

HSB-811P

Reliability Prediction Report (MTBF)

Report NO : 05I070006

02-22-2005

Issue Date

Wenyuan Yang

Manager

Jessica Chou

Test Engineer

Reliability Prediction (MTBF)

I . **Model Name:** HSB-811P (9697811P04)

II . **Prediction Date:** Feb. 22, 2005

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: 23.6 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.

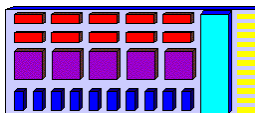
VIII. Prediction Result:

- Failure Rate: 10.032108 ppm
- MTBF: 99,680 Hours

IX. Prediction Table

Standard Reliability Prediction Report

Part Number 9697811P04
Reference Des
Date 二月 22, 2005
Environment GF, GU - Ground Fixed,
Temperature 23.60

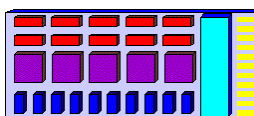


Description Top-level assembly
File Name 9697811P04.RPJ
Time 1:33 下午
Failure Rate 10.032108
MTBF 99,680

Assembly Name	Part Number	Ref Des	Qty	Failure Rate	MTBF
HSB-811P-A01-VG	9697811P04		1.00	10.032108	99,680

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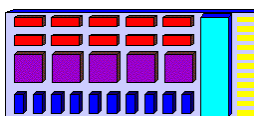


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File Name 9697811P04.RPJ
Time 1:33 下午
Failure Rate 10.032108
MTBF 99,680

Part Number	Category	Ref Des	Failure Rate, Unit	Quantity	Failure Rate
1655003010	Connection	FAN1	0.001586	1.00	0.001586
1653006101	Connection	IR1	0.003172	1.00	0.003172
1653002101	Connection	JP1	0.001057	1.00	0.001057
1653002100	Connection	CN6	0.001057	1.00	0.001057
1655404020	Connection	ATX2	0.002115	1.00	0.002115
1750119013	Miscellaneous	BT1	0.900000	1.00	0.900000
1653005205	Connection	CN2	0.005287	1.00	0.005287
1653205203	Connection	COM1,COM2	0.005287	2.00	0.010573
1653005201	Connection	USB4	0.005287	1.00	0.005287
14S6200400	Integrated Circuit	U10	0.141113	1.00	0.141113
1653900034	Connection	CFD1	0.001057	1.00	0.001057
1652510201	Connection	LAN1	0.005287	1.00	0.005287
1655420020	Connection	ATX1	0.010573	1.00	0.010573
1655003022	Connection	CN1	0.001586	1.00	0.001586
1654606200	Connection	CN4	0.003172	1.00	0.003172
1655005021	Connection	CN5	0.002643	1.00	0.002643
1111622101	Capacitor	C1,C11-C13,C2,C3	0.025312	6.00	0.151869
1189656190	Capacitor	C164,C9	0.013761	2.00	0.027522
1654515308	Connection	VGA1	0.007930	1.00	0.007930
1653004200	Connection	FP1,FP2	0.004229	2.00	0.008458
1653220208	Connection	IDE1,IDE2	0.021146	2.00	0.042292
1653003100	Connection	JP2	0.001586	1.00	0.001586
1654804100	Connection	USB1-USB3	0.002115	3.00	0.006344
1653217205	Connection	FDD1	0.017974	1.00	0.017974
1119647191	Capacitor	C10,C165,C8	0.043943	3.00	0.131828
105A756033	Resistor	R180,R223,R244	0.002206	3.00	0.006618
1231325050	Miscellaneous	Y3	0.150000	1.00	0.150000
105A702203	Resistor	R184	0.002206	1.00	0.002206
105A503300	Resistor	R202-R204,R210- ,R240,R247,R320- ,R322,R324,R326- -R331,R335,R400	0.002206	17.00	0.037503
105A503300	Resistor	R401,R402	0.002206	2.00	0.004412
105A536523	Resistor	R209	0.002206	1.00	0.002206
105A708223	Resistor	R105,R114,R115- ,R117,R118,R126- -R128,R193,R194- ,R261,R262,R272	0.002206	13.00	0.028679
105A708223	Resistor	R280-R282,R316- ,R57-R59,R61,R6- 3,R69-R72,R76-R- 80,R85-R87	0.002206	21.00	0.046327
105A560403	Resistor	R65,R66	0.002206	2.00	0.004412
105A548763	Resistor	R83	0.002206	1.00	0.002206
105A549963	Resistor	R130,R131,R137- ,R138,R141,R142- ,R149,R150,R238- ,R243,R278,R292	0.002206	12.00	0.026473
105A549963	Resistor	R293-R296,R91	0.002206	5.00	0.011030
105A707503	Resistor	R102,R113,R94	0.002206	3.00	0.006618

