



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 AUC50*50*15mm series as the right table	AUB0512HHB-A							
Representative Test P/N : AUC0512DB-AF00								
Equipment: 1.Oven: E24-W507								

(◎ L₁₀ Expectancy: 30,000 hours minimum @ fan rated voltage and the temperature of 40°C

According to the equation for **Weibull distribution**, MTTF ≈ 7×L10 = 210,000 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 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)
60	40	4.00	56	2.303	2,981	2,981.0	210,003	30,000

Test Progress:

Date for Test Beginning	Date for Test Termination (at least)	Current Test Status			Current Total Test Time (hours)
2007/4/11 9:00 AM	2007/8/19 7:57 AM	<input type="checkbox"/> In process	<input type="checkbox"/> In process (exceed requested)	<input checked="" type="checkbox"/> Termination	2981.0

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 (°C)	Acceleration Factor A _F	Estimated MTTF (hours)	Estimated L ₁₀ (hours)
25	11.31	593,979	84,854
30	8.00	420,006	60,001
40	4.00	210,003	30,000
50	2.00	105,002	15,000
60	1.00	52,501	7,500
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
WJQFML-2007042	138.00	2007/8/19 8:00 AM	YUHONG.SUN	fly.shi



DC FAN FUNCTION TEST RECORD FOR LIFE EXPERIMENT

Available for these models with lower speed and same physical structure.
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applies to AUC50*50*15mm series as the right table

AUB0512HHB-A

Required Test Time (hrs)	Date for Test Beginning	Date for Test Termination	Sample Size (pcs):			
				AUB0512HHB-A		
2,981	2007/4/11 9:00 AM	2007/8/19 7:57 AM	56	0	2981.0	
Representative Test P/N : AUC0512DB-AF00			Current Test Status		<input type="checkbox"/> In process	<input type="checkbox"/> In process (exceed requested)
Equipment: 1.Oven: E24-W507					<input checked="" type="checkbox"/> Termination	

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. (mA)	Current Spec. (mA)		Speed Spec. (RPM)	Speed Spec. (RPM)		Noise Spec. (dB A)	Noise Check. (dB A)	
240max.	240max.	-	7400±8%	7400-15%	-	42.5max.	42.5+3max.	-	
1	186	193	3.8	7435	7236	2.7	38.0	39.5	3.9
2	193	200	3.6	7578	7438	1.8	38.3	39.2	2.3
3	191	190	0.5	7320	7307	0.2	38.2	38.9	1.8
4	193	195	1.0	7346	7318	0.4	38.3	39.4	2.9
5	188	190	1.1	7394	7385	0.1	38.4	39.2	2.1
6	193	196	1.6	7342	7249	1.3	38.0	38.7	1.8
7	195	203	4.1	7361	7208	2.1	38.2	39.1	2.4
8	196	196	0.0	7372	7457	1.2	38.1	39.4	3.4
9	192	196	2.1	7365	7414	0.7	38.1	39.5	3.7
10	193	193	0.0	7293	7243	0.7	37.9	39.8	5.0
11	191	198	3.7	7477	7358	1.6	38.3	38.7	1.0
12	189	189	0.0	7378	7365	0.2	38.0	39.3	3.4
13	196	189	3.6	7377	7365	0.2	37.8	39.4	4.2
14	195	196	0.5	7398	7313	1.1	38.5	39.2	1.8
15	180	183	1.7	7152	7159	0.1	39.0	38.8	0.5
16	192	195	1.6	7432	7366	0.9	38.3	38.9	1.6
17	196	201	2.6	7403	7297	1.4	38.1	38.8	1.8
18	190	192	1.1	7544	7328	2.9	38.0	38.7	1.8
19	194	194	0.0	7446	7474	0.4	38.3	39.4	2.9
20	196	201	2.6	7409	7287	1.6	38.6	39.1	1.3
21	191	195	2.1	7432	7363	0.9	38.4	39.5	2.9
22	191	197	3.1	7457	7280	2.4	37.9	39.2	3.4
23	188	197	4.8	7618	7378	3.2	38.8	39.0	0.5
24	198	201	1.5	7559	7542	0.2	38.7	39.8	2.8
25	186	189	1.6	7512	7390	1.6	38.6	39.6	2.6
26	191	178	6.8	7315	7890	7.9	37.9	40.6	7.1
27	195	195	0.0	7280	7165	1.6	38.1	39.8	4.5
28	194	197	1.5	7299	7326	0.4	37.6	39.4	4.8
29	192	193	0.5	7332	7298	0.5	38.1	39.4	3.4
30	194	196	1.0	7454	7373	1.1	38.5	39.6	2.9
31	191	194	1.6	7344	7368	0.3	37.5	39.1	4.3
32	185	197	6.5	7449	7226	3.0	38.0	39.2	3.2
33	189	198	4.8	7518	7264	3.4	38.2	39.6	3.7
34	189	198	4.8	7529	7371	2.1	38.4	39.4	2.6
35	191	192	0.5	7413	7455	0.6	37.9	38.8	2.4

