Test Report: NSP-2400-27

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

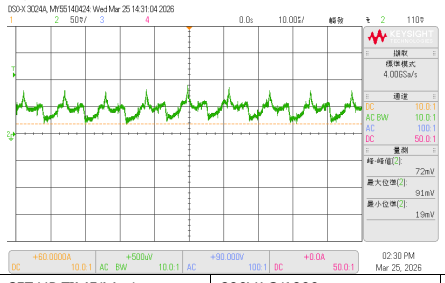
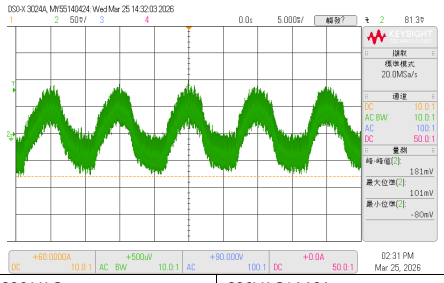
Safety Test
E.M.C. Test

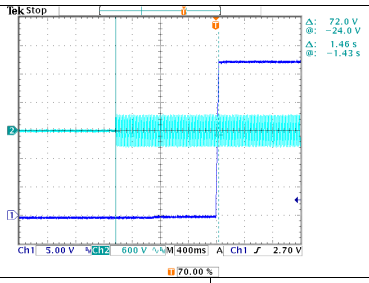
■ RELIABILITY TEST

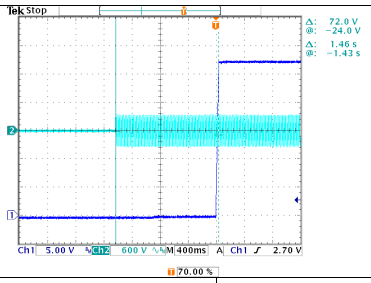
ENVIRONMENT TEST

■ DESIGN VERIFY TEST

OUTPUT FUNCTION TEST

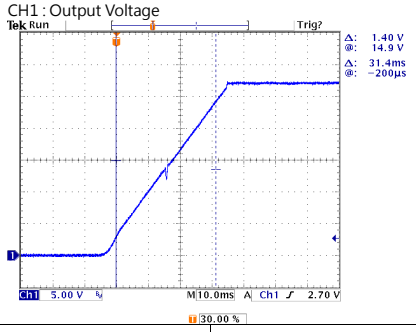
NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	OUTPUT VOLTAGE ADJUST RANGE	CH1: 24.3V ~ 32.4V	I/P : 230 VAC I/P : 115 VAC O/P : MIN LOAD Ta : 25℃	23.451V~33.164V/230VAC 23.450V~33.162V/115VAC
2	OUTPUT VOLTAGE TOLERANCE	V1: 1% ~ -1%	I/P : 85VAC /305VAC O/P : FULL/ MIN. LOAD Ta:25℃	V1: 0.37% ~-0.24%
3	LINE REGULATION	V1: 0.5% ~ -0.5%	I/P : 85VAC~ 305VAC O/P : FULL LOAD Ta:25℃	V1: 0.12% ~-0.018%
4	LOAD REGULATION	V1: 0.5% ~ -0.5%	I/P : 230VAC O/P : FULL ~MIN LOAD Ta:25℃	V1: 0.15% ~-0.11%
5	OVER/UNDERSHOOT TEST	<± 10%	I/P : 230VAC O/P : FULL LOAD Ta:25℃	<10%
6	RIPPLE & NOISE (Max)	V1: 300mVp-p	I/P : 230VAC O/P : FULL LOAD Ta:25℃	V1: 181mVp-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℃	230VAC/ 1464ms 115VAC/ 960ms 277VAC/ 1352ms
	INPUT=230VAC/50HZ @ FULL LOAD CH1 : Output Voltage CH2 : AC Input Voltage		INPUT=115VAC/60HZ @ FULL LOAD CH1 : Output Voltage CH2 : AC Input Voltage	



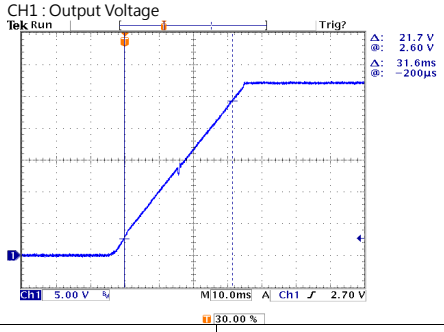


8	RISE TIME (Max)	230VAC/60ms 115VAC/60ms 277VAC/60ms	I/P： 230 VAC I/P： 115 VAC I/P： 277 VAC O/P：FULL LOAD Ta：25℃	230VAC/ 31.4ms 115VAC/ 31.6ms 277VAC/ 32.2ms