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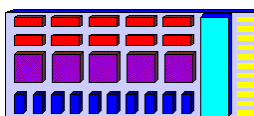


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File Name 9697811P04.RPJ
Time 1:33 下午
Failure Rate 10.032108
MTBF 99,680

Part Number	Category	Ref Des	Failure Rate, Unit	Quantity	Failure Rate
105A710033	Resistor	R100,R122,R211- ,R235,R236,R246- ,R253,R254,R259- ,R373,R381-R383	0.002206	13.00	0.028679
105A505103	Resistor	R106,R107	0.002206	2.00	0.004412
175910000A	Miscellaneous	BZ1	0.150000	1.00	0.150000
1653925216	Connection	CFD1	0.026433	1.00	0.026433
1124533180	Capacitor	C17,C22	0.001051	2.00	0.002101
1129510060	Capacitor	C128	0.005976	1.00	0.005976
1189922180	Capacitor	C37,C38,C46,C68	0.004412	4.00	0.017648
1189922180	Capacitor	C169	0.006776	1.00	0.006776
1189922180	Capacitor	C110	0.006053	1.00	0.006053
1129710050	Capacitor	C101,C111,C120- ,C131,C133,C150- ,C151,C41,C43,C- 47,C70-C72,C79-- C82	0.002697	17.00	0.045856
1129610051	Capacitor	C107,C109,C121- ,C127,C48,C51,C- 52,C57,C63,C64,- C67	0.002697	11.00	0.029671
1124547080	Capacitor	C138,C149,C154- ,C157,C75-C78	0.001051	8.00	0.008404
1124568180	Capacitor	C93,C94	0.001051	2.00	0.002101
1301005440	Semiconductor	DD1,DD3,DD4	0.022935	3.00	0.068804
1300404843	Semiconductor	D4,D6-D8	0.022935	4.00	0.091739
1653213203	Connection	LPT1	0.013745	1.00	0.013745
1211103367	Inductor	L5	0.123133	1.00	0.123133
1211106870	Inductor	L12	0.083830	1.00	0.083830
1211100160	Inductor	L26,L27	0.083830	2.00	0.167660
1212308054	Inductor	L36-L38	0.002206	3.00	0.006618
121230603C	Inductor	L39,L41-L43	0.002206	4.00	0.008824
1311006910	Semiconductor	Q21	0.022935	1.00	0.022935
1654262300	Connection	MPCI1	0.065553	1.00	0.065553
1122701680	Capacitor	C166,M100-M105- ,M107,M110-M113- ,M115,M116,M118- -M166,M168-M183	0.001583	79.00	0.125053
1122701680	Capacitor	M185-M197,M2,M- 200,M201,M203-- M210,M212-M271- ,M3,M33-M35,M37	0.001583	88.00	0.139300
1122701680	Capacitor	M38,M39,M4,M40- ,M42-M44,M49,M5- ,M50-M62,M6,M65- ,M66,M7,M69-M74	0.001583	32.00	0.050654
1122701680	Capacitor	M8,M78-M99	0.001583	22.00	0.034825
14S2200900	Integrated Circuit	U26	0.053561	1.00	0.053561
1315492010	Semiconductor	U27	0.148870	1.00	0.148870
1315492010	Semiconductor	U33	0.076449	1.00	0.076449
14S3033800	Integrated Circuit	U28	0.212299	1.00	0.212299
14S3260700	Integrated Circuit	U30	0.352141	1.00	0.352141
1315995310	Semiconductor	U31	0.239375	1.00	0.239375

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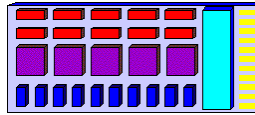


