Test Report: NPP-1700-12

1700W High Reliable Ultra Wide Output Range Battery Charger & Power Supply 2-in-1

■ DESIGN VERIFY TEST

Output Function Test
Input Function Test
Protection Function Test
Control Function Test
Component Stress Test

■ SAFETY & E.M.C. TEST

Safety Test
E.M.C. Test

■ RELIABILITY TEST

ENVIRONMENT TEST

Battery Charger mode

■ DESIGN VERIFY TEST

OUTPUT FUNCTION TEST

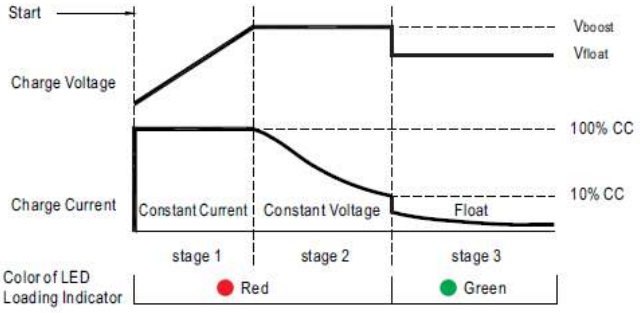
NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	BOOST CHARGE VOLTAGE (default)	14.4V± 0.12V	I/P: 230 VAC O/P: CC=90% LOAD Ta:25℃	14.415V
2	FLOAT CHARGE VOLTAGE (default)	13.8V±0.12 V	I/P: 230 VAC O/P:NO LOAD Ta:25℃	13.905V
3	OUTPUT VOLTAGE ADJUST RANGE	10.5V~ 21 V	I/P： 230 VAC O/P：CC=90% LOAD Ta：25℃	9.882V~21.687V
4	CURRENT ADJUSTABLE RANGE	42.5~85A	I/P： 230 VAC O/P：C.V MODE-1V Ta：25℃	36.058A~89.311A
5	MAX POWER	1428W	I/P: 230 VAC O/P:BAT. LOAD(CV=16.8V) Ta:25℃	1428.2 W
6	MAX. OUTPUT CURRENT	85A±0.85	I/P： 230 VAC O/P：C.V MODE-1V Ta：25℃	85.036A

PROTECTION FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	SHORT PROTECTION	SHORT EVERY OUTPUT 1 HOUR NO DAMAGE Constant current Range： 80.75~89.25A PROTECTION TYPE： Constant current limiting, charger will shut down, re-power on to recover	I/P: 264 VAC O/P: BAT. LOAD Ta:25℃	NO DAMAGE Constant current Range： 85.084 A PROTECTION TYPE： Constant current limiting, charger will shut down, re-power on to recover
2	OVER VOLTAGE PROTECTION	21.5V~26V PROTECTION TYPE： Shut down and latch off o/p voltage, re-power on to recover	I/P: 264VAC I/P: 230VAC I/P: 90VAC O/P:MIN LOAD Ta:25℃	23.8V/ 264VAC 23.8V/ 230VAC 23.8V/ 90VAC PROTECTION TYPE： Shut down and latch off o/p voltage, re-power on to recover
3	OVER TEMPERATURE PROTECTION	Protection type： Shut down O/P voltage, recovers automatically after	I/P: 264VAC I/P: 90VAC O/P:FULL LOAD	O.T.P. Active PROTECTION TYPE： Shut down O/P voltage,