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

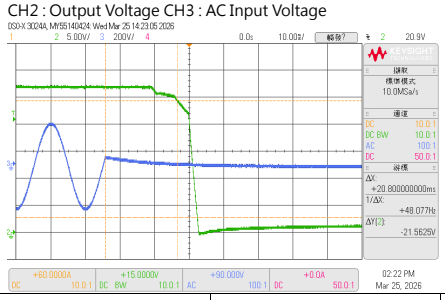


INPUT=115VAC/60HZ @ FULL LOAD
CH1 : Output Voltage

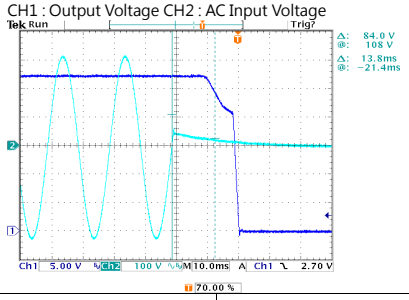


9	HOLD UP TIME (Typ.)	230VAC/12ms / 70% Load 230VAC/8ms / Full Load	I/P： 230 VAC O/P：70% LOAD O/P：FULL LOAD Ta：25℃	20.8ms / 70%Load 13.8ms / Full Load

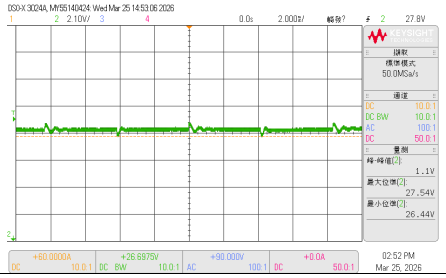
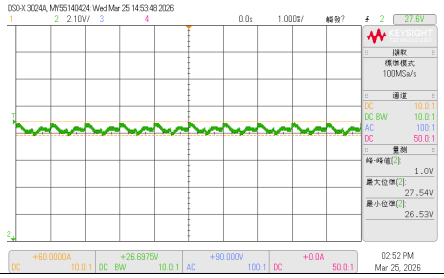
INPUT=230VAC/50HZ @ 70% LOAD
CH2 : Output Voltage CH3 : AC Input Voltage



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

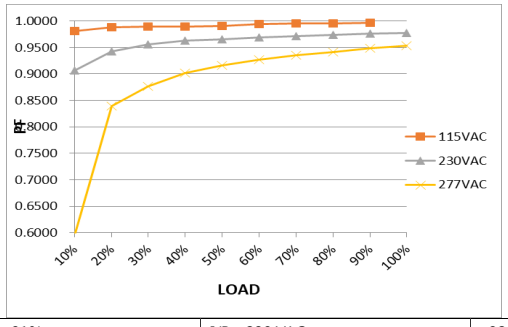
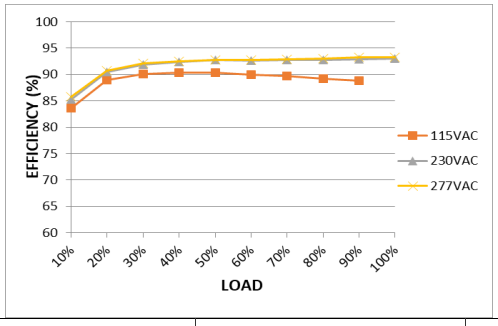


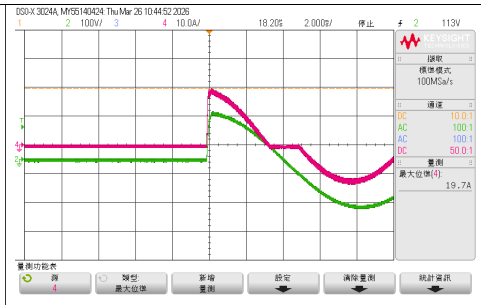
10	DYNAMIC LOAD	V1: 2700 mVp-p	I/P: 230VAC O/P: (1)FULL /50% LOAD 50%DUTY / 120HZ	1100mVp-p

