



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 AUB92x92x25.4 mm series as the right table	AUB0912L-C	AUB0912H-C		
	AUB0912M-CF00			
	AUB0912M-8Q69			
	AUB0912HH-PE15			

Representative Test P/N :AUB0912HH-CF00	
Equipment: 1.Oven: E24-F0030	On/Off Cycles: Every 500 hours

⊙ **L₁₀ Expectancy: 50,000 hours minimum @ fan rated voltage and the temperature of 40 °C**
 According to the equation for **Weibull distribution**, **MTTF ≅ 7×L₁₀ = 350,000 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%).

Stress/Elevated Temperature Ts (°C) (Actual Test Temperature)	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 °C (hours)	Verified L ₁₀ 40 °C (hours)
70	40	8.00	56	2.303	2,484	2,485.0	350,123	50,018

Test Progress:

Date for Test Beginning	Date for Test Termination (at least)	Current Test Status			Current Total Test Time (hours)
2006/1/6 7:00 PM	2006/5/14 8:07 PM	<input type="checkbox"/> In process	<input type="checkbox"/> In process (exceed requested)	<input checked="" type="checkbox"/> Termination	2485.0

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	22.63	990,296	141,471
30	16.00	700,245	100,035
40	8.00	350,123	50,018
50	4.00	175,061	25,009
60	2.00	87,531	12,504
70	1.00	43,765	6,252

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
DG05FNL315	589.00	2006/5/14 9:00 PM	Nan.Yang	Gx.Xu



DC FAN FUNCTION TEST RECORD

physical structure. All model may be followed by Rxx or Fxx series suffixes. This test report applies to AUB92x920x25.4 m

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 AUB92x920x25.4 mm series as the right table	AUB0912L-C	AUB0912H-C			
	AUB0912M-CF00				
	AUB0912M-8Q69				
	AUB0912HH-PE15				

Required Test Time (hrs)	Date for Test Beginning	Date for Test Termination	Sample Size (pcs):	Failure (pcs):	Current Total Test Time (hrs)
2,484	2006/1/6 7:00 PM	2006/5/14 8:07 PM	56	0	2485.0

Representative Test P/N :AUB0912HH-CF00	Current Test Status	<input type="checkbox"/> In process	<input type="checkbox"/> In process (exceed requested)	<input checked="" type="checkbox"/> Termination
---	----------------------------	-------------------------------------	--	---

Equipment: 1.Oven: E24-F0030	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)	Current Spec. (A)		Speed Spec. (RPM)	Speed Spec. (RPM)		Noise Spec. (dB A)	Noise Spec. (dB A)	
	0.40Max.	0.40Max.		2880-3520	2880-3520		44.0Max	44.0Max	
1	0.33	0.33	0.0	3265	3288	0.7	42.4	42.2	-0.5
2	0.34	0.33	-2.9	3243	3238	-0.2	42.0	42.6	1.4
3	0.33	0.33	0.0	3189	3242	1.7	41.8	42.4	1.4
4	0.33	0.33	0.0	3247	3265	0.6	42.2	42.5	0.7
5	0.33	0.33	0.0	3187	3200	0.4	42.3	42.5	0.5
6	0.34	0.34	0.0	3197	3201	0.1	42.1	42.3	0.5
7	0.34	0.33	-2.9	3243	3265	0.7	41.9	42.7	1.9
8	0.33	0.34	3.0	3244	3271	0.8	42.3	42.1	-0.5
9	0.35	0.33	-5.7	3198	3215	0.5	42.0	42.5	1.2
10	0.33	0.33	0.0	3190	3201	0.3	42.4	42.3	-0.2
11	0.33	0.33	0.0	3232	3250	0.6	42.2	42.6	0.9
12	0.33	0.34	3.0	3153	3172	0.6	42.0	42.2	0.5
13	0.34	0.33	-2.9	3208	3202	-0.2	41.8	42.5	1.7
14	0.34	0.33	-2.9	3211	3271	1.9	42.3	42.3	0.0
15	0.34	0.34	0.0	3218	3234	0.5	41.9	42.6	1.7
16	0.33	0.33	0.0	3212	3265	1.7	42.2	42.7	1.2
17	0.33	0.33	0.0	3209	3237	0.9	42.0	42.3	0.7
18	0.33	0.33	0.0	3251	3275	0.7	42.2	42.4	0.5
19	0.34	0.34	0.0	3210	3197	-0.4	42.4	42.6	0.5
20	0.35	0.34	-2.9	3209	3235	0.8	41.8	42.3	1.2
21	0.33	0.33	0.0	3297	3270	-0.8	42.0	42.3	0.7
22	0.33	0.35	6.1	3258	3241	-0.5	42.3	42.5	0.5
23	0.33	0.33	0.0	3230	3256	0.8	42.1	42.1	0.0
24	0.34	0.32	-5.9	3226	3293	2.1	41.9	42.6	1.7
25	0.33	0.33	0.0	3163	3154	-0.3	42.1	42.4	0.7
26	0.34	0.34	0.0	3204	3185	-0.6	42.2	42.7	1.2
27	0.33	0.33	0.0	3271	3285	0.4	42.0	42.3	0.7
28	0.34	0.33	-2.9	3235	3264	0.9	42.4	42.5	0.2
29	0.34	0.33	-2.9	3249	3205	-1.4	42.1	42.5	1.0
30	0.33	0.33	0.0	3182	3201	0.6	41.9	42.3	1.0
31	0.34	0.34	0.0	3210	3228	0.6	42.3	42.6	0.7
32	0.34	0.35	2.9	3226	3182	-1.4	42.2	42.3	0.2
33	0.34	0.34	0.0	3216	3211	-0.2	42.0	42.2	0.5
34	0.33	0.33	0.0	3249	3267	0.6	42.2	42.5	0.7
35	0.34	0.33	-2.9	3147	3165	0.6	42.0	42.7	1.7

