



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

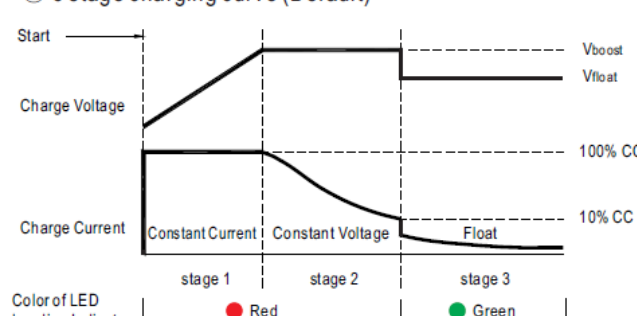
PROTECTION FUNCTION TEST

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°C	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°C	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
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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~7.4V</u> Charger ON: <u>7.5 V~13.2V</u> (1) Remote off Pin= <u>6.535W</u> (2) Remote off Vo= <u>0.048 V</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>5.169 V</u> ; Charger failure or protection = <u>13.18 mV</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>5.201 V</u> Charging = <u>13.31 mV</u>												
5	AUX POWER	OUTPUT VOLTAGE RANGE : 10.8~13.2V	I/P: 230 VAC O/P:BAT. LOAD Ta:25°C	TEST: <u>12.024 V</u>												
6	CHARGING CURVE	I/P:230Vac O/P:TESTING Ta:25°C ◎ 3 stage charging curve (Default)  Color of LED Loading Indicator: ● Red ● Green <table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <td>Taper Current</td> <td>8.5A±0.85A</td> </tr> <tr> <td>Io</td> <td>8.986A</td> </tr> </table>			Taper Current	8.5A±0.85A	Io	8.986A								
Taper Current	8.5A±0.85A															
Io	8.986A															
7	LED INDICATOR	<table border="1" style="width:100%; border-collapse: collapse;"> <thead> <tr> <th>LED Indicator</th> <th>Charger(Default)</th> <th>Power Supply</th> </tr> </thead> <tbody> <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> </tbody> </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

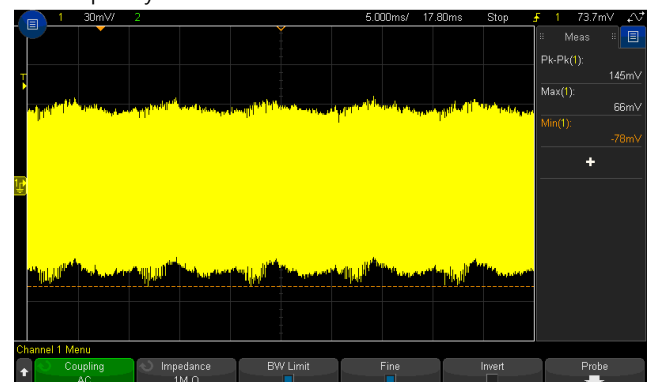
OUTPUT FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	OUTPUT VOLTAGE ADJUST RANGE	CH1: 10.5 V~ 21V	I/P : 230 VAC I/P : 115 VAC O/P : MIN LOAD Ta : 25°C	9.996V~21.766V/230VAC 9.998V~21.766V/115VAC
2	CURRENT ADJUSTABLE RANGE	42.5~85A	I/P : 230 VAC O/P : TEST LOAD Ta : 25°C	41.25A~85.71A
3	OUTPUT VOLTAGE TOLERANCE	V1: -2.0 %~ +2.0 %	I/P: 90VAC /264VAC O/P:FULL/ MIN. LOAD Ta:25°C	V1: -0.31%~0.42%
4	LINE REGULATION	V1: -0.5 %~ +0.5 %	I/P: 90VAC~ 264VAC O/P:FULL LOAD Ta:25°C	V1: 0%~0.23%
5	LOAD REGULATION	V1: -2.0 %~ +2.0 %	I/P: 230VAC O/P:FULL ~MIN LOAD Ta:25°C	V1: -0.31%~0.42%
6	OVER/UNDERSHOOT TEST	< ±5%	I/P: 230VAC O/P:FULL LOAD Ta:25°C	4.66%
7	RIPPLE & NOISE(Max)	V1: 180 mVp-p	I/P:230VAC O/P:FULL LOAD Ta:25°C	V1: 145 mVp-p

high frequency :