			(2)FULL /50% LOAD 50%DUTY / 1KHZ Ta:25℃	1000mVp-p
	FULL /50% LOAD 50%DUTY / 120HZ 		FULL /50% LOAD 50%DUTY / 1KHZ 	

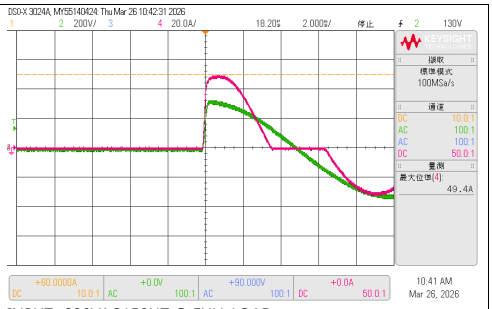
INPUT FUNCTION TEST

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℃	(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
			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)	TEST:PASS
2	INPUT FREQUENCY RANGE	47HZ ~63 HZ NO DAMAGE	I/P：85 VAC ~305 VAC O/P：FULL~MIN LOAD Ta:25℃	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℃	I =16.37A/ 115VAC I =11.47A/ 230VAC I =9.768A/ 277VAC
	LEAKAGE CURRENT	<500 uA / 277 VAC (Earth) < 100uA / 277 VAC (Touch)	I/P： 277 VAC /60Hz O/P：Min LOAD Ta：25℃	Earth L-FG： 321 uA N-FG： 328 uA Touch +Vo： 69.2 uA -Vo： 69.2 uA

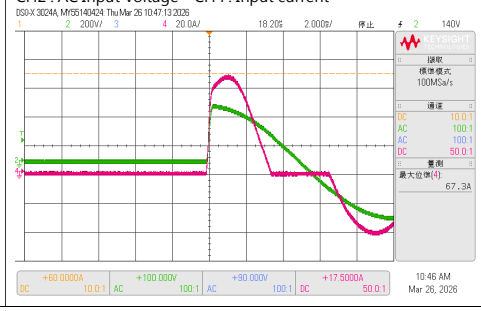
6	POWER FACTOR (Typ.)	0.98/ 115VAC 0.95/ 230VAC 0.93/ 277VAC	I/P : 115 VAC I/P : 230 VAC I/P : 277 VAC O/P : FULL LOAD Ta : 25℃	PF= 0.9949/ 115VAC PF= 0.9775/ 230VAC PF= 0.9495/ 277VAC
	P.F vs LOAD			
7	EFFICIENCY(Typ.)	91%	I/P : 230 VAC O/P : 100% Load Ta:25℃	92.98%
	EFFICIENCY vs LOAD			
8	INRUSH CURRENT(Typ.)	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℃	I =19.7A/ 115VAC I =49.4A/ 230VAC I =67.3A/ 277VAC T50=2540us/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	

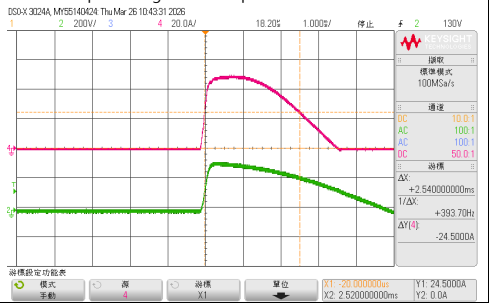


INPUT=277VAC/50HZ @ FULL LOAD
CH2 : AC Input Voltage CH4 : Input current



INPUT=230VAC/ 50HZ @ FULL LOAD
CH2 : AC Input Voltage CH4 : Input current T-50





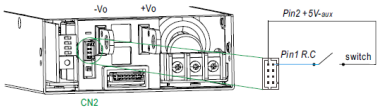
PROTECTION FUNCTION TEST

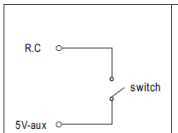
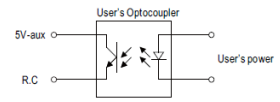
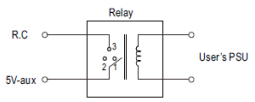
NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	OVER LOAD PROTECTION	PEAK POWER MODE From 105% to 200% of rated output power, unit will shut down after 5 seconds of continuous operation. AC repower on to recover. (2 Sec for 12V/15V models)	I/P : 305VAC : 230VAC : 180VAC : 115VAC : 100VAC : 85VAC O/P : TESTING Ta:25℃	106.75%/ 305VAC 106.53%/ 230VAC 105.29%/ 180VAC 72.6%/ 115VAC 64.86%/ 100VAC 58.55%/ 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)

