



Test Report: PCD-40-1400B

40W Single Output AC Dimmable LED Power Supply

■ DESIGN VERIFY TEST

Output Function Test

Input Function Test

Protection Function Test

Component Stress Test

■ SAFETY & E.M.C. TEST

Safety Test

E.M.C. Test

■ RELIABILITY TEST

ENVIRONMENT TEST

DESIGN VERIFY TEST

OUTPUT FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT
1	RIPPLE & NOISE	V1 : 2500 mVp-p (Max)	I/P : 230VAC O/P : FULL LOAD Ta : 25°C	V1 : 1100 mVp-p (Max)	P
2	OPERATING VOLTAGE RANGE	V1= 17V~29V	I/P : 230VAC O/P : CV MODE Ta : 25°C	O/P= 17V : 1.395 A O/P= 28V : 1.394 A	P
3	SET UP TIME	230VAC : 500 ms (Max)	I/P : 230 VAC O/P : FULL LOAD Ta : 25°C	230VAC/ 327 ms	P
4	OVER/UNDERSHOOT TEST	< 35V	I/P : 230 VAC O/P : FULL LOAD Ta : 25°C	TEST : < 35 V	P
5	CURRENT ACCURACY	±5%	I/P : 230 VAC O/P : FULL LOAD Ta : 25°C	TEST : ±0.11% %	P

INPUT FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT
1	INPUT VOLTAGE RANGE	180VAC~295 VAC	I/P : TESTING O/P : FULL LOAD Ta : 25°C	175 V~295V	P
			I/P : LOW-LINE=3V=177 V HIGH-LINE=295 V O/P : FULL/MIN LOAD ON : 30 Sec . OFF : 30 Sec 10MIN (AC POWER ON/OFF NO DAMAGE)	TEST : OK	
2	INPUT FREQUENCY RANGE	47HZ ~63 HZ NO DAMAGE OSC	I/P : 180 VAC ~ 295 VAC O/P : FULL~MIN LOAD Ta : 25°C	TEST : OK	P
3	POWER FACTOR	0.9 / 230 VAC(TYP) 0.9 / 277 VAC(TYP)	I/P : 230 VAC I/P : 277 VAC O/P : FULL LOAD Ta : 25°C	PF= 0.959 / 100% PF= 0.929 / 100%	P
4	EFFICIENCY	85 % (TYP)	I/P : 230 VAC O/P : FULL LOAD Ta : 25°C	87.23 %	P
5	INPUT CURRENT	230V/ 0.35 A (TYP) 277V/ 0.30 A (TYP)	I/P : 230 VAC I/P : 277 VAC O/P : FULL LOAD Ta : 25°C	I = 0.216 A/ 230 VAC I = 0.181 A/ 277 VAC	P
6	INRUSH CURRENT	230V/ 11 A (TYP) (twidh=50us measured at 50% Ipeak) COLD START	I/P : 230 VAC O/P : FULL LOAD Ta : 25°C	I = 7.062 A/ 230 VAC T = 32.8 us	P
7	LEAKAGE CURRENT	< 0.5 mA / 240 VAC	I/P : 240 VAC O/P : Min LOAD Ta : 25°C	L-CASE : 0.003 mA N-CASE : 0.003 mA	P
8		Total harmonic distortion will be lower than 20% when output loading is 60% or higher at 230VAC	I/P : 230VAC O/P : 60% LOAD Ta : 25°C	THD : 18.85 %	P
		Total harmonic distortion will be lower than 20% when output loading is 75% or higher at 277VAC	I/P : 277VAC O/P : 75% LOAD Ta : 25°C	THD : 18.50 %	

PROTECTION FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT
1	OVER TEMPERATURE PROTECTION	SPEC : TSW1 : 105±5 °C O.T.P. NO DAMAGE	I/P : 230 VAC O/P : FULL LOAD	O.T.P. Active Shut down o/p voltage, re-power on to recover	P
2	SHORT PROTECTION	SHORT EVERY OUTPUT 1 HOUR NO DAMAGE	I/P : 295 VAC O/P : FULL LOAD Ta : 25°C	NO DAMAGE Hiccup mode, recovers automatically after fault condition is removed.	P

