSB-800P-A10.RPJ
Time 6:07 下午
Failure Rate 12.681395
MTBF 78,856

Part Number	Category	Location	Calculation Model	Quality	Tem. Rise	Quantity	Failure Rate, Unit	Failure Rate, %	MTBF, Unit
1315992601	Semiconductor	U52	Telcordia Issue 1	Level I	13.00	1.00	0.228341	1.8006	4379418.09
14S2272700	Integrated Circuit	U18	Telcordia Issue 1	Level I	10.20	1.00	0.122984	.9698	8131158.79
14S2272700	Integrated Circuit	U48	Telcordia Issue 1	Level I	15.00	1.00	0.169881	1.3396	5886471.33
1315313800	Semiconductor	U45	Telcordia Issue 1	Level I		1.00	0.079832	.6295	12526258.32
1315313800	Semiconductor	U43	Telcordia Issue 1	Level I	14.60	1.00	0.119065	.9389	8398779.15
1315446310	Semiconductor	U38,U54	Telcordia Issue 1	Level I		2.00	0.079832	1.2590	12526258.32
1314108412	Integrated Circuit	U20	Telcordia Issue 1	Level I		1.00	0.059802	.4716	16721916.86
14S2533100	Integrated Circuit	U42	Telcordia Issue 1	Level I	21.70	1.00	0.262382	2.0690	3811230.21
14S5A03200	Integrated Circuit	U32	Telcordia Issue 1	Level I		1.00	0.059802	.4716	16721916.86
14S4195710	Integrated Circuit	U25	Telcordia Issue 1	Level I		1.00	0.059802	.4716	16721916.86
14S5801402	Integrated Circuit	U28	Telcordia Issue 1	Level I		1.00	0.026337	.2077	37969565.62
14S4081110	Integrated Circuit	U53	Telcordia Issue 1	Level I		1.00	0.059802	.4716	16721916.86
14S5A00821	Integrated Circuit	U19,U37	Telcordia Issue 1	Level I		2.00	0.026337	.4154	37969565.62
14S3149103	Integrated Circuit	U24	Telcordia Issue 1	Level I	15.80	1.00	0.063589	.5014	15725943.75
14S4911216	Integrated Circuit	U26	Telcordia Issue 1	Level I	13.20	1.00	0.150675	1.1882	6636812.22
14S4911216	Integrated Circuit	U27	Telcordia Issue 1	Level I	12.90	1.00	0.147672	1.1645	6771770.53
14S4800004	Integrated Circuit	U21	Telcordia Issue 1	Level I	64.60	1.00	0.383675	3.0255	2606374.54
14S4553600	Integrated Circuit	U23	Telcordia Issue 1	Level I	18.30	1.00	0.072519	.5719	13789468.26
14S6A51227	Integrated Circuit	U1,U3,U4	Telcordia Issue 1	Level I		3.00	0.032235	.7626	31022419.16
14S6A51227	Integrated Circuit	U2	Telcordia Issue 1	Level I	11.50	1.00	0.072424	.5711	13807507.58
14S6334610	Integrated Circuit	U50	Telcordia Issue 1	Level I	9.20	1.00	0.044379	.3500	22533112.53
14S4810001	Integrated Circuit	U44	Telcordia Issue 1	Level I	9.50	1.00	0.045233	.3567	22107798.46
14S2202600	Integrated Circuit	U5,U6	Telcordia Issue 1	Level I		2.00	0.059802	.9431	16721916.86
1315993311	Semiconductor	U29	Telcordia Issue 1	Level I		1.00	0.159665	1.2590	6263129.16
14S5A01400	Integrated Circuit	U11,U30	Telcordia Issue 1	Level I		2.00	0.059802	.9431	16721916.86
14S4871204	Integrated Circuit	U7	Telcordia Issue 1	Level I	12.40	1.00	0.053002	.4180	18867121.96
1651203291	Connection	U22	Telcordia Issue 1	Level I		1.00	0.018302	.1443	54637611.06
14S4121601	Integrated Circuit	U12	Telcordia Issue 1	Level I		1.00	0.026337	.2077	37969565.62
14S4021301	Integrated Circuit	U10,U15,U16,U51	Telcordia Issue 1	Level I		4.00	0.059802	1.8863	16721916.86
14S4048501	Integrated Circuit	U40,U41	Telcordia Issue 1	Level I		2.00	0.059802	.9431	16721916.86
14S5A12506	Integrated Circuit	U39	Telcordia Issue 1	Level I		1.00	0.026337	.2077	37969565.62
14S5812502	Integrated Circuit	U14	Telcordia Issue 1	Level I		1.00	0.026337	.2077	37969565.62
1315970110	Semiconductor	U17,U34	Telcordia Issue 1	Level I		2.00	0.159665	2.5181	6263129.16
14S3128421	Integrated Circuit	U9	Telcordia Issue 1	Level I		1.00	0.059802	.4716	16721916.86
14S4758300	Integrated Circuit	U60	Telcordia Issue 1	Level I		1.00	0.059802	.4716	16721916.86
14S2200900	Integrated Circuit	U13	Telcordia Issue 1	Level I		1.00	0.059802	.4716	16721916.86

