



Test Report: NPP-1700-24

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

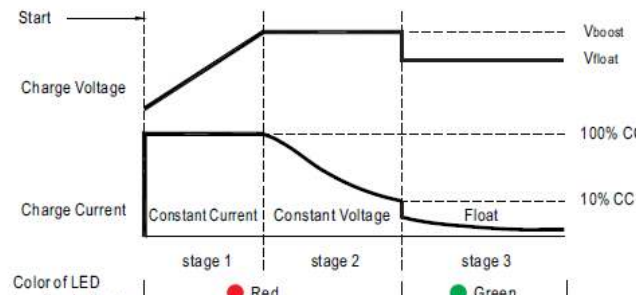
NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	BOOST CHARGE VOLTAGE (default)	28.8V± 0.24V	I/P: 230 VAC O/P: CC=90% LOAD Ta:25°C	28.812V
2	FLOAT CHARGE VOLTAGE (default)	27.6V±0.24 V	I/P: 230 VAC O/P:NO LOAD Ta:25°C	27.674V
3	OUTPUT VOLTAGE ADJUST RANGE	21V~42 V	I/P : 230 VAC O/P : CC=90% LOAD Ta : 25°C	18.437V~43.115V
4	CURRENT ADJUSTABLE RANGE	25~50A	I/P : 230 VAC O/P : C.V MODE-1V Ta : 25°C	21.218A~51.786A
5	MAX POWER	1680W	I/P: 230 VAC O/P:BAT. LOAD(CV=33.6V) Ta:25°C	<u>1683.8</u> W
6	MAX. OUTPUT CURRENT	50±0.5A	I/P : 230 VAC O/P : C.V MODE-1V Ta : 25°C	<u>50.108A</u>

PROTECTION FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	SHORT PROTECTION	SHORT EVERY OUTPUT 1 HOUR NO DAMAGE Constant current Range: 47.5~52.5A PROTECTION TYPE : Constant current limiting, charger will shut down, re-power on to recover	I/P: 264 VAC O/P: BAT. LOAD Ta:25°C	NO DAMAGE Constant current Range: <u>50.119</u> A PROTECTION TYPE : Constant current limiting, charger will shut down, re-power on to recover
2	OVER VOLTAGE PROTECTION	43V~52V 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°C	48.3V/ 264VAC 48.3V/ 230VAC 49.1V/ 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 OK PROTECTION TYPE : Shut down O/P voltage,

		temperature goes down		recovers automatically after temperature goes down
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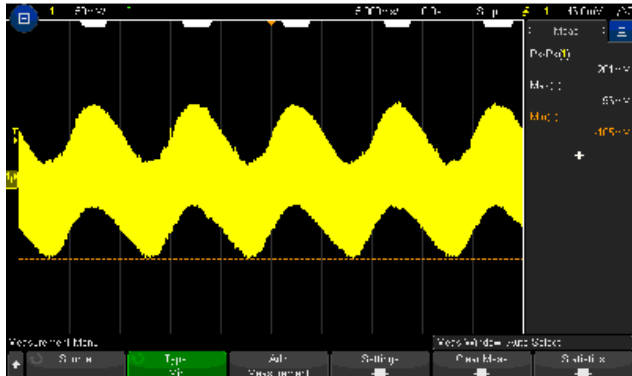
CONTROL FUNCTION TEST