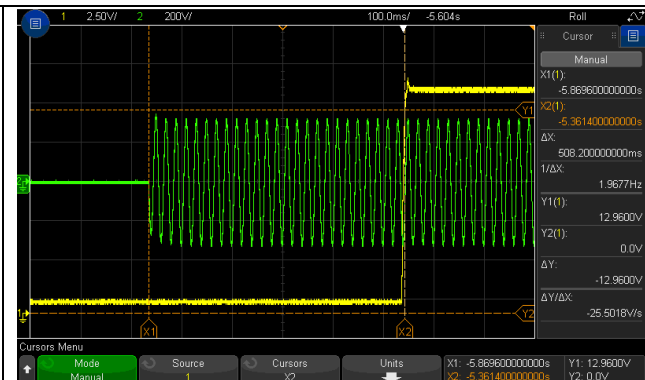
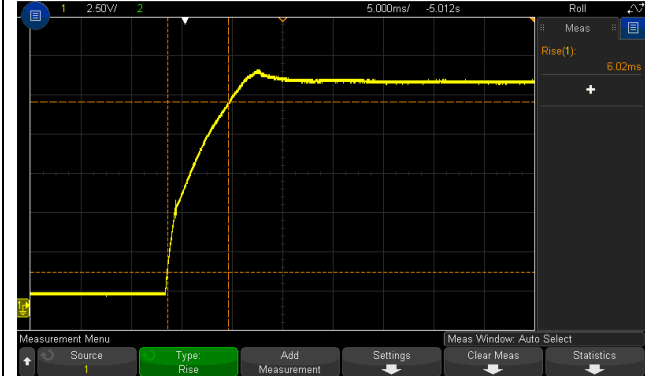
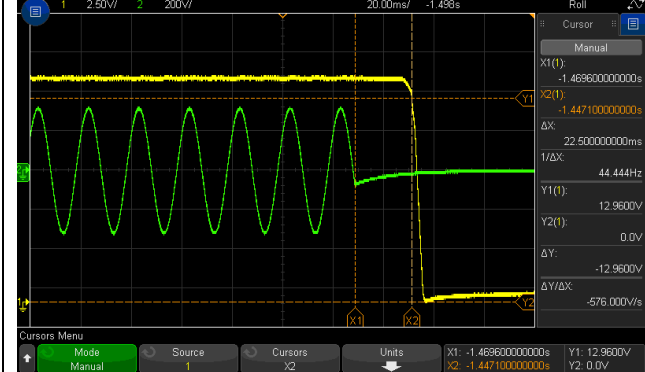
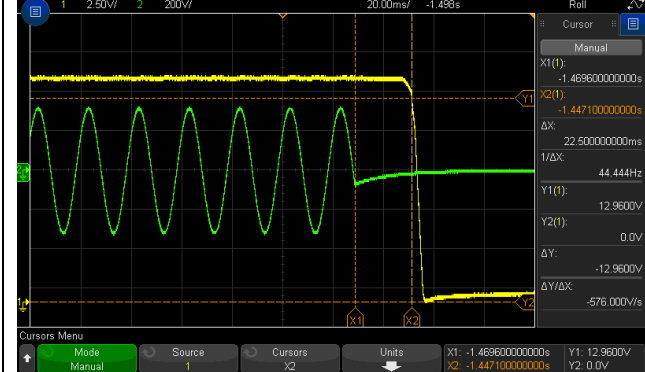
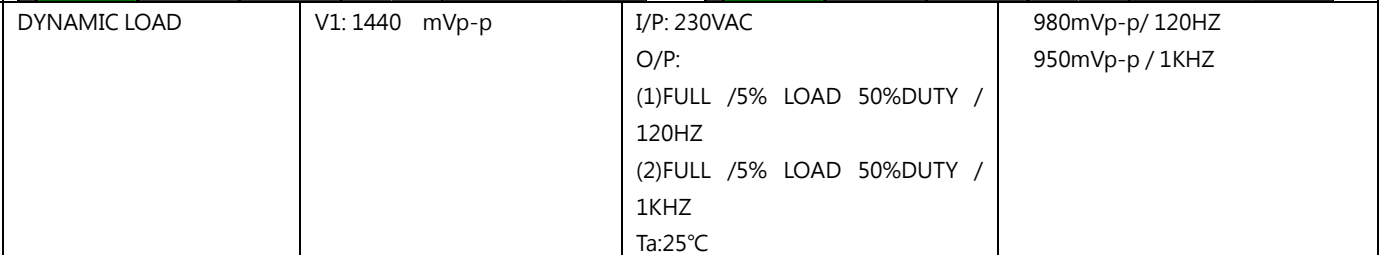


low frequency :



