



# 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 AUB 80x80x25.4mm series as the right table	AUB0812EJ-00			
	AUB0812EJ-00HJP			

**Representative Test P/N : AUB0812EJ-00GZT**

**Equipment: 1.Oven: E24-T0161**

⊙ **L<sub>10</sub> Expectancy: 60,000 hours minimum @ fan rated voltage and the temperature of 40°C**

According to the equation for **Weibull distribution**, **MTTF ≙ 7×L10 = 420,000 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<sub>r;c</sub>) 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 <sub>s</sub> (°C) (Actual Test Temperature)	Unstress Temperature T <sub>u</sub> (°C)	Acceleration Factor A <sub>F</sub>	Quantity of Test Devices n (pcs)	Poisson Distribution Factor B <sub>r;c</sub>	Required test time with zero failure t (hours)	Actual test time with zero failure t (hours)	Verified MTTF 40 °C (hours)	Verified L <sub>10</sub> 40 °C (hours)
70	40	8.00	100	2.303	1,759	1,466.0	350,088	50,013

**Test Progress:**

Date for Test Beginning	Date for Test Termination (at least)	Current Test Status			Current Total Test Time (hours)
2021/1/18 9:00 AM	2021/5/18 4:45 AM	<input type="checkbox"/> In process	<input type="checkbox"/> In process (exceed requested)	<input checked="" type="checkbox"/> Termination	1466.0

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<sub>10</sub> 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 <sub>F</sub>	Estimated MTTF (hours)	Estimated L <sub>10</sub> (hours)
25	22.63	990,197	141,457
30	16.00	700,175	100,025
40	8.00	350,088	50,013
50	4.00	175,044	25,006
60	2.00	87,522	12,503
70	1.00	43,761	6,252

- Fan permission criteria for the measurement after test :
1. Speed can not drop of ≥ 15% below the original measured rpm.
  2. Current cannot increase > 15% of original measure current.
  3. Noise cannot >3dB over the original measure noise.

<b>Test Result</b>	<input checked="" type="checkbox"/> <b>Accept</b>
	<input type="checkbox"/> <b>Reject</b>

QE File No.	Time-out for function test or others (hours)	Issued Date	Reported By	Approved By
DG21FNL001	1117.00	2021/5/6	Loly.Wang	Tim.Yi