QE File No.	Time-out for function test or others (hours)	Issued Date	Reported By	Approved By
DG05FNL315	589.00	2006/5/14 9:00 PM	Nan.Yang	Gx.Xu



DC FAN FUNCTION TEST RECORD

physical structure. All model may be followed by Rxx or Fxx series suffixes. This test report applies to **AUB92x920x25.4 mm**

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 AUB92x920x25.4 mm series as the right table	AUB0912L-C	AUB0912H-C		
	AUB0912M-CF00			
	AUB0912M-8Q69			
	AUB0912HH-PE15			

Required Test Time (hrs)	Date for Test Beginning	Date for Test Termination	Sample Size (pcs):	Failure (pcs):	Current Total Test Time (hrs)
2,484	2006/1/6 7:00 PM	2006/5/14 8:07 PM	56	0	2485.0

Representative Test P/N :AUB0912HH-CF00	Current Test Status	<input type="checkbox"/> In process	<input type="checkbox"/> In process (exceed requested)	<input checked="" type="checkbox"/> Termination
---	----------------------------	-------------------------------------	--	---

Equipment: 1.Oven: E24-F0030 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.	Current Spec.		Speed Spec.	Speed Spec.		Noise Spec.	Noise Spec.	
	(A) 0.40Max.	(A) 0.40Max.		(RPM) 2880-3520	(RPM) 2880-3520		(dB A) 44.0Max	(dB A) 44.0Max	
36	0.34	0.34	0.0	3156	3210	1.7	41.8	42.3	1.2
37	0.34	0.33	-2.9	3249	3261	0.4	42.1	42.5	1.0
38	0.33	0.35	6.1	3192	3044	-4.6	42.4	42.0	-0.9
39	0.34	0.34	0.0	3206	3274	2.1	42.0	42.6	1.4
40	0.33	0.33	0.0	3191	3215	0.8	41.8	42.4	1.4
41	0.33	0.33	0.0	3163	3172	0.3	42.1	42.6	1.2
42	0.34	0.34	0.0	3174	3187	0.4	42.4	42.4	0.0
43	0.34	0.33	-2.9	3154	3179	0.8	42.2	42.7	1.2
44	0.33	0.33	0.0	3248	3236	-0.4	42.0	42.2	0.5
45	0.33	0.33	0.0	3229	3242	0.4	42.3	42.5	0.5
46	0.34	0.34	0.0	3189	3212	0.7	41.7	42.1	1.0
47	0.33	0.33	0.0	3204	3225	0.7	42.0	42.6	1.4
48	0.34	0.34	0.0	3192	3207	0.5	42.1	42.3	0.5
49	0.34	0.34	0.0	3238	3255	0.5	41.9	42.5	1.4
50	0.35	0.34	-2.9	3170	3199	0.9	42.1	42.2	0.2
51	0.33	0.33	0.0	3203	3237	1.1	42.3	42.0	-0.7
52	0.33	0.34	3.0	3188	3186	-0.1	42.1	42.6	1.2
53	0.32	0.33	3.1	3209	3191	-0.6	42.2	42.3	0.2
54	0.33	0.33	0.0	3252	3224	-0.9	41.8	42.7	2.2
55	0.34	0.34	0.0	3174	3215	1.3	42.0	42.4	1.0
56	0.32	0.33	3.1	3177	3192	0.5	41.9	42.6	1.7
X-Bar	0.336	0.337	-	3218.9	3196.7	-	42.28	42.28	-
σ	0.007	0.007	-	50.310	40.423	-	0.296	0.195	-

QE File No.	Time-out for function test or others (hrs)	Issued Date	Reported By	Approved By
DG05FNL315	589.00	2006/5/14 9:00 PM	Nan.Yang	Gx.Xu