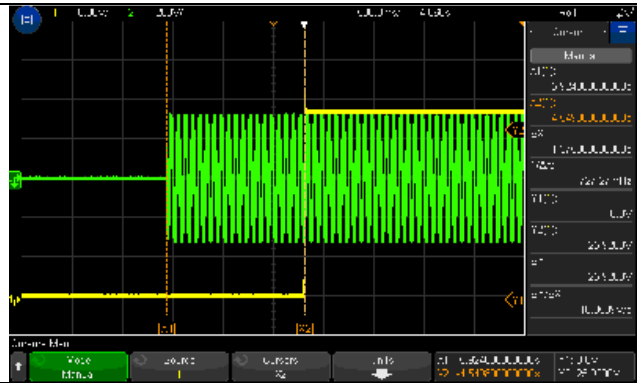
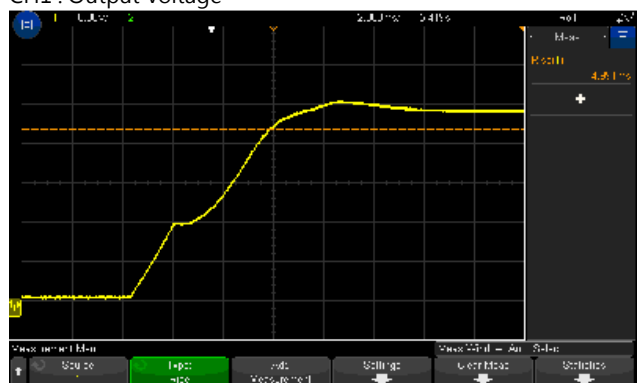
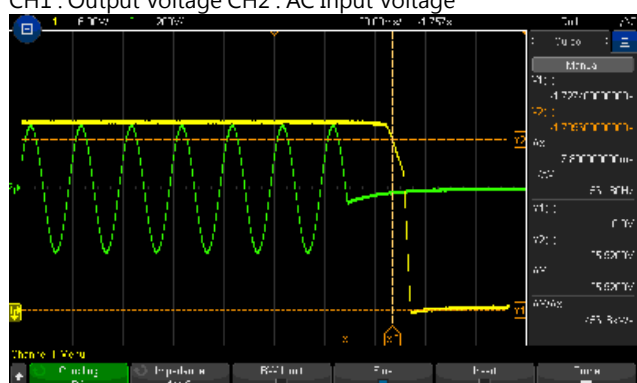
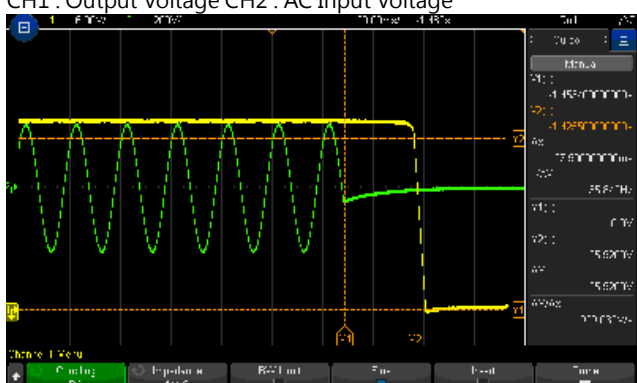
NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT											
1	FAN SPEED CONTROL	Depends on internal temperature	I/P: 230 VAC O/P:BAT. LOAD Ta:25°C	TEST: <u>OK</u>											
2	REMOTE CONTROL	Rc+ / Rc- OPEN(-0.5V~0.5V) : Charger OFF ; SHORT(10.8V~13.2V):Charger ON	I/P: 230 VAC O/P:BAT. LOAD Ta:25°C	OPEN /SHORT TEST: <u>OK</u> Charger OFF: <u>-0.5V~7.7V</u> Charger ON: <u>7.8~13.2V</u> (1) Remote off Pin= <u>6.62W</u> (2) Remote off Vo= <u>0.096V</u>											
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°C	TEST: Charger OK = <u>5.175</u> V; Charger failure or protection = <u>12.62mV</u>											
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°C	TEST: Battery full = <u>5.177</u> V Charging = <u>12.73mV</u>											
5	AUX POWER	OUTPUT VOLTAGE RANGE : 10.8~13.2V	I/P: 230 VAC O/P:BAT. LOAD Ta:25°C	TEST: <u>11.973</u> V											
6	CHARGING CURVE	I/P:230VAC O/P:TESTING Ta:25°C ⦿ 3 stage charging curve (Default)  <table><tr><td>Taper Current</td><td>5A±0.5A</td></tr><tr><td>Io</td><td>4.636A</td></tr></table>			Taper Current	5A±0.5A	Io	4.636A							
Taper Current	5A±0.5A														
Io	4.636A														
7	LED INDICATOR	<table><tr><th>LED Indicator</th><th>Charger(Default)</th><th>Power Supply</th></tr><tr><td>Green</td><td>Float stage(stage 3) or full charged</td><td>Normal working</td></tr><tr><td>Red</td><td>Charging(stage 1 or 2)</td><td>——</td></tr><tr><td>NO Light</td><td>Abnormal</td><td>Abnormal</td></tr></table> I/P: 230V O/P:TESTING LOAD Ta:25°C	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	TEST : <u>OK</u>
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													