		temperature goes down		recovers automatically after temperature goes down

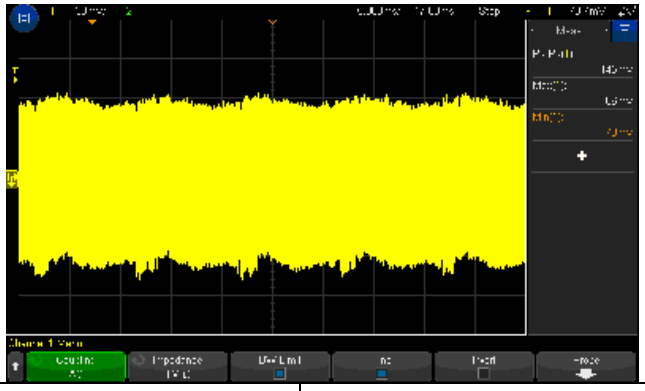
CONTROL FUNCTION TEST

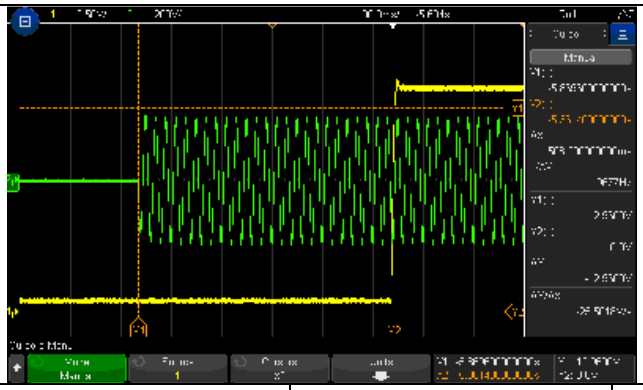
NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	FAN SPEED CONTROL	Depends on internal temperature	I/P: 230 VAC O/P:BAT. LOAD Ta:25℃	TEST: OK
2	REMOTE CONTROL	Rc+ / Rc- OPEN(-0.5V~0.5V) : Charger OFF ; SHORT(10.8V~13.2V) : Charger ON	I/P: 230 VAC O/P:BAT. LOAD Ta:25℃	OPEN /SHORT TEST: OK Charger OFF: -0.5V~7.4V Charger ON: 7.5 V~13.2V (1) Remote off Pin=6.535W (2) Remote off Vo= 0.048 V
3	CHARGE OK SIGNAL	The TTL signal out, Charger OK = 4.5 ~ 5.5V; Charger failure or protection = -0.5 ~ 0.5V	I/P: 230 VAC O/P:BAT. LOAD Ta:25℃	TEST: Charger OK = 5.169 V; Charger failure or protection = 13.18 mV
4	BATTERY FULL SIGNAL	The TTL signal out, Battery full = 4.5 ~ 5.5V Charging = -0.5 ~ 0.5V	I/P: 230 VAC O/P:BAT. LOAD Ta:25℃	TEST: Battery full = 5.201 V Charging = 13.31 mV
5	AUX POWER	OUTPUT VOLTAGE RANGE : 10.8~13.2V	I/P: 230 VAC O/P:BAT. LOAD Ta:25℃	TEST: 12.024 V
6	CHARGING CURVE	I/P:230Vac O/P:TESTING Ta:25℃ ◎ 3 stage charging curve (Default)  Taper Current 8.5A±0.85A Io 8.986A		
7	LED INDICATOR	LED Indicator / Charger(Default) / Power Supply Green / Float stage(stage 3) or full charged / Normal working Red / Charging(stage 1 or 2) / —— NO Light / Abnormal / Abnormal I/P: 230V O/P:TESTING LOAD Ta:25℃		TEST : OK

Power Supply mode

■ DESIGN VERIFY TEST

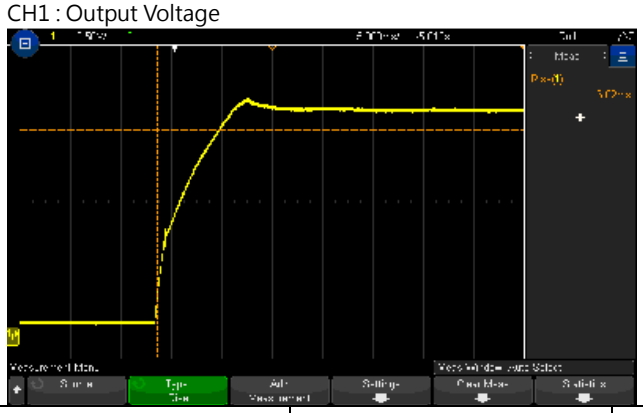
OUTPUT FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	OUTPUT VOLTAGE ADJUST RANGE	CH1: 10.5 V~ 21V	I/P : 230 VAC I/P : 115 VAC O/P : MIN LOAD Ta : 25℃	9.996V~21.766V/230VAC 9.998V~21.766V/115VAC
2	CURRENTADJUSTABLE RANGE	42.5~85A	I/P : 230 VAC O/P : TEST LOAD Ta : 25℃	41.25A~85.71A
3	OUTPUT VOLTAGE TOLERANCE	V1: -2.0 %~ +2.0 %	I/P: 90VAC /264VAC O/P:FULL/ MIN. LOAD Ta:25℃	V1: -0.31%~0.42%
4	LINE REGULATION	V1: -0.5 %~ +0.5 %	I/P: 90VAC~ 264VAC O/P:FULL LOAD Ta:25℃	V1: 0%~0.23%
5	LOAD REGULATION	V1: -2.0 %~ +2.0 %	I/P: 230VAC O/P:FULL ~MIN LOAD Ta:25℃	V1: -0.31%~0.42%
6	OVER/UNDERSHOOT TEST	< ±5%	I/P: 230VAC O/P:FULL LOAD Ta:25℃	4.66%
7	RIPPLE & NOISE(Max)	V1: 180 mVp-p	I/P:230VAC O/P:FULL LOAD Ta:25℃	V1: 145 mVp-p
	high frequency : 		low frequency : 	
8	SET UP TIME(Max)	230VAC/1800ms	I/P : 230 VAC O/P : FULL LOAD Ta : 25℃	230VAC/508.2ms
	INPUT=230VAC/50HZ @ FULL LOAD CH1 : Output Voltage CH2 : AC Input Voltage			