BGN (dBA) : 15.9

Temp (°C) : 24.9



## DC FAN FUNCTION TEST RECORD FOR LIFE EXPERIMENT

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				AUB0812EJ-00HJP						
<b>Required Test Time (hrs)</b>	<b>Date for Test Beginning</b>	<b>Date for Test Termination</b>	<b>Sample Size (pcs):</b>	<b>Failure (pcs):</b>	<b>Current Total Test Time (hrs)</b>					
1,759	2021/1/18 9:00 AM	2021/5/18 4:45 AM	100	0	<b>1466.0</b>					
Representative Test P/N : AUB0812EJ-00GZT				<b>Current Test Status</b>		<input type="checkbox"/> In process		<input type="checkbox"/> In process (exceed requested)		<input checked="" type="checkbox"/> Termination
Equipment: 1.Oven: E24-T0161										
Test Data Between Initial Test and Final Test										
Sample No.	Initial Test Current Spec. (A) <b>0.66 Max.</b>	Final Test Current Spec. (A) <b>0.66 Max.</b>	Deviation (%)	Initial Test Speed Spec. (RPM) <b>4050-4950</b>	Final Test Speed Spec. (RPM) <b>4050-4950</b>	Deviation (%)	Initial Test Noise Spec. (dB A) <b>55.0 Max</b>	Final Test Noise Spec. (dB A) <b>55.0 Max</b>	Deviation <b>3 dBMax.</b>	
1	0.54	0.53	-2.0	4458	4516	1.3	50.8	50.2	-0.6	
2	0.55	0.54	-2.2	4590	4605	0.3	50.6	49.9	-0.7	
3	0.55	0.54	-0.7	4516	4525	0.2	50.5	50.2	-0.3	
4	0.55	0.52	-4.9	4497	4603	2.4	50.3	50.2	-0.1	
5	0.54	0.52	-3.3	4507	4650	3.2	51.0	51.4	0.4	
6	0.55	0.52	-5.1	4465	4549	1.9	50.8	50.4	-0.4	
7	0.54	0.52	-3.0	4491	4527	0.8	50.4	50.0	-0.4	
8	0.54	0.53	-2.4	4484	4520	0.8	50.9	50.0	-0.9	
9	0.55	0.54	-2.2	4535	4554	0.4	51.0	50.6	-0.4	
10	0.54	0.54	-1.3	4500	4518	0.4	51.0	51.3	0.3	
11	0.55	0.52	-5.4	4576	4640	1.4	50.7	51.0	0.3	
12	0.54	0.53	-1.1	4490	4628	3.1	50.6	50.4	-0.2	
13	0.55	0.54	-1.8	4501	4534	0.7	50.7	50.6	-0.1	
14	0.54	0.53	-2.6	4507	4581	1.6	50.6	50.7	0.1	
15	0.54	0.53	-1.7	4477	4513	0.8	50.3	50.8	0.5	
16	0.54	0.53	-2.6	4518	4558	0.9	50.5	50.0	-0.5	
17	0.54	0.53	-1.5	4555	4517	-0.8	50.4	50.2	-0.2	
18	0.54	0.51	-4.8	4495	4646	3.4	50.9	51.1	0.2	
19	0.55	0.51	-6.1	4480	4613	3.0	50.4	50.0	-0.4	
20	0.55	0.52	-5.1	4491	4617	2.8	50.6	50.8	0.2	
21	0.54	0.52	-3.7	4587	4525	-1.4	50.3	50.4	0.1	
22	0.53	0.52	-1.7	4462	4644	4.1	50.4	50.8	0.4	
23	0.54	0.53	-2.6	4536	4648	2.5	51.3	51.5	0.2	
24	0.55	0.52	-5.3	4508	4609	2.2	51.3	51.2	-0.1	
25	0.55	0.52	-3.9	4566	4634	1.5	50.6	50.7	0.1	
26	0.54	0.54	0.9	4555	4550	-0.1	50.7	49.4	-1.3	
27	0.53	0.51	-4.1	4558	4528	-0.7	50.3	50.0	-0.3	
28	0.52	0.51	-2.5	4458	4629	3.8	50.9	50.7	-0.2	
29	0.54	0.53	-1.1	4535	4543	0.2	50.5	49.3	-1.2	
30	0.54	0.52	-4.6	4592	4676	1.8	51.2	52.0	0.8	
31	0.55	0.58	4.0	4501	4294	-4.6	50.4	48.5	-1.9	
32	0.54	0.52	-2.1	4509	4561	1.2	50.9	50.2	-0.7	
<b>QE File No.</b>	<b>Time-out for function test or others (hours)</b>			<b>Issued Date</b>		<b>Reported By</b>		<b>Approved By</b>		
DG21FNL001	1117.00			2021/5/6		Loly.Wang		Tim.Yi		



## DC FAN FUNCTION TEST RECORD FOR LIFE EXPERIMENT

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AUB0812EJ-00				
AUB0812EJ-00HJP				

Required Test Time (hrs)	Date for Test Beginning	Date for Test Termination	Sample Size (pcs):	Failure (pcs):	Current Total Test Time (hrs)
1,759	2021/1/18 9:00 AM	2021/5/18 4:45 AM	100	0	<b>1466.0</b>
Representative Test P/N : AUB0812EJ-00GZT			<b>Current Test Status</b> <input type="checkbox"/> In process <input type="checkbox"/> In process (exceed requested) <input checked="" type="checkbox"/> Termination		
Equipment: 1.Oven: E24-T0161					

