



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 PFD 40X40X28mm series as the right table					
Representative Test P/N :PFD0412ENJVN					
Equipment: 1.Oven: CK-1800					

◎ **L₁₀ Expectancy:** **70,000** hours minimum @ fan rated voltage and the temperature of 40℃
According to the equation for **Weibull distribution**, $MTTF \doteq 7 \times L_{10} =$ **490,000** 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,

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

where, (B_{rc}) 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 (℃) (Actual Test Temperature)	Unstress Temperature Tu (℃)	Acceleration Factor A _F	Quantity of Test Devices n (pcs)	Poisson Distribution Factor B _{rc}	Required test time with zero failure t (hours)	Actual test time with zero failure t (hours)	Verified MTTF 40 ℃ (hours)	Verified L ₁₀ 40 ℃ (hours)
90	40	32.00	56	2.303	869	1,360.0	766,466	109,495

Test Progress:

Date for Test Beginning	Date for Test Termination (at least)	Current Test Status			Current Total Test Time (hours)
2024/5/18 3:30 PM	2024/8/29 1:26 PM	☐ In process	☐ In process (exceed requested)	☒ Termination	1360.0

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 (℃)	Acceleration Factor A _F	Estimated MTTF (hours)	Estimated L ₁₀ (hours)
25	90.51	2,167,893	309,699
30	64.00	1,532,931	218,990
40	32.00	766,466	109,495
50	16.00	383,233	54,748
60	8.00	191,616	27,374
70	4.00	95,808	13,687
80	2.00	47,904	6,843
90	1.00	23,952	3,422

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

☒ Accept
☐ Reject

QE File No.	Time-out for function test or others (hours)	Issued Date	Reported By	Approved By
DG24FNL039	1600.50	2024/9/19	Poppy.Liang	Blandy.Yang

BGN (dBA) : 16.2

Temp (℃) : 26.0



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)				
869	2024/5/18 3:30 PM	2024/8/29 1:26 PM	56	0	1360.0				
Representative Test P/N :PFD0412ENJVN			Current Test Status	☐ In process	☐ In process (exceed requested)	☒ Termination			
Equipment: 1.Oven: CK-1800									
Test Data Between Initial Test and Final Test									
Sample No.	Initial Test Current Spec. (A) 5.5 Max.	Final Test Current Spec. (A) 5.5 Max.	Deviation (%)	Initial Test Speed Spec. (RPM) 40500-49500	Final Test Speed Spec. (RPM) 40500-49500	Deviation (%)	Initial Test Noise Spec. (dB A) 76.0Max	Final Test Noise Spec. (dB A) 76.0Max	Deviation 3 dBMax.
1	4.78	4.80	0.4	45746	45796	0.1	74.6	74.7	0.1
2	4.64	4.76	2.7	45140	45202	0.1	74.1	74.9	0.8
3	4.89	4.79	-2.0	45935	44757	-2.6	73.6	75.5	1.9
4	4.83	4.89	1.2	45894	45478	-0.9	73.5	75.2	1.7
5	4.60	4.90	6.5	45365	45978	1.4	74.4	75.0	0.6
6	4.64	4.78	3.1	45388	44888	-1.1	73.9	75.0	1.1
7	4.61	4.83	4.9	45963	45401	-1.2	72.7	75.0	2.3
8	4.80	4.90	2.1	46097	45334	-1.7	74.3	75.3	1.0
9	4.81	4.92	2.3	45576	45900	0.7	74.5	74.2	-0.3
10	4.60	4.68	1.9	45367	45088	-0.6	74.7	75.5	0.8
11	4.68	4.79	2.4	45855	46113	0.6	73.7	74.8	1.1
12	4.77	5.07	6.4	45843	46204	0.8	74.1	75.6	1.5
13	4.73	4.80	1.5	45699	45239	-1.0	74.4	75.3	0.9
14	4.87	4.94	1.6	45612	45386	-0.5	73.8	74.9	1.1
15	4.73	4.88	3.2	45958	45687	-0.6	73.6	74.4	0.8
16	4.94	4.89	-1.1	46288	45625	-1.4	73.1	75.2	2.1
17	4.62	4.77	3.2	45302	45396	0.2	74.1	74.5	0.4
18	4.64	4.77	2.9	45467	45663	0.4	73.5	76.1	2.6
19	4.82	4.77	-0.9	45964	45149	-1.8	74.4	75.2	0.8
20	4.82	4.89	1.4	45864	45927	0.1	74.2	75.3	1.1
21	4.90	4.85	-0.9	45548	45312	-0.5	74.1	75.2	1.1
22	4.73	4.69	-0.9	45494	45169	-0.7	74.2	74.6	0.4
23	4.81	4.78	-0.5	45855	44974	-1.9	73.8	74.0	0.2
24	4.81	5.10	6.0	45827	45929	0.2	73.4	75.2	1.8
25	4.85	4.90	1.0	45584	45551	-0.1	74.7	74.8	0.1
26	4.82	4.70	-2.4	46027	44886	-2.5	72.8	75.2	2.4
27	4.90	4.85	-1.2	45990	46082	0.2	72.7	75.5	2.8
28	4.96	5.01	1.1	45827	45605	-0.5	72.3	75.2	2.9
29	4.67	4.90	4.9	45873	45187	-1.5	74.8	75.2	0.4
30	4.98	4.79	-3.9	46136	45812	-0.7	73.6	76.0	2.4
31	4.72	4.79	1.5	45854	45749	-0.2	73.0	74.9	1.9
32	4.75	4.81	1.3	45464	45165	-0.7	72.6	75.5	2.9
QE File No.	Time-out for function test or others (hours)		Issued Date		Reported By		Approved By		
DG24FNL039	1600.50		2024/9/19		Poppy.Liang		Blandy.Yang		