COMPONENT STRESS TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT
1	Power Transistor (D to S) or (C to E) Peak Voltage	Q 2 Rated : STP10NK80ZFP: 800V/9A	I/P : High-Line +3V = 298 V O/P : (1)Full Load Turn on (2) Output Short (3)Full load continue Ta : 25°C	(1) 632 V (2) 492 V (3) 580 V	P
2	Diode Peak Voltage	D100 Rated : STTH3002CT: 200V/30A	I/P : High-Line +3V = 298 V O/P : (1)Full Load Turn on (2)Output Short (3)Full load continue Ta : 25°C	(1) 166 V (2) 126 V (3) 163 V	P
3	Clamp Diode Peak Voltage	D 10 Rated : HER308: 1000V/3A	I/P : High-Line +3V = 298 V O/P : (1)Full Load Turn on (2)Output Short (3)Full load continue Ta : 25°C	(1) 618 V (2) 470 V (3) 574 V	P
4	Control IC Voltage Test	U 1 Rated : NCP1608B: 10.2V~20V	I/P : High-Line +3V = 298 V O/P : (1)Full Load Turn on /Off (2) Min load Turn on /Off (3)Full Load /Min load Change Ta : 25°C	(1) 14.4 V (2) 12.1 V (3) 14.3 V	P

■ SAFETY & E.M.C. TEST

SAFETY TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT
1	WITHSTAND VOLTAGE	I/P-O/P : 3.75 KVAC/min	I/P-O/P : 4 KVAC/min Ta : 25°C	I/P-O/P : 1.136 mA NO DAMAGE	P
2	ISOLATION RESISTANCE	I/P-O/P : 500VDC>100MΩ	I/P-O/P : 500 VDC Ta : 25°C /70%RH	I/P-O/P : >9999 MΩ NO DAMAGE	P

E.M.C TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT
1	HARMONIC	EN61000-3-2 CLASS C	I/P: 230/240/277VAC /50HZ/60HZ O/P:100% LOAD Ta:25°C	PASS	P
2	CONDUCTION	EN55015	I/P:230 VAC (50HZ) O/P:FULL LOAD Ta:25°C	PASS Test by certified Lab	P
3	RADIATION	EN55015	I/P: 230 VAC (50HZ) O/P:FULL LOAD Ta:25°C	PASS Test by certified Lab	P
4	E.S.D	EN61000-4-2 LIGHT INDUSTRY AIR:8KV / Contact:4KV	I/P: 230 VAC/50HZ O/P:FULL LOAD Ta:25°C	CRITERIA A	P
5	E.F.T	EN61000-4-4 LIGHT INDUSTRY INPUT: 1KV	I/P: 230 VAC/50HZ O/P:FULL LOAD Ta:25°C	CRITERIA B	P
6	SURGE	EN61000-4-5 LIGHT INDUSTRY L-N :1KV	I/P: 230 VAC/50HZ O/P:FULL LOAD Ta:25°C	CRITERIA B	P
7	Test by certified Lab & Test Report Prepare				

