



Test Report: NSP-2400-12

2400W AC/DC High Reliable Multi-Industries Enclosed Type Power Supply

■ 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



2400W AC/DC High Reliable Multi-Industries Enclosed Type Power Supply

NSP-2400 series

■ DESIGN VERIFY TEST



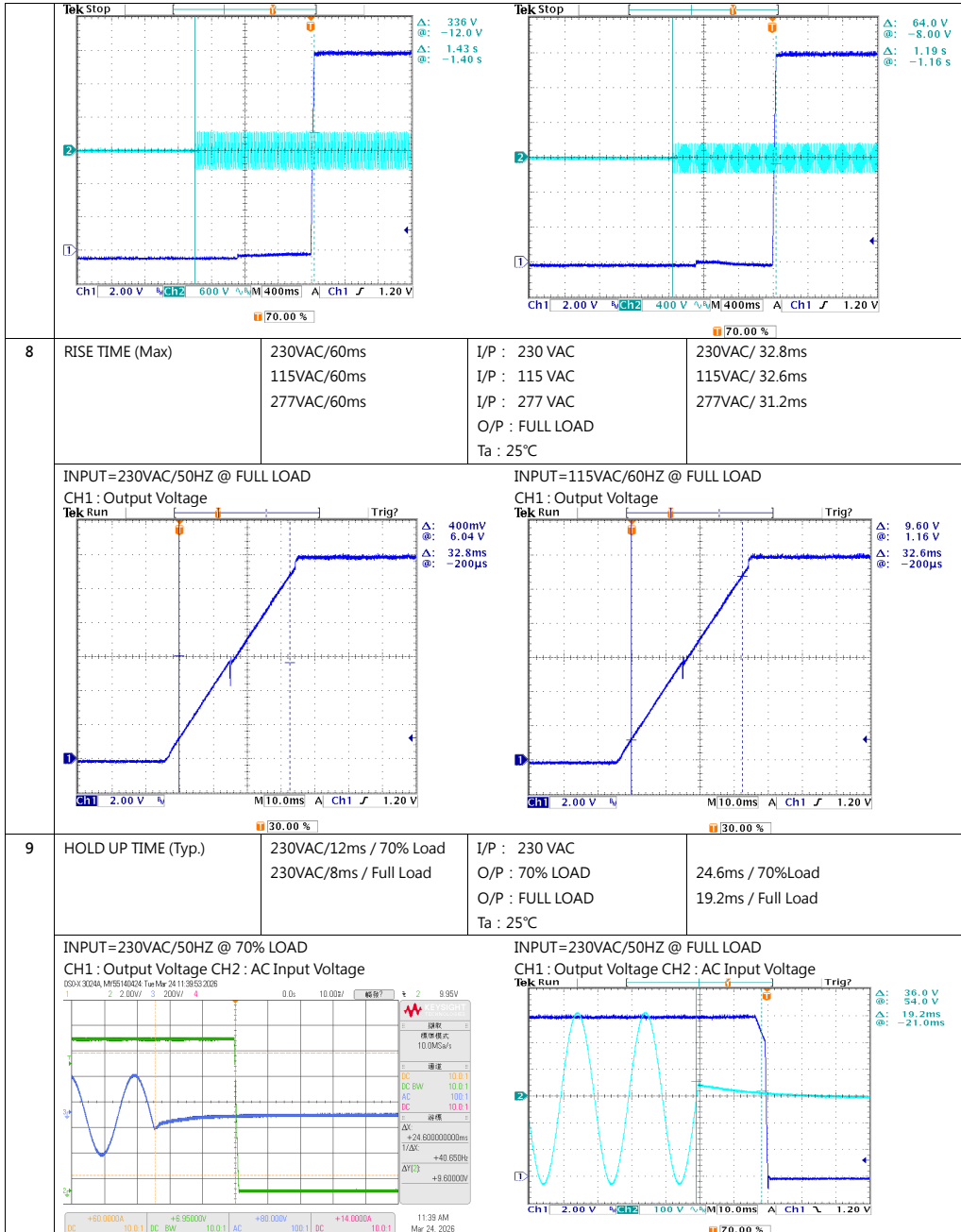
OUTPUT FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	OUTPUT VOLTAGE ADJUST RANGE	CH1: 10.8V ~ 14.4V	I/P : 230 VAC I/P : 115 VAC O/P : MIN LOAD Ta : 25°C	10.440V~14.749V/230VAC 10.440V~14.747V/115VAC
2	OUTPUT VOLTAGE TOLERANCE	V1: 1% ~ -1%	I/P : 85VAC /305VAC O/P : FULL/ MIN. LOAD Ta:25°C	0.16% ~ -0.44%
3	LINE REGULATION	V1: 0.5% ~ -0.5%	I/P : 85VAC~ 305VAC O/P : FULL LOAD Ta:25°C	0.49% ~ -0.008
4	LOAD REGULATION	V1: 0.5% ~ -0.5%	I/P : 230VAC O/P : FULL ~MIN LOAD Ta:25°C	0.083% ~ -0.274%
5	OVER/UNDERSHOOT TEST	<± 15%	I/P : 230VAC O/P : FULL LOAD Ta:25°C	<15%
6	RIPPLE & NOISE (Max)	V1: 300mVp-p	I/P : 230VAC O/P : FULL LOAD Ta:25°C	V1: 145mVp-p
high frequency : low frequency :				
7	SET UP TIME(Max)	230VAC/1800ms 115VAC/1800ms 277VAC/1800ms	I/P : 230 VAC I/P : 115 VAC I/P : 277 VAC O/P : FULL LOAD Ta : 25°C	230VAC/ 1430ms 115VAC/ 1192ms 277VAC/1140ms
INPUT=230VAC/50HZ @ FULL LOAD CH2 : Output Voltage CH3 : AC Input Voltage			INPUT=115VAC/60HZ @ FULL LOAD CH2 : Output Voltage CH3 : AC Input Voltage	



