

# **AOP-8060HT-E1**

## **Reliability Prediction Report**

### **(MTBF)**

Report NO : 04P070009

**12-02-2004**

Issue Date

**Wenyuan Yang**

Manager

**Jessica Chou**

Test Engineer

## Reliability Prediction (MTBF)

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### I . Model Name:

- AOP-8060HT-E1 (Operator Panel.SiS 550.5.7" STN.Fanless.AC.R-TS.64MB RAM.32MB CF.CE4.2 (ENG))
  - Without LCD/Touch screen/Inverter/Compact Flash card
- SX14Q004 - LCD
- ITO04S.0708 - Touch screen
- LV-X01-BB – Inverter
- SDCFJ-32 - Compact Flash card

II . Prediction Date: Dec. 02, 2004

III . Prediction Site: AAEEON Q.E. Dept.

IV . Predicted by : Jessica Chou

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:

1. AOP-8060HT-E1 without LCD/Touch screen/Inverter/Compact Flash card
  - 1-1. Failure Rate: 12.064583 ppm
  - 1-2. MTBF: 82,887 Hours

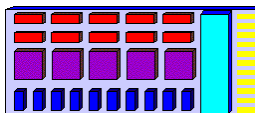
2. LCD (SX14Q004)
  - 2-1. MTBF: 127.5K hrs
3. Touch screen (ITO04S.0708)
  - 3-1. Lifetime: 1,000,000 times
4. Inverter (LV-X01-BB)
  - 4-1. MTBF: 290,181 Hrs
5. Compact Flash card (SDCFJ-32)
  - 5-1. MTBF: > 1,000,000 Hrs

## IX. Remark

- LCD & Touch screen & Inverter & Compact Flash card were provide with our supplier vendor.

### Standard Reliability Prediction Report

**Part Number** System  
**Reference Des**  
**Date** 十二月 2, 2004  
**Environment** GF, GU - Ground Fixed,  
**Temperature** 25.00



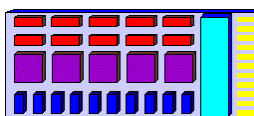
**Description** Top-level assembly  
**File Name** AOP-8060HT-E1.RPJ  
**Time** 11:30 上午  
**Failure Rate** 12.064583  
**MTBF** 82,887

Assembly Name	Part Number	Ref Des	Qty	Failure Rate	MTBF
AOP-8060HT-E1	System		1.00	12.064583	82,887
9697532084			1.00	12.064583	82,887

**Standard Reliability Prediction Report**

**Part Number**  
**Reference Des**

**Date** 十二月 2, 2004  
**Environment** GF, GU - Ground Fixed,  
**Temperature** 24.60



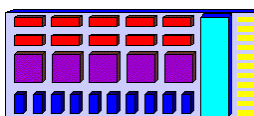
**Description** MBC-5320-A02  
**File Name** AOP-8060HT-E1.RPJ  
**Time** 11:30 上午  
**Failure Rate** 12.064583  
**MTBF** 82,887