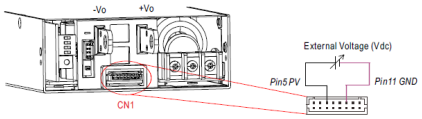
		PEAK POWER MODE At >200% of rated output power, constant current limiting is activated. Unit will shut down after 5 seconds of continuous operation. AC repower on to recover. (2 Sec for 12V/15V models) Note: Input≧ 220VAC:Peak power = 2 X Rated Power Input < 220VAC:Peak power=1.33 X Rated Power	I/P：305VAC ：230VAC ：180VAC ：115VAC ：100VAC ：85VAC O/P：Peak Load Ta:25℃	202.10%/ 305VAC 201.54%/ 230VAC 133.68%/ 180VAC 93.90%/ 115VAC 80.68%/ 100VAC 73.66%/ 85VAC PROTECTION TYPE： 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 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℃	106.75%/ 305VAC 106.53%/ 230VAC 105.29%/ 180VAC 72.6%/ 115VAC 64.86%/ 100VAC 58.55%/ 85VAC PROTECTION TYPE： Constant current limiting, recovers automatically after abnormal condition is removed
2	OVER VOLTAGE PROTECTION	33V ~ 42V	I/P: 305VAC I/P: 230VAC I/P: 85VAC O/P:MIN LOAD Ta:25℃	34.931V/ 305VAC 34.965V/ 230VAC 34.909V/ 85VAC PROTECTION TYPE： Shut down o/p 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℃	NO DAMAGE PROTECTION TYPE： Shutdown O/P voltage, re-power on to recover

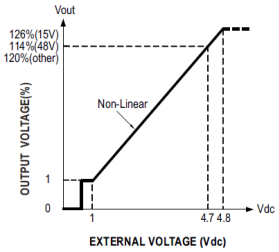
CONTROL FUNCTION TEST

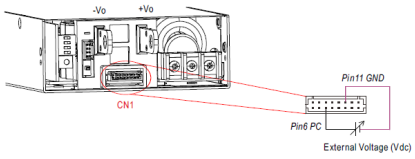
<table>
<tr><th>NO</th><th>TEST ITEM</th><th>SPECIFICATION</th><th>TEST CONDITION</th><th>RESULT</th></tr>
<tr><td>1</td><td>AUXILIARY POWER (AUX)</td><td colspan="3">1. Auxiliary voltage output, 4.25~5.75Vdc, referenced to GND-aux (pin2).
The maximum load current is 0.2A. This output has the built-in "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".

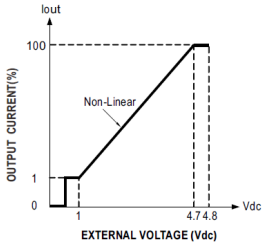
I/P: 230 VAC
O/P:FULL LOAD
Ta:25℃
Test Result：
<table>
<tr><th>AUX</th><th>TOLERANCE</th><th>RIPPLE</th><th>TEST RESULT</th></tr>
<tr><td>5V / 0.2A</td><td>4.25~5.75V</td><td>150mVp-p</td><td>4.92V/50mV</td></tr>
<tr><td>12V / 0.8A</td><td>10.2~13.8V</td><td>450mVp-p</td><td>11.9V/112mV</td></tr>
</table></td></tr>
<tr><td>2</td><td>REMOTE ON/OFF CONTROL</td><td colspan="3">※ 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>
<table>
<tr><td> 
</td><td> 
</td><td> 
</td></tr>
<tr><td>R.C. by external switch.</td><td>R.C. by user's optocoupler control module.</td><td>R.C. by user's Relay control module.</td></tr>
</table>
I/P: 230 VAC
O/P:FULL LOAD
Ta:25℃
Test Result：
<table>
<tr><th>Between ON/OFF and +5V-AUX</th><th>Power Supply Status</th></tr>
<tr><td>SW SHORT</td><td>ON</td></tr>
<tr><td>SW OPEN</td><td>OFF</td></tr>
</table></td></tr>
<tr><td>3</td><td>REMOTE SENSE</td><td>S+ / S-
>0.5V
Compensate voltage drop on the load wiring up to 0.5V.</td><td>I/P: 230 VAC
O/P:FULL LOAD
Ta:25℃</td><td>0.5V</td></tr>
</table>