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33	4. 78	4. 86	1.7	45753	44980	-1.7	74.6	76.0	1.4
34	4. 66	4. 87	4.4	45798	46144	0.8	75.0	75.4	0.4
35	4. 62	4. 70	1.7	45533	44824	-1.6	74.2	74.1	-0.1
36	4. 72	4. 83	2.2	45237	46093	1.9	73.6	74.5	0.9
37	4. 90	4. 95	1.0	45596	46088	1.1	75.1	74.6	-0.5
38	4. 71	4. 79	1.8	45828	45364	-1.0	73.5	75.8	2.3
39	4. 73	5. 02	6.2	46089	45785	-0.7	74.4	74.7	0.3
40	4. 92	5. 06	2.7	45936	45541	-0.9	74.7	75.3	0.6
41	4. 88	4. 70	-3.8	45744	45193	-1.2	74.1	74.8	0.7
42	4. 87	4. 96	1.8	46004	45853	-0.3	74.6	75.7	1.1
43	4. 69	4. 79	2.1	45695	45723	0.1	74.7	75.3	0.6
44	4. 69	4. 90	4.6	45451	45982	1.2	74.7	75.4	0.7
45	4. 75	5. 09	7.3	46062	45890	-0.4	74.8	74.6	-0.2
46	4. 77	4. 88	2.4	45622	45258	-0.8	74.7	74.6	-0.1
47	4. 63	5. 00	7.9	45788	45872	0.2	74.0	75.6	1.6
48	4. 69	4. 74	1.2	45500	45447	-0.1	74.8	75.3	0.5
49	4. 76	4. 79	0.5	45670	45265	-0.9	74.6	73.9	-0.7
50	5. 01	4. 87	-2.9	45924	45303	-1.4	74.4	75.0	0.6
51	4. 88	4. 98	2.0	46236	45000	-2.7	74.2	75.4	1.2
52	4. 78	4. 81	0.7	45574	45436	-0.3	73.7	74.6	0.9
53	4. 87	5. 14	5.6	45891	45571	-0.7	73.7	75.0	1.3
54	4. 71	4. 71	0.0	45748	45039	-1.5	72.3	74.5	2.2
55	4. 78	4. 91	2.7	45886	45701	-0.4	75.0	74.3	-0.7
56	4. 71	4. 78	1.5	45218	45775	1.2	75.7	75.5	-0.2
X-Bar	4.77	4.86	-	45743	45514	-	74.0	75.1	-
σ	0.11	0.11	-	264	381	-	0.7	0.5	-
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