MODEL：NES-200-3.3

OUTPUT FUNCTION TEST

NO	TEST ITEM	SPECICATION	TEST CONDITION	RESULT	VERDICT
1	RIPPLE & NOISE	V1: 150 mVp-p (Max)	I/P: 230 VAC O/P:FULL LOAD Ta:25℃	V1: 65 mVp-p (Max)	PASS
2	OUTPUT VOLTAGE ADJUST RANGE	CH1: 2.97V ~ 3.7V	I/P: 230 VAC I/P:115 VAC O/P:MIN LOAD Ta:25℃	2.808V~3.782V/230VAC 2.810V~3.785V//115VAC	PASS
3	OUTPUT VOLTAGE TOLERANCE	V1: -2 %~ +2 % (Max)	I/P: 190VAC / 264 VAC O/P:FULL/ 0% LOAD Ta:25℃	V1: -1.101%~ 1.961 %	PASS
4	LINE REGULATION	V1: -0.5 %~ +0.5 % (Max)	I/P: 190 VAC ~ 264VAC O/P:FULL LOAD Ta:25℃	V1: -0.181 %~ 0.181 %	PASS
5	LOAD REGULATION	V1: -1.5 %~ +1.5 % (Max)	I/P: 230 VAC O/P:FULL ~MIN LOAD Ta:25℃	V1: -1.101 %~ 0.927 %	PASS
6	SET UP TIME	230VAC/ 1000 ms (Max) 115VAC/ 1000 ms (Max)	I/P: 230 VAC I/P: 115 VAC O/P:FULL LOAD Ta:25℃	230 VAC/ 183.46 ms 115 VAC/ 131.75 ms	PASS
7	RISE TIME	230VAC/ 50 ms (Max) 115VAC/ 50 ms (Max)	I/P: 230 VAC I/P: 115 VAC O/P:FULL LOAD Ta:25℃	230 VAC/ 0.854 ms 115 VAC/ 0.876 ms	PASS
8	HOLD TIME	230VAC/ 20 ms (Typ) 115VAC/ 16 ms (Typ)	I/P: 230 VAC I/P: 115 VAC O/P:FULL LOAD Ta:25℃	230 VAC/ 50.01 ms 115 VAC/ 44.08 ms	PASS
9	OVER/UNDERSHOOT TEST	< ±10 %	I/P: 230 VAC O/P:FULL LOAD Ta:25℃	TEST: +1.198 % -2.096 %	PASS
10	DYNAMIC LOAD	V1: 660 mVp-p	I/P: 230 VAC O/P: (1)FULL /Min LOAD 90%DUTY/1KHZ (2)FULL /Min LOAD 50%DUTY/120HZ Ta:25℃	(1) 340 mVp-p (2) 540 mVp-p	PASS

INPUT FUNCTION TEST

NO	TEST ITEM	SPECICATION	TEST CONDITION	RESULT	VERDICT
1	INPUT VOLTAGE RANGE	180 VAC~ 264 VAC	I/P:TESTING O/P:FULL LOAD Ta:25℃	180 V~ 264 V	PASS
			(1)I/P: LOW-LINE-3V= 177 V HIGH-LINE+15%= 300 V O/P:FULL/MIN LOAD ON: 30 Sec . OFF: 30 Sec 10MIN (2) I/P:230VAC ON: 0.5 Sec . OFF: 0.5 Sec 20MIN (AC POWER ON/OFF NO DAMAGE)	TEST: (1) OK (2) OK	
2	INPUT FREQUENCY RANGE	47HZ ~63 HZ NO DAMAGE OSC	I/P: 180 VAC ~264 VAC O/P:FULL~MIN LOAD Ta:25℃	TEST: OK	PASS
3	EFFICIENCY	75 % (Typ)	I/P: 230 VAC O/P:FULL LOAD Ta:25℃	76.22 %	PASS
4	INPUT CURRENT	230 V/ 2.5 A (Typ) 115 V/ 4.5 A (Typ)	I/P: 230 VAC I/P: 115 VAC O/P:FULL LOAD Ta:25℃	I =1.693A/ 230VAC I =2.826A/ 115VAC	PASS
5	INRUSH CURRENT	230 V/ 55 A 115 V/ 40 A COLD START	I/P: 230 VAC I/P: 115 VAC O/P:FULL LOAD Ta:25℃	I =44.125 A/ 230VAC I =28.468 A/ 115VAC	PASS