<table>
<tr><td>4</td><td>ALARM SIGNAL</td><td>
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℃
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>76.66%</td><td>High (3.5 ~ 5.5V)</td><td>5.162V</td></tr>
<tr><td>Vout ≧ 75%~85%</td><td>78.77%</td><td>Low (-0.5 ~ 0.5V)</td><td>0.001V</td></tr>
</table>
</td></tr>
<tr><td>5</td><td>OUTPUT VOLTAGE PROGRAMMABLE(PV)</td><td>
(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℃
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>0~1.62</td><td>25.65~28.35</td><td>31.05~33.75</td><td>31.91~34.61</td></tr>
<tr><td>Vout</td><td>0.292V</td><td>0.295V</td><td>27.151V</td><td>32.464V</td><td>33.213V</td></tr>
</table>
</td></tr>
<tr><td>6</td><td>OUTPUT CURRENT PROGRAMMABLE (PC)</td><td>
(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℃
</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	1.09%	1.19%	50.03%	100.02%	102.92%
7	FAN NOISE (Typ.)	10% load @38 dB 70% load @44dB Built-in intelligent fan speed control detect by PSU' S internal temperature		I/P：230 VAC O/P：TESTING Ta：25℃		10% load:37.5 dB 70% load: 37.5dB	

COMPONENT STRESS TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	PWM Transistor (D to S) or (C to E) Peak Voltage	Q3 G3F45MT06K Rated : 650V 52A@TC=25℃ 37 A@TC=100℃ 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	VDS: (1) 435V/11.2A (2) 503V/42A (3) 443V/20.9A (4) 439V/12.5A (5) 435V/11.7A (6) 459V/23.4A (7) 499V/42.7A VGS: (1)16.5V (2)18.5V (3)17.3V (4)16.5V (5)17.7V (6)16.5V VDS: (1) 435V/24.8A (2) 471V/46.7A (3) 435V/20.2A

			(4)Dynamic Load Full Load/ Min. Load 90%Duty/3KHz	(4) 431V/13.8A
			(5)Dynamic Load Full Load/ Min. Load 90%Duty/5KHz	(5) 431V12.0/A
			(6)Dynamic Load Full Load/ Min. Load 50%Duty/120Hz	(6) 447V/22.4A
			(7)0%→400% Load.	(7) 447V/40.3A
2	P.F.C Transistor (D to S) or (C to E) Peak Voltage	Q901 Rated: 650 V 55 A@TC=25℃ 35 @TC=100℃ 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/ 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℃	VDS: (1) 489V/9.13A (2) 493V/9.93A (3) 497V/9.21A (4) 485V/9.53A (5) 489V/9.77A (6) 497V/11.54A (7) 436V/0.3A VGS: (1)11.2V (2)11.2V (3)12.0V (4)11.2V (5)11.4V (6)0.4V VDS: (1) 509V/10.8A (2) 501V/10.0A (3) 501V/9.4A (4) 509V/9.4A (5) 509V/11.2A (6) 473V/8.2A (7) 452V/6.7A
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	 (1) 433V (2) 441V

已註解 [p1]: 缺規格

			(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 Ta:25℃	(3) 433V (4) 437V (1) 445V (2) 458V (3) 450V (4) 450V	
4	Diode Peak Voltage	Q800 Rated: 331 A/ 120 V VGS : ±20 V Q853 IPT017N12NM6 Rated: 331 A/ 120 V VGS : ±20 V	AC ON/OFF I/P:High-Line +3V =308 V VO: SPEC MAX 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 VO: standard O/P: (1)Full Load VGS: VO: standard (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℃	Q800: VO: SPEC MAX VDS: (1) 107.7V (2) 108.5V (3) 116.5V (4) 110.9V (5) 108.5V (6) 118.1V (7) 105.3V (8) 116.5 V VO: standard (1) 107.9V VO: standard VGS: (1)8.5V (2)8.9V (3)8.7V (4)8.5V (5)8.7V (6)5.9V	Q853: VO: SPEC MAX VDS: (1) 108.6V (2) 112.6V (3) 117.5V (4) 113.4V (5) 108.6V (6) 119.1V (7) 107.0V (8) 118.3V VO: standard (1) 108.7V VO: standard VGS: (1)8.9V (2)9.3V (3)8.9V (4)8.7V (5)8.9V (6)7.3V
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	 (1)447V (2)443V (3)447V (4)445V	