8	SET UP TIME(Max)	230VAC/1800ms	I/P : 230 VAC O/P : FULL LOAD Ta : 25°C	230VAC/508.2ms
INPUT=230VAC/50HZ @ FULL LOAD CH1 : Output Voltage CH2 : AC Input Voltage				

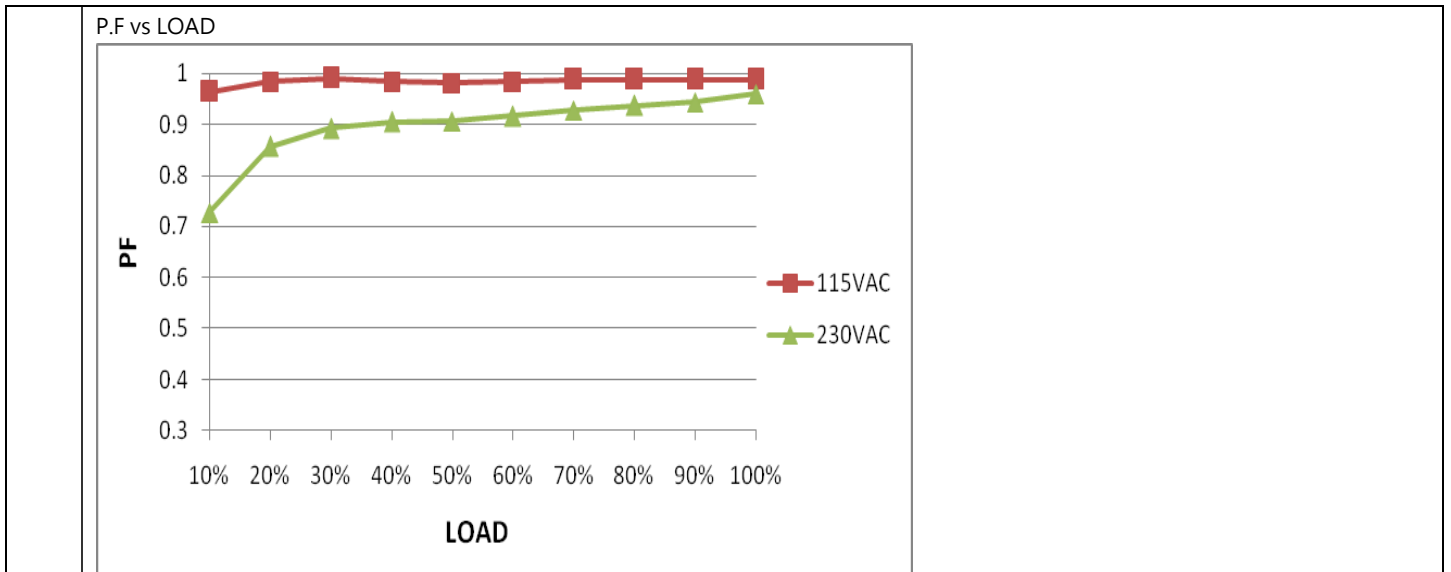


			
9	RISE TIME (Max)	230VAC/60ms	I/P : 230 VAC O/P : FULL LOAD Ta : 25°C
INPUT=230VAC/50HZ @ FULL LOAD CH1 : Output Voltage			
			
10	HOLD UP TIME (Typ.)	230VAC/FULL LOAD /10ms 230VAC/75% LOAD /16ms	I/P : 230 VAC O/P : FULL LOAD Ta : 25°C
INPUT=230VAC/50HZ @ FULL LOAD CH1 : Output Voltage CH2 : AC Input 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°C
			

