



DC FAN LIFE EXPERIMENT REPORT

Available for these models with lower speed and same physical structure. All model may be followed by Rxx or Fxx series suffixes. This test report applies to AFB 70x70x25.4mm series as the right table	AFB0712SH	AFB0712HH		
	AFB0724SH	AFB0724HH		
	AFB0712VH	AB0712SH-AB		
	AFB0724VH			

Representative Test P/N : AFB0712SH-AF00

Equipment: 1.Oven: E24-T0161 On/Off Cycles: Every 500 hours

⊙ L₁₀ Expectancy: 70,000 hours minimum @ fan rated voltage and the temperature of 40°C

According to the equation for **Weibull distribution**, **MTTF ≅ 7×L10 = 490,000 hours**

And we rely on a zero failure Weibull test strategy and accelerated testing technique, to determine the total test time (t) for verifying the above life estimation by the equations,

$$t = 1.036 \times \text{MTTF} \times [(B_{r,c}) \div n]^{0.91} \div A_F, \text{ and } A_F = 2^{(T_s - T_u)/10}$$

where, (B_{r,c}) is Poisson distribution factor with the failure number of r equal to 0 and the decimal confidence level of c equal to 0.90(90%).

Stress/Elevated Temperature T _s (°C) (Actual Test Temperature)	Unstress Temperature T _u (°C)	Acceleration Factor A _F	Quantity of Test Devices n (pcs)	Poisson Distribution Factor B _{r,c}	Required test time with zero failure t (hours)	Actual test time with zero failure t (hours)	Verified MTTF 40 °C (hours)	Verified L ₁₀ 40 °C (hours)
70	40	8.00	56	2.303	3,478	3,478.0	490,031	70,004

Test Progress:

Date for Test Beginning	Date for Test Termination (at least)	Current Test Status			Current Total Test Time (hours)
2003/10/28 3:00 PM	2004/3/21 12:46 PM	<input type="checkbox"/> In process	<input type="checkbox"/> In process (exceed requested)	<input checked="" type="checkbox"/> Termination	3478.0

Herewith, we could assume as right on the basis of above test result. Besides, if the actual test time exceed the required, it comes out that those fans' L₁₀ expectancy and MTTF are greater than the warrant. (MTTF: means Mean Time To Failures, it should be used in a non-repairable system setting. Now we show the MTTF in our life report, that's because we will not repair the failed fans during life experiment. MTBF: means Mean Time Between failures, it should be used in a repairable system setting.

Temperature for MTTF Estimation (°C)	Acceleration Factor A _F	Estimated MTTF (hours)	Estimated L ₁₀ (hours)
25	22.63	1,386,017	198,002
30	16.00	980,062	140,009
40	8.00	490,031	70,004
50	4.00	245,015	35,002
60	2.00	122,508	17,501
70	1.00	61,254	8,751

- Fan permission criteria for the measurement after test :
1. Speed can not drop of ≥ 15% below the original measured rpm.
 2. Current cannot increase > 15% of original measure current.
 3. Noise cannot >3dB over the original measure noise.

Test Result	<input checked="" type="checkbox"/> Accept <input type="checkbox"/> Reject
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QE File No.	Time-out for function test or others (hours)	Issued Date	Reported By	Approved By
DG03FNL157	461.00	2004/4/9	Dongqian.Liang	Tim.Yi

BGN (dBA) : 16.3

Temp (°C) : 21.2



DC FAN FUNCTION TEST RECORD FOR LIFE EXPERIMENT

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				AFB0724SH	AFB0724HH				
				AFB0712VH	AB0712SH-AB				
				AFB0724VH					
Required Test Time (hrs)	Date for Test Beginning	Date for Test Termination	Sample Size (pcs):	Failure (pcs):	Current Total Test Time (hrs)				
3,478	2003/10/28 3:00 PM	2004/3/21 12:46 PM	56	0	3478.0				
Representative Test P/N : AFB0712SH-AF00			Current Test Status		<input type="checkbox"/> In process	<input type="checkbox"/> In process (exceed requested)	<input checked="" type="checkbox"/> Termination		
Equipment: 1.Oven: E24-T0161				On/Off Cycles: Every 500 hours					
Test Data Between Initial Test and Final Test									
Sample No.	Initial Test Current Spec. (A)	Final Test Current Spec. (A)	Deviation (%)	Initial Test Speed Spec. (RPM)	Final Test Speed Spec. (RPM)	Deviation (%)	Initial Test Noise Spec. (dB A)	Final Test Noise Spec. (dB A)	Deviation
	0.84 Max.	0.84 Max.		5796-6804	5796-6804		52.0 Max	52.0 Max	3 dBMax.
1	0.61	0.62	1.6	6480	6367	-1.7	51.7	51.5	-0.2
2	0.61	0.62	1.6	6507	6369	-2.1	51.6	51.4	-0.2
3	0.62	0.63	1.6	6425	6397	-0.4	51.5	51.3	-0.2
4	0.63	0.64	1.6	6454	6428	-0.4	51.8	51.6	-0.2
5	0.63	0.63	0.3	6533	6530	0.0	52.0	51.3	-0.7
6	0.64	0.63	-1.6	6524	6509	-0.2	51.9	51.3	-0.6
7	0.63	0.62	-1.6	6399	6480	1.3	51.7	51.5	-0.2
8	0.62	0.63	1.6	6423	6377	-0.7	51.8	51.4	-0.4
9	0.61	0.62	1.6	6401	6382	-0.3	51.9	51.1	-0.8
10	0.62	0.62	0.0	6467	6455	-0.2	51.9	51.2	-0.7
11	0.62	0.64	3.2	6554	6320	-3.6	51.7	51.3	-0.4
12	0.62	0.62	0.0	6475	6414	-0.9	51.6	51.4	-0.2
13	0.61	0.61	0.0	6429	6376	-0.8	52.0	51.0	-1.0
14	0.62	0.63	1.6	6433	6356	-1.2	51.5	51.6	0.1
15	0.60	0.60	0.0	6391	6367	-0.4	51.8	51.4	-0.4
16	0.62	0.62	0.0	6457	6376	-1.3	51.7	51.5	-0.2
17	0.62	0.62	0.0	6472	6400	-1.1	51.4	51.2	-0.2
18	0.63	0.64	1.6	6479	6397	-1.3	51.6	51.1	-0.5
19	0.62	0.62	-0.3	6500	6410	-1.4	51.8	51.3	-0.5
20	0.62	0.62	0.0	6444	6446	0.0	51.7	51.2	-0.5
21	0.63	0.63	0.0	6376	6375	0.0	51.6	51.3	-0.3
22	0.62	0.61	-1.6	6398	6458	0.9	51.5	51.4	-0.1
23	0.61	0.62	1.6	6492	6421	-1.1	51.6	51.6	0.0
24	0.62	0.61	-1.6	6384	6429	0.7	51.7	51.5	-0.2
25	0.61	0.61	0.0	6469	6412	-0.9	51.8	51.3	-0.5
26	0.62	0.62	0.0	6425	6406	-0.3	51.6	51.3	-0.3
27	0.65	0.63	-3.1	6448	6451	0.0	51.8	51.4	-0.4
28	0.60	0.60	0.0	6432	6338	-1.5	51.5	51.6	0.1
29	0.62	0.62	0.0	6404	6364	-0.6	51.8	51.5	-0.3
30	0.64	0.64	0.0	6483	6437	-0.7	51.7	51.2	-0.5
31	0.63	0.63	0.0	6449	6409	-0.6	51.6	51.1	-0.5
32	0.61	0.62	1.6	6391	6313	-1.2	51.7	51.3	-0.4
QE File No.	Time-out for function test or others (hours)			Issued Date		Reported By		Approved By	
DG03FNL157	461.00			2004/4/9		Dongqian.Liang		Tim.Yi	



