



TEST 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 FFB80x80x38 mm series as the right table	FFB0812GHE-R00	FFB0812SHE	FFB0812VHE	FFB0812HHE
	FFB0812GHE	FFB0848SHE	FFB0848VHE	FFB0848HHE
	FFB0824EHE	FFB0824SHE	FFB0824VHE	FFB0824HHE
Representative Test P/N :FFB0812UHE-F00				
Equipment: 1. Oven:E24-F0107			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	17,888.0	2,520,320	360,046

Test Progress:

Date for Test Beginning	Date for Test Termination (at least)	Current Test Status			Current Total Test Time (hours)
2005/1/18 7:00 PM	2007/1/9 5:37 PM	<input type="checkbox"/> In process	<input type="checkbox"/> In process (exceed requested)	<input checked="" type="checkbox"/> Termination	17888.0

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	7,128,541	1,018,363
30	16.00	5,040,639	720,091
40	8.00	2,520,320	360,046
50	4.00	1,260,160	180,023
60	2.00	630,080	90,011
70	1.00	315,040	45,006

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
DG05FNL008	14818.50	2008/10/12 1:30 PM	Nan.Yang	Zenny Lei



DC FAN CUSTOMIZED LIFE EXPERIMENT TEST REPORT

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FFB0812GHE-R00	FFB0812SHE	FFB0812VHE	FFB0812HHE
FFB0812GHE	FFB0848SHE	FFB0848VHE	FFB0848HHE
FFB0824EHE	FFB0824SHE	FFB0824VHE	FFB0824HHE

Required Test Time (hrs)	Date for Test Beginning	Date for Test Termination	Sample Size (pcs):	Failure (pcs):	Current Total Test Time (hrs)
2,484	2005/1/18 7:00 PM	2007/1/9 5:37 PM		0	17888.0

Representative Test P/N :FFB0812UHE-F00	Current Test Status	<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-F0107 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) 1.80Max.	Current Spec. (A) 1.80Max.		Speed Spec. (RPM) 6900-8100	Speed Spec. (RPM) 6900-8100		Noise Spec. (dB A) 66.2Max	Noise Spec. (dB A) 66.2Max	
1	1.51	1.47	-2.3	7588	7605	0.2	61.9	61.4	-0.8
2	1.55	1.53	-1.7	7672	7657	-0.2	61.3	61.6	0.5
3	1.53	1.51	-0.8	7660	7710	0.7	61.5	62.0	0.8
4	1.57	1.54	-1.6	7645	7701	0.7	62.4	61.7	-1.1
5	1.55	1.53	-1.1	7586	7603	0.2	61.3	62.0	1.1
6	1.55	1.51	-2.1	7669	7652	-0.2	61.9	61.2	-1.1
7	1.54	1.52	-1.0	7613	7642	0.4	61.1	61.6	0.8
8	1.52	1.49	-1.6	7571	7668	1.3	61.7	61.9	0.3
9	1.52	1.57	3.4	7628	7634	0.1	62.1	61.7	-0.6
10	1.54	1.53	-0.6	7589	7704	1.5	61.5	61.3	-0.3
11	1.54	1.54	-0.1	7675	7686	0.1	61.9	61.5	-0.6
12	1.47	1.44	-1.8	7506	7651	1.9	61.3	61.3	0.0
13	1.51	1.50	-0.4	7566	7614	0.6	61.7	61.6	-0.2
14	1.50	1.49	-0.8	7548	7595	0.6	61.4	61.9	0.8
15	1.53	1.52	-1.0	7605	7602	0.0	61.9	61.7	-0.3
16	1.53	1.52	-0.2	7599	7673	1.0	60.7	61.6	1.5
17	1.56	1.56	-0.1	7626	7641	0.2	61.5	61.4	-0.2
18	1.59	1.50	-5.1	7658	7612	-0.6	61.3	61.6	0.5
19	1.57	1.55	-1.1	7638	7748	1.4	61.9	61.6	-0.5
20	1.56	1.55	-0.8	7651	7605	-0.6	61.1	61.9	1.3
21	1.61	1.53	-5.1	7700	7749	0.6	61.8	61.7	-0.2
22	1.53	1.53	-0.3	7592	7697	1.4	61.2	61.8	1.0
23	1.49	1.46	-2.2	7570	7604	0.4	61.3	61.5	0.3
24	1.49	1.47	-1.3	7547	7658	1.5	61.5	61.8	0.5
25	1.55	1.51	-2.6	7623	7580	-0.6	61.7	61.6	-0.2
26	1.50	1.57	4.5	7448	7672	3.0	62.3	61.9	-0.6
27	1.57	1.54	-1.7	7635	7672	0.5	61.7	61.7	0.0
28	1.52	1.50	-1.5	7644	7551	-1.2	61.4	61.4	0.0
29	1.51	1.51	-0.3	7561	7624	0.8	61.7	61.9	0.3
30	1.57	1.55	-1.3	7681	7732	0.7	61.5	61.5	0.0
31	1.48	1.44	-2.6	7531	7595	0.8	61.9	61.3	-1.0
32	1.48	1.43	-3.4	7512	7630	1.6	61.3	61.6	0.5
33	1.59	1.56	-2.2	7693	7744	0.7	61.7	61.3	-0.6
34	1.58	1.56	-0.8	7630	7826	2.6	60.8	61.5	1.2
35	1.53	1.48	-3.1	7493	7595	1.4	61.1	61.7	1.0