RELIABILITY TEST

ENVIRONMENT TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT																																																																																										
1	TEMPERATURE RISE TEST	MODEL : PCD-40-1750B 1. ROOM AMBIENT BURN-IN : 2.5 HRS I/P : 230VAC O/P : 95% LOAD Ta=30.4 °C 2. HIGH AMBIENT BURN-IN : 3.5 HRS I/P : 230VAC O/P : 95% LOAD Ta=49.2 °C <table><tr><th>NO</th><th>Position</th><th>P/N</th><th>ROOM AMBIENT Ta= 30.4 °C</th><th>HIGH AMBIENT Ta= 49.2 °C</th></tr><tr><td>1</td><td>LF2</td><td>LF6013</td><td>64.9°C</td><td>81.4°C</td></tr><tr><td>2</td><td>BD1</td><td>UR4KB80</td><td>74.6°C</td><td>90.3°C</td></tr><tr><td>3</td><td>Q6</td><td>FMV08N50E</td><td>72.7°C</td><td>89.2°C</td></tr><tr><td>4</td><td>C10</td><td>C/MPE 154/630V</td><td>71.5°C</td><td>88.0°C</td></tr><tr><td>5</td><td>L1</td><td>TR6108</td><td>72.0°C</td><td>87.6°C</td></tr><tr><td>6</td><td>U1</td><td>NCP1608B</td><td>70.7°C</td><td>85.3°C</td></tr><tr><td>7</td><td>C40</td><td>47uF/63V L7Kh 8*11.5 KY</td><td>62.3°C</td><td>79.9°C</td></tr><tr><td>8</td><td>Q2</td><td>STP10NK80ZFP</td><td>75.9°C</td><td>92.2°C</td></tr><tr><td>9</td><td>T1</td><td>TF6496</td><td>79.1°C</td><td>91.7°C</td></tr><tr><td>10</td><td>D100</td><td>FCH20A15</td><td>91.0°C</td><td>104.7°C</td></tr><tr><td>11</td><td>LF100</td><td>TR574</td><td>60.4°C</td><td>76.6°C</td></tr><tr><td>12</td><td>C105</td><td>1000u/35V UL10Kh 12.5*20 ZLH</td><td>67.6°C</td><td>82.8°C</td></tr><tr><td>13</td><td>TSW1</td><td>BW-DCP-105°C-R0 10mm</td><td>74.0°C</td><td>88.0°C</td></tr><tr><td>14</td><td>D10</td><td>HER308</td><td>76.5°C</td><td>92.0°C</td></tr><tr><td>15</td><td>R20</td><td>2W 240KΩ 5%</td><td>78.6°C</td><td>92.8°C</td></tr><tr><td>16</td><td>D30</td><td>HER204</td><td>75.7°C</td><td>89.5°C</td></tr><tr><td>17</td><td>R17</td><td>2W 4.3KΩ 5%</td><td>76.5°C</td><td>92.5°C</td></tr></table>			NO	Position	P/N	ROOM AMBIENT Ta= 30.4 °C	HIGH AMBIENT Ta= 49.2 °C	1	LF2	LF6013	64.9°C	81.4°C	2	BD1	UR4KB80	74.6°C	90.3°C	3	Q6	FMV08N50E	72.7°C	89.2°C	4	C10	C/MPE 154/630V	71.5°C	88.0°C	5	L1	TR6108	72.0°C	87.6°C	6	U1	NCP1608B	70.7°C	85.3°C	7	C40	47uF/63V L7Kh 8*11.5 KY	62.3°C	79.9°C	8	Q2	STP10NK80ZFP	75.9°C	92.2°C	9	T1	TF6496	79.1°C	91.7°C	10	D100	FCH20A15	91.0°C	104.7°C	11	LF100	TR574	60.4°C	76.6°C	12	C105	1000u/35V UL10Kh 12.5*20 ZLH	67.6°C	82.8°C	13	TSW1	BW-DCP-105°C-R0 10mm	74.0°C	88.0°C	14	D10	HER308	76.5°C	92.0°C	15	R20	2W 240KΩ 5%	78.6°C	92.8°C	16	D30	HER204	75.7°C	89.5°C	17	R17	2W 4.3KΩ 5%	76.5°C	92.5°C	P
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2	LOW TEMPERATURE TURN ON TEST	TURN ON AFTER 2 HOUR	I/P : 180VAC/295VAC O/P : 95 % LOAD Ta= -30 °C	TEST : OK	P																																																																																										
3	HIGH HUMIDITY HIGH TEMPERATURE HIGH VOLTAGE TURN ON TEST	AFTER 12 HOURS IN CHAMBER ON CONTROL 50 °C NO DAMAGE	I/P : 295 VAC O/P : 95% LOAD Ta= 50 °C HUMIDITY= 95 %R.H	TEST : OK	P																																																																																										
4	TEMPERATURE COEFFICIENT	± 0.03 %(0~50°C)	I/P : 230 VAC O/P : 95% LOAD	± 0.0115 %(0~50°C)	P																																																																																										
5	STORAGE TEMPERATURE TEST	1. Thermal shock Temperature : -45°C~ +85°C 2. Temperature change rate : 25°C / MIN 3. Dwell time low and high temperature : 30 MIN/EACH 4. Total test cycle : 5 CYCLE 5. Input/Output condition : STATIC		OK	P																																																																																										
6	THERMAL SHOCK TEST	1. Thermal shock Temperature : -35°C~ +55°C 2. Temperature change rate : 25°C / MIN 3. Dwell time low and high temperature : 30 MIN/EACH 4. Total test cycle : 10 CYCLE 5. Input/Output condition : 230VAC/Full Load AC ON/OFF TEST turn on 58sec ; turn off 2sec		OK	P																																																																																										

7	VIBRATION TEST	1 Carton & 1 Set (1) Waveform : Sine Wave (2) Frequency : 10~500Hz (3) Sweep Time : 12min/sweep cycle (4) Acceleration : 2G (5) Test Time : 72min in each axis (X.Y.Z) (6) Ta : 25℃	TEST : OK	P
8	CAPACITOR LIFE CYCLE	PCD-40-1750B:SUPPOSE C105 IS THE MOST CRITICAL COMPONENT (1) I/P : 230VAC O/P : FULL LOAD Ta=25 ℃ LIFE TIME (2) I/P : 230VAC O/P : FULL LOAD Ta=50 ℃ LIFE TIME (3) I/P : 230VAC O/P : 75% LOAD Ta=50 ℃ LIFE TIME	(1) 236268.8 HRS (2) 53625.6HRS (3) 66028.8HRS	P
9	MTBF	MIL-HDBK-217F NOTICES2 PARTS COUNT TOTAL FAILURE RATE : 362.331KHRS		P
10	DMTBF/Accelerated Life Test	Demonstration Mean Time Between Failure(Expected Life) : 30,000 hours @ Tcase 75℃; 50,000 hours @ Tcase 65℃		P

TEST RESULT	TESTER	APPROVAL
PASS	ZOULF	HOWAY

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