Test Report: NSP-100-7.5

100W AC/DC High Reliable Multi-Industries Encolsed 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

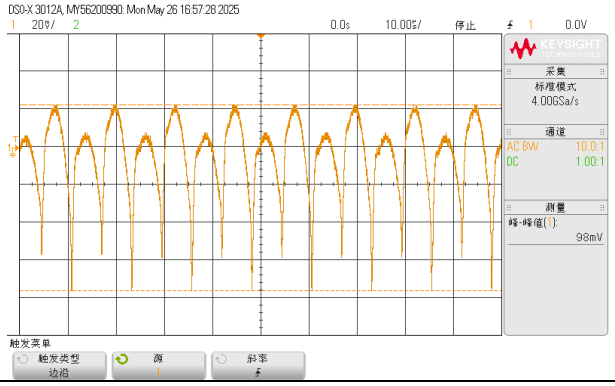
ENVIRONMENT TEST

■ DESIGN VERIFY TEST

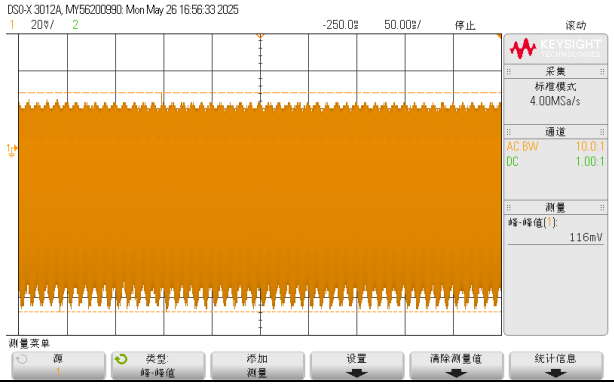
OUTPUT FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	OUTPUT VOLTAGE ADJUST RANGE	CH1: 6.8V~ 9.0V	I/P： 230 VAC O/P：MIN LOAD Ta：25℃	6.53V~9.48V/230VAC
2	OUTPUT VOLTAGE TOLERANCE	V1: -2.0 %~ 2.0%	I/P: 85VAC /305VAC O/P:FULL/ MIN. LOAD Ta:25℃	V1: -0.53 %~ 0.26%
3	LINE REGULATION	V1: -0.5%~ 0.5%	I/P: 85VAC~ 305VAC O/P:FULL LOAD Ta:25℃	V1: -0.13%~0.13%
4	LOAD REGULATION	V1: -1.0%~ 1.0%	I/P: 230VAC O/P:FULL ~MIN LOAD Ta:25℃	V1: -0.5%~ 0.4 %
5	OVER/UNDERSHOOT TEST	<±10%	I/P: 230VAC O/P:FULL LOAD Ta:25℃	4.2%
6	RIPPLE & NOISE (Max)	V1: 150mVp-p	I/P: 230 VAC O/P: MIN LOAD—FULL LOAD Ta:25℃	V1: 116mVp-p / 100% load

high frequency：

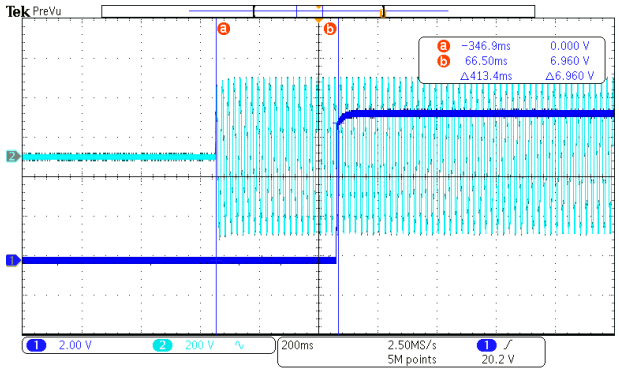


low frequency：

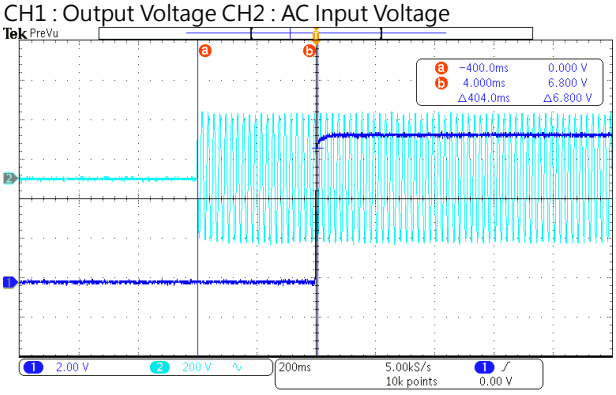


7	SET UP TIME(Max)	277VAC/1000ms 230VAC/1000ms 115VAC/1500ms	I/P：277 VAC I/P：230 VAC I/P：115VAC O/P：FULL LOAD Ta：25℃	277VAC/413.4ms 230VAC/404ms 115VAC/358.2ms