Part Number	Category	Ref Des	Failure Rate, Unit	Quantity	Failure Rate
1653003101	Connection	JP4,JP9	0.041789	2.00	0.083578
1653002202	Connection	JP7	0.002229	1.00	0.002229
14S6202002	Integrated Circuit	ROM1	0.131276	1.00	0.131276
1653900034	Connection	CN5	0.022287	1.00	0.022287
1654606306	Connection	CN7	0.003343	1.00	0.003343
1654425100	Connection	CN10	0.013930	1.00	0.013930
1654425305	Connection	CN13	0.013930	1.00	0.013930
1653007200	Connection	CN1	0.007801	1.00	0.007801
1654808300	Connection	CN6	0.004457	1.00	0.004457
1652512202	Connection	CN8	0.006686	1.00	0.006686
1654409103	Connection	CN9	0.005015	1.00	0.005015
1652505200	Connection	CN12	0.002786	1.00	0.002786
1652608200	Connection	CN14	0.004457	1.00	0.004457
1652603900	Connection	CN15	0.001672	1.00	0.001672
1653002101	Connection	JP5	0.001114	1.00	0.001114
1653009100	Connection	JP6	0.005015	1.00	0.005015
1653003100	Connection	JP8	0.041789	1.00	0.041789
1114622110	Capacitor	C280,C281	0.016001	2.00	0.032001
1655905030	Connection	JP1	0.069648	1.00	0.069648
1750119011	Miscellaneous	BAT1	0.900000	1.00	0.900000
14S6334610	Integrated Circuit	U9	0.029714	1.00	0.029714
14S4021310	Integrated Circuit	U10,U13	0.057652	2.00	0.115303
14S4021310	Integrated Circuit	U11	0.154764	1.00	0.154764
14S4048500	Integrated Circuit	U14,U15	0.057652	2.00	0.115303
14S4081100	Semiconductor	U16	0.000000	1.00	0.000000
14S8600000	Integrated Circuit	U17	0.068263	1.00	0.068263
14S9020200	Integrated Circuit	U19	0.141828	1.00	0.141828
14S5A00700	Integrated Circuit	U21	0.037007	1.00	0.037007
14S3006000	Integrated Circuit	U22	0.057652	1.00	0.057652
1653208205	Connection	CN2	0.008915	1.00	0.008915
1654040000	Connection	CN16	0.557186	1.00	0.557186
1121701080	Capacitor	C11, C19, C2, C20, C25, C265, C267, C268, C27, C273, C288, C292	0.002532	12.00	0.030389
1121701080	Capacitor	C295,C298,C30,- C302,C303,C309- ,C33,C356,C39,C- 41,C42,C44-C46	0.002532	14.00	0.035453
1121701080	Capacitor	C48,C49,C5,C58,- C77,C78,C87,C89	0.002532	8.00	0.020259
1129701690	Capacitor	C109,C111,C121- ,C123,C127-C140- ,C15,C156,C175,- C176,C185-C187	0.002532	25.00	0.063310
1129701690	Capacitor	C191-C194,C196- -C206,C210,C211- ,C213,C215-C220- ,C223-C226,C228	0.002532	29.00	0.073439
1129701690	Capacitor	C229,C23,C230,- C232,C235,C236- ,C239,C242,C243- ,C254,C255,C26	0.002532	12.00	0.030389

### Standard Reliability Prediction Report

**Part Number**  
**Reference Des**

**Date** 十二月 2, 2004  
**Environment** GF, GU - Ground Fixed,  
**Temperature** 24.60



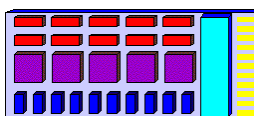
**Description** MBC-5320-A02  
**File Name** AOP-8060HT-E1.RPJ  
**Time** 11:30 上午  
**Failure Rate** 12.064583  
**MTBF** 82,887

Part Number	Category	Ref Des	Failure Rate, Unit	Quantity	Failure Rate
1129701690	Capacitor	C269,C277,C278- ,C283,C291,C293- ,C297,C313,C35,- C357-C359,C38	0.002532	13.00	0.032921
1129701690	Capacitor	C43,C47,C50-C57- ,C61,C62,C65,C6- 6,C68,C69,C71,C- 72,C92-C95	0.002532	22.00	0.055713
1129710390	Capacitor	C100,C101,C110- ,C112,C122,C124- ,C263,C264,C98,- C99	0.001057	10.00	0.010575
1124522190	Capacitor	C148,C149	0.001057	2.00	0.002115
1129747090	Capacitor	C179,C180,C182- ,C183	0.001057	4.00	0.004230
1124410190	Capacitor	C256,C257,C270- ,C279,C284	0.001057	5.00	0.005287
1122722780	Capacitor	C275	0.001593	1.00	0.001593
1189622183	Capacitor	C290	0.004894	1.00	0.004894
1540747282	Resistor	RN12,RN14,RN15- ,RN29-RN33,RN36	0.006133	9.00	0.055194
105A704729	Resistor	R100,R101,R11,- R116-R118,R12,- R13,R134,R14,R- 153,R154,R177	0.002250	1.00	0.002250
105A704729	Resistor	R178,R194,R195- ,R198,R2,R200-R- 203,R24,R244,R2- 46,R247,R251	0.002250	1.00	0.002250
105A704729	Resistor	R26-R34,R37,R39- -R42,R45,R47,R8- ,R88,R93,R94,R9- 7,R98	0.002250	49.00	0.110249
105A703309	Resistor	R109-R111,R114- ,R115,R15,R16,R- 175,R22,R249,R6- 6-R70,R84,R85	0.002250	17.00	0.038250
105A705133	Resistor	R25,R48	0.002250	2.00	0.004500
14S4020010	Integrated Circuit	U32	0.120104	1.00	0.120104
1231314350	Miscellaneous	Y2	0.150000	1.00	0.150000
1231373740	Miscellaneous	Y4	0.150000	1.00	0.150000
105A715009	Resistor	R143,R146,R53-- R56	0.002250	6.00	0.013500
105A700139	Resistor	R137,R182,R228- ,R242,R57	0.002250	5.00	0.011250
105A702223	Resistor	R82,R83	0.002250	2.00	0.004500
105A702003	Resistor	R169,R170	0.002250	2.00	0.004500
105A532423	Resistor	R208	0.002250	1.00	0.002250
105A500133	Resistor	R219	0.002250	1.00	0.002250
1212306033	Inductor	L16-L18,L20-L24,- L27-L30,L42-L44	0.002250	15.00	0.033750
121230805A	Inductor	L31,L52	0.002250	2.00	0.004500
1212306034	Inductor	L49	0.002250	1.00	0.002250