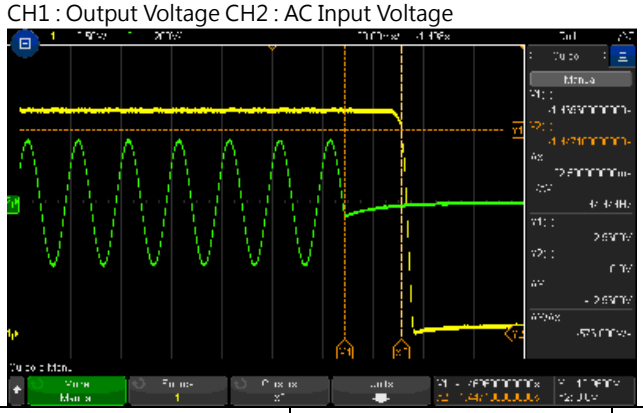
9	RISE TIME (Max)	230VAC/60ms	I/P： 230 VAC O/P：FULL LOAD Ta：25℃	230VAC/6.02ms

INPUT=230VAC/50HZ @ FULL LOAD
CH1 : Output Voltage

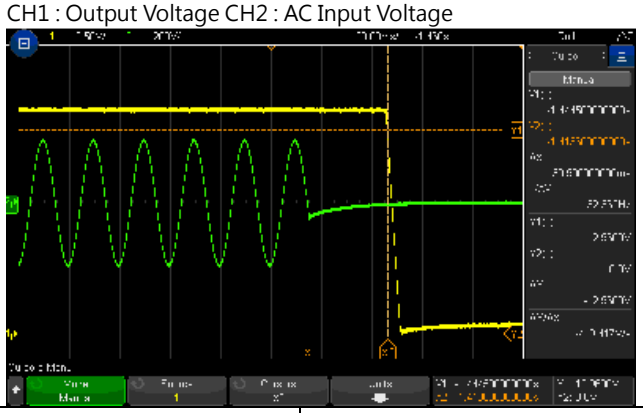


10	HOLD UP TIME (Typ.)	230VAC/FULL LOAD /10ms 230VAC/75% LOAD /16ms	I/P： 230 VAC O/P：FULL LOAD Ta：25℃	230VAC/FULL LOAD /22.5ms 230VAC/75% LOAD /30.9ms

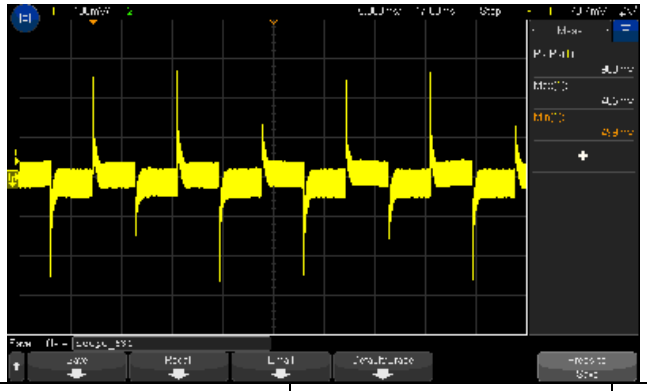
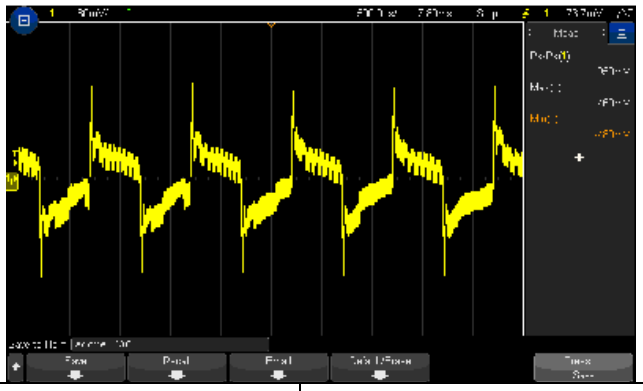
INPUT=230VAC/50HZ @ FULL LOAD
CH1 : Output Voltage CH2 : AC Input Voltage



