



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 AFB70x70x13mm series as the right table	AFB0712HC	AFB0724HC			
	AFB0712MC	AFB0724MC			
	AFB0712LC	AFB0724LC			

Representative Test P/N : AFB0712HC-S43V	
Equipment: 1.Oven: E24-F0036	On/Off Cycles: Every 500 hours

◎ **L₁₀ Expectancy: 40,000 hours minimum @ fan rated voltage and the temperature of 40 °C**
 According to the equation for **Weibull distribution**, **MTTF ≐ 7×L10 = 280,000 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%), and

Stress/Elevated Temperature T _s (°C)	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)
60	40	4.00	56	2.303	3,975	3,975.0	280,028	40,004

Test Progress:

Date for Test Beginning	Date for Test Termination (at least)	Current Test Status			Current Total Test Time (hours)
2003/9/2 5:30 PM	2004/3/19 5:06 PM	<input type="checkbox"/> In process	<input type="checkbox"/> In process (exceed requested)	<input checked="" type="checkbox"/> Termination	3975.0

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	11.31	792,038	113,148
30	8.00	560,055	80,008
40	4.00	280,028	40,004
50	2.00	140,014	20,002
60	1.00	70,007	10,001

Fan permission criteria for the measurement after test :

1. For current, the limit is less than spec.(max.).
2. For speed, the allowable decrease is less than 15%.
3. For noise, the limit is less than spec.(max.). + 3 dB

Test Result	<input checked="" type="checkbox"/> Accept
	<input type="checkbox"/> Reject

QE File No.	Time-out for function test or others (hours)	Issued Date	Reported By	Approved By
DG03FNL124	801.00	2004/3/19 5:30 PM	Huiling.Fu	Rengen.Liu

Note: The test sample equivalent to TAISOL, Part number: AFB0712HC-S43V.



DC FAN FUNCTION TEST RECORD FOR LIFE EXPERIMENT

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	AFB0712MC	AFB0724MC			
	AFB0712LC	AFB0724LC			

Required Test Time (hrs)	Date for Test Beginning	Date for Test Termination	Sample Size (pcs):	Failure (pcs):	Current Total Test Time (hrs)
3,975	2003/9/2 5:30 PM	2004/3/19 5:06 PM	56	0	3975.0

Representative Test P/N : AFB0712HC-S43V	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-F0036	On/Off Cycles: Every 500 hours
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Test Data Between Initial Test and Final Test

Sample No.	Initial Test	Final Test	Deviation (%)	Initial Test	Final Test	Deviation (%)	Initial Test	Final Test	Deviation (%)
	Current Spec. (A) 0.33Max.	Current Spec. (A) 0.33Max.		Speed Spec. (RPM) 3496-4104	Speed Spec. (RPM) 3496-4104		Noise Check. (dB A) 39.0Max	Noise Spec. (dB A) 39.0Max	
1	0.23	0.23	0.0	3735	3758	0.6	OK	36.4	
2	0.24	0.24	0.0	3588	3614	0.7	OK	36.2	
3	0.25	0.24	-4.0	4006	4005	0.0	OK	37.0	
4	0.24	0.24	0.0	3861	3959	2.5	OK	37.2	
5	0.24	0.24	0.0	3791	3815	0.6	OK	36.2	
6	0.25	0.25	0.0	3543	3582	1.1	OK	36.5	
7	0.25	0.25	0.0	3804	3837	0.9	OK	36.4	
8	0.25	0.25	4.2	3967	3892	-1.9	OK	36.0	
9	0.24	0.24	0.0	3865	3877	0.3	OK	36.6	
10	0.24	0.24	-4.0	3882	3891	0.2	OK	36.4	
11	0.25	0.25	0.0	3593	3654	1.7	OK	36.5	
12	0.25	0.25	0.0	3936	3962	0.7	OK	36.1	
13	0.25	0.25	4.2	3908	3933	0.6	OK	36.2	
14	0.24	0.24	-4.0	3760	3782	0.6	OK	35.8	
15	0.25	0.25	4.2	3744	3765	0.6	OK	35.7	
16	0.24	0.24	-4.0	3870	3892	0.6	OK	36.0	
17	0.25	0.25	4.2	3692	3751	1.6	OK	36.0	
18	0.24	0.25	4.2	3739	3758	0.5	OK	36.7	
19	0.24	0.24	0.0	3670	3692	0.6	OK	37.1	
20	0.24	0.24	-4.0	3668	3699	0.8	OK	36.6	
21	0.25	0.25	0.0	3821	3865	1.2	OK	36.2	
22	0.24	0.24	0.0	3890	3952	1.6	OK	36.0	
23	0.25	0.25	0.0	3785	3831	1.2	OK	36.5	
24	0.25	0.25	0.0	3754	3781	0.7	OK	36.2	
25	0.23	0.23	0.0	3859	3873	0.4	OK	36.8	
26	0.25	0.25	0.0	3887	3891	0.1	OK	36.7	
27	0.24	0.24	0.0	3639	3652	0.4	OK	36.9	
28	0.25	0.25	0.0	3895	3937	1.1	OK	36.0	
29	0.24	0.24	0.0	3670	3687	0.5	OK	36.0	
30	0.25	0.25	0.0	3798	3834	0.9	OK	36.1	
31	0.25	0.24	-4.0	3846	3866	0.5	OK	36.4	
32	0.24	0.24	0.0	3860	3891	0.8	OK	36.1	
33	0.25	0.25	0.0	3896	3950	1.4	OK	37.0	
34	0.24	0.24	0.0	3839	3871	0.8	OK	36.2	
35	0.24	0.24	0.0	3810	3844	0.9	OK	37.1	