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10	DYNAMIC LOAD	V1: 1200 mVp-p	I/P: 230VAC O/P: (1)FULL /50% LOAD 1130mVp-p 50%DUTY / 120HZ (2)FULL /50% LOAD 1150mVp-p 50%DUTY / 1KHZ Ta:25°C	
FULL /50% LOAD 50%DUTY / 120HZ FULL /50% LOAD 50%DUTY / 1KHZ				

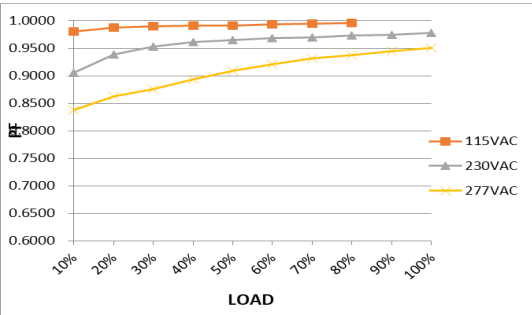
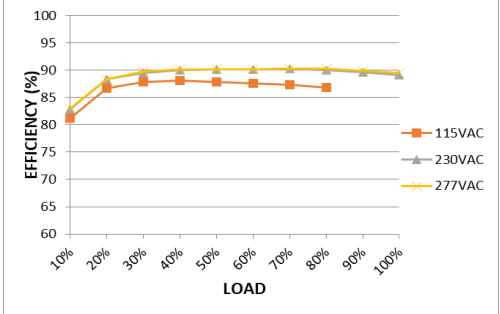
INPUT FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	INPUT VOLTAGE RANGE	85VAC~305VAC 250VDC~431VDC	(1) I/P:TESTING O/P:FULL LOAD (2) I/P:DC TESTING(L:+ N:-) O/P: FULL / 50% LOAD (3) I/P:DC TESTING(L:- N:+) O/P: FULL / 50% LOAD Ta:25°C I/P: LOW-LINE-3V=82 V HIGH-LINE+10V=315 V O/P:FULL/MIN LOAD (PLEASE CHECK DERATING CURVE) ON: 30 Sec OFF: 30 Sec 10MIN (POWER ON/OFF NO DAMAGE)	(1) 85V~305V (2)241.0Vdc~431Vdc/FULL LOAD 240.4Vdc~431Vdc/50% LOAD (3) 241.1Vdc~431Vdc/FULL LOAD 240.2Vdc~431Vdc/50% LOAD TEST:PASS
2	INPUT FREQUENCY RANGE	47HZ ~63 HZ NO DAMAGE	I/P : 85 VAC ~305 VAC O/P : FULL~MIN LOAD Ta:25°C	TEST:PASS
3	INPUT CURRENT (Typ.)	115V/ 17 A 230V/ 13 A 277V/ 11A	I/P : 230 VAC I/P : 115 VAC I/P : 277 VAC O/P : FULL LOAD Ta : 25°C	I =15.81A/ 115VAC I =10.988A/ 230VAC I =9.308A/ 277VAC
4	LEAKAGE CURRENT	<500 uA / 277 VAC (Earth) < 100uA / 277 VAC (Touch)	I/P : 277 VAC /60Hz O/P : Min LOAD Ta : 25°C	Earth L-FG : 351 uA N-FG : 350 uA