INPUT=230VAC/50HZ @ 75% LOAD
CH1 : Output Voltage CH2 : AC Input Voltage



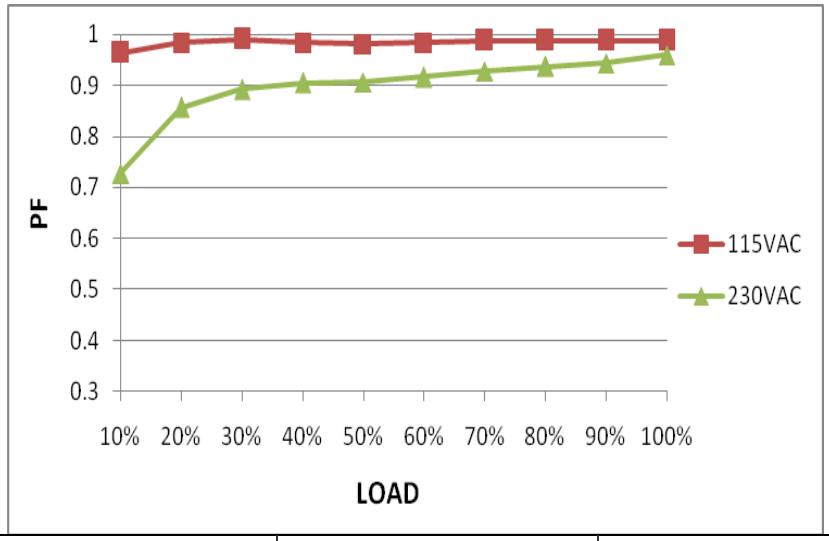
12	DYNAMIC LOAD	V1: 1440 mVp-p	I/P: 230VAC O/P: (1)FULL /5% LOAD 50%DUTY / 120HZ (2)FULL /5% LOAD 50%DUTY / 1KHZ Ta:25℃	980mVp-p/ 120HZ 950mVp-p / 1KHZ

	FULL /50% LOAD 50%DUTY / 120HZ 		FULL /50% LOAD 50%DUTY / 1KHZ 	
12	TRANSIENT RECOVERY TIME	V1: 1440 mVp-p	I/P: 230VAC O/P:40% LOAD CHANGE 50%DUTY/120HZ 1.25A/us	1130 mVp-p

INPUT FUNCTION TEST

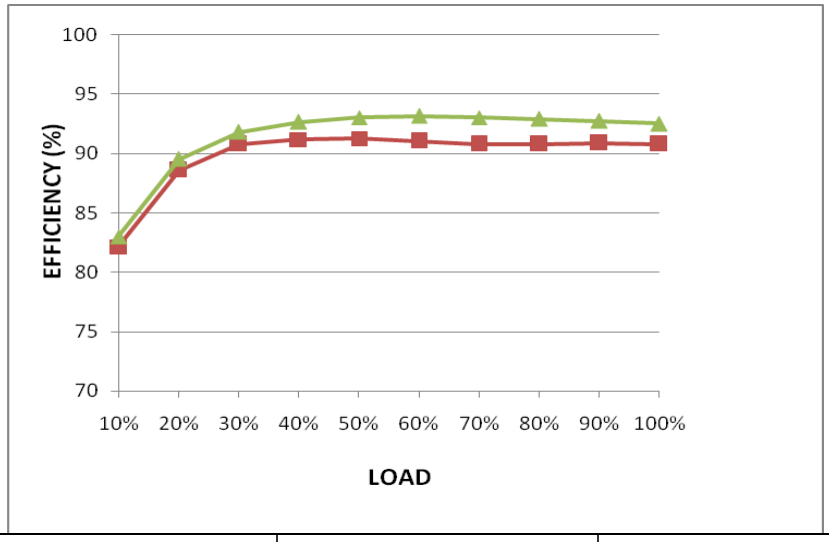
NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	INPUT VOLTAGE RANGE	90VAC~264VAC 250VDC~ 370VDC	(1) I/P:TESTING O/P: FULL LOAD (2) I/P:DC TESTING(L:+ N:-) O/P: FULL LOAD (3) I/P:DC TESTING(L:- N:+) O/P: FULL LOAD Ta:25℃	(1) 175.4V~264V/FULL LOAD 84.8V~264V/70% LOAD“ (2) 190Vdc~370Vdc/FULLLOAD 160Vdc~370Vdc/70% LOAD (3) 190Vdc~370Vdc/FULL LOAD 160Vdc~370Vdc/70% LOAD
			I/P: LOW-LINE-3V=87 V HIGH-LINE+15%= 300 V O/P: FULL LOAD (PLEASE CHECK DERATING CURVE) ON: 30 Sec . OFF: 30 Sec 10MIN	TEST: NO DAMAGE
2	INPUT FREQUENCY RANGE	47HZ ~63 HZ NO DAMAGE	I/P:90 VAC ~264 VAC O/P:FULL~MIN LOAD Ta:25℃	TEST: OK
3	INPUT CURRENT (Typ.)	230V/ 9.3 A 115V/ 14.8 A	I/P： 230 VAC I/P： 115 VAC O/P：RATED POWER (Vo=16.8V) Ta：25℃	I =6.96A/ 230VAC I =9.66A/ 115VAC
4	LEAKAGE CURRENT	Charger /Power: 0.75mA/240VAC (60335-1/2-29), 1.5mAPeak/240VAC (62368-1)	I/P: 240 VAC O/P:Min LOAD Ta:25℃	Charger/ Power: 60335： 0.097mA 62368：1.40 mA
5	POWER FACTOR (Typ.)	0.95/ 230VAC 0.98/115VAC	I/P： 230 VAC I/P： 115 VAC O/P：RATED POWER (Vo=16.8V) Ta：25℃	PF=0.960/230VAC PF=0.992/115VAC