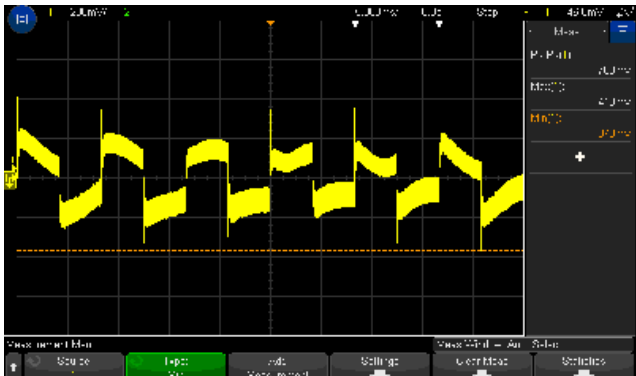
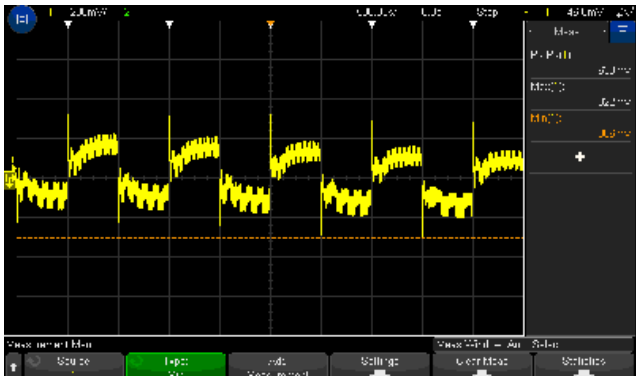
Power Supply mode

