

DC FAN LIFE EXPERIMENT REPORT

Available for these models with lower speed and same physical tructure. All model may be followed by Rxx or Fxx series uffixes. This test report applies to AFB 60x60x15mm series s the right table	AFB0624HHB AFB AFB0624MBAV8	0624HB AFB0624M	IB AFB0624LB					
Representative Test P/N : AFB0624HHB								
Equipment: 1.Oven: F00-5, E24-T060 2. DC Source: GW GPC-3060D				On/Off Cycles: Every 500 hours				

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

According 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,

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

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 (°C)	Unstress Temperature Tu (°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 ℃ (hours)	Verified L ₁₀ 40 ℃ (hours)
80	40	16.00	20	2.303	4,438	6,808.0	751,674	107,382

Test Progress:

Date for Test	Date for Test	Current Test Status			Current Total Test Time
Beginning	Termination (at least)				(hours)
1997/11/25 10:00 AM	1998/7/29 6:59 PM	In process	In process (exceed requested)	✓ Termination	6808.0

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. (MTTF:	Temperature for MTTF Estimation (°C)	Acceleration Factor A _F	Estimated MTTF (hours)	Estimated L ₁₀ (hours)
means Mean Time To Failures, it should be used in a non-repairable	25	45.25	2,126,055	303,722
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	30	32.00	1,503,348	214,764
Mean Time Between failures, it should be used in a repairable system setting. Basically , MTBF is equal to MTTF , they use same formula to	40	16.00	751,674	107,382
work out a life data.)	50	8.00	375,837	53,691
Fan permission criteria for the measurement after test :	60	4.00	187,919	26,846
1. For current, the limit is less than spec.(max.). 2. For speed, the allowable descrease is less than 15%.	70	2.00	93,959	13,423
3. For noise, the limit is less than spec.(max.). $+ 3 \text{ dB}$	80	1.00	46,980	6,711

QE File No.	Time-out for function test or others (hours)	Issued Date	Reported By	Approved By	
A088L	1475.00	1998/11/5 1:00 PM	BONNIE . CHENG	Potor Sun	



DC FAN FUNCTION TEST RECORD FOR LIFE EXPERIMENT

Available for	these models wit	h lower speed and	same physical str	ructure. All	AFB0624HHB AI AFB0624MBAV8	-B0624HB AFB06	24MB AFB0624L.	3	
model may be to AFB 60x6	e followed by Rxx 0x15mm series a:	or Fxx series suff s the right table	ixes. This test rej	port applies					
to THE OONO	oxionin series a	s the fight table							
Required Test Time				Date	for Test	Sample	Failure	Current 7	Fotal Test
(hrs) Date for Test Beginning		Termination		Size (pcs):	(pcs):	Time (hrs)			
4,438 1997/11/25 10:00 AM			1998/7/2	1998/7/29 6:59 PM 20		0	6808.0		
Donrocont	otivo Tost D/N		ILID		Comment To at States			In process	
Kepresent		N. AFD0024F	пр		Current Test Status		In process	(exceed requested)	Termination
Equipmen	t: 1.Oven: F0	0-5, E24-T06	50 2. DC So	urce: GW	GPC-3060D		On/Off Cycles: Every 500 hours		
			Test Data B	etween Ini	itial Test an	d Final Test			
Sample P/N	: GFB0412VHI	F-F00		-	-	-	-		-
Sample	Initial Test	Final Test	Deviation	Initial Test	Final Test	Deviation	Initial Test	Final Test	Deviation
No	Current Spec.	Current Spec.	(04)	Speed Spec.	Speed Spec.	(04)	Noise Spec.	Noise Spec.	(0/)
INO.	(A) 0.15 Max.	0.15 Max.	(%)	(RPM) 4500 Ref.	(RPM) 4500-15%	(%)	(dB A) 38.0 Max.	(dB A) 41.0 Max.	(%)
1	0.09	0.08	-11.1	4434	4671	53	33.3	37.8	13.5
2	0.08	0.08	0.0	4638	5122	10.4	34.5	39.8	15.4
3	0.09	0.08	-11.1	4407	4736	7.5	34.4	38.1	10.8
4	0.08	0.08	0.0	4456	4925	10.5	33.7	39.0	15.7
5	0.09	0.09	0.0	4529	4541	0.3	34.0	37.2	9.4
6	0.09	0.08	-11.1	4485	4822	7.5	34.4	38.5	11.9
7	0.09	0.08	-11.1	4360	4825	10.7	33.4	38.5	15.3
8	0.09	0.08	-11.1	4504	4831	7.3	34.1	38.5	12.9
9	0.08	0.08	0.0	4506	4854	7.7	34.7	38.6	11.2
10	0.08	0.08	0.0	4637	5010	8.0	34.3	39.3	14.6
11	0.09	0.08	-11.1	4488	4931	9.9	34.0	39.0	14.7
12	0.08	0.08	0.0	4400	4625	5.1	33.4	37.6	12.6
13	0.09	0.08	-11.1	4510	4922	9.1	34.1	38.9	14.1
14	0.09	0.08	-11.1	4572	5049	10.4	34.8	39.2	12.6
15	0.09	0.08	-11.1	4436	4822	8.7	33.9	38.5	13.6
16	0.09	0.09	0.0	4381	4731	8.0	34.2	38.1	11.4
17	0.09	0.08	-11.1	4503	4771	6.0	35.5	38.5	8.5
18	0.09	0.08	-11.1	4475	4769	6.6	34.0	38.3	12.6
19	0.09	0.08	-11.1	4507	4994	10.8	34.1	39.6	16.1
20	0.09	0.08	-11.1	4353	4719	8.4	33.3	38.0	14.1
								 	
X-Bar	0.088	0.081		4479.050	4833.500	-	34.105	38.550	-
σ	0.004	0.003	-	79.694	146.841	-	0.547	0.659	-
QE File No. Time-out for function test or		Issued Date		Repor	ted By	Approved By			
A088L		1475.00		1900/1/0 12:00 AM		BONNIE . CHENG		Potor Sun	