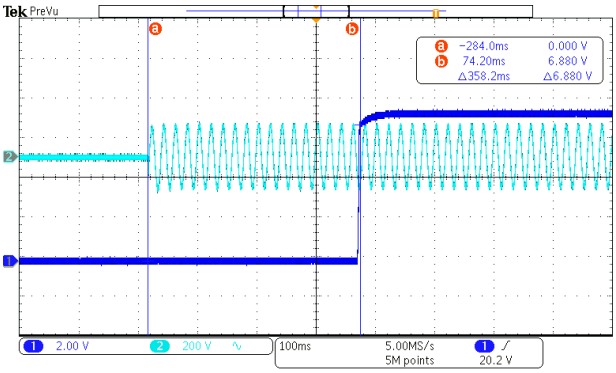
INPUT=277VAC/60HZ @ FULL LOAD
CH1 : Output Voltage CH2 : AC Input Voltage



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

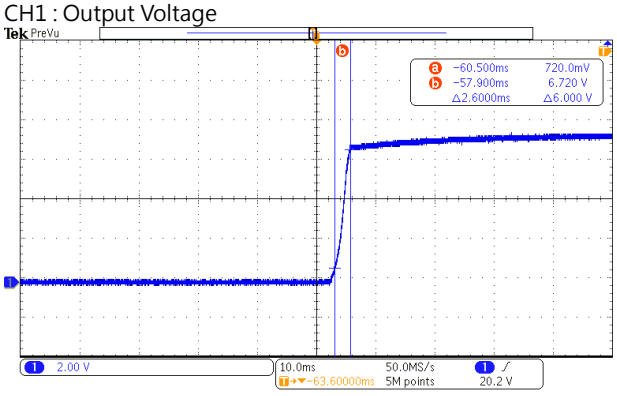


INPUT=115VAC/60HZ @ FULL LOAD
CH1 : Output Voltage CH2 : AC Input Voltage

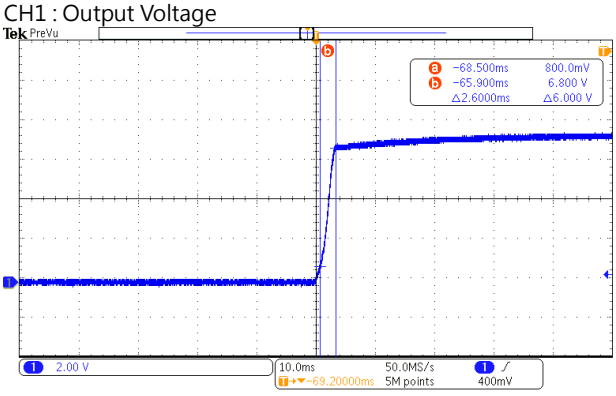


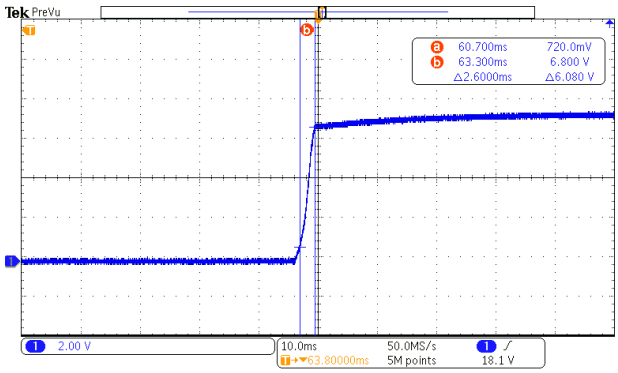
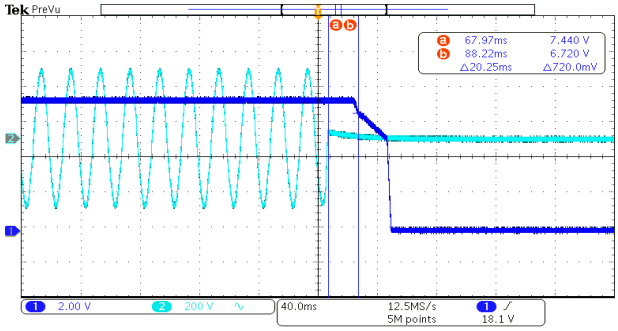
8	RISE TIME (Max)	277VAC/80ms 230VAC/80ms 115VAC/80ms	I/P：277VAC I/P：230 VAC I/P：115VAC O/P：FULL LOAD Ta：25℃	277VAC/ 2.6ms 230VAC/2.6ms 115VAC/ 2.6ms