QE File No.	Time-out for function test or others (hours)	Issued Date	Reported By	Approved By
WJQFML-2007042	138.00	2007/8/19 8:00 AM	YUHONG.SUN	fly.shi



DC FAN FUNCTION TEST RECORD

FOR LIFE EXPERIMENT

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Required Test Time (hrs)	Date for Test Beginning	Date for Test Termination	Sample Size (pcs):	Failure (pcs):	Current Total Test Time (hrs)				
2,981	2007/4/11 9:00 AM	2007/8/19 7:57 AM	56	0	2981.0				
Representative Test P/N : AUC0512DB-AF00			Current Test Status		<input type="checkbox"/> In process	<input type="checkbox"/> In process (exceed requested)	<input checked="" type="checkbox"/> Termination		
Equipment: 1.Oven: E24-W507									
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. (mA)	Current Spec. (mA)		Speed Spec. (RPM)	Speed Spec. (RPM)		Noise Spec. (dB A)	Noise Check. (dB A)	
	240max.	240max.		7400±8%	7400-15%		42.5max.	42.5+3max.	
36	190	192	-	7426	7455	0.4	38.4	39.2	2.1
37	191	199	4.2	7532	7385	2.0	38.7	39.1	1.0
38	198	200	1.0	7287	7359	1.0	38.0	38.8	2.1
39	195	196	0.5	7446	7316	1.7	38.4	38.9	1.3
40	198	209	5.6	7314	7049	3.6	38.4	39.2	2.1
41	192	195	1.6	7407	7354	0.7	38.1	39.1	2.6
42	194	194	0.0	7259	7317	0.8	37.9	38.9	2.6
43	185	191	3.2	7291	7174	1.6	38.0	38.8	2.1
44	189	192	1.6	7273	7398	1.7	38.3	39.2	2.3
45	198	195	1.5	7304	7499	2.7	37.6	38.6	2.7
46	187	194	3.7	7419	7386	0.4	38.5	40.8	6.0
47	191	198	3.7	7445	7232	2.9	38.2	39.4	3.1
48	193	197	2.1	7405	7349	0.8	38.0	39.9	5.0
49	187	192	2.7	7423	7303	1.6	38.9	39.2	0.8
50	197	198	0.5	7337	7471	1.8	38.8	39.4	1.5
51	189	196	3.7	7474	7403	0.9	38.1	39.7	4.2
52	187	192	2.7	7372	7319	0.7	38.4	39.1	1.8
53	189	190	0.5	7395	7430	0.5	37.9	39.0	2.9
54	181	180	0.6	7359	7381	0.3	38.5	39.1	1.6
55	190	197	3.7	7264	7148	1.6	38.5	39.5	2.6
56	189	197	4.2	7399	7243	2.1	38.3	39.7	3.7
Mean (X-Bar)	191.3	194.7	-	7395.8	7343.3	-	38.23	39.28	-
Standard Deviation	4.023	5.107	-	90.272	121.027	-	0.322	0.424	-
QE File No.	Time-out for function test or others (hours)		Issued Date		Reported By		Approved By		
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