■ DESIGN VERIFY TEST

OUTPUT FUNCTION TEST

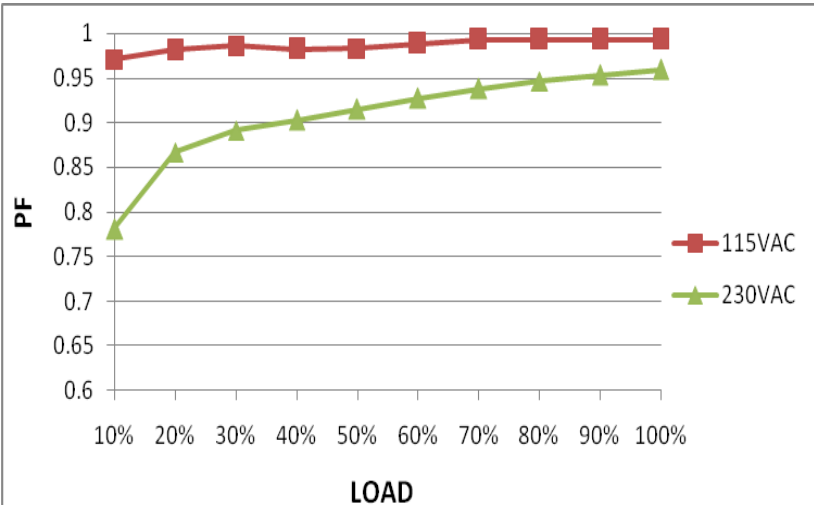
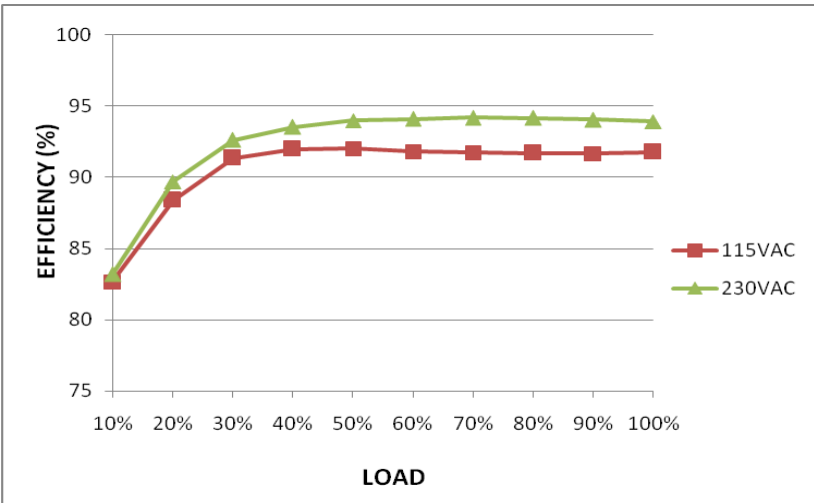
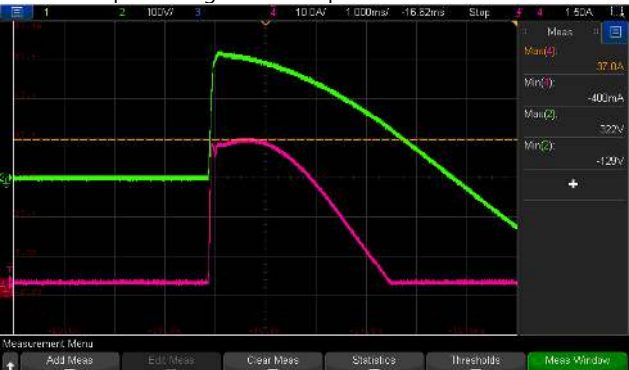
NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	OUTPUT VOLTAGE ADJUST RANGE	CH1: 21 V~ 42V	I/P : 230 VAC I/P : 115 VAC O/P : MIN LOAD Ta : 25°C	19.264V~43.196 V/230VAC 19.266V~43.188 V/115VAC
2	CURRENT ADJUSTABLE RANGE	25~50A	I/P : 230 VAC O/P : TEST LOAD Ta : 25°C	24.85A~50.42A
3	OUTPUT VOLTAGE(Max) TOLERANCE	V1: -1.0 %~ +1.0 %	I/P: 90VAC /264VAC O/P:FULL/ MIN. LOAD Ta:25°C	V1: -0.0764%~0.1423%
4	LINE REGULATION (Max)	V1: -0.5 %~ +0.5 %	I/P: 90VAC~ 264VAC O/P:FULL LOAD Ta:25°C	V1: 0%~0.0521%
5	LOAD REGULATION(Max)	V1: -1.0 %~ +1.0 %	I/P: 230VAC O/P:FULL ~MIN LOAD Ta:25°C	V1: -0.0764%~0.1423%
6	OVER/UNDERSHOOT TEST	< +5%	I/P: 230VAC O/P:FULL LOAD Ta:25°C	4.55%
7	RIPPLE & NOISE(Max)	V1: 300 mVp-p	I/P:230VAC O/P:FULL LOAD Ta:25°C	V1: 201mVp-p 5ms
high frequency :  low frequency : 				
8	SET UP TIME(Max)	230VAC/1800ms	I/P : 230 VAC O/P : FULL LOAD Ta : 25°C	230VAC/ 1375ms
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°C	230VAC/ 4.991ms
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°C	230VAC/FULL LOAD /17.80ms 230VAC/75% LOAD / 27.9ms
INPUT=230VAC/50HZ @ FULL LOAD CH1 : Output Voltage CH2 : AC Input Voltage 				
INPUT=230VAC/50HZ @ 75% LOAD CH1 : Output Voltage CH2 : AC Input Voltage 				
11	DYNAMIC LOAD	V1: 2880 mVp-p	I/P: 230VAC O/P: (1)FULL /50% LOAD 50%DUTY / 120HZ (2)FULL /50% LOAD 50%DUTY / 1KHZ Ta:25°C	780mVp-p 630mVp-p