### Standard Reliability Prediction Report

**Part Number**  
**Reference Des**  
**Date**  
**Environment**  
**Temperature**

十二月 2, 2004  
 GF, GU - Ground Fixed,  
 24.60



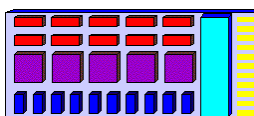
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**Time** 11:30 上午  
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**MTBF** 82,887

Part Number	Category	Ref Des	Failure Rate, Unit	Quantity	Failure Rate
1174510180	Capacitor	NC2-NC5,NC7,N-C9	0.001057	6.00	0.006345
1174547080	Capacitor	NC13-NC17	0.001057	5.00	0.005287
1311119710	Semiconductor	Q7	0.023608	1.00	0.023608
1315700212	Semiconductor	Q24	0.078692	1.00	0.078692
1314043210	Integrated Circuit	Q19	0.057652	1.00	0.057652
1315441012	Semiconductor	Q26	0.078692	1.00	0.078692
1315441012	Semiconductor	Q30	0.132667	1.00	0.132667
1315441012	Semiconductor	Q31	0.133681	1.00	0.133681
1315992601	Semiconductor	Q32	0.078692	1.00	0.078692
105A507503	Resistor	R223	0.002250	1.00	0.002250
105A568003	Resistor	R224	0.002250	1.00	0.002250
105A501523	Resistor	R225	0.002250	1.00	0.002250
105A512713	Resistor	R226	0.002250	1.00	0.002250
105A549963	Resistor	R227	0.002250	1.00	0.002250
105A704733	Resistor	R229,R248	0.002250	2.00	0.004500
105A512103	Resistor	R233,R235	0.002250	2.00	0.004500
105A727003	Resistor	R238	0.002250	1.00	0.002250
105A708223	Resistor	R241	0.002250	1.00	0.002250
105A710003	Resistor	R243	0.002250	1.00	0.002250
14S9190100	Integrated Circuit	U1	0.220706	1.00	0.220706
14S5A00401	Integrated Circuit	U7	0.038381	1.00	0.038381
14S4810000	Integrated Circuit	U8	0.093433	1.00	0.093433
14S4369700	Integrated Circuit	U25	0.070554	1.00	0.070554
14S2162400	Integrated Circuit	U26	0.185099	1.00	0.185099
1315942410	Semiconductor	U27,U28	0.157384	2.00	0.314769
14S2303700	Integrated Circuit	U29	0.239962	1.00	0.239962
14S2652000	Integrated Circuit	U30	0.057652	1.00	0.057652
105A503333	Resistor	R222	0.002250	1.00	0.002250
105A701039	Resistor	R112,R158,R160- -R161,R166,R176- ,R181,R183,R206- ,R210,R211,R216	0.002250	12.00	0.027000
105A701039	Resistor	R230,R245,R269- ,R96	0.002250	4.00	0.009000
105A708203	Resistor	R102,R108	0.002250	2.00	0.004500
105A705623	Resistor	R113,R140	0.002250	2.00	0.004500
105A747033	Resistor	R119,R120	0.002250	2.00	0.004500
105A756033	Resistor	R121,R122	0.002250	2.00	0.004500
105A701539	Resistor	R127-R130,R136	0.002250	5.00	0.011250
10AS720033	Resistor	R132,R133	0.002250	2.00	0.004500
105A505623	Resistor	R138	0.002250	1.00	0.002250
105A549969	Resistor	R144,R145,R147- ,R148	0.002250	4.00	0.009000
1073701089	Inductor	R204	0.002250	1.00	0.002250
105A702263	Resistor	R207	0.002250	1.00	0.002250
105A516513	Resistor	R217	0.002250	1.00	0.002250
1301005441	Semiconductor	D8	0.023608	1.00	0.023608
1301005442	Semiconductor	D11	0.023608	1.00	0.023608
1752001600	Miscellaneous	F1-F3	0.030000	3.00	0.090000