### Test Data Between Initial Test and Final Test

Sample No.	Initial Test Current Spec. ( A ) <b>0.66 Max.</b>	Final Test Current Spec. ( A ) <b>0.66 Max.</b>	Deviation (%)	Initial Test Speed Spec. ( RPM ) <b>4050-4950</b>	Final Test Speed Spec. ( RPM ) <b>4050-4950</b>	Deviation (%)	Initial Test Noise Spec. ( dB A ) <b>55.0 Max</b>	Final Test Noise Spec. ( dB A ) <b>55.0 Max</b>	Deviation <b>3 dBMax.</b>
33	0.56	0.54	-3.2	4566	4649	1.8	51.0	52.2	1.2
34	0.53	0.51	-4.3	4526	4634	2.4	50.5	50.7	0.2
35	0.54	0.51	-4.6	4478	4685	4.6	50.2	50.8	0.6
36	0.55	0.50	-10.6	4472	4664	4.3	50.4	50.6	0.2
37	0.55	0.54	-0.9	4529	4575	1.0	51.0	51.0	0.0
38	0.56	0.53	-3.8	4556	4685	2.8	51.3	51.6	0.3
39	0.54	0.51	-6.3	4433	4627	4.4	50.3	50.9	0.6
40	0.53	0.52	-2.1	4502	4560	1.3	50.2	50.2	0.0
41	0.56	0.55	-2.5	4499	4565	1.5	50.5	51.0	0.5
42	0.55	0.54	-1.8	4527	4544	0.4	51.0	50.0	-1.0
43	0.54	0.51	-4.8	4500	4613	2.5	50.4	50.0	-0.4
44	0.56	0.54	-4.1	4518	4630	2.5	50.2	50.5	0.3
45	0.55	0.52	-5.4	4487	4634	3.3	50.6	50.8	0.2
46	0.54	0.53	-2.0	4487	4575	2.0	50.8	50.8	0.0
47	0.54	0.52	-4.4	4446	4593	3.3	50.2	50.9	0.7
48	0.55	0.52	-4.8	4473	4621	3.3	50.4	50.8	0.4
49	0.54	0.52	-2.1	4492	4519	0.6	51.0	50.5	-0.5
50	0.56	0.52	-7.9	4515	4609	2.1	51.0	51.0	0.0
51	0.55	0.54	-1.7	4545	4606	1.3	51.2	50.9	-0.3
52	0.54	0.53	-2.6	4460	4628	3.8	50.6	50.7	0.1
53	0.53	0.50	-5.8	4539	4658	2.6	50.5	50.7	0.2
54	0.54	0.52	-4.8	4545	4598	1.2	50.9	50.8	-0.1
55	0.54	0.52	-3.7	4503	4616	2.5	50.8	51.1	0.3
56	0.54	0.54	-1.3	4514	4542	0.6	50.9	50.5	-0.4
57	0.54	0.51	-5.5	4525	4686	3.6	50.5	51.2	0.7
58	0.54	0.54	0.0	4514	4437	-1.7	51.0	50.0	-1.0
59	0.55	0.53	-3.5	4592	4605	0.3	50.4	50.7	0.3
60	0.56	0.53	-5.3	4645	4637	-0.2	51.2	51.5	0.3
61	0.57	0.55	-3.9	4596	4731	2.9	51.3	51.4	0.1
62	0.55	0.55	-1.6	4549	4678	2.8	51.6	51.7	0.1
63	0.55	0.53	-4.4	4563	4669	2.3	50.9	51.5	0.6
64	0.54	0.53	-1.7	4518	4629	2.5	50.6	50.3	-0.3

QE File No.	Time-out for function test or others (hrs)	Issued Date	Reported By	Approved By
DG21FNL001	1117.00	2021/5/6	Loly.Wang	Tim.Yi



## DC FAN FUNCTION TEST RECORD FOR LIFE EXPERIMENT

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	AUB0812EJ-00HP			

Required Test Time (hrs)	Date for Test Beginning	Date for Test Termination	Sample Size (pcs):	Failure (pcs):	Current Total Test Time (hrs)
1,759	2021/1/18 9:00 AM	2021/5/18 4:45 AM	100	0	<b>1466.0</b>

Representative Test P/N : AUB0812EJ-00GZT	<b>Current Test Status</b>	<input type="checkbox"/> In process	<input type="checkbox"/> In process (exceed requested)	<input checked="" type="checkbox"/> Termination
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Equipment: 1.Oven: E24-T0161