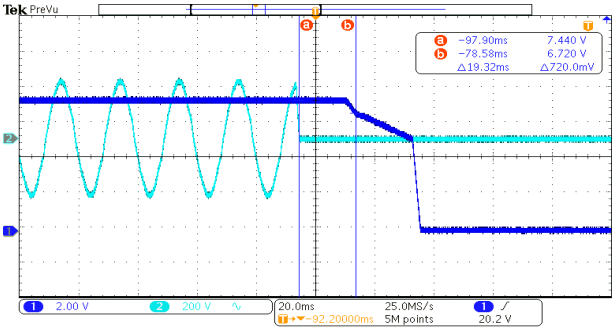
INPUT=277VAC/60HZ @ FULL LOAD
CH1 : Output Voltage

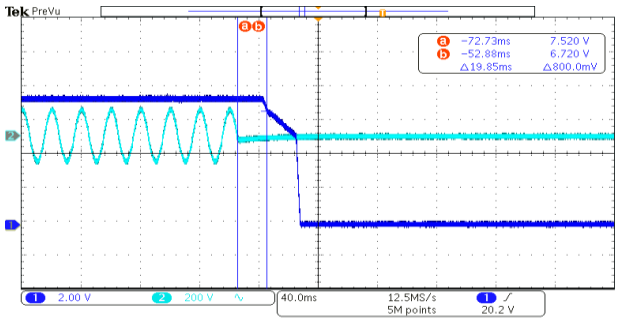


INPUT=230VAC/50HZ @ FULL LOAD
CH1 : Output Voltage



<table>
<tr><td></td><td colspan="4">INPUT=115VAC/60HZ @ FULL LOAD
CH1 : Output Voltage
 
</td></tr>
<tr><td>9</td><td>HOLD UP TIME (Typ.)</td><td>277VAC/16ms
230VAC/16ms
115VAC/16ms</td><td>I/P：277VAC
I/P：230 VAC
I/P：115VAC
O/P：FULL LOAD
Ta：25℃</td><td>277VAC/20.25ms
230VAC/19.32ms
115VAC/19.85ms</td></tr>
<tr><td></td><td colspan="4">INPUT=277VAC/60HZ @ FULL LOAD
CH1 : Output Voltage CH2 : AC Input Voltage
 

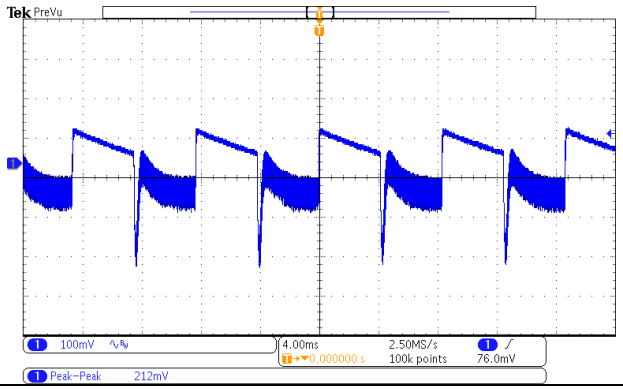
INPUT=230VAC/50HZ @ FULL LOAD
CH1 : Output Voltage CH2 : AC Input Voltage
 

INPUT=115VAC/60HZ @ FULL LOAD
CH1 : Output Voltage CH2 : AC Input Voltage
 
</td></tr>
<tr><td>10</td><td>DYNAMIC LOAD</td><td>V1: 1500mVp-p</td><td>I/P: 230VAC
O/P:
(1)FULL /50% LOAD 50%DUTY / 120HZ
(2)FULL /50% LOAD 50%DUTY / 1KHZ
Ta:25℃</td><td>