P.F vs LOAD



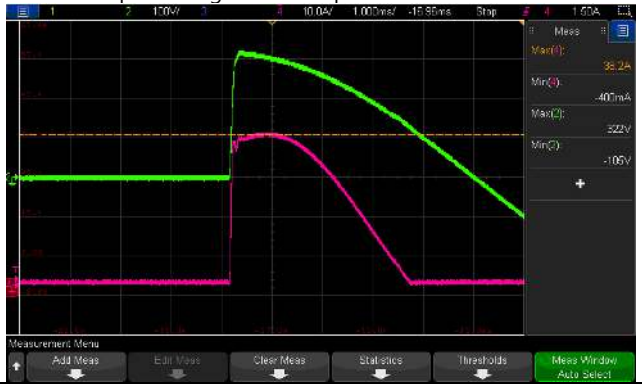
6	EFFICIENCY(Typ.)	92%	I/P:230 VAC O/P: RATED POWER (Vo=16.8V) Ta:25℃	92.705%

EFFICIENCY vs LOAD



7	INRUSH CURRENT(Typ.)	230V/50A COLD START	I/P： 230 VAC O/P：FULL LOAD Ta：25℃	I =38.2A/ 230VAC T50=2.5ms/230V

INPUT=230VAC/50HZ @ FULL LOAD
CH1 : AC Input Voltage CH4 : Input current



PROTECTION FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	OVER LOAD PROTECTION	105 %~ 115 % PROTECTION TYPE： Constant current limiting, unit will shutdown after 5 sec, re-power on to recover	I/P: 264VAC I/P: 230VAC I/P: 180VAC O/P:TESTING Ta:25℃	107.64%/ 264VAC 107.74%/ 230VAC 107.81%/180VAC PROTECTION TYPE： Constant current limiting, unit will shut down after 5 sec, re-power on to recover
2	OVER VOLTAGE PROTECTION	21.5V~26V PROTECTION TYPE： Shut down and latch off o/p voltage, re-power on to recover	I/P: 264VAC I/P: 230VAC I/P: 90VAC O/P:MIN LOAD Ta:25℃	23.8V/ 264VAC 23.8V/ 230VAC 23.8V/ 90VAC PROTECTION TYPE： Shut down and latch off o/p voltage, re-power on to recover
3	OVER TEMPERATURE PROTECTION	Protection type： Shut down O/P voltage, recovers automatically after temperature goes down	I/P: 264VAC I/P: 90VAC O/P:FULL LOAD	O.T.P. Active PROTECTION TYPE： Shut down O/P voltage, recovers automatically after temperature goes down
4	SHORT PROTECTION	SHORT EVERY OUTPUT 1 HOUR NO DAMAGE PROTECTION TYPE： Constant current limiting, charger will shut down, re-power on to recover	I/P: 264 VAC O/P: FULL LOAD Ta:25℃	NO DAMAGE PROTECTION TYPE： Constant current limiting, charger will shut down, re-power on to recover

CONTROL FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	FAN SPEED CONTROL	Depends on internal temperature	I/P: 230 VAC O/P:testing Ta:25℃	TEST: OK
2	REMOTE CONTROL	OPEN：POWER OFF； SHORT：POWER ON	I/P: 230 VAC O/P:FULL. LOAD Ta:25℃	OPEN/SHORT TEST: OK
3	DC OK	The TTL signal out, DC OK = 4.5 ~ 5.5V; Power supply failure or protection = -0.5 ~ 0.5V	I/P: 230 VAC O/P:BAT. LOAD Ta:25℃	TEST： Charger OK = 5.186 V; Charger failure or protection = 0.034 V