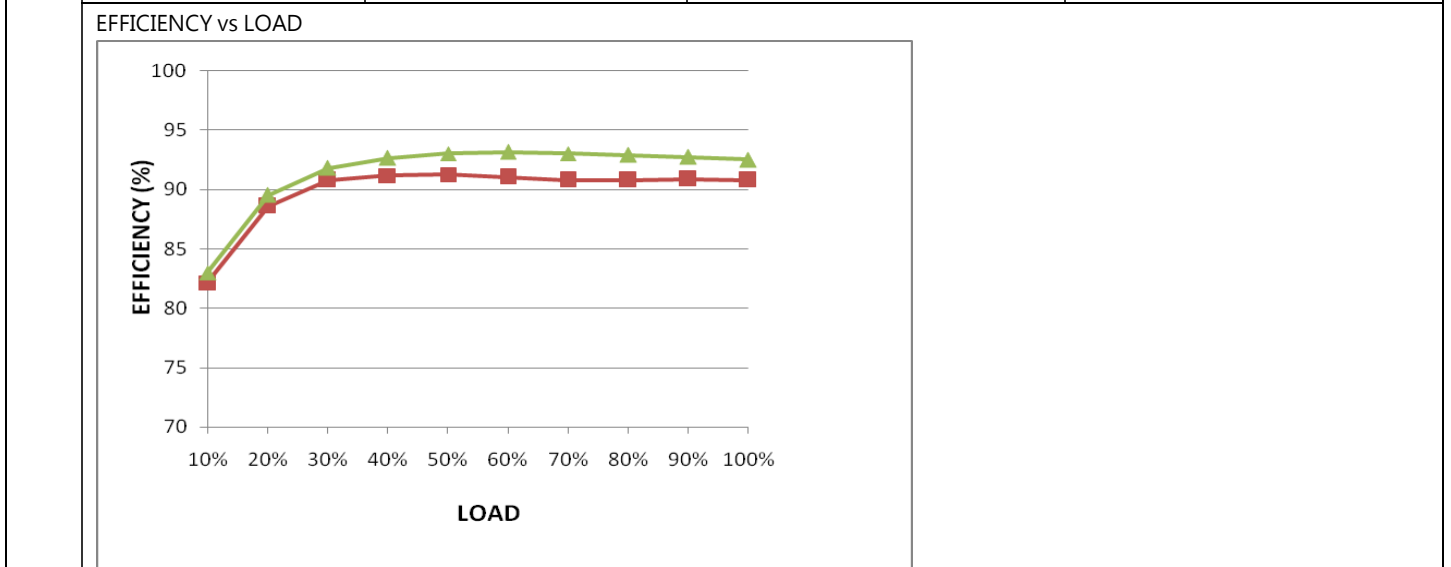
	FULL /50% LOAD 50%DUTY / 120HZ		FULL /50% LOAD 50%DUTY / 1KHZ	
12	TRANSIENT RECOVERY TIME	V1: 1440 mVp-p	I/P: 230VAC O/P:40% LOAD CHANGE 50%DUTY/120HZ 1.25A/us	1130 mVp-p

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	(1) 175.4V~264V/FULL LOAD 84.8V~264V/70% LOAD
			(2) I/P:DC TESTING(L:+ N:-) O/P: FULL LOAD	(2) 190Vdc~370Vdc/FULLLOAD 160Vdc~370Vdc/70% LOAD
			(3) I/P:DC TESTING(L:- N:+) O/P: FULL LOAD	(3) 190Vdc~370Vdc/FULL LOAD 160Vdc~370Vdc/70% LOAD
			Ta:25°C	
			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°C	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°C	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°C	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°C	PF=0.960/230VAC PF=0.992/115VAC



6	EFFICIENCY(Typ.)	92%	I/P:230 VAC O/P: RATED POWER (Vo=16.8V) Ta:25°C	92.705%
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7	INRUSH CURRENT(Typ.)	230V/50A COLD START	I/P : 230 VAC O/P : FULL LOAD Ta : 25°C	I =38.2A/ 230VAC T50=2.5ms/230V
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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°C	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°C	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°C	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°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>5.186</u> V; Charger failure or protection = <u>0.034</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 Q903 VDS: VDS: (1) 435V (1) 447V (2) 427V (2) 447V (3) 435V (3) 451V (4) 427V (4) 447V (5) 427V (5) 451V (6) 431V (6) 451V (7) 435V (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°C	Q1 Q3 VDS: VDS: (1) 467V (1) 483V (2) 455V (2) 463V (3) 463V (3) 475V (4) 459V (4) 475V (5) 455V (5) 475V (6) 447V (6) 467V (7) 427V (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°C	U600 VDS: (1) 549V (2) 553V (3) 545V (4) 549V (5) 549V (6) 557V (7) 565V



450W High Reliable Ultra Wide Output Range
Battery Charger & Power Supply 2-in-1

NPP-1700 series

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°C	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°C	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°C	(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°C	(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
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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:7.32mA 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°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	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°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 577.4K 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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