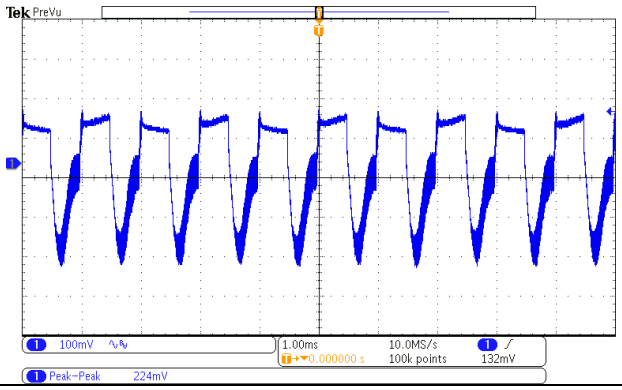
212mVp-p

224mVp-p</td></tr>
</table>

FULL /50% LOAD 50%DUTY / 120HZ

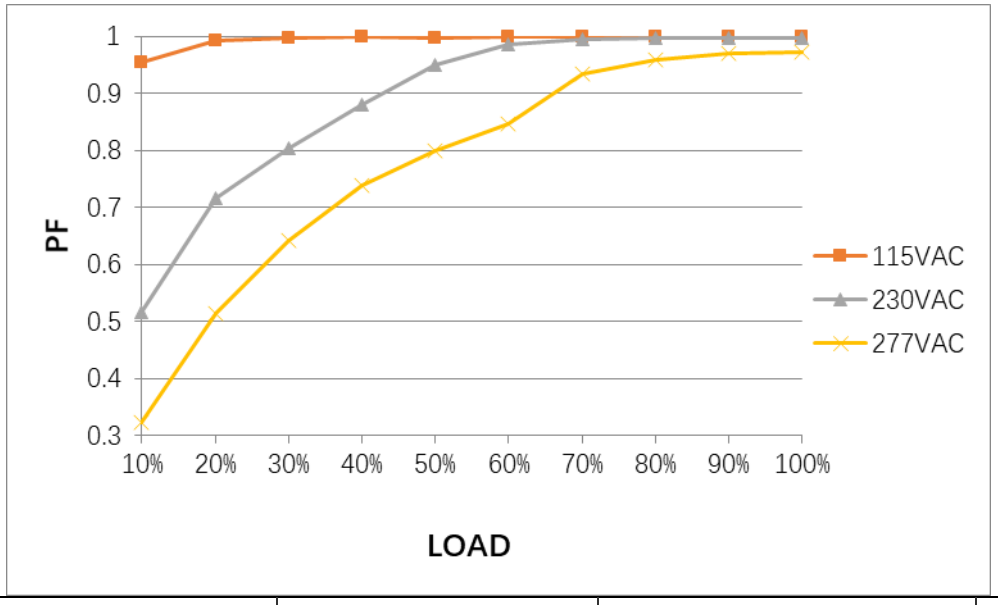
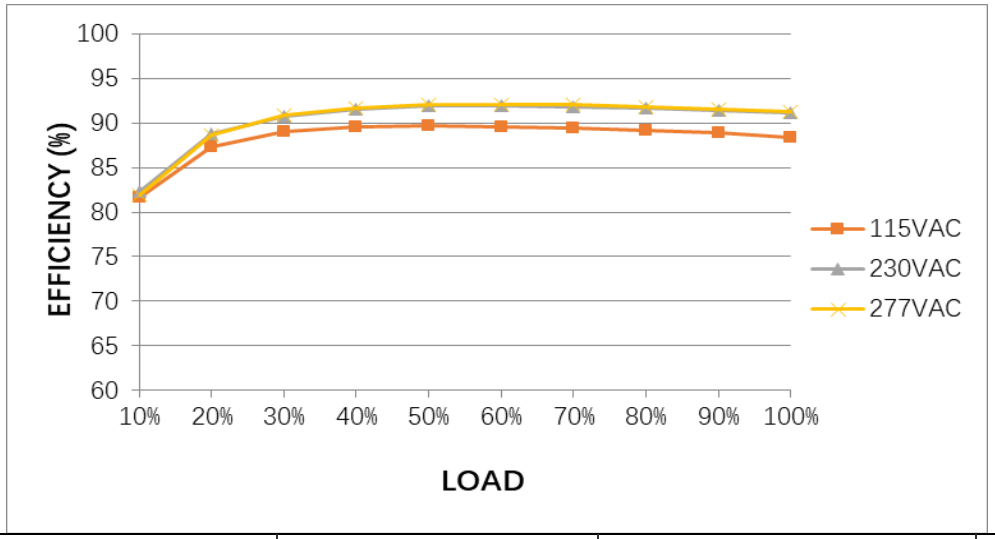