COMPONENT STRESS TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	
1	PWM Transistor (D to S) or (C to E) Peak Voltage	Q 901/Q903 Rated : 600V/ 34A	AC ON/OFF I/P: High-Line +3V =267V VDS: O/P: (1) Full Load (2) Output Short (3) Dynamic Load Full Load/ Min. Load 90%Duty/1KHz (4) Dynamic Load Full Load/ Min. Load 90%Duty/3KHz (5) Dynamic Load Full Load/ Min. Load 90%Duty/5KHz (6) Dynamic Load 100% Load/ Min. Load 50%Duty/120Hz (7)0%→400% Load. Ta:25℃	Q901 VDS: (1) 435V (2) 427V (3) 435V (4) 427V (5) 427V (6) 431V (7) 435V	Q903 VDS: (1) 447V (2) 447V (3) 451V (4) 447V (5) 451V (6) 451V (7) 443V
2	P.F.C Transistor (D to S) or (C to E) Peak Voltage	Q1/Q3 Rated: 600V /34 A	I/P: High-Line +3V =267 V AC ON/OFF VDS： O/P: (1)Full Load (2)Output Short (3) Dynamic Load Full Load/ Min. Load 90%Duty/1KHz (4) Dynamic Load Full Load/ Min. Load 90%Duty/3KHz (5) Dynamic Load Full Load/ Min. Load 90%Duty/5KHz (6) Dynamic Load 100% Load/ Min. Load 50%Duty/120Hz (7)0%→400% Load. Ta:25℃	Q1 VDS: (1) 467V (2) 455V (3) 463V (4) 459V (5) 455V (6) 447V (7) 427V	Q3 VDS: (1) 483V (2) 463V (3) 475V (4) 475V (5) 475V (6) 467V (7) 439V
3	AUX MOS	U600 Rated: 800V /4.9 A	I/P: High-Line +3V =267 V AC ON/OFF O/P: (1)Full Load (2)Output Short (3) Dynamic Load Full Load/ Min. Load 90%Duty/1KHz (4) Dynamic Load Full Load/ Min. Load 90%Duty/3KHz (5) Dynamic Load Full Load/ Min. Load 90%Duty/5KHz (6) Dynamic Load 100% Load/ Min. Load 50%Duty/120Hz (7)0%→400% Load. Ta:25℃	U600 VDS: (1) 549V (2) 553V (3) 545V (4) 549V (5) 549V (6) 557V (7) 565V	

4	P.F.C DIODE	D 13/D16 Rated: 6 A/ 650 V	I/P:High-Line +3V =267 V AC ON/OFF O/P: (1)Full Load (2)Output Short (3)Dynamic Load Full Load/ Min. Load 90%Duty/5KHz (4)Dynamic Load 100% Load/ Min. Load 50%Duty/120Hz Ta:25℃	D13 (1) 505V (2) 501V (3) 513V (4) 501V	D16 (1) 525V (2) 509V (3) 525V (4) 537V
5	Diode Peak Voltage	Q210 / Q214/ Q218/ Q222 Rated:80V/ 100A	AC ON/OFF I/P:High-Line +3V =267 V Vo=Vmax O/P: (1)Full Load (2)Output Short (3)Dynamic Load Full Load/ Min. Load 90%Duty/1KHz (4)Dynamic Load Full Load/ Min. Load 90%Duty/3KHz (5)Dynamic Load Full Load/ Min. Load 90%Duty/5KHz (6)Dynamic Load 100% Load/ Min. Load 50%Duty/120Hz (7)0%→400% Load. (8)NO LOAD Vo=Normal O/P: (1)Full Load (2) Before Burst Mode Ta:25℃	Q210 Vo=Vmax VDS: (1) 56.1V (2) 57.3V (3) 56.9V (4) 56.9V (5) 57.3V (6) 57.7V (7) 54.5V (8) 52.9V Vo=Normal (1) 52.5V (2) 48.5V Q218 Vo=Vmax VDS: (1) 54.1V (2) 54.9V (3) 54.5V (4) 54.9V (5) 55.3V (6) 54.1V (7) 52.1V (8) 50.9V Vo=Normal (1) 50.0V (2) 48.4V	Q214 Vo=Vmax VDS: (1) 57.3V (2) 57.3V (3) 57.3V (4) 56.9V (5) 57.7V (6) 57.3V (7) 54.1V (8) 55.7V Vo=Normal (1) 50.9V (2) 48.0V Q222 Vo=Vmax VDS: (1) 56.5V (2) 56.5V (3) 56.1V (4) 56.5V (5) 56.1V (6) 55.7V (7) 54.9V (8) 54.9V Vo=Normal (1) 50.5V (2) 48.4V
6	Input Capacitor Voltage	C 5 Rated : 220u /450V	I/P:High-Line +3V =267V O/P: (1)Full Load input on/off (2) Min load input on /Off (3)Full Load /Min load Change (4)Full load continue Ta:25℃	(1)421V (2)421V (3)417V (4)405V	
7	Control IC Voltage Test	PWM IC U800Rated 8.9V~15.5V PFC IC U401Rated 10.6V~22V	AC ON/OFF I/P:High-Line +3V =267 V O/P(1)FULL LOAD (2) Output Short (3)O.L.P	U800 (1) 12.84V (2) 12.68V (3) 12.68V (4) 13.72V	U250 (1) 13.56V (2) 14.04V (3) 13.56V (4) 13.08V