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AFB0724SH	AFB0724HH		
AFB0712VH	AB0712SH-AB		
AFB0724VH			

Required Test Time (hrs)	Date for Test Beginning	Date for Test Termination	Sample Size (pcs):	Failure (pcs):	Current Total Test Time (hrs)
3,478	2003/10/28 3:00 PM	2004/3/21 12:46 PM	56	0	3478.0

Representative Test P/N : AFB0712SH-AF00	Current Test Status	<input type="checkbox"/> In process	<input type="checkbox"/> In process (exceed requested)	<input checked="" type="checkbox"/> Termination
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Equipment: 1.Oven: E24-T0161	On/Off Cycles: Every 500 hours
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Test Data Between Initial Test and Final Test

Sample No.	Initial Test Current Spec. (A) 0.84 Max.	Final Test Current Spec. (A) 0.84 Max.	Deviation (%)	Initial Test Speed Spec. (RPM) 5796-6804	Final Test Speed Spec. (RPM) 5796-6804	Deviation (%)	Initial Test Noise Spec. (dB A) 52.0 Max	Final Test Noise Spec. (dB A) 52.0 Max	Deviation 3 dBMax.
33	0.63	0.64	1.6	6471	6477	0.1	51.4	51.1	-0.3
34	0.62	0.62	0.0	6438	6377	-0.9	51.5	51.3	-0.2
35	0.62	0.62	0.0	6452	6427	-0.4	51.3	51.3	0.0
36	0.60	0.60	0.0	6372	6393	0.3	51.6	51.4	-0.2
37	0.62	0.62	0.0	6395	6378	-0.3	51.7	51.4	-0.3
38	0.62	0.62	0.0	6462	6496	0.5	51.8	51.4	-0.4
39	0.63	0.64	1.6	6458	6451	-0.1	51.5	51.3	-0.2
40	0.61	0.63	3.3	6426	6352	-1.2	51.7	51.8	0.1
41	0.61	0.63	3.3	6490	6372	-1.8	51.8	51.5	-0.3
42	0.64	0.65	1.6	6495	6476	-0.3	51.6	51.2	-0.4
43	0.63	0.63	0.0	6491	6420	-1.1	51.7	51.6	-0.1
44	0.65	0.65	0.0	6562	6492	-1.1	51.3	51.3	0.0
45	0.63	0.63	0.0	6440	6319	-1.9	51.4	51.4	0.0
46	0.66	0.68	3.0	6593	6472	-1.8	51.6	51.6	0.0
47	0.64	0.66	3.1	6545	6374	-2.6	51.3	51.7	0.4
48	0.63	0.64	1.6	6477	6429	-0.7	51.7	51.3	-0.4
49	0.65	0.65	0.0	6606	6458	-2.2	51.6	51.2	-0.4
50	0.63	0.65	3.2	6555	6423	-2.0	51.8	51.2	-0.6
51	0.62	0.62	0.0	6390	6429	0.6	51.5	51.4	-0.1
52	0.63	0.64	1.6	6493	6418	-1.2	51.9	51.6	-0.3
53	0.60	0.59	-1.7	6382	6462	1.3	51.4	51.3	-0.1
54	0.63	0.64	1.6	6572	6395	-2.7	51.6	51.2	-0.4
55	0.61	0.62	1.6	6421	6404	-0.3	51.8	51.1	-0.7
56	0.59	0.60	1.7	6260	6256	-0.1	51.3	51.7	0.4
X-Bar	0.62	0.63	-	6457.93	6409.27	-	51.65	51.36	-
σ	0.01	0.02	-	63.35	52.02	-	0.17	0.17	-

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