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File Name 9697811P04.RPJ
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Failure Rate 10.032108
MTBF 99,680

Part Number	Category	Ref Des	Failure Rate, Unit	Quantity	Failure Rate
14S3115000	Integrated Circuit	U32	0.053561	1.00	0.053561
14S2303700	Integrated Circuit	U34	0.230894	1.00	0.230894
1651203291	Connection	U10	0.016917	1.00	0.016917
1231232720	Miscellaneous	Y1	0.150000	1.00	0.150000
105A722003	Resistor	R173	0.002206	1.00	0.002206
12313012A0	Miscellaneous	Y2	0.150000	1.00	0.150000
1231314350	Miscellaneous	Y4	0.150000	1.00	0.150000
1315700211	Semiconductor	Q24,Q6	0.076449	2.00	0.152899
1315041410	Semiconductor	Q11	0.118135	1.00	0.118135
1315041410	Semiconductor	Q12	0.121255	1.00	0.121255
1315041410	Semiconductor	Q26	0.125081	1.00	0.125081
1540700080	Resistor	RN42	0.005857	1.00	0.005857
1540782280	Resistor	RN37	0.005857	1.00	0.005857
106B501031	Resistor	RT1,RT2	0.010573	2.00	0.021146
105A700103	Resistor	R156,R158,R2,R3-,R68	0.002206	5.00	0.011030
105A501033	Resistor	M272,R10,R11,R-110,R16,R182,R1-85,R189-R192,R2-01,R207,R21,R217	0.002206	15.00	0.033091
105A501033	Resistor	R219,R251,R27,-R275,R286,R315-,R33,R34,R346,R-35,R350,R36,R389	0.002206	13.00	0.028679
105A501033	Resistor	R43,R44,R46,R8,-R9	0.002206	5.00	0.011030
105A701003	Resistor	R14,R233,R234,-R241,R301-R307-,R325	0.002206	12.00	0.026473
105A502833	Resistor	R23	0.002206	1.00	0.002206
105A500133	Resistor	R135,R136,R139-,R146,R157,R172-,R183,R205,R231-,R239,R256,R257	0.002206	12.00	0.026473
105A500133	Resistor	R266-R270,R28,-R284,R298,R299-,R319,R323,R332-,R334,R337,R370	0.002206	16.00	0.035297
105A500133	Resistor	R386,R388,R394-,R56	0.002206	4.00	0.008824
105A527463	Resistor	R109,R134,R147-,R153,R264	0.002206	5.00	0.011030
105A768003	Resistor	R119	0.002206	1.00	0.002206
105A537463	Resistor	R124	0.002206	1.00	0.002206
105A554963	Resistor	R148,R163,R265-,R359	0.002206	4.00	0.008824
105A747003	Resistor	R197,R198	0.002206	2.00	0.004412
1059701133	Resistor	R287	0.002206	1.00	0.002206
105A547503	Resistor	R308	0.002206	1.00	0.002206
105A702223	Resistor	R348,R349	0.002206	2.00	0.004412
105A702733	Resistor	R387	0.002206	1.00	0.002206
14S4280106	Integrated Circuit	U6	0.036177	1.00	0.036177
14S5A01400	Integrated Circuit	U11	0.053561	1.00	0.053561

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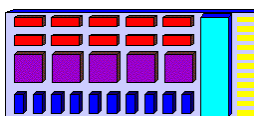


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Time 1:33 下午
Failure Rate 10.032108
MTBF 99,680