QE File No.	Time-out for function test or others (hours)	Issued Date	Reported By	Approved By
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Sample No.	Initial Test	Final Test	Deviation (%)	Initial Test	Final Test	Deviation (%)	Initial Test	Final Test	Deviation (%)
	Current Spec. (A) 1.80Max.	Current Spec. (A) 1.80Max.		Speed Spec. (RPM)	Speed Spec. (RPM) 6900-8100		Noise Spec. (dB A) 66.2Max	Noise Spec. (dB A) 66.2Max	
36	1.56	1.51	-3.3	7625	7602	-0.3	61.4	61.4	0.0
37	1.48	1.47	-0.7	7511	7654	1.9	61.9	61.3	-1.0
38	1.53	1.53	-0.3	7601	7643	0.6	62.1	61.6	-0.8
39	1.55	1.52	-2.1	7638	7724	1.1	61.5	61.5	0.0
40	1.52	1.50	-1.1	7610	7612	0.0	61.3	62.0	1.1
41	1.53	1.52	-0.4	7619	7689	0.9	61.7	61.8	0.2
42	1.56	1.53	-2.2	7668	7736	0.9	61.5	61.7	0.3
43	1.54	1.51	-1.9	7670	7780	1.4	61.4	61.5	0.2
44	1.50	1.50	0.1	7568	7612	0.6	61.2	61.6	0.7
45	1.55	1.53	-1.0	7599	7749	2.0	61.4	62.0	1.0
46	1.57	1.52	-2.7	7636	7652	0.2	61.5	61.7	0.3
47	1.53	1.53	-0.3	7606	7650	0.6	61.1	61.5	0.7
48	1.48	1.48	-0.2	7586	7576	-0.1	61.7	61.3	-0.6
49	1.57	1.57	0.2	7629	7693	0.8	61.3	61.7	0.7
50	1.52	1.46	-3.6	7579	7595	0.2	61.7	61.6	-0.2
51	1.54	1.52	-1.6	7653	7638	-0.2	61.5	61.9	0.7
52	1.49	1.50	0.3	7584	7600	0.2	61.9	61.3	-1.0
53	1.54	1.41	-8.5	7704	7590	-1.5	60.8	61.6	1.3
54	1.50	1.46	-2.5	7568	7638	0.9	61.5	61.6	0.2
55	1.52	1.53	1.0	7617	7614	0.0	61.1	61.9	1.3
56	1.54	1.52	-1.6	7665	7639	-0.3	61.3	61.6	0.5
X-Bar	1.532	1.511	-	7608.7	7653.9	-	61.52	61.62	-
σ	0.031	0.036	-	54.833	57.657	-	0.354	0.212	-

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