FULL /50% LOAD 50%DUTY / 1KHZ



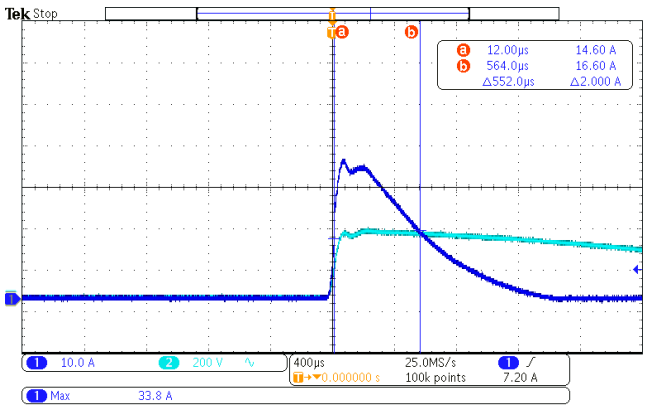
INPUT FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	INPUT VOLTAGE RANGE	85VAC~305VAC 120VDC~ 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) 82V~308V (2) 117Vdc~434Vdc/FULL LOAD 117Vdc~ 434Vdc/50% LOAD (3) 117Vdc~434 Vdc/FULL LOAD 117 Vdc~434Vdc/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:85VAC ~305VAC O/P:FULL~MIN LOAD Ta:25℃	TEST: PASS
3	INPUT CURRENT (Typ.)	277V/ 0.45A 230V/ 0.52 A 115V/ 1.1 A	I/P： 277VAC I/P： 230 VAC I/P： 115VAC O/P：FULL LOAD Ta：25℃	I =0.40A/ 277VAC I =0.47A/ 230VAC I =0.96A/ 115VAC
4	LEAKAGE CURRENT	Earth leakage current <350μA(rms)@277Vac	I/P： 277 VAC O/P：Min LOAD Ta：25℃	L-FG： 225μA N-FG： 221μA
		Touch current <100μA(rms)@277Vac	I/P： 277 VAC O/P：Min LOAD Ta：25℃	L-V+： 56 μA L-V-： 56 μA N-V+： 56 μA N-V-： 56 μA

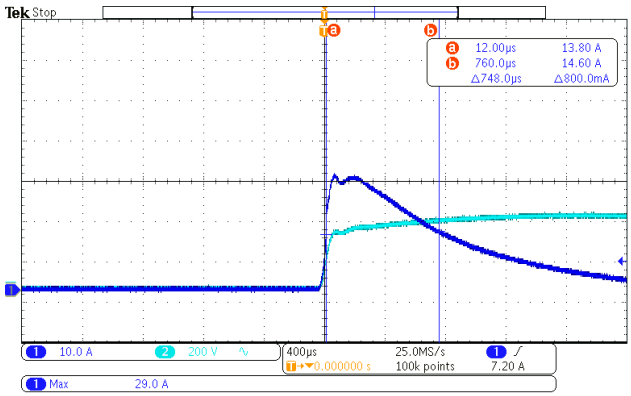
5	POWER FACTOR (Typ.)	0.90/277VAC 0.93/ 230VAC 0.98/ 115VAC	I/P： 277 VAC I/P： 230 VAC I/P： 115 VAC O/P：FULL LOAD Ta：25℃	PF=0.971/277VAC PF=0.997/230VAC PF=0.999/115VAC
	P.F vs LOAD 			
6	EFFICIENCY(Typ.)	91%	I/P:230 VAC O/P:FULL LOAD Ta:25℃	91.1%
	EFFICIENCY vs LOAD 			
7	NO LOAD POWER CONSUMPTION(Typ.)	Remote Power ON： 2W/277VAC 2W/230VAC 2W/115VAC Remote Power OFF： 0.5W/277VAC 0.5W/230VAC 0.3W/115VAC	I/P： 277VAC I/P： 230 VAC I/P： 115 VAC O/P：RC ON/RC OFF Ta：25℃	Remote Power ON： 0.72W/277VAC 0.78W/230VAC 0.84W/115VAC Remote Power OFF： 0.36W/277VAC 0.29W/230VAC 0.15W/115VAC