		U250 Rated -0.3V~37V O/P IC U801 Rated 4.5V~36V	(4)O.V.P. (5)NO LOAD VRmin(LOW LINE) Ta:25℃	(5) 13.16V U401 (1) 13.16V (2) 13.00V (3) 13.00V (4) 13.48V (5) 13.00V	(5) 13.24V U801 (1) 12.36V (2) 12.03V (3) 12.03V (4) 12.03V (5) 12.36V

■ SAFETY& E.M.C. TEST

SAFETY TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	WITHSTAND VOLTAGE	I/P-O/P: 3KVAC/min I/P-FG :2KVAC/min O/P-FG:0.5KVAC/min	I/P-O/P: 3.6 KVAC/min I/P-FG: 2.4 KVAC/min O/P-FG:0.6 KVAC/min Ta:25℃	I/P-O/P:7.32mA I/P-FG:6.75mA O/P-FG:4.20m A NO DAMAGE
2	ISOLATION RESISTANCE	I/P-O/P:500VDC>100MΩ I/P-FG: 500VDC>100MΩ O/P-FG:500VDC>100MΩ	I/P-O/P: 600 VDC I/P-FG: 600 VDC O/P-FG: 600 VDC Ta:25℃	I/P-O/P: 9999MΩ I/P-FG: 9999MΩ O/P-FG: 9999MΩ NO DAMAGE
3	GROUNDING CONTINUITY	FG(PE) TO CHASSIS OR TRACE < 100 mΩ	40A / 2min Ta:25℃	7mΩ

E.M.C TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	HARMONIC	BS EN/EN61000-3-2 CLASS A	I/P:230VAC/50HZ O/P:FULL LOAD Ta:25℃	PASS
2	CONDUCTION	BS EN/EN 55032 (CISPR32), BS EN / EN55014-1 CLASS B	I/P: 230 VAC (50HZ) O/P:FULL/50% LOAD Ta:25℃	PASS Test by certified Lab
3	RADIATION	BS EN/EN 55032 (CISPR32), BS EN / EN55014-1 CLASS A	I/P:230VAC/50HZ O/P:FULL/50% LOAD Ta:25℃	PASS Test by certified Lab
4	E.S.D	BS EN/EN61000-4-2 AIR：8KV / Contact：4KV	I/P:230VAC/50HZ O/P:FULL LOAD Ta:25℃	CRITERIA A
5	E.F.T	BS EN/EN61000-4-4 INPUT: 1KV	I/P:230VAC/50HZ O/P:FULL LOAD Ta:25℃	CRITERIA A
6	SURGE	BS EN/EN 61000-4-5 L-N :1KV L,N-PE:2KV	I/P:230VAC/50HZ O/P:FULL LOAD Ta:25℃	CRITERIA A

7	Test by certified Lab & Test Report Prepare Any contradictions of the test results, please refer to the latest EMC test report

■ RELIABILITY TEST

ENVIRONMENT TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	TEMPERATURE RISE TEST	MODEL：NPP-1700-24 1. ROOM AMBIENT BURN-IN：2 HRS I/P： 230VAC O/P： FULL LOAD Ta= 25.1 ℃ 2. HIGH AMBIENT BURN-IN： 2 HRS I/P： 230VAC O/P： FULL LOAD Ta= 52.2 ℃		

