

DC FAN LIFE EXPERIMENT REPORT

Available for these models with lower speed and same physical	AFB0912VH	AFB0912HH	AFB0912H	AFB0912M	AFB0912L				
		AFB0924HH	AFB0924H	AFB0924M	AFB0924L				
suffixes. This test report applies to AFB 92x92x25mm series as	AFB0948HH	AFB0948H	AFB0948M	AFB0948L					
the right table	AFC0912D-6V13								
Representative Test P/N: AFB0912VH									
Instruments used: 1.Oven: F00-5. E24-T060 2. DC Source: GW GPC-3060D On/Off Cycles: Every 500 hours									

© L₁₀ Expectancy: 70,000 hours minimum @ fan rated voltage and the temperature of 40℃ $MTTF = 7 \times L10 = 490,000 \text{ hours}$ According to the equation for **Weibull distribution**, 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,

$$t=1.036\times MTTF\times \left[(B_{r;c})\div\ n\right]^{0.91}\div A_F$$
 , and $\ A_F=2^{(Ts-Tu)/10}$

where, (B_{rc}) 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 Ts (°C)	Unstress Temperature Tu (℃)	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 (hours)	Verified L ₁₀ (hours)
80	40	16.00	20	2.303	4,438	7,942.0	876,880	125,269

Test Progress:

Date for Test	Date for Test	Current Test Status			Current Total Test	
Beginning	Termination (at least)				Time (hours)	
1996/9/14 8:00 AM	1997/3/18 5:59 AM	In process	In process (exceed requested)	✓ Termination	7942.0	

(hours)

354,313

250,537

125,269

62,634

31,317

15,659

7.829

Herewith, we could assume as right on the basis of above test result. Temperature for Acceleration Estimated Estimated L₁₀ MTTF Estimation **Factor** Besides, if the actual test time exceed the required, it comes out that MTTF (hours) (°C) A_F those fans' L_{10} expectancy and MTTF are greater than the warrant. (MTTF: means Mean Time To Failures, it should be used in a non-25 2,480,190 45.25 repairable system setting. Now we show the MTTF in our life report, 30 32.00 1,753,759 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 40 16.00 876,880 repairable system setting. Basically, MTBF is equal to MTTF, they use same formula to work out a life data.) **50** 8.00 438,440 Fan permission criteria for the measurement after test: 60 4.00 219,220 1. For current, the limit is less than spec.(max.).

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

QE File No.	Time-out for function test or others (hours)		Reported By	Approved By	
A039	80.00	1997/8/14 2:00 PM	Bomico Chang	Poter Sur	

70

80

2.00

1.00

109,610

54,805



DC FAN FUNCTION TEST RECORD FOR LIFE EXPERIMENT

QE File No. A039		80.	00	1997/8/1	4 2:00 PM	Bomico	Clary	Poter Sur		
		Time-out fo		Issued Date Reported By			Approved By			
σ	0.008	0.008	-	32.294	42.831	-	0.331	0.228	-	
X-Bar	0.400	0.408	-	3744	3947	-	45.4	46.8	-	
20	0.40	0.41	2.5	3735	3966	6.2	45.5	46.9	3.1	
19	0.38	0.40	5.3	3745	3948	5.4	45.2	46.8	3.5	
18	0.40	0.41	2.5	3750	3946	5.2	45.5	46.8	2.9	
17	0.39	0.40	2.6	3748	3986	6.4	45.7	47.0	2.8	
16	0.40	0.41	2.5	3700	3916	5.8	45.1	46.7	3.5	
15	0.39	0.40	2.6	3740	3949	5.6	45.6	46.8	2.6	
14	0.41	0.41	0.0	3750	3950	5.3	45.1	46.8	3.8	
13	0.39	0.40	2.6	3700	3922	6.0	45.2	46.7	3.3	
12	0.41	0.41	0.0	3680	3900	6.0	44.8	46.6	4.0	
11	0.41	0.40	0.0	3750	3962	5.7	45.0	46.9	4.2	
9 10	0.40	0.40	0.0	3745	3962	4.9 5.2	45.5	46.9	3.1 2.9	
8	0.40	0.40 0.40	0.0	3780 3776	4009 3962	6.1	45.9 45.5	47.2 46.9	2.8	
7	0.40	0.41	2.5	3750	3945	5.2	44.8	46.8	4.5	
6	0.40	0.40	0.0	3760	3977	5.8	45.8	47.0	2.6	
5	0.40	0.41	2.5	3750	3941	5.1	45.5	46.8	2.9	
4	0.41	0.42	2.4	3800	4017	5.7	45.9	47.2	2.8	
3	0.40	0.41	2.5	3677	3922	6.7	45.1	46.7	3.5	
2	0.40	0.43	7.5	3770	3813	1.1	45.5	46.1	1.3	
1	0.41	0.42	2.4	3770	3967	5.2	45.5	46.9	3.1	
	0.60 Max.	0.60 Max.		3800 Ref.	3800-15%		48.2 Max.	51.2 Max.		
No.	(A)	(A)	(%)	(RPM)	(RPM)	(%)	(dB A)	(dB A)	(%)	
Sample	Current Spec.	Current Spec.	Deviation	Speed Spec.	Speed Spec.	Deviation	Noise Spec.	Noise Spec.	Deviation	
-	Initial Test	Final Test	ъ	Initial Test	Final Test		Initial Test	Final Test	ъ	
Sample P/N	: AFB0912VH									
		Т	est Data E	Between In	itial Test a	nd Final Tes	st			
Instrumen	ts used: 1.0ve	en: F00-5, E	E24-T060	2. DC Sou	rce: GW GPC-3060D On/Off Cycles: Every 500 l				0 hours	
Representa	tive Test P/N	: AFB0912\ 	/H		Current	Fest Status	In process	(exceed requested)	Termination	
,,								In process	7	
4,438 1996/9/14 8:00 AM			1997/3/1	997/3/18 5:59 AM 20			0 7942.0			
(hrs) Beginning			Termination		(pcs):	(pcs):	Time ((hrs)		
Require	d Test Time	Date fo	or Test	Date 1	for Test	Sample Size	Failure	Current T	otal Test	
applies to AF	B 92x92x25 mm	series as the righ	nt table		AFC0912D-6V13					
All model may be followed by Rxx or Fxx series suffixes. Th			is test report	AFB0948HH	AFB0948H	AFB0948M	AFB0948L			
	these models with	•			AFB0924VH	AFB0924HH	AFB0924H	AFB0924M	AFB0924L	
					AFB0912VH	AFB0912HH	AFB0912H	AFB0912M	AFB0912L	