INRUSH CURRENT(Typ.)	277V/45A 230V/35A 115V/20A COLD START	I/P： 277 VAC I/P： 230 VAC I/P： 115 VAC O/P：FULL LOAD Ta：25℃	I =33.8A/ 277VAC T50=552us/277V I =29A/ 230VAC T50=748us/230V I =16.6A/ 115VAC T50=444us/115V

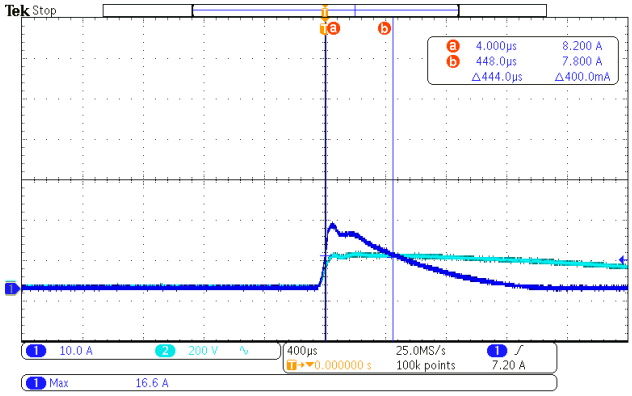
INPUT=277VAC/50HZ @ FULL LOAD
CH2 : AC Input Voltage CH4 : Input current



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



INPUT=115VAC/50HZ @ FULL LOAD
CH2 : AC Input Voltage CH4 : Input current



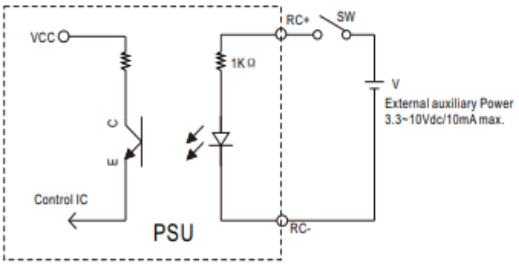
PROTECTION FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	OVER LOAD PROTECTION	105%~ 150%	I/P: 305VAC I/P: 230VAC I/P: 85VAC O/P:TESTING Ta:25℃	135.23 % / 305VAC 135.23 % / 230VAC 135.23 % / 85VAC Protection type : 1、105%~150% rated output power, Constant current limiting for more than 5 secnds and then shut down o/p voltage, AC re-power on to recover
2	OVER VOLTAGE PROTECTION	9.2V~13V	I/P: 305VAC I/P: 230VAC I/P: 85VAC O/P:MIN LOAD Ta:25℃	11.8V/ 305VAC 11.8V/ 230VAC 11.8V/ 85VAC Protection type : Shut down o/p voltage, re-power on to recover
3	OVER TEMPERATURE PROTECTION	NO DAMAGE	I/P: 305VAC I/P: 85VAC O/P:FULL LOAD	O.T.P. Active Protection type : Shut down o/p voltage, re-power on to recover
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 : Constant current limiting for more than 5 seconds and then shut down o/p voltage, AC re-power on to recover

CONTROL FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	REMOTE ON/OFF CONTROL	**2.Remote Control** The PSU can be turned ON/OFF by using the "Remote Control" function with external switch and auxiliary power		

PSU Vo Status	Between RC-(pin1) and RC+(pin2) on CN1
POWER ON	Keep 0~0.8Vdc or open
POWER OFF	Keep 3.3~10Vdc by external voltage



I/P: 230 VAC
O/P:FULL LOAD
Ta:25℃
Test Result :

Between ON/OFF	Power Output Status
SW ON（0~0.8V）	ON
SW OFF （3.3~10V）	OFF

COMPONENT STRESS TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	PWM Transistor (D to S) or (C to E) Peak Voltage	Q6 Rated 650 V/11 A	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 100% Load/ Min. Load 50%Duty/120Hz (7)0%→400% Load. I/P:Low-Line -3V = 82V 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℃	 VDS: (1) 436V (2) 436V (3) 432V (4) 444V (5) 440V (6) 436V (7) 440V VDS: (1) 444V (2) 444V (3) 436V (4) 440V (5) 440V (6) 440V (7) 444V
2	P.F.C Transistor (D to S) or (C to E) Peak Voltage	Q1 Rated 650 V/15A	I/P:High-Line +3V =308V 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.	 VDS: (1) 519V (2) 439V (3) 487V (4) 452V (5) 456V (6) 483V (7) 419V

