



DC FAN LIFE EXPERIMENT REPORT

Available for these models with lower speed and same physical structure. All model may be followed byRxx orFxx series suffixes. This test report applies to AUB 70x70x25.0 mm series as the right table	AUB0712H-CXCG				
	AUB0712HH-CX04				
Representative Test P/N : AUB0712HH-DC3G		F:4020303718 I:4020303718		Date Code: 3726PR	
Equipment: 1.Oven: E24-F0028					

⊙ L₁₀ Expectancy: 30,000 hours minimum @ fan rated voltage and the temperature of 40°C
 According to the equation for **Weibull distribution**, $MTTF \cong 7 \times L_{10} = 210,000$ 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,

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

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 T _s (°C) (Actual Test Temperature)	Unstress Temperature T _u (°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)
90	40	32.00	56	2.303	373	6,720.0	3,787,243	541,035

Test Progress:

Date for Test Beginning	Date for Test Termination (at least)	Current Test Status			Current Total Test Time (hours)
2013/8/14 11:30 AM	2013/9/7 10:37 PM	<input type="checkbox"/> In process	<input checked="" type="checkbox"/> In process (exceed requested)	<input type="checkbox"/> Termination	6720.0

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	90.51	10,711,939	1,530,277
30	64.00	7,574,485	1,082,069
40	32.00	3,787,243	541,035
50	16.00	1,893,621	270,517
60	8.00	946,811	135,259
70	4.00	473,405	67,629
80	2.00	236,703	33,815
90	1.00	118,351	16,907

Fan permission criteria for the measurement after test :

1. Speed can not drop of $\geq 15\%$ below the original measured rpm.
2. Current cannot increase $> 15\%$ of original measure current.
3. Noise cannot $> 3\text{dB}$ over the original measure noise.

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
DG13FNL112	2840.00	2015/5/7	Loly.Wang	Tim.Yi

BGN (dBA) : 16.0

Temp (°C) : 21.0



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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)
373	2013/8/14 11:30 AM	2013/9/7 10:37 PM	56	0	6720.0

Representative Test P/N : AUB0712HH-DC3G	Current Test Status	<input type="checkbox"/> In process	<input checked="" type="checkbox"/> In process (exceed requested)	<input type="checkbox"/> Termination
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Equipment: 1.Oven: E24-F0028

Test Data Between Initial Test and Final Test

Sample No.	Initial Test Current Spec. (A)	Final Test Current Spec. (A)	Deviation (%)	Initial Test Speed Spec. (RPM)	Final Test Speed Spec. (RPM)	Deviation (%)	Initial Test Noise Spec. (dB A)	Final Test Noise Spec. (dB A)	Deviation 3 dBMax.
	0.40 Max.	0.40 Max.		4050-4950	4050-4950		44.5 Max	44.5 Max	
1	0.210	0.219	4.3	4464	4604	3.1	38.7	39.2	0.5
2	0.215	0.199	-7.4	4416	4470	1.2	39.2	39.4	0.2
3	0.209	0.203	-2.9	4525	4480	-1.0	38.6	39.9	1.3
4	0.218	0.219	0.5	4429	4614	4.2	39.3	39.2	-0.1
5	0.213	0.202	-5.2	4408	4492	1.9	39.4	40.3	0.9
6	0.213	0.196	-8.0	4429	4443	0.3	39.7	40.1	0.4
7	0.220	0.201	-8.6	4469	4500	0.7	38.8	39.8	1.0
8	0.217	0.212	-2.3	4381	4543	3.7	39.1	41.0	1.9
9	0.218	0.196	-10.1	4506	4567	1.4	39.9	39.6	-0.3
10	0.208	0.197	-5.3	4461	4446	-0.3	39.3	40.4	1.1
11	0.221	0.192	-13.1	4504	4518	0.3	39.7	39.1	-0.6
12	0.208	0.210	1.0	4469	4586	2.6	39.9	39.2	-0.7
13	0.220	0.219	-0.5	4466	4646	4.0	38.7	39.5	0.8
14	0.210	0.194	-7.6	4480	4489	0.2	38.9	39.7	0.8
15	0.222	0.216	-2.7	4413	4519	2.4	39.3	39.6	0.3
16	0.213	0.190	-10.8	4467	4456	-0.2	39.5	39.4	-0.1
17	0.216	0.192	-11.1	4489	4524	0.8	39.7	39.9	0.2
18	0.213	0.212	-0.5	4447	4518	1.6	39.8	40.5	0.7
19	0.216	0.197	-8.8	4446	4496	1.1	38.6	41.0	2.4
20	0.213	0.196	-8.0	4554	4439	-2.5	38.7	40.7	2.0
21	0.218	0.201	-7.8	4478	4346	-2.9	39.7	40.9	1.2
22	0.213	0.197	-7.5	4535	4396	-3.1	39.6	39.5	-0.1
23	0.218	0.191	-12.4	4479	4505	0.6	39.4	39.7	0.3
24	0.204	0.212	3.9	4538	4531	-0.2	39.0	39.5	0.5
25	0.216	0.192	-11.1	4448	4477	0.7	38.6	39.7	1.1
26	0.207	0.195	-5.8	4516	4394	-2.7	39.7	41.0	1.3
27	0.215	0.197	-8.4	4433	4476	1.0	38.9	39.6	0.7
28	0.219	0.199	-9.1	4401	4493	2.1	39.1	40.1	1.0
29	0.216	0.193	-10.6	4403	4392	-0.2	39.1	40.3	1.2
30	0.208	0.197	-5.3	4477	4350	-2.8	38.9	39.8	0.9
31	0.217	0.192	-11.5	4435	4540	2.4	38.8	39.5	0.7
32	0.207	0.200	-3.4	4520	4412	-2.4	39.5	39.4	-0.1