			Ta:25℃	

■ 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℃	I/P-O/P: 4.69 mA I/P-FG: 3.13 mA O/P-FG: 11.42 m A 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℃	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℃	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℃	PASS
2	CONDUCTION	EN55032 ,EN55011 CLASS B	I/P： 230 VAC (50HZ) O/P：FULL/50% LOAD Ta：25℃	PASS Test by certified Lab
3	RADIATION	EN55032 ,EN55011 CLASS B	I/P： 230 VAC (50HZ) O/P：FULL LOAD Ta：25℃	PASS Test by certified Lab
4	E.S.D	EN61000-4-2 MEDICAL AIR：15KV / Contact：8KV	I/P： 230 VAC/50HZ O/P：FULL LOAD Ta：25℃	CRITERIA A
5	E.F.T	EN61000-4-4 INDUSTRY INPUT： 2KV	I/P： 230 VAC/50HZ O/P：FULL LOAD Ta：25℃	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℃	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-2400-24 1. ROOM AMBIENT BURN-IN : 1HRS I/P : 230VAC O/P : FULL LOAD Ta= 25 ℃ 2. HIGH AMBIENT BURN-IN : 2 HRS I/P : 230VAC O/P : FULL LOAD Ta= 60 ℃		

NO	Position	ROOM AMBIENT Ta= 25 ℃	HIGH AMBIENT Ta= 60 ℃
1	LF2	60.4℃	78.1℃
2	BD1	95.1℃	110.0℃
3	L1	67.9℃	81.1℃
4	RY1	71.5℃	83.9℃
5	Q901	83.8℃	93.9℃
6	Q903	81.4℃	93.2℃
7	D13	87.1℃	98.4℃
8	C5	73.9℃	83.1℃
9	L40	69.6℃	83.1℃
10	Q1	89.1℃	99.0℃
11	Q2	89.4℃	98.4℃
12	Q3	88.6℃	98.1℃
13	Q4	88.5℃	98.0℃
14	D28	84.4℃	94.6℃
15	D176	91.5℃	98.4℃
16	Q801	78.4℃	91.9℃
17	Q803	72.6℃	87.0℃
18	Q852	71.6℃	87.3℃
19	Q850	80.5℃	94.1℃
20	T1-2	89.3℃	96.5℃
21	T1-1	86.8℃	93.5℃
22	T1 Core	86.3℃	89.5℃
23	Q801	74.4℃	88.7℃
24	A-PCB	87.3℃	98.3℃
25	L100	90.3℃	103.7℃
26	T170	80.0℃	93.1℃
27	U200	101.6℃	105.3℃
28	U850	88.1℃	97.5℃
29	U401	37.8℃	66.5℃
30	C182	70.7℃	84.0℃
31	C105	42.6℃	66.9℃

		32	C104	46.9℃	69.3℃
		33	RT10	74.1℃	85.4℃
		34	CN451	68.6℃	81.7℃
		35	RT12	64.7℃	79.4℃
		28	Q712	70.5℃	87.4℃
		29	L100-PCB	93.8℃	102.3℃

2	OVER LOAD BURN-IN TEST	NO DAMAGE 1 HOUR (MIN)	I/P：230 VAC O/P： 110%LOAD Ta：25℃	TEST：OK
3	LOW TEMPERATURE TURN ON TEST	TURN ON AFTER 2 HOUR	I/P：305VAC/180VAC O/P：100 %LOAD Ta= -35℃	TEST：OK
4	HIGH HUMIDITY HIGH TEMPERATURE HIGH VOLTAGE TURN ON TEST	AFTER 12 HOURS IN CHAMBER ON CONTROL 60 ℃/95 %R.H NO DAMAGE	I/P：315 VAC O/P：FULL LOAD Ta= 60 ℃ HUMIDITY= 95 %R.H	TEST：OK
5	TEMPERATURE COEFFICIENT	± 0.03 %/℃(0~60℃)	I/P：230 VAC O/P：FULL LOAD	± 0.002 %/℃(0~60℃)
6	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：10 CYCLE 5. Input/Output condition：STATIC	
7	THERMAL SHOCK TEST	-30~60℃	1. Thermal shock Temperature：-35℃~ +65℃ 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	
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℃	
9	CAPACITOR LIFE CYCLE	SUPPOSE C104 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= 60 ℃ LIFE TIME (3) I/P：230VAC O/P：75% LOAD Ta= 60 ℃ LIFE TIME (4) I/P：230VAC O/P：50% LOAD Ta= 60 ℃ 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℃)		
11	Ongoing Reliability Test	I/P：230VAC O/P：FULL LOAD TA=60℃ Demonstration Mean Time Between Failure：50,000 hours		

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

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