			I/P:Low-Line -3V =82V 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℃	VDS: (1) 491V (2) 447V (3) 487V (4) 460V (5) 464V (6) 463V (7) 451V
3	P.F.C DIODE	D8 Rated 4 A/650V	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 100% Load/ Min. Load 50%Duty/120Hz I/P:Low-Line -3V = 82V 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℃	(1) 438V (2) 418V (3) 430V (4) 438V (1) 450V (2) 442V (3) 450V (4) 454V
4	Diode Peak Voltage	Q100 Rated 114A/30 V Q101 Rated 114A/30 V	AC ON/OFF I/P:High-Line +3V =308 V 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 Ta:25℃	Q100: VDS: (1) 22.2V (2) 5.4V (3) 21.4V (4) 22V (5) 21.6V (6) 21.4V (7) 8.6V (8) 19V

				Q101: VDS: (1) 20.6V (2) 8.2V (3) 20V (4) 19.6V (5) 19.8V (6) 20V (7) 8.2V (8) 20.6V
5	Input Capacitor Voltage	C5 Rated: 68μ/ 450V Surge voltage:500V	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℃	 (1)432V (2)432V (3)448V (4)436V
6	Control IC Voltage Test	PWM IC U2 Rated -0.4 V~ 30 V O/P IC U100 Rated -0.3V~ 38V	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 VRmin(LOW LINE) Ta:25℃	 U2 (1) 19.4V (2) 19.4V (3) 19.4V (4) 19.6V (5) 13V U100 (1) 11.7V (2) 11.7V (3) 11.7V (4) 11.6V (5) 6.8V

■ SAFETY& E.M.C. TEST

SAFETY TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	WITHSTAND VOLTAGE	I/P-O/P: 4.2 K VAC/min I/P-FG : 2.1 K VAC/min O/P-FG: 1.5 KVAC/min	I/P-O/P: 4.62 KVAC/min I/P-FG: 2.52 KVAC/min O/P-FG: 1.8 KVAC/min Ta:25℃	I/P-O/P: 1.916 mA I/P-FG: 1.9 mA O/P-FG: 1.553 m A
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: >9999 MΩ I/P-FG: >9999 MΩ O/P-FG: >9999 MΩ NO DAMAGE
3	GROUNDING CONTINUITY	FG(PE) TO CHASSIS OR TRACE < 100 mΩ	40A / 2min Ta:25℃	10 mΩ

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	BS EN/EN55032(CISPR32),CNS 15936 EN/EN55014-1(CISPR14-1) EN/EN55011(CISPR11)	I/P： 230 VAC (50HZ) O/P：FULL/50% LOAD Ta：25℃	PASS Test by certified Lab
3	RADIATION	BS EN/EN55032(CISPR32),CNS 15936 EN/EN55014-1(CISPR14-1) EN/EN55011(CISPR11)	I/P： 230 VAC (50HZ) O/P：FULL LOAD Ta：25℃	PASS Test by certified Lab
4	E.S.D	EN61000-4-2 AIR：15KV / Contact：8KV	I/P： 230 VAC/50HZ O/P：FULL LOAD Ta：25℃	CRITERIA A
5	E.F.T	EN61000-4-4 INPUT： 2KV	I/P： 230 VAC/50HZ O/P：FULL LOAD Ta：25℃	CRITERIA A
6	SURGE	IEC61000-4-5 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