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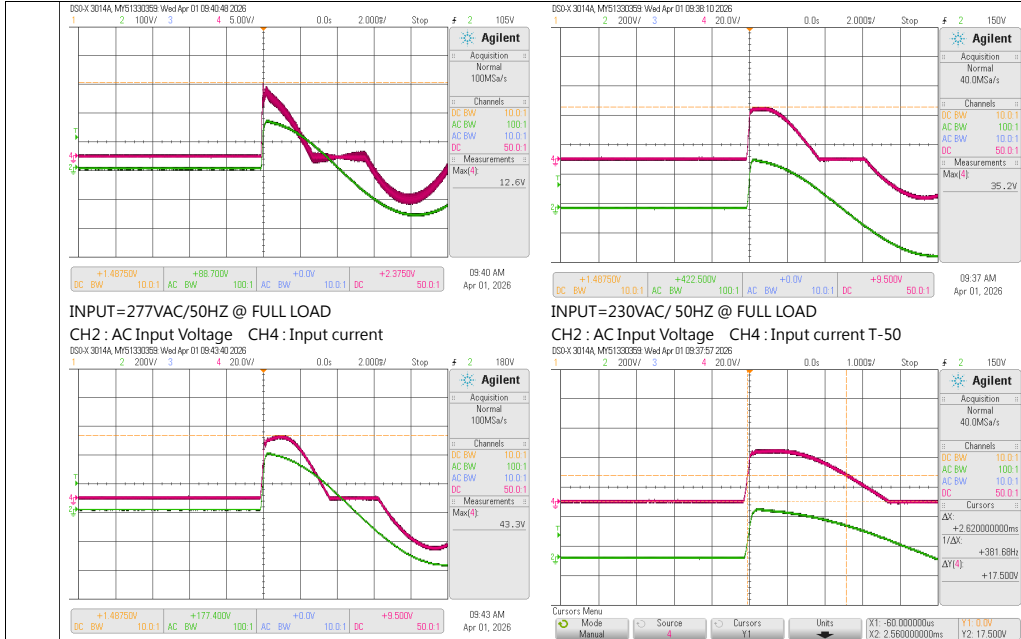
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				Touch +Vo : 76 uA -Vo : 75.6 uA
6	POWER FACTOR (Typ.)	0.98/ 115VAC 0.95/ 230VAC 0.93/ 277VAC	I/P : 115 VAC I/P : 230 VAC I/P : 277 VAC O/P : FULL LOAD Ta : 25°C	PF= 0.9962/ 115VAC PF= 0.9782/ 230VAC PF= 0.9524/ 277VAC
	P.F vs LOAD 			
7	EFFICIENCY(Typ.)	89%	I/P : 230 VAC O/P : 100% Load Ta:25°C	89.11%
	EFFICIENCY vs LOAD 			
8	INRUSH CURRENT(Typ.)	115V/30A 230V/60A 277V/75A COLD START	I/P : 115 VAC I/P : 230 VAC I/P : 277 VAC O/P : FULL LOAD Ta : 25°C	I =12.6A/ 115VAC I =35.2A/ 230VAC I =43.3A/ 277VAC T50=2620us/230V
	INPUT=115VAC/60HZ @ FULL LOAD CH2 : AC Input Voltage CH4 : Input current		INPUT=230VAC/ 50HZ @ FULL LOAD CH2 : AC Input Voltage CH4 : Input current	



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PROTECTION FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	OVER LOAD PROTECTION	PEAK POWER MODE From 105% to 200% of rated output power, unit will shut down after 5 seconds of continuous operation. AC repower on to recover. (2 Sec for 12V/15V models)	I/P : 305VAC : 230VAC : 180VAC : 115VAC : 100VAC : 85VAC O/P : TESTING Ta:25°C	106.38%/ 305VAC 106.21%/ 230VAC 104.2%/ 180VAC 70.9%/ 115VAC 62.02%/ 100VAC 58.75%/ 85VAC PROTECTION TYPE : From 105% to 200% of rated output power, unit will shut down after 5 seconds of continuous operation. AC repower on to recover. (2 Sec for 12V/15V models)
		PEAK POWER MODE At >200% of rated output power, constant current limiting is activated. Unit will shut down after 5 seconds of continuous operation. AC repower on to recover. (2 Sec	I/P : 305VAC : 230VAC : 180VAC : 115VAC : 100VAC : 85VAC O/P : Peak Load Ta:25°C	201.54%/ 305VAC 201.58%/ 230VAC 135.68%/ 180VAC 95.30%/ 115VAC 82.05%/ 100VAC 75.25%/ 85VAC PROTECTION TYPE : At >200% of rated output power,

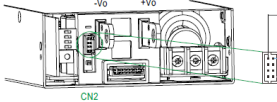
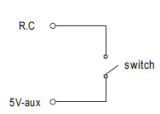
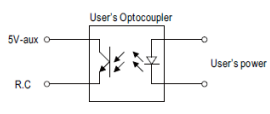
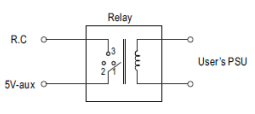


