



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 60x60x20 mm series as the right table	AFB0605HHD	AFB0605HD	AFB0605MD	AFB0605LD	
	AFB0612HHD	AFB0612HD	AFB0612MD	AFB0612LD	
	AFB0624HHD	AFB0624HD	AFB0624MD	AFB0624LD	

Representative Test P/N : AFB0605HHD

Equipment: 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

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%), and

Stress/Elevated Temperature T _s ()	Unstress Temperature T _u ()	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 Beginning	Date for Test Termination (at least)	Current Test Status			Current Total Test Time (hours)
1998/2/13 8:00 AM	1999/1/25 6:04 AM	<input type="checkbox"/> In process	<input type="checkbox"/> In process (exceed requested)	<input checked="" type="checkbox"/> 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' 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. **Basically, MTBF is equal to MTTF, they use same formula to work out a life data.**)

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

Temperature for MTTF Estimation ()	Acceleration Factor A _F	Estimated MTTF (hours)	Estimated L ₁₀ (hours)
25	45.25	2,166,598	309,514
30	32.00	1,532,016	218,859
40	16.00	766,008	109,430
50	8.00	383,004	54,715
60	4.00	191,502	27,357
70	2.00	95,751	13,679
80	1.00	47,876	6,839

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