QE File No.	Time-out for function test or others (hours)	Issued Date	Reported By	Approved By
DG03FNL124	801.00	2004/3/19 5:30 PM	Huiling.Fu	Even.Liu



DC FAN FUNCTION TEST RECORD

FOR LIFE EXPERIMENT

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AFB0712HC	AFB0724HC
AFB0712MC	AFB0724MC
AFB0712LC	AFB0724LC

Required Test Time (hrs)	Date for Test Beginning	Date for Test Termination	Sample Size (pcs):	Failure (pcs):	Current Total Test Time (hrs)
3,975	2003/9/2 5:30 PM	2004/3/19 5:06 PM	56	0	3975.0

Representative Test P/N : AFB0712HC-S43V	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-F0036 On/Off Cycles: Every 500 hours

Test Data Between Initial Test and Final Test

Sample No.	Initial Test	Final Test	Deviation (%)	Initial Test	Final Test	Deviation (%)	Initial Test	Final Test	Deviation (%)
	Current Spec. (A) 0.33Max.	Current Spec. (A) 0.33Max.		Speed Spec. (RPM) 3496-4104	Speed Spec. (RPM) 3496-4104		Noise Check. (dB A) 39.0Max	Noise Spec. (dB A) 39.0Max	
36	0.24	0.25	4.2	3754	3781	0.7	OK	36.5	
37	0.25	0.25	0.0	3886	3902	0.4	OK	36.8	
38	0.24	0.24	0.0	3891	3913	0.6	OK	36.4	
39	0.25	0.25	0.0	3857	3888	0.8	OK	36.4	
40	0.24	0.24	0.0	3881	3884	0.1	OK	36.5	
41	0.24	0.24	0.0	3929	3987	1.5	OK	36.2	
42	0.24	0.24	0.0	3592	3682	2.5	OK	36.7	
43	0.24	0.25	4.2	4008	4005	-0.1	OK	36.6	
44	0.24	0.24	0.0	3955	3971	0.4	OK	36.4	
45	0.25	0.25	0.0	3600	3647	1.3	OK	37.2	
46	0.25	0.25	0.0	3822	3847	0.7	OK	37.0	
47	0.24	0.24	0.0	3677	3693	0.4	OK	36.9	
48	0.24	0.24	0.0	3913	3958	1.2	OK	36.2	
49	0.24	0.24	0.0	3924	3951	0.7	OK	36.0	
50	0.25	0.25	0.0	3865	3881	0.4	OK	36.3	
51	0.24	0.24	0.0	3973	3974	0.0	OK	36.4	
52	0.24	0.24	0.0	3856	3905	1.3	OK	36.2	
53	0.24	0.24	0.0	3903	3987	2.2	OK	36.2	
54	0.24	0.25	4.2	3840	3862	0.6	OK	36.0	
55	0.25	0.25	0.0	3936	3967	0.8	OK	36.4	
56	0.24	0.24	0.0	3879	3914	0.9	OK	36.6	
X-Bar	0.244	0.244	-	3816.8	3846.4	-		36.42	-
σ	0.006	0.006	-	114.880	110.555	-		0.367	-

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