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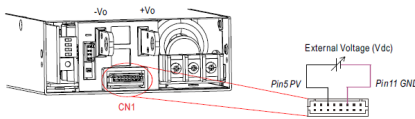
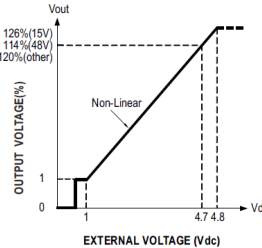
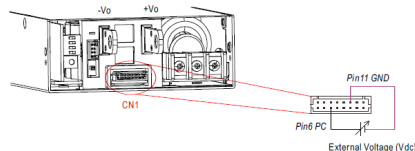
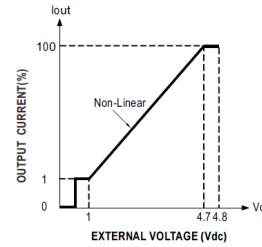
		for 12V/15V models) Note: Input ≥ 220VAC: Peak power = 2 X Rated Power Input < 220VAC: Peak power = 1.33 X Rated Power		constant current limiting is activated. Unit will shut down after 5 seconds of continuous operation. AC repower on to recover. (2 Sec for 12V/15V models)
		CURRENT LIMITING MODE Constant current limiting, recovers automatically after abnormal condition is removed	I/P : 305VAC : 230VAC : 180VAC : 115VAC : 100VAC : 85VAC O/P : TESTING Ta: 25°C	106.38%/ 305VAC 106.21%/ 230VAC 104.2%/ 180VAC 70.9%/ 115VAC 62.02%/ 100VAC 58.75%/ 85VAC PROTECTION TYPE : Constant current limiting, recovers automatically after abnormal condition is removed
2	OVER VOLTAGE PROTECTION	15V ~ 19V	I/P: 305VAC I/P: 230VAC I/P: 85VAC O/P: MIN LOAD Ta: 25°C	15.842V/ 305VAC 15.739V/ 230VAC 15.730V/ 85VAC PROTECTION TYPE : Shut down and latch off output voltage, re-power on to recover
3	OVER TEMPERATURE PROTECTION	Protection type : Shut down output voltage, recovers automatically after temperature goes down	I/P: 305VAC I/P: 85VAC O/P: FULL LOAD	O.T.P. Active Protection type : Shut down output voltage, recovers automatically after temperature goes down
4	SHORT PROTECTION	SHORT EVERY OUTPUT 1 HOUR NO DAMAGE	I/P: 305VAC I/P: 85VAC O/P: FULL LOAD Ta: 25°C	NO DAMAGE PROTECTION TYPE : Shutdown O/P voltage, re-power on to recover

CONTROL FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT												
1	AUXILIARY POWER (AUX)	1. Auxiliary voltage output, 4.25~5.75Vdc, referenced to GND-aux (pin2). The maximum load current is 0.2A. This output has the built-in “Oring diodes” and is not controlled by “R.C” 2. Auxiliary voltage output, 10.2~13.8Vdc, referenced to GND-aux (pin2). The maximum load current is 0.8A. This output has the built-in “Oring diodes” and is not controlled by “R.C” . I/P: 230 VAC O/P:FULL LOAD Ta:25°C Test Result : <table><thead><tr><th>AUX</th><th>TOLERANCE</th><th>RIPPLE</th><th>TEST RESULT</th></tr></thead><tbody><tr><td>5V / 0.2A</td><td>4.25~5.75V</td><td>150mVp-p</td><td>4.94V/ 60mV</td></tr><tr><td>12V / 0.8A</td><td>10.2~13.8V</td><td>450mVp-p</td><td>11.6V/ 125mV</td></tr></tbody></table>			AUX	TOLERANCE	RIPPLE	TEST RESULT	5V / 0.2A	4.25~5.75V	150mVp-p	4.94V/ 60mV	12V / 0.8A	10.2~13.8V	450mVp-p	11.6V/ 125mV
AUX	TOLERANCE	RIPPLE	TEST RESULT													
5V / 0.2A	4.25~5.75V	150mVp-p	4.94V/ 60mV													
12V / 0.8A	10.2~13.8V	450mVp-p	11.6V/ 125mV													