	FULL /50% LOAD 50%DUTY / 120HZ		FULL /50% LOAD 50%DUTY / 1KHZ	
				
12	TRANSIENT RECOVERY TIME	V1: 2880 mVp-p	I/P: 230VAC O/P:40% LOAD CHANGE 50%DUTY/120HZ 2.5A/us	1100 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°C	(1) 170.6V ~264V/FULL LOAD 84.20V ~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: RATED POWER /MIN LOAD (PLEASE CHECK DERATING CURVE) ON: 30 Sec OFF: 30 Sec 10MIN	TEST: OK
2	INPUT FREQUENCY RANGE	47HZ ~63 HZ NO DAMAGE	I/P:90 VAC ~264 VAC O/P:FULL~MIN LOAD Ta:25°C	TEST: OK
3	INPUT CURRENT (Typ.)	230V/ 9.3 A 115V/ 14.8A	I/P : 230 VAC I/P : 115 VAC O/P : RATED POWER (Vo=33.6V) Ta : 25°C	I =8.0575A/230VAC I =11.22A/ 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°C	Charger/ Power 60335: 0.089mA 62368: 1.39 mA
5	POWER FACTOR (Typ.)	0.95/ 230VAC 0.98/115VAC	I/P : 230 VAC I/P : 115 VAC O/P : RATED POWER (Vo=33.6V) Ta : 25°C	PF=0.967/230VAC PF= 0.991/115VAC

	P.F vs LOAD <table><caption>P.F vs LOAD Data</caption><thead><tr><th>LOAD</th><th>115VAC PF</th><th>230VAC PF</th></tr></thead><tbody><tr><td>10%</td><td>0.97</td><td>0.78</td></tr><tr><td>20%</td><td>0.98</td><td>0.87</td></tr><tr><td>30%</td><td>0.98</td><td>0.89</td></tr><tr><td>40%</td><td>0.97</td><td>0.90</td></tr><tr><td>50%</td><td>0.97</td><td>0.91</td></tr><tr><td>60%</td><td>0.98</td><td>0.92</td></tr><tr><td>70%</td><td>0.99</td><td>0.93</td></tr><tr><td>80%</td><td>0.99</td><td>0.94</td></tr><tr><td>90%</td><td>0.99</td><td>0.95</td></tr><tr><td>100%</td><td>0.99</td><td>0.96</td></tr></tbody></table>				LOAD	115VAC PF	230VAC PF	10%	0.97	0.78	20%	0.98	0.87	30%	0.98	0.89	40%	0.97	0.90	50%	0.97	0.91	60%	0.98	0.92	70%	0.99	0.93	80%	0.99	0.94	90%	0.99	0.95	100%	0.99	0.96
LOAD	115VAC PF	230VAC PF																																			
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6	EFFICIENCY(Typ.)	93%	I/P:230 VAC O/P: RATED POWER (Vo=33.6V) Ta:25°C	93.9%																																	
	EFFICIENCY vs LOAD <table><caption>EFFICIENCY vs LOAD Data</caption><thead><tr><th>LOAD</th><th>115VAC Efficiency (%)</th><th>230VAC Efficiency (%)</th></tr></thead><tbody><tr><td>10%</td><td>83</td><td>83</td></tr><tr><td>20%</td><td>88</td><td>89</td></tr><tr><td>30%</td><td>91</td><td>92</td></tr><tr><td>40%</td><td>92</td><td>93</td></tr><tr><td>50%</td><td>92</td><td>93.5</td></tr><tr><td>60%</td><td>92</td><td>94</td></tr><tr><td>70%</td><td>92</td><td>94</td></tr><tr><td>80%</td><td>92</td><td>94</td></tr><tr><td>90%</td><td>92</td><td>94</td></tr><tr><td>100%</td><td>92</td><td>94</td></tr></tbody></table>				LOAD	115VAC Efficiency (%)	230VAC Efficiency (%)	10%	83	83	20%	88	89	30%	91	92	40%	92	93	50%	92	93.5	60%	92	94	70%	92	94	80%	92	94	90%	92	94	100%	92	94
LOAD	115VAC Efficiency (%)	230VAC Efficiency (%)																																			
10%	83	83																																			
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60%	92	94																																			
70%	92	94																																			
80%	92	94																																			
90%	92	94																																			
100%	92	94																																			
7	INRUSH CURRENT(Typ.)	230V/50A COLD START	I/P : 230 VAC O/P : FULL LOAD Ta : 25°C	I =37A / 230VAC T50=2.56ms/230V																																	
	INPUT=230VAC/50HZ @ FULL LOAD CH1 : AC Input Voltage CH4 : Input current  Measurement Menu: Add Meas, Edit Meas, Clear Meas, Statistics, Thresholds, Meas Window, Auto Select																																				