NO	Position	ROOM AMBIENT Ta= 25.1 ℃	HIGH AMBIENT Ta=52.2℃
1	ZNR1	35.4℃	59.4℃
2	LF1	44.4℃	65.1℃
3	Q903	43.0℃	69.3℃
4	Q902	50.7℃	66.6℃
5	C1	36.6℃	58.6℃
6	RY1	48.3℃	63.9℃
7	L2	60.8℃	75.4℃
8	RTH1	47.4℃	65.1℃
9	C2	42.4℃	62.7℃
10	LF3	50.0℃	68.4℃
11	C11	48.4℃	65.0℃
12	T52	50.7℃	65.5℃
13	BD2	67.2℃	83.2℃
14	BD1	64.5℃	81.4℃
15	Q1	62.2℃	82.3℃
16	Q3	62.2℃	81.2℃
17	U401	49.7℃	63.5℃
18	C920	41.9℃	62.0℃
19	RTH3	45.2℃	62.6℃
20	C7	47.1℃	64.1℃
21	L3	60.7℃	79.4℃
22	C620	48.2℃	61.6℃
23	T2coil	69.4℃	84.7℃
24	T2core	47.4℃	62.2℃
25	C122	51.1℃	64.1℃
26	T601	55.3℃	71.3℃
27	U800	42.8℃	59.0℃
28	C128	27.5℃	51.5℃
29	T1 coil	68.2℃	82.0℃
30	T1 core	47.9℃	63.2℃
31	C116	50.4℃	64.3℃
32	LF10	42.1℃	55.9℃
33	D651	44.1℃	81.7℃
34	Q215	49.5℃	70.8℃
35	J103	62.2℃	73.3℃
36	U270	52.6℃	74.3℃
37	Q221	49.7℃	70.6℃
38	U600	59.6℃	77.6℃
39	D14	58.5℃	79.3℃
40	U150	36.9℃	56.8℃
41	RG5	45.7℃	62.5℃
42	RG51	41.7℃	59.2℃
43	RTH5	48.3℃	69.6℃

2	LOW TEMPERATURE TURN ON TEST	TURN ON AFTER 2 HOUR	I/P： 230VAC/180VAC O/P： 100 %LOAD Ta= -35℃	TEST：OK
3	HIGH HUMIDITY HIGH TEMPERATURE HIGH VOLTAGE TURN ON TEST	AFTER 12 HOURS IN CHAMBER ON CONTROL 50 ℃ NO DAMAGE	I/P： 272 VAC O/P：FULL LOAD Ta= 49 ℃ HUMIDITY= 95 %R.H	TEST：OK
4	TEMPERATURE COEFFICIENT	± 0.05%/ (0℃~50℃)	I/P： 230 VAC O/P：FULL LOAD	0.0096 %/℃(0~50℃)
5	STORAGE TEMPERATURE TEST	-40~85℃	1. Thermal shock Temperature： -45℃~ +90℃ 2. Temperature change rate ：25℃ / MIN 3. Dwell time low and high temperature ： 30 MIN/EACH 4. Total test cycle：10CYCLE 5. Input/Output condition： STATIC	

6	THERMAL SHOCK TEST	-30~50℃	1. Thermal shock Temperature： -35℃~ +55℃ 2. Temperature change rate ：25℃ / MIN 3. Dwell time low and high temperature ： 30 MIN/EACH 4. Total test cycle：16 CYCLE 5. Input/Output condition： 15cycle:230V/ FULL LOAD AC ON 3sec/AC OFF 1sec TEST 1cycle:230V/ FULL LOAD Burn In Test
7	VIBRATION TEST	10 ~ 500Hz, 2G 10min./1cycle, 60min. each along X, Y, Z axes	1 Carton & 1 Set (1) Waveform： Sine Wave (2) Frequency：10~500Hz (3) Sweep Time：10min/sweep cycle (4) Acceleration：3G (5) Test Time：180min in each axis (X.Y.Z) (6) Ta：25℃
8	CAPACITOR LIFE CYCLE	SUPPOSE C113 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 (4) I/P： 230VAC O/P：50% LOAD Ta= 50 ℃ LIFE TIME	(1) 555347.7HRS (2) 260880.9HRS (3) 389632.6HRS (4) 498140.3HRS
9	MTBF	Conducted by Parts Stress Analysis Prediction 192.5K hrs min. Telcordia SR-332 (Bellcore) ; 58.5K hrs min. MIL-HDBK-217F (25℃)	
10	Ongoing Reliability Test	I/P：230VAC O/P：FULL LOAD TA=50℃ Demonstration Mean Time Between Failure : 30,000 hours	

TEST RESULT	TESTER	REVIEW	APPROVAL
PASS	LIUTT		Wangdz

2020.10.1 TAG-QA-009