2	REMOTE ON/OFF CONTROL	※ The power supply can be turned ON/OFF individually or along with other units by using the "Remote Control" function with external switch, photocoupler or relay. <table><tr><td>PSU Vo Status</td><td>Between +5V-aux(Pin 2) and R.C(Pin 1)</td></tr><tr><td>Power ON</td><td>Switch Short</td></tr><tr><td>Power OFF</td><td>Switch Open</td></tr></table>  R.C. by external switch.  R.C. by user's optocoupler control module.  R.C. by user's Relay control module. I/P: 230 VAC O/P:FULL LOAD Ta:25°C Test Result : <table><tr><td>Between ON/OFF and +5V-AUX</td><td>Power Supply Status</td></tr><tr><td>SW SHORT</td><td>ON</td></tr><tr><td>SW OPEN</td><td>OFF</td></tr></table>			PSU Vo Status	Between +5V-aux(Pin 2) and R.C(Pin 1)	Power ON	Switch Short	Power OFF	Switch Open	Between ON/OFF and +5V-AUX	Power Supply Status	SW SHORT	ON	SW OPEN	OFF
PSU Vo Status	Between +5V-aux(Pin 2) and R.C(Pin 1)															
Power ON	Switch Short															
Power OFF	Switch Open															
Between ON/OFF and +5V-AUX	Power Supply Status															
SW SHORT	ON															
SW OPEN	OFF															
3	REMOTE SENSE	S+ / S- >0.5V Compensate voltage drop on the load wiring up to 0.5V.	I/P: 230 VAC O/P:FULL LOAD Ta:25°C	0.5V												
4	ALARM SIGNAL	DC OK SIGNAL High (3.5 ~ 5.5V) : When the Vout ≤ 77%±5%. Low (-0.5 ~ 0.5V) : When Vout ≥ 80%±5%. The maximum sourcing current is 10mA and only for output. I/P: 230 VAC O/P:FULL LOAD Ta:25°C Test Result														
		<table><tr><th>Spec.</th><th>Transition point</th><th>Spec.</th><th>DC OK SIGNAL</th></tr><tr><td>Vout ≤ 72%~82%</td><td>78.38%</td><td>High (3.5 ~ 5.5V)</td><td>4.963V</td></tr><tr><td>Vout ≥ 75%~85%</td><td>80.79%</td><td>Low (-0.5 ~ 0.5V)</td><td>0V</td></tr></table>	Spec.	Transition point	Spec.	DC OK SIGNAL	Vout ≤ 72%~82%	78.38%	High (3.5 ~ 5.5V)	4.963V	Vout ≥ 75%~85%	80.79%	Low (-0.5 ~ 0.5V)	0V		
Spec.	Transition point	Spec.	DC OK SIGNAL													
Vout ≤ 72%~82%	78.38%	High (3.5 ~ 5.5V)	4.963V													
Vout ≥ 75%~85%	80.79%	Low (-0.5 ~ 0.5V)	0V													



5	OUTPUT VOLTAGE PROGRAMMABLE(PV)	(1)Default by potentiometer (SVR) (a)Have the DIP switch position-3 set as  (b)Output voltage can be trimmed by SVR. (2)By Output Voltage Programming (a)Have the DIP switch position-3 set as  (b)The output voltage can be trimmed to 0~120% by applying EXTERNAL VOLTAGE between PV and GND on CN1.  I/P: 230 VAC O/P:FULL LOAD Ta:25°C TEST RESULT : <table><tr><td>External voltage(DC)</td><td>0.8V</td><td>1V</td><td>4.078V</td><td>4.7V</td><td>4.8V</td></tr><tr><td>SPEC(V)</td><td>0</td><td>0~0.72</td><td>11.4~12.6</td><td>13.8~15</td><td>14.18~15.38</td></tr><tr><td>Vout</td><td>0.078V</td><td>0.170V</td><td>11.929V</td><td>14.387V</td><td>14.714V</td></tr></table> 	External voltage(DC)	0.8V	1V	4.078V	4.7V	4.8V	SPEC(V)	0	0~0.72	11.4~12.6	13.8~15	14.18~15.38	Vout	0.078V	0.170V	11.929V	14.387V	14.714V
External voltage(DC)	0.8V	1V	4.078V	4.7V	4.8V															
SPEC(V)	0	0~0.72	11.4~12.6	13.8~15	14.18~15.38															
Vout	0.078V	0.170V	11.929V	14.387V	14.714V															
6	OUTPUT CURRENT PROGRAMMABLE (PC)	(1)Default Overload Protection(OLP) value (a)Have the DIP switch position-2 set as  (b)Output current is set default value. (2)By Constant Current Level Programming (a)Have the DIP switch position-2 set as  (b)The constant current level can be trimmed to 0~100% of the rated current by applying EXTERNAL VOLTAGE between PC and GND on CN1.  I/P: 230 VAC O/P:TESTING Ta:25°C <table><tr><td>External voltage(DC)</td><td>0.8V</td><td>1V</td><td>2.831</td><td>4.7V</td><td>4.8V</td></tr><tr><td>SPEC</td><td>0%</td><td>1%±10%</td><td>50%±10%</td><td>100%±10%</td><td>102.67%±10%</td></tr><tr><td>Iout</td><td>1.4%</td><td>1.6%</td><td>50.32%</td><td>100.48%</td><td>102.76%</td></tr></table> 	External voltage(DC)	0.8V	1V	2.831	4.7V	4.8V	SPEC	0%	1%±10%	50%±10%	100%±10%	102.67%±10%	Iout	1.4%	1.6%	50.32%	100.48%	102.76%
External voltage(DC)	0.8V	1V	2.831	4.7V	4.8V															
SPEC	0%	1%±10%	50%±10%	100%±10%	102.67%±10%															
Iout	1.4%	1.6%	50.32%	100.48%	102.76%															
7	FAN NOISE (Typ.)	10% load @38 dB 70% load @46 dB Built-in intelligent fan speed control detect by PSU' S internal temperature I/P : 230 VAC O/P : TESTING Ta : 25°C 10% load:37.5 dB 70% load: 46dB																		