PROTECTION FUNCTION TEST

NO	TEST ITEM	SPECICATION	TEST CONDITION	RESULT	VERDICT
1	OVER LOAD PROTECTION	105%~ 150 % RATED OUTPUT POWER	I/P: 264 VAC I/P: 230 VAC I/P: 190 VAC O/P:TESTING Ta:25℃	121.23 %/264VAC 121.0 %/ 230VAC 122.13 %/ 190 VAC Constant Current Limiting	PASS
2	OVER VOLTAGE PROTECTION	CH1: 3.8 V~ 4.9 V	I/P: 264 VAC I/P: 230 VAC I/P: 180 VAC O/P:MIN LOAD Ta:25℃	4.52 V/264VAC 4.52 V/ 230VAC 4.53 V/ 180VAC Shut down O/P voltage, Re-power on to recover	PASS
3	OVER TEMPERATURE PROTECTION	SPEC: TSW1= 95 ℃ ±5 ℃ O.T.P. NO DAMAGE	I/P: 230 VAC O/P:FULL LOAD	98.7 ℃/ 230 VAC O.T.P. Active Shut down o/p voltage，recovers automatically after temperature goes down	PASS
4	SHORT PROTECTION	SHORT EVERY OUTPUT 1 HOUR NO DAMAGE	I/P: 264 VAC O/P: FULL LOAD Ta:25℃	NO DAMAGE Constant Current Limiting	PASS