QE File No.	Time-out for function test or others (hours)	Issued Date	Reported By	Approved By
DG13FNL112	2840.00	2015/5/7	Loly.Wang	Tim.Yi



DC FAN FUNCTION TEST RECORD FOR LIFE EXPERIMENT

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				AUB0712HH-CX04						
Required Test Time (hrs)	Date for Test Beginning	Date for Test Termination	Sample Size (pcs):	Failure (pcs):	Current Total Test Time (hrs)					
373	2013/8/14 11:30 AM	2013/9/7 10:37 PM	56	0	6720.0					
Representative Test P/N : AUB0712HH-DC3G				Current Test Status	<input type="checkbox"/> In process	<input checked="" type="checkbox"/> In process (exceed requested)	<input type="checkbox"/> Termination			
Equipment: 1.Oven: E24-F0028										
Test Data Between Initial Test and Final Test										
Sample No.	Initial Test Current Spec. (A) 0.40 Max.	Final Test Current Spec. (A) 0.40 Max.	Deviation (%)	Initial Test Speed Spec. (RPM) 4050-4950	Final Test Speed Spec. (RPM) 4050-4950	Deviation (%)	Initial Test Noise Spec. (dB A) 44.5 Max	Final Test Noise Spec. (dB A) 44.5 Max	Deviation 3 dBMax.	
33	0.219	0.203	-7.3	4396	4586	4.3	39.8	40.8	1.0	
34	0.210	0.194	-7.6	4483	4422	-1.4	38.9	39.5	0.6	
35	0.218	0.197	-9.6	4405	4548	3.2	39.0	40.1	1.1	
36	0.208	0.197	-5.3	4439	4366	-1.6	39.2	40.3	1.1	
37	0.214	0.197	-7.9	4435	4554	2.7	39.5	39.8	0.3	
38	0.213	0.213	0.0	4507	4534	0.6	39.4	40.5	1.1	
39	0.217	0.213	-1.8	4446	4522	1.7	39.8	39.7	-0.1	
40	0.209	0.197	-5.7	4401	4324	-1.7	39.0	39.9	0.9	
41	0.215	0.198	-7.9	4452	4479	0.6	38.6	39.2	0.6	
42	0.211	0.193	-8.5	4448	4382	-1.5	39.1	39.4	0.3	
43	0.215	0.221	2.8	4444	4517	1.6	38.8	39.6	0.8	
44	0.210	0.214	1.9	4470	4627	3.5	39.4	39.8	0.4	
45	0.214	0.234	9.3	4479	4348	-2.9	39.9	39.5	-0.4	
46	0.211	0.193	-8.5	4449	4460	0.2	38.8	39.7	0.9	
47	0.216	0.191	-11.6	4365	4428	1.4	38.9	39.9	1.0	
48	0.212	0.207	-2.4	4473	4524	1.1	39.0	39.0	0.0	
49	0.210	0.196	-6.7	4478	4395	-1.9	39.5	39.5	0.0	
50	0.214	0.198	-7.5	4499	4388	-2.5	39.3	40.1	0.8	
51	0.215	0.191	-11.2	4443	4434	-0.2	39.2	40.5	1.3	
52	0.208	0.201	-3.4	4491	4522	0.7	39.1	40.3	1.2	
53	0.218	0.194	-11.0	4541	4449	-2.0	39.5	40.7	1.2	
54	0.212	0.199	-6.1	4399	4389	-0.2	38.7	39.5	0.8	
55	0.215	0.197	-8.4	4401	4422	0.5	38.8	39.4	0.6	
56	0.221	0.209	-5.4	4421	4213	-4.7	38.1	39.2	1.1	
X-Bar	0.2	0.2	-	4458.1	4473.1	-	39.19	39.9	-	
σ	0.004	0.010	-	43.620	83.888	-	0.420	0.536	-	
QE File No.	Time-out for function test or others (hrs)			Issued Date		Reported By		Approved By		
DG13FNL112	2840.00			2015/5/7		Loly.Wang		Tim.Yi		