COMPONENT STRESS TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	PWM Transistor (D to S) or (C to E) Peak Voltage	Q3 Rated : 650V 52 A@TC=25°C 37 A@TC=100°C VGS : -10V to 22V	AC ON/OFF I/P:High-Line +3V =308V 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 Full Load/ Min. Load 50%Duty/120Hz (7)0%→400% Load. VGS (1)OLP (2)Output Short (3) Dynamic Load Full Load/ Min. Load 90%Duty/1KHz (4) Dynamic Load Full Load/ Min. Load 90%Duty/5KHz (5) Dynamic Load Full Load/ Min. Load 50%Duty/120Hz (6)NO LOAD VDS: I/P:Low-Line -3V = 177V 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 Full Load/ Min. Load 50%Duty/120Hz (7)0%→400% Load.	VDS: (1) 477V/17.0A (2) 565V/37.0A (3) 473V/23.8A (4) 477V/22.2A (5) 477V/20.6A (6) 473V/30.2A (7) 517V/32.7A VGS: (1)19.4V (2)20.0V (3)18.4V (4)19.8V (5)19.2V (6)17.0V VDS: (1) 425V/16.4A (2) 485V/36A (3) 429V/22.4A (4) 437V/22.0A (5) 465V/18.8A (6) 429V/26.4A (7) 489V/36A
2	P.F.C Transistor (D to S) or (C to E) Peak Voltage	Q901 Rated: 650 V 55 A@TC=25°C 35 @TC=100°C VGS :± 25 V	I/P:High-Line +3V =308 V AC ON/OFF O/P: (1)Full Load (2)Output Short (3)Dynamic Load Full Load/	VDS: (1) 520V/14.3A (2) 532V/13.5A (3) 530V/15.5A



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			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 Full Load/ Min. Load 50%Duty/120Hz (7)0%→400% Load. VGS: (1)OLP (2)Output Short (3) Dynamic Load Full Load/ Min. Load 90%Duty/1KHz (4) Dynamic Load Full Load/ Min. Load 90%Duty/5KHz (5) Dynamic Load Full Load/ Min. Load 50%Duty/120Hz (6)NO LOAD I/P:Low-Line -3V = 177V 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 Full Load/ Min. Load 50%Duty/120Hz (7)0%→400% Load. Ta:25°C	(4) 526V/15.9A (5) 518V/14.9A (6) 514V/14.3A (7) 482V/0A VGS: (1)11.6V (2)11.6V (3)12.1V (4)10.8V (5)10.02V (6)8.1V VDS: (1) 522V/16.1A (2) 530V/15.9A (3) 518V/15.3A (4) 522V/16.1A (5) 514V/15.9A (6) 510V/15.7A (7) 446V/15.9A
3	P.F.C DIODE	D14 Rated: 20 A/650 V	I/P:High-Line +3V =308 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 Full Load/ Min. Load 50%Duty/120Hz I/P:Low-Line -3V = 177V AC ON/OFF O/P: (1)Full Load (2)Output Short (3)Dynamic Load Full Load/ Min. Load 90%Duty/5KHz (4)Dynamic Load Full Load/ Min. Load 50%Duty/120Hz	(1) 441V (2) 457V (3) 449V (4) 445V (1) 457V (2) 457V (3) 453V (4) 453V