**Standard Reliability Prediction Report**

**Part Number**  
**Reference Des**

**Date** 十二月 2, 2004  
**Environment** GF, GU - Ground Fixed,  
**Temperature** 24.60



**Description** MBC-5320-A02  
**File Name** AOP-8060HT-E1.RPJ  
**Time** 11:30 上午  
**Failure Rate** 12.064583  
**MTBF** 82,887

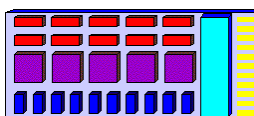
Part Number	Category	Ref Des	Failure Rate, Unit	Quantity	Failure Rate
121230603J	Inductor	L1,L10-L15,L2,L3,- L36-L39,L4,L41,L5- ,L51,L9	0.002250	18.00	0.040500
121110276A	Inductor	L6-L8	0.085499	3.00	0.256498
121230603H	Inductor	L19,L25,L26,L33-- L35,L45	0.002250	7.00	0.015750
1211103362	Inductor	L46	0.085499	1.00	0.085499
1211103362	Inductor	L48	0.073504	1.00	0.073504
1211103260	Inductor	L47	0.075034	1.00	0.075034
1211103360	Inductor	L50	0.085499	1.00	0.085499
1315450010	Semiconductor	M1-M3	0.078692	3.00	0.236077
1174618180	Capacitor	NC1	0.001057	1.00	0.001057
1174510280	Capacitor	NC10-NC12	0.001057	3.00	0.003172
1315993310	Semiconductor	Q3	0.157384	1.00	0.157384
1310390410	Semiconductor	Q13,Q25,Q27,Q28- ,Q35,Q5,Q6	0.023608	7.00	0.165254
14S5A01400	Integrated Circuit	Q8	0.057652	1.00	0.057652
1314101010	Integrated Circuit	Q20	0.057652	1.00	0.057652
1315035610	Semiconductor	Q23	0.000000	1.00	0.000000
1315442010	Semiconductor	Q29	0.133004	1.00	0.133004
1540710080	Resistor	RN1,RN10,RN11,- RN13,RN17-RN28- ,RN2,RN3-RN7,R- N9	0.006133	23.00	0.141051
1540782280	Resistor	RN8	0.006133	1.00	0.006133
1651203291	Connection	ROM1	0.017830	1.00	0.017830
105A700009	Resistor	R10,R131,R139,- R142,R155-R157- ,R163-R165,R17,- R172,R180,R212	0.002250	14.00	0.031500
105A700009	Resistor	R214,R221,R231- ,R250,R268,R271- ,R36,R4,R50,R9,- R95	0.002250	11.00	0.024750
105A701009	Resistor	R104,R105,R141- ,R171,R18,R185-- R188,R19,R20,R- 205,R21,R232	0.002250	14.00	0.031500
105A701009	Resistor	R253,R254,R35,- R5,R6,R7,R86	0.002250	7.00	0.015750
105A513703	Resistor	R23	0.002250	1.00	0.002250
105A710053	Resistor	R38	0.013500	1.00	0.013500
105A710039	Resistor	R184,R43,R44,R- 46	0.002250	4.00	0.009000
1231332721	Miscellaneous	Y1	0.150000	1.00	0.150000
1231325050	Miscellaneous	Y3	0.150000	1.00	0.150000
1231324551	Miscellaneous	Y5	0.150000	1.00	0.150000
105A501039	Resistor	R209	0.002250	1.00	0.002250
105A702209	Resistor	R103,R107,R123- -R126,R240,R63-- R65,R71-R76	0.002250	16.00	0.036000
105A702729	Resistor	R77,R78,R81	0.002250	3.00	0.006750
105A704709	Resistor	R87,R89,R90-R92	0.002250	5.00	0.011250



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**Part Number**  
**Reference Des**