Part Number	Category	Ref Des	Failure Rate, Unit	Quantity	Failure Rate
14S4048501	Integrated Circuit	U14,U15	0.053561	2.00	0.107122
14S5A23200	Integrated Circuit	U19	0.053561	1.00	0.053561
14S4813000	Integrated Circuit	U23	0.036177	1.00	0.036177
1129701690	Capacitor	M10-M20,M22-M-30,M36,M45-M48-,M9	0.002516	26.00	0.065411
1129701790	Capacitor	N1,N10-N26,N2--N9	0.001583	26.00	0.041157
1752311000	Miscellaneous	P1,P2	0.030000	2.00	0.060000
105A700333	Resistor	R237,R242	0.002206	2.00	0.004412
105A701523	Resistor	R248	0.002206	1.00	0.002206
105A720033	Resistor	R252	0.002206	1.00	0.002206
105A516923	Resistor	R276	0.002206	1.00	0.002206
105A702723	Resistor	R290,R291,R362--R369,R374,R379	0.002206	12.00	0.026473
105A513703	Resistor	R314	0.002206	1.00	0.002206
105A702233	Resistor	R345	0.002206	1.00	0.002206
105A524903	Resistor	R361	0.002206	1.00	0.002206
14S4147600	Integrated Circuit	U1	0.097479	1.00	0.097479
14S4871202	Integrated Circuit	U4	0.036177	1.00	0.036177
14S5A12503	Integrated Circuit	U12,U16,U17	0.036177	3.00	0.108532
1315970110	Semiconductor	U13,U21,U22	0.152899	3.00	0.458697
14S4021310	Integrated Circuit	U18	0.053561	1.00	0.053561
14S3128420	Integrated Circuit	U20	0.053561	1.00	0.053561
14S4070610	Integrated Circuit	U24	0.053561	1.00	0.053561
14S5900700	Integrated Circuit	U25	0.066026	1.00	0.066026
1121501680	Capacitor	M114,M117	0.002516	2.00	0.005032
1124501780	Capacitor	N27-N29,N33-N35-,N37,N43-N45,N4-7-N59	0.001051	23.00	0.024162
1314917313	Integrated Circuit	Q1	0.193794	1.00	0.193794
1314108412	Integrated Circuit	Q3	0.269126	1.00	0.269126
1310390411	Semiconductor	Q13,Q14,Q16,Q17-,Q5,Q7	0.022935	6.00	0.137609
1315041210	Semiconductor	Q8	0.000000	1.00	0.000000
1315041210	Semiconductor	Q9	0.000000	1.00	0.000000
1315041210	Semiconductor	Q25	0.000000	1.00	0.000000
1315035200	Semiconductor	Q15	0.000000	1.00	0.000000
1540756081	Resistor	RN1,RN10-RN32-,RN2,RN3-RN9	0.005857	32.00	0.187422
1540701380	Resistor	RN36	0.005857	1.00	0.005857
1540727280	Resistor	RN38,RN39,RN45	0.005857	3.00	0.017571
105A703323	Resistor	R171,R174,R318	0.002206	3.00	0.006618
105A733003	Resistor	R1,R160,R165,R-179,R187,R188,R-230,R250,R260,R-274	0.002206	10.00	0.022061
105A533203	Resistor	R218,R220,R6	0.002206	3.00	0.006618
105A561903	Resistor	R12	0.002206	1.00	0.002206
105A743003	Resistor	R13	0.002206	1.00	0.002206

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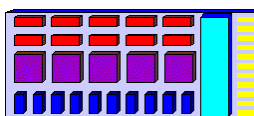