<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>TEMPERATURE RISE TEST</td><td colspan="3">MODEL : NSP-100-7.5
1. ROOM AMBIENT BURN-IN : 2 HRS
I/P : 230VAC O/P : FULL LOAD Ta=27.1 ℃
2. HIGH AMBIENT BURN-IN : 2 HRS
I/P : 230VAC O/P : FULL LOAD Ta=51.6 ℃
<table>
<tr><th>NO</th><th>Position</th><th>ROOM AMBIENT Ta=27.1 ℃</th><th>HIGH AMBIENT Ta=51.6 ℃</th></tr>
<tr><td>1</td><td>ZNR1</td><td>40.2℃</td><td>66.0℃</td></tr>
<tr><td>2</td><td>LF1</td><td>48.3℃</td><td>73.6℃</td></tr>
<tr><td>3</td><td>C2</td><td>49.5℃</td><td>74.4℃</td></tr>
<tr><td>4</td><td>C10</td><td>52.3℃</td><td>76.9℃</td></tr>
<tr><td>5</td><td>L2</td><td>57.2℃</td><td>80.9℃</td></tr>
<tr><td>6</td><td>Q1</td><td>53.4℃</td><td>77.9℃</td></tr>
<tr><td>7</td><td>C5</td><td>52.8℃</td><td>77.6℃</td></tr>
<tr><td>8</td><td>C14</td><td>57.9℃</td><td>84.5℃</td></tr>
<tr><td>9</td><td>U2</td><td>66.6℃</td><td>90.9℃</td></tr>
<tr><td>10</td><td>C36</td><td>62.0℃</td><td>86.7℃</td></tr>
<tr><td>11</td><td>BD1</td><td>53.0℃</td><td>77.4℃</td></tr>
<tr><td>12</td><td>D8</td><td>53.2℃</td><td>78.5℃</td></tr>
<tr><td>13</td><td>Q5</td><td>54.6℃</td><td>79.4℃</td></tr>
<tr><td>14</td><td>Q6</td><td>59.6℃</td><td>84.8℃</td></tr>
<tr><td>15</td><td>T1</td><td>72.8℃</td><td>98.8℃</td></tr>
<tr><td>16</td><td>C200</td><td>58.9℃</td><td>85.0℃</td></tr>
<tr><td>17</td><td>C105</td><td>59.0℃</td><td>85.9℃</td></tr>
<tr><td>18</td><td>U100</td><td>54.9℃</td><td>80.6℃</td></tr>
<tr><td>19</td><td>Q100</td><td>62.0℃</td><td>88.2℃</td></tr>
<tr><td>20</td><td>Q101</td><td>61.1℃</td><td>87.0℃</td></tr>
<tr><td>21</td><td>RTH3</td><td>53.4℃</td><td>80.1℃</td></tr>
</table></td></tr>
<tr><td>2</td><td>OVER LOAD BURN-IN TEST</td><td>NO DAMAGE
1 HOUR (MIN)</td><td>I/P : 230 VAC
O/P : 126.3 % LOAD
Ta : 25℃</td><td>TEST : OK</td></tr>
<tr><td>3</td><td>LOW TEMPERATURE
TURN ON TEST</td><td>TURN ON AFTER 2 HOUR</td><td>I/P : 85VAC/305VAC
O/P : 80/100 % LOAD
Ta=-35/-45 ℃</td><td>TEST : OK</td></tr>
<tr><td>4</td><td>HIGH HUMIDITY
HIGH TEMPERATURE
HIGH VOLTAGE
TURN ON TEST</td><td>AFTER 12 HOURS
IN CHAMBER ON
CONTROL 50 ℃/95 %R.H
NO DAMAGE</td><td>I/P : 315 VAC
O/P : FULL LOAD
Ta= 50 ℃
HUMIDITY= 95 %R.H</td><td>TEST : OK</td></tr>
<tr><td>5</td><td>TEMPERATURE
COEFFICIENT</td><td>± 0.05 %/℃(0~60℃)</td><td>I/P : 230 VAC
O/P : FULL LOAD</td><td>± 0.011 %/℃(0~60℃)</td></tr>
</table>

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	-40~50℃	1. Thermal shock Temperature： -45℃~ +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
8	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℃
9	CAPACITOR LIFE CYCLE	SUPPOSE C105 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) 508195HRS (2) 21679HRS (3) 70963HRS (4) 174193HRS
10	MTBF	Conducted by Parts Stress Analysis Prediction 2163.5K hrs min. Telcordia SR-332 (Bellcore) ; 250.4K hrs min. MIL-HDBK-217F (25℃)	
11	Ongoing Reliability Test	I/P：230VAC O/P：FULL LOAD TA=50℃ Demonstration Mean Time Between Failure : 50,000 hours	

TEST RESULT	TESTER	REVIEW	APPROVAL
PASS	WUWQIN/ZHOUBIAO	WENF	WUWQ

2020.10.1 TAG-QA-009