已註解 [p1]: 缺規格



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			Ta:25°C		
4	Diode Peak Voltage	Q800 Rated: 315 A/ 100 V VGS : ±20 V Q853 Rated: 315 A/ 100 V VGS : ±20 V	AC ON/OFF I/P:High-Line +3V =308 V <u>VO: SPEC MAX</u> 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 Full Load/ Min. Load 50%Duty/120Hz (7)0%→400% Load. (8).NO LOAD <u>VO: standard</u> O/P: (1)Full Load VGS: <u>VO: standard</u> (1)OLP (2)Output Short (3) Dynamic Load Full Load/ Min. Load 90%Duty/1KHz (4) Dynamic Load Full Load/ Min. Load 90%Duty/5KHz (5) Dynamic Load Full Load/ Min. Load 50%Duty/120Hz (6)NO LOAD Ta:25°C	Q800: <u>VO: SPEC MAX</u> VDS: (1) 70.5V (2) 73.4V (3) 84.1V (4) 75.3V (5) 72.1V (6) 90V (7) 73.8V (8) 79.3V <u>VO: standard</u> (1) 73V <u>VO: standard</u> VGS: (1)8.34V (2)8.75V (3)8.26V (4)8.18V (5)8.26V (6)4.16V	Q853: <u>VO: SPEC MAX</u> VDS: (1) 72.2V (2) 73.0V (3) 90V (4) 82.6V (5) 77.8V (6) 90V (7) 79.4V (8) 87.4V <u>VO: standard</u> (1) 72.2V <u>VO: standard</u> VGS: (1)8.75V (2)8.75V (3)8.42V (4)8.42V (5)8.58V (6)5.05V
5	Input Capacitor Voltage	C5 Rated: 100μ / 450V Surge voltage: 495 V	I/P:High-Line +3V =308V 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)447V (2)448V (3)448V (4)447V	
6	Control IC Voltage Test	PFC U330 Rated 10.5V ~ 22 V O/P U850 Rated 8 V~ 24 V MCU U401	AC ON/OFF I/P:High-Line +3V =308 V O/P:(1)Full Load (2) Output Short (3)O.L.P (4)O.V.P. (5)No Load VR min (Low Line) MCU : (1) Full Load	U330 (1) 13.26V (2) 12..98V (3) 12.31V (4) 12.15V (5) 13.94V U850 (1) 12.9V (2) 12.8V	



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		Rated 2.4V~ 3.6V AUX U200 Rated 25V	(2) Output Short (3)O.L.P (4)O.V.P. (5)No Load VR min (LOW LINE) Ta:25°C	(3) 12.9V (4) 12.8V (5) 12.9.V U200 (1) 16.87V (2) 12.25V (3) 12.24V (4) 12.06V (5) 16.85V
7	TOP SWITCHING STAND BY POWER	U200 Rated: 20 A/ 800V	AC ON/OFF I/P:High-Line +3V =308 V O/P: (1)Full Load (2)Remote On/Off I/P:Low-Line -3V =177 V O/P: (1)Full Load (2)Remote On/Off Ta:25°C	(1) 601V/ 1.29A (2) 617V/ 1.07A (1) 585V/ 1.35A (2) 605V/ 1.69A

■ SAFETY& E.M.C. TEST

SAFETY TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	WITHSTAND VOLTAGE	I/P-O/P: 4 K VAC/min I/P-FG : 2 K VAC/min O/P-FG: 1.5 KVAC/min	I/P-O/P: 4.4 KVAC/min I/P-FG: 2.4 KVAC/min O/P-FG: 1.8 KVAC/min Ta:25°C	I/P-O/P: 4.95 mA I/P-FG: 3.24 mA O/P-FG: 11.66 mA NO DAMAGE
2	ISOLATION RESISTANCE	I/P-O/P: 500 VDC>100MΩ I/P-FG: 500 VDC>100MΩ O/P-FG: 500 VDC >100MΩ	I/P-O/P: 500 VDC I/P-FG: 500 VDC O/P-FG: 500 VDC Ta:25°C	I/P-O/P: >30 GΩ I/P-FG: >30 GΩ O/P-FG: >30 GΩ NO DAMAGE
3	GROUNDING CONTINUITY	FG(PE) TO CHASSIS OR TRACE < 100 mΩ	42A / 2min Ta:25°C	28mΩ

E.M.C TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	HARMONIC	EN61000-3-2 CLASS A	I/P:230VAC/50HZ O/P:FULL LOAD Ta:25°C	PASS



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2	CONDUCTION	EN55032 ,EN55011 CLASS B	I/P : 230 VAC (50HZ) O/P : FULL/50% LOAD Ta : 25°C	PASS Test by certified Lab
3	RADIATION	EN55032 ,EN55011 CLASS B	I/P : 230 VAC (50HZ) O/P : FULL LOAD Ta : 25°C	PASS Test by certified Lab
4	E.S.D	EN61000-4-2 <u>MEDICAL</u> AIR : 15KV / Contact : 8KV	I/P : 230 VAC/50HZ O/P : FULL LOAD Ta : 25°C	CRITERIA A
5	E.F.T	EN61000-4-4 INDUSTRY INPUT : 2KV	I/P : 230 VAC/50HZ O/P : FULL LOAD Ta : 25°C	CRITERIA A
6	SURGE	IEC61000-4-5 INDUSTRY L-N : 2KV L,N-PE : 4KV	I/P : 230 VAC/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			