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105A704723	Resistor	R132,R133,R178- ,R195,R196,R22,- R255,R342,R343- ,R352,R353,R398	0.002206	12.00	0.026473
105A704723	Resistor	R399,R42,R90	0.002206	3.00	0.006618
105A523233	Resistor	R24	0.002206	1.00	0.002206
105A505633	Resistor	R25	0.002206	1.00	0.002206
105A710053	Resistor	R225,R311,R312- ,R37,R53,R54	0.013236	6.00	0.079418
105A568163	Resistor	R112	0.002206	1.00	0.002206
105A520003	Resistor	R116,R288	0.002206	2.00	0.004412
105A530103	Resistor	R123,R154	0.002206	2.00	0.004412
105A522663	Resistor	R125	0.002206	1.00	0.002206
105A700233	Resistor	R145	0.002206	1.00	0.002206
105A512403	Resistor	R152,R164,R358	0.002206	3.00	0.006618
105A524963	Resistor	R175	0.002206	1.00	0.002206
14S6334605	Integrated Circuit	U29	0.027606	1.00	0.027606
14S4254102	Integrated Circuit	U9	0.090497	1.00	0.090497
105A747033	Resistor	R181,R224,R245	0.002206	3.00	0.006618
105A704733	Resistor	R199,R200	0.002206	2.00	0.004412
105A519623	Resistor	R206	0.002206	1.00	0.002206
1059775003	Resistor	R15,R212,R215	0.002206	3.00	0.006618
105A544223	Resistor	R216	0.002206	1.00	0.002206
105A751003	Resistor	R232	0.002206	1.00	0.002206
105A705609	Resistor	R38-R41,R49-R52	0.002206	8.00	0.017648
105A700003	Resistor	R144,R151,R166- ,R273,R309,R310- ,R317,R384,R396- ,R45,R60	0.002206	11.00	0.024267
1054600289	Resistor	R47,R48	0.002206	2.00	0.004412
105A733033	Resistor	R55	0.002206	1.00	0.002206
105A515003	Resistor	R103,R108,R129- ,R155,R360,R64,- R67,R95,R97	0.002206	9.00	0.019855
105A705603	Resistor	R121,R258,R263- ,R277,R74,R75,R- 88	0.002206	7.00	0.015442
105A560463	Resistor	R104,R81,R82	0.002206	3.00	0.006618
105A513003	Resistor	R84	0.002206	1.00	0.002206
105A510003	Resistor	R111,R186,R249- ,R279,R297,R92,- R93	0.002206	7.00	0.015442
105A548703	Resistor	R96	0.002206	1.00	0.002206
105A540263	Resistor	R140,R289,R99	0.002206	3.00	0.006618
105A528703	Resistor	R101	0.002206	1.00	0.002206
1174518180	Capacitor	CP1-CP4	0.001051	4.00	0.004202
1129747650	Capacitor	CA1,CA10-CA18,- CA2-CA9	0.002697	18.00	0.048553
1654030000	Connection	CN3	0.015860	1.00	0.015860
1121701081	Capacitor	C104,C106,C123- ,C14,C15,C158-C- 162,C18,C23,C25- ,C29,C34,C53,C54	0.002516	17.00	0.042769

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1121701081	Capacitor	C65,C69,C97	0.002516	3.00	0.007547
1124510280	Capacitor	C125,C129,C21,- C24,C83,C90	0.001051	6.00	0.006303
1124510080	Capacitor	C117-C119,C132- ,C134,C135,C139- -C147,C171-C173- ,C32,C33,C35,C36	0.001051	22.00	0.023112
1189615187	Capacitor	C163	0.004799	1.00	0.004799
1124522080	Capacitor	C105,C126,C130- ,C44,C45,C49,C5- 0,C55,C56,C60-C- 62,C66,C92,C95	0.001051	15.00	0.015758
1124547180	Capacitor	C73	0.001051	1.00	0.001051
1124518180	Capacitor	C88,C89	0.001051	2.00	0.002101
1124527180	Capacitor	C156	0.001805	1.00	0.001805
1124522281	Capacitor	C167	0.001051	1.00	0.001051
1300283540	Semiconductor	DD2	0.022935	1.00	0.022935
1301003240	Semiconductor	D2,D5	0.022935	2.00	0.045870
1304101340	Semiconductor	LED1	0.004288	1.00	0.004288
1214309002	Inductor	L1,L11,L2,L6,L7	0.002206	5.00	0.011030
121110010G	Inductor	L3	0.083830	1.00	0.083830
121110010H	Inductor	L10	0.114812	1.00	0.114812
121110010H	Inductor	L9	0.114609	1.00	0.114609
1059700001	Resistor	L13,L24,L25,L31,- L32,L35	0.002206	6.00	0.013236
1211100102	Inductor	L14	0.083830	1.00	0.083830
121230603D	Inductor	L16-L22	0.002206	7.00	0.015442
1212306030	Inductor	L15,L28,L30,L33,- L34,L8	0.002206	6.00	0.013236
16515A0993	Connection	DIMM1	0.105730	1.00	0.105730
16515A0995	Connection	DIMM0	0.427831	1.00	0.427831
105A703363	Resistor	R226-R229	0.002206	4.00	0.008824
105A506823	Resistor	R390	0.002206	1.00	0.002206
14S4285201	Integrated Circuit	U8	0.131708	1.00	0.131708
1314111713	Integrated Circuit	Q19,Q2,Q23	0.053561	3.00	0.160683
1122710090	Capacitor	C108,C112,C113- ,C124,C136,C137- ,C153,C27,C28,C- 42,C74,C91,C96	0.001583	13.00	0.020578
1121747780	Capacitor	M273	0.002516	1.00	0.002516