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Description Top-level assembly
File Name HSB-800P-A10.RPJ
Time 6:07 下午
Failure Rate 12.681395
MTBF 78,856

Part Number	Category	Location	Calculation Model	Quality	Tem. Rise	Quantity	Failure Rate, Unit	Failure Rate, %	MTBF, Unit
14S9820800	Integrated Circuit	U35,U36	Telcordia Issue 1	Level I		2.00	0.026337	.4154	37969565.62
14S9351200	Integrated Circuit	U31	Telcordia Issue 1	Level I	14.50	1.00	0.059340	.4679	16852080.17
1314111713	Integrated Circuit	U49	Telcordia Issue 1	Level I	14.30	1.00	0.162164	1.2788	6166609.75
123131435B	Miscellaneous	Y1	Telcordia Issue 1	Level I		1.00	0.150000	1.1828	6666666.67
1231332721	Miscellaneous	Y4	Telcordia Issue 1	Level I		1.00	0.150000	1.1828	6666666.67
1231325058	Miscellaneous	Y3,Y5	Telcordia Issue 1	Level I		2.00	0.150000	2.3657	6666666.67
11E1522680	Capacitor	C166,C17,C186,C49, C54,C57,C62,C7	Telcordia Issue 1	Level I		8.00	0.004544	.2867	220055560.52
1129701790	Capacitor	C103,C130,C195, C196,C197,C198, C200,C201,C202, C203,C83,C89	Telcordia Issue 1	Level I		12.00	0.004544	.4300	220055560.52
1311390610	Semiconductor	Q5	Telcordia Issue 1	Level I		1.00	0.023950	.1889	41754194.40
105A501523	Resistor	R337	Telcordia Issue 1	Level I		1.00	0.002272	.0179	440111121.05
105A549913	Resistor	R399	Telcordia Issue 1	Level I		1.00	0.002272	.0179	440111121.05
1059700001	Resistor	FB10,FB11,FB28, FB29,R412,R416	Telcordia Issue 1	Level I		6.00	0.002272	.1075	440111121.05
105A512103	Resistor	R415	Telcordia Issue 1	Level I		1.00	0.002272	.0179	440111121.05
14S9386100	Integrated Circuit	U55,U56,U57,U58	Telcordia Issue 1	Level I		4.00	0.059802	1.8863	16721916.86
14S9386100	Integrated Circuit	U59	Telcordia Issue 1	Level I	8.50	1.00	0.109422	.8629	9138913.18
1129710090	Capacitor	C208,C209	Telcordia Issue 1	Level I		2.00	0.004544	.0717	220055560.52
105A701039	Resistor	R564	Telcordia Issue 1	Level I		1.00	0.002272	.0179	440111121.05
105A707509	Resistor	R565,R566,R567	Telcordia Issue 1	Level I		3.00	0.002272	.0538	440111121.05
11C1647780	Capacitor	C41	Telcordia Issue 1	Level I		1.00	0.004544	.0358	220055560.52
1750220326	Connection	BT1	Telcordia Issue 1	Level I		1.00	0.001144	.0090	874201776.95
1759100002	Miscellaneous	BZ1	Telcordia Issue 1	Level I		1.00	0.150000	1.1828	6666666.67
1656304022	Connection	CN5	Telcordia Issue 1	Level I		1.00	0.002288	.0180	437100888.47
1655003022	Connection	CN8	Telcordia Issue 1	Level I		1.00	0.001716	.0135	582801184.63
1655305020	Connection	CN6	Telcordia Issue 1	Level I		1.00	0.002860	.0226	349680710.78
1653005201	Connection	CN1,USB1,USB2	Telcordia Issue 1	Level I		3.00	0.005720	.1353	174840355.39
1655005021	Connection	CN9	Telcordia Issue 1	Level I		1.00	0.002860	.0226	349680710.78
1655003010	Connection	CN2	Telcordia Issue 1	Level I		1.00	0.001716	.0135	582801184.63
1653005205	Connection	CN3	Telcordia Issue 1	Level I		1.00	0.005720	.0451	174840355.39
165440910B	Connection	COM1	Telcordia Issue 1	Level I		1.00	0.022878	.1804	437100888.85
1653205203	Connection	COM2,COM3,COM4	Telcordia Issue 1	Level I		3.00	0.005720	.1353	174840355.39
1111610194	Capacitor	EC5,EC7,EC8	Telcordia Issue 1	Level I		3.00	0.042896	1.0148	23312047.39
1119622196	Capacitor	EC1,EC2,EC3,EC4	Telcordia Issue 1	Level I		4.00	0.071494	2.2551	13987228.43
1653217205	Connection	FDD1	Telcordia Issue 1	Level I		1.00	0.019446	.1533	51423633.94

