

DC FAN LIFE EXPERIMENT REPORT

Available for these models with lower speed and same	AFB0605HHD	AFB0605HD	AFB0605MD	AFB0605LD					
physical structure. All model may be followed by Rxx or Fxx	AFB0612HHD	AFB0612HD	AFB0612MD	AFB0612LD					
series suffixes. This test report applies to AFB 60x60x20	AFB0624HHD	AFB0624HD	AFB0624MD	AFB0624LD					
mm series as the right table									
Representative Test P/N : AFB0605HHD									
Equipment: 1. Oven: F00-5, E24-T060 2. DC Source: GW GPC-3060D On/Off Cycles: Every 500 hours									
				_					

 L_{10} Expectancy: 70,000 hours minimum @ fan rated voltage and the temperature of 40According to the equation for Weibull distribution,MTTF $7 \times L10 =$ 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,

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

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 Ts ()	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 40 (hours)	Verified L ₁₀ 40 (hours)
80	40	16.00	15	2.303	5,766	9,014.0	766,008	109,430

Test Progress:

Date for Test	Date for Test	Current Test Status			Current Total Test
Beginning	Termination (at least)				Time (hours)
1998/2/13 8:00 AM	1999/1/25 6:04 AM	In process	In process (exceed requested)	⊡ Termination	9014.0

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' L_{10} expectancy and MTTF are greater than the warrant. (Temperature for MTTF Estimation ()	Acceleration Factor A _F	Estimated MTTF (hours)	Estimated L ₁₀ (hours)
MTTF: means Mean Time To Failures, it should be used in a non-	25	45.25	2,166,598	309,514
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.	30	32.00	1,532,016	218,859
MTBF : means Mean Time Between failures, it should be used in a repairable system setting. Basically , MTBF is equal to MTTF , they	40	16.00	766,008	109,430
use same formula to work out a life data.)	50	8.00	383,004	54,715
Fan permission criteria for the measurement after test :	60	4.00	191,502	27,357
 For current, the limit is less than spec.(max.). For speed, the allowable descrease is less than 15%. 	70	2.00	95,751	13,679
3. For noise, the limit is less than spec.(max.). $+ 3 \text{ dB}$	80	1.00	47,876	6,839

QE File No.	Time-out for function test or others (hours)		Reported By	Approved By	
A087	2536.00	2002/11/28 1:00 PM	BONNIE . CHENG	Potor Sun	



DC FAN FUNCTION TEST RECORD FOR LIFE EXPERIMENT

A 1111 C	Available for these models with lower speed and same physical				AFB0605HHD	AFB0605HD	AFB0605MD	AFB0605LD	
		-			AFB0612HHD	AFB0612HD	AFB0612MD	AFB0612LD	
structure. All model may be followed by Rxx or Fxx series suffixes. This test report applies to AFB 60x60x20 mm series as the right table					AFB0624HHD	AFB0624HD	AFB0624MD	AFB0624LD	
This test tepe	it applies to AP1	5 00x00x20 mm	i series as the	fight table					
Required	d Test Time	Date fo	or Test	Date	for Test	Sample Size	Failure	Current '	Fotal Test
()	(hrs) Beginning		Term	ination	(pcs):	(pcs):	Time	(hrs)	
5,766 1998/2/13 8:00 AM		1999/1/2	9/1/25 6:04 AM 15		0	9014.0			
Representative Test P/N : AFB0605HHD					Current Test Status		□ In process	In process (exceed requested)	√ Termination
Equipmen	t: 1.Oven: F0	0-5, E24-T	060 2. DO	C Source: C	GW GPC-30)60D	On/Off Cyc	eles: Every 5	00 hours
		r	Fest Data	Between I	nitial Test a	nd Final Te	est		
Sample P/N	: GFB0412VH	F-F00							
Commis	Initial Test	Final Test	Deviation	Initial Test	Final Test	Deviation			
Sample	Current Spec.	Current Spec.	Deviation	Speed Spec.	Speed Spec.	Deviation			
No.	(A) 0.50 Max.	(A) 0.50 Max.	(%)	(RPM) 4400 Ref.	(RPM) 4400-15%	(%)			
1	0.40	0.38	-5.0	4479	4926	10.0			
2	0.40	0.38	-5.0	4436	4935	11.2			
3	0.39	0.39	0.0	4403	4683	6.4			
4	0.39	0.39	0.0	4448	4745	6.7			
5	0.38	0.37	-2.6	4490	4873	8.5			
6	0.40	0.38	-5.0	4388	4884	11.3			
7	0.38	0.37	-2.6	4450	4903	10.2			
8	0.38	0.36	-5.3	4459	4879	9.4			
9	0.39	0.37	-5.1	4465	4913	10.0			
10	0.38	0.37	-2.6	4556	4947	8.6			
11	0.38	0.37	-2.6	4459	4887	9.6			
12	0.38	0.35	-7.9	4456	4943	10.9			
13	0.38	0.37	-2.6	4486	4857	8.3			
14	0.38	0.39	2.6	4446	4622	4.0			
15	0.38	0.36	-5.3	4506	4926	9.3			
X-Bar	0.386	0.373	-	4462	4862	-			
	0.008	0.012	-	40.278	98.728	-			
QE File No. Time-out for function test or others (hrs)		Issue	ed Date	Repor	Reported By		Approved By		
A087		2536.00 1900/1/0		12:00 AM BONNIE . CHENG		Potor Sun			