### 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
	<b>0.66 Max.</b>	<b>0.66 Max.</b>		<b>4050-4950</b>	<b>4050-4950</b>		<b>55.0 Max</b>	<b>55.0 Max</b>	<b>3 dBMax.</b>
65	0.56	0.52	-7.3	4494	4566	1.6	50.3	50.0	-0.3
66	0.55	0.54	-1.8	4488	4615	2.8	50.2	50.4	0.2
67	0.54	0.52	-3.0	4446	4604	3.6	50.5	51.0	0.5
68	0.55	0.55	0.2	4611	4365	-5.3	51.0	49.9	-1.1
69	0.53	0.53	-1.1	4541	4698	3.5	50.8	51.4	0.6
70	0.55	0.51	-6.9	4546	4614	1.5	50.7	50.7	0.0
71	0.55	0.52	-4.2	4502	4682	4.0	50.6	50.7	0.1
72	0.53	0.51	-4.9	4547	4676	2.8	50.8	50.6	-0.2
73	0.55	0.52	-5.1	4507	4661	3.4	50.9	51.2	0.3
74	0.56	0.51	-8.7	4546	4636	2.0	50.4	50.7	0.3
75	0.55	0.53	-4.2	4502	4683	4.0	51.4	51.3	-0.1
76	0.56	0.52	-7.9	4469	4597	2.9	50.8	50.8	0.0
77	0.55	0.54	-2.0	4582	4606	0.5	51.3	50.8	-0.5
78	0.56	0.55	-0.7	4478	4505	0.6	51.1	49.5	-1.6
79	0.54	0.53	-2.0	4508	4594	1.9	50.7	50.4	-0.3
80	0.54	0.51	-6.5	4476	4658	4.1	51.2	51.2	0.0
81	0.55	0.52	-4.6	4510	4648	3.1	50.9	51.0	0.1
82	0.55	0.52	-5.1	4483	4646	3.6	51.0	50.7	-0.3
83	0.55	0.51	-7.6	4521	4707	4.1	50.6	50.9	0.3
84	0.53	0.53	0.2	4508	4635	2.8	50.9	51.0	0.1
85	0.53	0.51	-4.5	4563	4624	1.3	50.3	50.9	0.6
86	0.54	0.52	-4.1	4451	4645	4.4	50.5	50.8	0.3
87	0.55	0.50	-8.2	4528	4657	2.8	50.7	51.0	0.3
88	0.53	0.53	0.6	4542	4587	1.0	50.8	50.4	-0.4
89	0.54	0.51	-5.5	4556	4642	1.9	50.9	51.6	0.7
90	0.54	0.52	-3.7	4565	4657	2.0	51.1	51.6	0.5
91	0.55	0.52	-6.0	4523	4656	2.9	51.1	51.5	0.4
92	0.54	0.54	-0.2	4543	4597	1.2	51.4	50.1	-1.3

QE File No.	Time-out for function test or others (hrs)	Issued Date	Reported By	Approved By
DG21FNL001	1117.00	2021/5/6	Loly.Wang	Tim.Yi



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				AUB0812EJ-00HJP						
<b>Required Test Time (hrs)</b>	<b>Date for Test Beginning</b>	<b>Date for Test Termination</b>	<b>Sample Size (pcs):</b>	<b>Failure (pcs):</b>	<b>Current Total Test Time (hrs)</b>					
1,759	2021/1/18 9:00 AM	2021/5/18 4:45 AM	100	0	<b>1466.0</b>					
Representative Test P/N : AUB0812EJ-00GZT				<b>Current Test Status</b>		<input type="checkbox"/> In process	<input type="checkbox"/> In process (exceed requested)	<input checked="" type="checkbox"/> Termination		
Equipment: 1.Oven: E24-T0161										
<b>Test Data Between Initial Test and Final Test</b>										
Sample No.	Initial Test Current Spec. ( A ) <b>0.66 Max.</b>	Final Test Current Spec. ( A ) <b>0.66 Max.</b>	Deviation (%)	Initial Test Speed Spec. ( RPM ) <b>4050-4950</b>	Final Test Speed Spec. ( RPM ) <b>4050-4950</b>	Deviation (%)	Initial Test Noise Spec. ( dB A ) <b>55.0 Max</b>	Final Test Noise Spec. ( dB A ) <b>55.0 Max</b>	Deviation <b>3 dBMax.</b>	
93	0.56	0.53	-5.7	4545	4522	-0.5	51.0	50.9	-0.1	
94	0.55	0.53	-3.1	4531	4699	3.7	50.5	50.7	0.2	
95	0.54	0.54	-0.2	4484	4565	1.8	50.4	50.5	0.1	
96	0.53	0.53	-1.1	4516	4562	1.0	50.6	50.7	0.1	
97	0.53	0.51	-4.9	4497	4596	2.2	50.5	50.0	-0.5	
98	0.55	0.52	-4.0	4492	4516	0.5	51.0	50.7	-0.3	
99	0.54	0.51	-5.4	4440	4625	4.2	50.7	51.3	0.6	
100	0.52	0.51	-2.3	4598	4569	-0.6	51.2	50.6	-0.6	
X-Bar	0.54	0.52	-	4517.53	4600.72	-	50.74	50.69	-	
$\sigma$	0.01	0.01	-	40.88	68.01	-	0.33	0.57	-	
<b>QE File No.</b>	<b>Time-out for function test or others (hrs)</b>		<b>Issued Date</b>		<b>Reported By</b>		<b>Approved By</b>			
DG21FNL001	1117.00		2021/5/6		Loly.Wang		Tim.Yi			