**Date** 十二月 2, 2004  
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**Temperature** 24.60

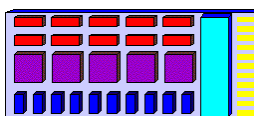


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**Failure Rate** 12.064583  
**MTBF** 82,887

Part Number	Category	Ref Des	Failure Rate, Unit	Quantity	Failure Rate
1121582290	Capacitor	C301	0.002532	1.00	0.002532
1129715090	Capacitor	C354,C355	0.001057	2.00	0.002115
1301005443	Semiconductor	D1,D10,D13,D2,D-3,D4	0.023608	6.00	0.141646
1750220322	Miscellaneous	BAT1	0.900000	1.00	0.900000
1653925216	Connection	CN5	0.027859	1.00	0.027859
1653005202	Connection	CN11	0.139296	1.00	0.139296
1129701790	Capacitor	C1,C12,C14,C164-C24,C244,C245,-C247,C248,C250-C251,C274,C29	0.001593	13.00	0.020714
1129701790	Capacitor	C319,C32,C320,-C321,C322,C6,C-78,C88,C9	0.001593	9.00	0.014340
1129710050	Capacitor	C10,C16,C184,C-188,C21,C22,C23-4,C237,C252,C25-3,C262,C271,C28	0.002715	13.00	0.035297
1129710050	Capacitor	C296,C3,C304,C-308,C31,C314-C3-16,C4,C40,C7,C7-6,C86	0.002715	13.00	0.035297
1189610183	Capacitor	C125,C17,C258,-C261	0.004894	4.00	0.019577
1129710090	Capacitor	C102-C107,C113-C116,C36,C37,C-90,C91,C96,C97	0.001057	16.00	0.016919
1129722060	Capacitor	C108,C119,C120-C174,C177,C195-C272,C360	0.002715	8.00	0.021722
1124427090	Capacitor	C142-C147,C189-C190	0.001057	8.00	0.008460
1124547190	Capacitor	C173,C178,C181-C299	0.001057	4.00	0.004230
1124420090	Capacitor	C240,C241	0.001057	2.00	0.002115
1129722091	Capacitor	C259,C260	0.001057	2.00	0.002115
1189633181	Capacitor	C286,C287,C289-C306,C310,C312	0.004894	6.00	0.029366
1124522290	Capacitor	C294	0.001057	1.00	0.001057
1122722890	Capacitor	C300	0.001593	1.00	0.001593
1305002840	Semiconductor	D6	0.023608	1.00	0.023608
1121722650	Capacitor	C361	0.002532	1.00	0.002532
1301003640	Semiconductor	D12,D5	0.023608	2.00	0.047215
1301003640	Semiconductor	D7	0.042815	1.00	0.042815
1189615183	Capacitor	C13	0.007470	1.00	0.007470
1189615183	Capacitor	C305	0.007458	1.00	0.007458
14S5812300	Integrated Circuit	U34	0.038381	1.00	0.038381
105A510033	Resistor	R270,R272	0.002250	2.00	0.004500
105A747003	Resistor	R106	0.002250	1.00	0.002250
1653022202	Connection	CN4	0.612904	1.00	0.612904
1654262301	Connection	MPC11	0.069091	1.00	0.069091
14S3128420	Integrated Circuit	U20	0.057652	1.00	0.057652
1654916300	Connection	CN3	0.222874	1.00	0.222874

### Standard Reliability Prediction Report

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**Temperature** 24.60



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**File Name** AOP-8060HT-E1.RPJ  
**Time** 11:30 上午  
**Failure Rate** 12.064583  
**MTBF** 82,887

Part Number	Category	Ref Des	Failure Rate, Unit	Quantity	Failure Rate
14S9315400	Integrated Circuit	U31	0.057652	1.00	0.057652
105A505923	Resistor	R261	0.002250	1.00	0.002250
105A518223	Resistor	R262	0.002250	1.00	0.002250
1124418090	Capacitor	C117,C118	0.001057	2.00	0.002115
1540775080	Resistor	RN37	0.006133	1.00	0.006133
14S6811102	Integrated Circuit	U4	0.431057	1.00	0.431057
14S6811102	Integrated Circuit	U5	0.138463	1.00	0.138463
14S6811102	Integrated Circuit	U2	0.426632	1.00	0.426632
14S6811102	Integrated Circuit	U3	0.398830	1.00	0.398830