■ RELIABILITY TEST

ENVIRONMENT TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	TEMPERATURE RISE TEST	MODEL : NSP-2400-12 1. ROOM AMBIENT BURN-IN : 1HRS I/P : 230VAC O/P : FULL LOAD Ta= 25 °C 2. HIGH AMBIENT BURN-IN : 2 HRS I/P : 230VAC O/P : FULL LOAD Ta= 50 °C		



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NO	Position	ROOM AMBIENT Ta= 25 °C	HIGH AMBIENT Ta= 50 °C
1	LF2	35.0°C	60.8°C
2	BD1	58.8°C	83.8°C
3	L1	47.8°C	73.8°C
4	L2	52.6°C	78.3°C
5	T4	47.1°C	73.5°C
6	RTH1	54.4°C	79.8°C
7	RY1	55.1°C	80.4°C
8	Q901	63.1°C	88.7°C
9	Q903	63.9°C	89.1°C
10	D13	69.2°C	95.2°C
11	C5	55.3°C	79.2°C
12	L40	62.1°C	88.1°C
13	RG30	41.4°C	67.0°C
14	Q1	68.5°C	92.9°C
15	Q2	70.4°C	95.3°C
16	Q3	70.3°C	94.3°C
17	Q4	68.8°C	92.7°C
18	D28	68.1°C	93.2°C
19	D176	58.1°C	83.5°C
20	Q801	94.7°C	108.4°C
21	Q803	82.8°C	97.4°C
22	Q852	83.7°C	97.9°C
23	Q850	96.6°C	111.6°C
24	T1-1	59.4°C	85.7°C
25	T1-2	52.4°C	76.8°C
26	T1 Core	59.3°C	83.9°C
27	L100	84.1°C	110.9°C
28	T170	66.1°C	91.4°C
29	U200	70.8°C	95.4°C
30	RG60	41.2°C	65.2°C
31	RG61	35.2°C	59.0°C
32	U401	33.8°C	57.4°C
33	C182	55.0°C	80.4°C
34	C185	55.7°C	80.9°C
35	C175	56.0°C	81.2°C
36	C108	40.0°C	64.8°C
37	C105	37.1°C	61.7°C
38	C104	42.1°C	66.9°C
39	RT10	56.5°C	82.3°C
40	CN451	53.5°C	77.5°C
41	RT12	66.8°C	91.2°C
42	RT40	31.9°C	55.5°C
43	Q701	57.2°C	83.4°C
44	Q712	42.1°C	67.1°C



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2	OVER LOAD BURN-IN TEST	NO DAMAGE 1 HOUR (MIN)	I/P : 230 VAC O/P : 107%LOAD Ta : 25°C	TEST : OK
3	LOW TEMPERATURE TURN ON TEST	TURN ON AFTER 2 HOUR	I/P : 305VAC/180VAC O/P : 100 %LOAD Ta= -35 °C	TEST : OK
4	HIGH HUMIDITY HIGH TEMPERATURE HIGH VOLTAGE TURN ON TEST	AFTER 12 HOURS IN CHAMBER ON CONTROL 50 °C/95 %R.H NO DAMAGE	I/P : 315 VAC O/P : FULL LOAD Ta= 50 °C HUMIDITY= 95 %R.H	TEST : OK
5	TEMPERATURE COEFFICIENT	± 0.03 %/°C(0~50°C)	I/P : 230 VAC O/P : FULL LOAD	± 0.01 %/°C(0~50°C)
6	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 : 10 CYCLE 5. Input/Output condition : STATIC	
7	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	
8	VIBRATION TEST	10 ~ 500Hz, 2G 10min/1cycle, 60min. each along X, Y, Z axes	(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	
9	CAPACITOR LIFE CYCLE	SUPPOSE C104 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 Note: 15years(131,400h) is the maximum so that the deterioration of the sealing material		(1) 131400HRS (2) 131400HRS (3) 131400HRS (4) 131400HRS
10	MTBF	Conducted by Parts Stress Analysis Prediction 566.1K hrs min. Telcordia SR-332 (Bellcore) ; 47.3K hrs min. MIL-HDBK-217F (25°C)		
11	Ongoing Reliability Test	I/P : 230VAC O/P : FULL LOAD TA=50°C Demonstration Mean Time Between Failure : 50,000 hours		

TEST RESULT	TESTER	REVIEW	APPROVAL
PASS	DANIEL GAO	SANFORD SU	ERIS WU



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2020.10.1 TAG-QA-009