PROTECTION FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	OVER LOAD PROTECTION	105 %~ 115 % PROTECTION TYPE : Constant current limiting, unit will shut down after 5 sec, re-power on to recover	I/P: 264VAC I/P: 230VAC I/P: 180VAC O/P: TESTING Ta: 25°C	106.78%/ 264VAC 107.912%/ 230VAC 106.78%/180VAC PROTECTION TYPE : Constant current limiting, unit will shut down after 5 sec, re-power on to recover
2	OVER VOLTAGE PROTECTION	43V~52V 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°C	48.3V/ 264VAC 48.3V/ 230VAC 49.1V/ 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 OK 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: BAT. LOAD Ta: 25°C	NO DAMAGE 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°C	TEST: <u>OK</u>
2	REMOTE CONTROL	OPEN : POWER OFF ; SHORT : POWER ON	I/P: 230 VAC O/P: FULL. LOAD Ta: 25°C	OPEN/SHORT TEST: <u>OK</u>
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°C	TEST: Charger OK = <u>5.173</u> V; Charger failure or protection = <u>0.036</u> 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°C	Q901 VDS: (1) 410V (2) 426V (3) 414V (4) 414V (5) 414V (6) 414V (7) 418V	Q903 VDS: (1) 454V (2) 458V (3) 458V (4) 458V (5) 462V (6) 458V (7) 442V
2	P.F.C Transistor (D to S) or (C to E) Peak Voltage	Q1/Q3 Rated: 600V / 34A	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°C	Q1 VDS: (1) 482V (2) 458V (3) 466V (4) 470V (5) 462V (6) 446V (7) 418V	Q3 VDS: (1) 445V (2) 453V (3) 453V (4) 457V (5) 449V (6) 449V (7) 446V
3	AUX MOS	U600 Rated: 800V / 4.9A	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°C	U600 VDS: (1) 551V (2) 555V (3) 559V (4) 547V (5) 547V (6) 551V (7) 543V	

4	P.F.C DIODE	D 13/ D16 Rated : 6A/650V	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°C	D13 (1) 517V (2) 505V (3) 521V (4) 525V	D16 (1) 493V (2) 481V (3) 497V (4) 493V
5	Diode Peak Voltage	Q210 / Q214/ Q218/ Q222 Rated:120V/98A	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°C	Q210 Vo=Vmax VDS: (1) 102V (2) 103V (3) 102V (4) 103V (5) 103V (6) 103V (7) 102V (8) 99V Vo=Normal (1) 100V (2) 96V Q214 Vo=Vmax VDS: (1) 102V (2) 104V (3) 104V (4) 102V (5) 103V (6) 104V (7) 101V (8) 102V Vo=Normal (1) 100V (2) 96V	Q218 Vo=Vmax VDS: (1) 104V (2) 104V (3) 103V (4) 103V (5) 102V (6) 103V (7) 102V (8) 100V Vo=Normal (1) 101V (2) 98V Q222 Vo=Vmax VDS: (1) 100V (2) 101V (3) 101V (4) 100V (5) 100V (6) 102V (7) 99V (8) 98V Vo=Normal (1) 96V (2) 93V
6	Input Capacitor Voltage	C 5 Rated: 220uF/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°C	(1) 406V (2) 406V (3) 418V (4) 406V	
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) 12.88V (2) 12.40V (3) 12.48V (4) 13.29V	U250 (1) 13.44V (2) 14.50V (3) 13.21V (4) 13.05V

		O/P IC U801 Rated 4.5V~36V U250 Rated -0.3V~37V	(4)O.V.P. (5)NO LOAD VRmin(LOW LINE) Ta:25°C	(5) 12.56V U401 (1) 13.05V (2) 12.80V (3) 13.05V (4) 13.13V (5) 13.13V	(5) 13.37V U801 (1) 12.32V (2) 12.32V (3) 12.08V (4) 12.08V (5) 12.32V
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■ 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°C	I/P-O/P:7.55mA I/P-FG:6.46mA O/P-FG:4.06m 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: 500 VDC I/P-FG: 500 VDC O/P-FG: 500 VDC Ta:25°C	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°C	8mΩ

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°C	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°C	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°C	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°C	CRITERIA A
5	E.F.T	BS EN/EN61000-4-4 INPUT: 1KV	I/P:230VAC/50HZ O/P:FULL LOAD Ta:25°C	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°C	CRITERIA A



7	Test by certified Lab & Test Report Prepare Any contradictions of the test results, please refer to the latest EMC test report
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■ 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 °C 2. HIGH AMBIENT BURN-IN : 2 HRS I/P : 230VAC O/P : FULL LOAD Ta= 52.2 °C		

			NO	Position	ROOM AMBIENT Ta= 25.1 °C	HIGH AMBIENT Ta=52.2°C
			1	ZNR1	35.4°C	59.4°C
			2	LF1	44.4°C	65.1°C
			3	Q903	43.0°C	69.3°C
			4	Q902	50.7°C	66.6°C
			5	C1	36.6°C	58.6°C
			6	RY1	48.3°C	63.9°C
			7	L2	60.8°C	75.4°C
			8	RTH1	47.4°C	65.1°C
			9	C2	42.4°C	62.7°C
			10	LF3	50.0°C	68.4°C
			11	C11	48.4°C	65.0°C
			12	T52	50.7°C	65.5°C
			13	BD2	67.2°C	83.2°C
			14	BD1	64.5°C	81.4°C
			15	Q1	62.2°C	82.3°C
			16	Q3	62.2°C	81.2°C
			17	U401	49.7°C	63.5°C
			18	C920	41.9°C	62.0°C
			19	RTH3	45.2°C	62.6°C
			20	C7	47.1°C	64.1°C
			21	L3	60.7°C	79.4°C
			22	C620	48.2°C	61.6°C
			23	T2coil	69.4°C	84.7°C
			24	T2core	47.4°C	62.2°C
			25	C122	51.1°C	64.1°C
			26	T601	55.3°C	71.3°C
			27	U800	42.8°C	59.0°C
			28	C128	27.5°C	51.5°C
			29	T1 coil	68.2°C	82.0°C
			30	T1 core	47.9°C	63.2°C
			31	C116	50.4°C	64.3°C
			32	LF10	42.1°C	55.9°C
			33	D651	44.1°C	81.7°C
			34	Q215	49.5°C	70.8°C
			35	J103	62.2°C	73.3°C
			36	U270	52.6°C	74.3°C
			37	Q221	49.7°C	70.6°C
			38	U600	59.6°C	77.6°C
			39	D14	58.5°C	79.3°C
			40	U150	36.9°C	56.8°C
			41	RG5	45.7°C	62.5°C
			42	RG51	41.7°C	59.2°C
			43	RTH5	48.3°C	69.6°C
2	LOW TEMPERATURE TURN ON TEST	TURN ON AFTER 2 HOUR	I/P : 230VAC/180VAC O/P : 100 %LOAD Ta= -35°C	TEST : OK		
3	HIGH HUMIDITY HIGH TEMPERATURE HIGH VOLTAGE TURN ON TEST	AFTER 12 HOURS IN CHAMBER ON CONTROL 50 °C NO DAMAGE	I/P : 272 VAC O/P : FULL LOAD Ta= 49 °C HUMIDITY= 95 %R.H	TEST : OK		
4	TEMPERATURE COEFFICIENT	± 0.05%/ (0°C~50°C)	I/P : 230 VAC O/P : FULL LOAD	0.0096 %/°C(0~50°C)		
5	STORAGE TEMPERATURE TEST	-40~85°C	1. Thermal shock Temperature : -45°C~ +90°C 2. Temperature change rate : 25°C / 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°C	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 : 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°C
8	CAPACITOR LIFE CYCLE	SUPPOSE C113 IS THE MOST CRITICAL COMPONENT (1) I/P : 230VAC O/P : FULL LOAD Ta= 25 °C LIFE TIME (2) I/P : 230VAC O/P : FULL LOAD Ta= 50 °C LIFE TIME (3) I/P : 230VAC O/P : 75% LOAD Ta= 50 °C LIFE TIME (4) I/P : 230VAC O/P : 50% LOAD Ta= 50 °C 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°C)	
10	Ongoing Reliability Test	I/P : 230VAC O/P : FULL LOAD TA=50°C Demonstration Mean Time Between Failure : 30,000 hours	

TEST RESULT	TESTER	REVIEW	APPROVAL
PASS	LIUTT		Wangdz

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