ENVIRONMENT TEST

<table>
<tr><th>NO</th><th>TEST ITEM</th><th>SPECICATION</th><th>TEST CONDITION</th><th>RESULT</th><th>VERDICT</th></tr>
<tr><td>1</td><td>TEMPERATURE RISE TEST</td><td colspan="3">MODEL： NES-200-5
1. ROOM AMBIENT BURN-IN： 2 HRS
I/P: 230 VAC O/P: 100% LOAD Ta= 25.1 ℃
2. HIGH AMBIENT BURN-IN： 2 HRS
I/P: 230 VAC O/P: 100% LOAD Ta= 33.5 ℃
<table>
<tr><th>NO</th><th>Position</th><th>P/N</th><th>ROOM AMBIENT Ta= 25.1 ℃</th><th>HIGH AMBIENT Ta= 33.5 ℃</th></tr>
<tr><td>1</td><td>TSW1</td><td>BW-DCP-100℃</td><td>81.2℃</td><td>90.1℃</td></tr>
<tr><td>2</td><td>LF1</td><td>LF-212</td><td>55.9℃</td><td>65.3℃</td></tr>
<tr><td>3</td><td>BD1</td><td>KBJ608G</td><td>58.1℃</td><td>68.7℃</td></tr>
<tr><td>4</td><td>Q1</td><td>FMH09N90E</td><td>58.9℃</td><td>67.9℃</td></tr>
<tr><td>5</td><td>D15</td><td>BYV26EGP</td><td>55.7℃</td><td>60.3℃</td></tr>
<tr><td>6</td><td>D31</td><td>HER203</td><td>40.1℃</td><td>46.1℃</td></tr>
<tr><td>7</td><td>U1</td><td>TL3845P</td><td>40.3℃</td><td>45.7℃</td></tr>
<tr><td>8</td><td>T1</td><td>TF6313</td><td>43.1℃</td><td>51.7℃</td></tr>
<tr><td>9</td><td>D100</td><td>ESAD83-004R</td><td>64.7℃</td><td>71.5℃</td></tr>
<tr><td>10</td><td>D101</td><td>ESAD83-004R</td><td>63.4℃</td><td>71.3℃</td></tr>
<tr><td>11</td><td>L100</td><td>TR6074</td><td>72.6℃</td><td>81.6℃</td></tr>
<tr><td>12</td><td>R110</td><td>2W 51Ω</td><td>87.2℃</td><td>97.4℃</td></tr>
<tr><td>13</td><td>J100</td><td>1.8Φ P=10 11A 4.5mΩ</td><td>75.2℃</td><td>83.8℃</td></tr>
<tr><td>14</td><td>C185</td><td>10uF/50V YXF</td><td>56.1℃</td><td>61.1℃</td></tr>
<tr><td>15</td><td>C36</td><td>10uF/50V YXF</td><td>52.4℃</td><td>59.5℃</td></tr>
<tr><td>16</td><td>C37</td><td>100u/25V KY</td><td>36.6℃</td><td>40.7℃</td></tr>
<tr><td>17</td><td>C5</td><td>470uF/200V USP</td><td>45.9℃</td><td>51.1℃</td></tr>
<tr><td>18</td><td>C105</td><td>4700u/10V KY</td><td>63.3℃</td><td>72.5℃</td></tr>
<tr><td>19</td><td>C106</td><td>4700u/10V KY</td><td>59.1℃</td><td>67.8℃</td></tr>
<tr><td>20</td><td>PCB</td><td>CEM-1 2OZ SS</td><td>72.7℃</td><td>80.7℃</td></tr>
</table></td><td>PASS</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: 122.5% LOAD
Ta:25℃</td><td>TEST： OK</td><td>PASS</td></tr>
<tr><td>3</td><td>LOW TEMPERATURE
TURN ON TEST</td><td>TURN ON AFTER 2 HOUR</td><td>I/P: 264 VAC/190 VAC
O/P: 100% LOAD
Ta= -20 ℃</td><td>TEST： OK</td><td>PASS</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 30 ℃
NO DAMAGE</td><td>I/P: 272 VAC
O/P:FULL LOAD
Ta= 30 ℃
HUMIDITY= 95 %R.H</td><td>TEST： OK</td><td>PASS</td></tr>
<tr><td>5</td><td>TEMPERATURE
COEFFICIENT</td><td>± 0.03 %(0~50℃)</td><td>I/P: 230 VAC
O/P:FULL LOAD</td><td>± 0.012 %(0~50℃)</td><td>PASS</td></tr>
<tr><td>6</td><td>STORAGE TEMPERATURE TEST</td><td colspan="2">1. Thermal shock Temperature： -40℃~ +90℃
2. Temperature change rate ：25℃ / MIN
3. Dwell time low and high temperature ： 30 MIN/EACH
4. Total test cycle：5 CYCLE
5. Input/Output condition： STATIC</td><td>TEST： OK</td><td>PASS</td></tr>
<tr><td>7.</td><td>THERMAL SHOCK TEST</td><td colspan="2">1. Thermal shock Temperature： - 25 ℃~ + 35 ℃
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： 230VAC/Full Load 58SEC ON/2SEC OFF</td><td>TEST： OK</td><td>PASS</td></tr>
</table>

8	VIBRATION TEST	1 Carton & 1 Set (1) Waveform: Sine Wave (2) Frequency:10~500Hz (3) Sweep Time:10min/sweep cycle (4) Acceleration:3G (5) Test Time:1 hour in each axis (X.Y.Z) (6) Ta:25℃	TEST： OK	PASS
9	CAPACITOR LIFE CYCLE	NES-200-5: SUPPOSE C105 IS THE MOST CRITICAL COMPONENT (1) I/P: 230 VAC O/P:FULL LOAD Ta= 25 ℃ LIFE TIME= 174193 HRS (2) I/P: 230 VAC O/P:FULL LOAD Ta= 30 ℃ LIFE TIME= 116545 HRS (3) I/P: 230 VAC O/P:75% LOAD Ta= 30 ℃ LIFE TIME= 277094 HRS (4) I/P: 230 VAC O/P:50% LOAD Ta= 30 ℃ LIFE TIME= 496061 HRS		PASS
10	MTBF	MIL-HDBK-217F NOTICES2 PARTS COUNT TOTAL FAILURE RATE: 271.9K HRS		PASS
11	DMTBF/Accelerated Life Test	Demonstration Mean Time Between Failure(Expected Life) : 20,000 hours @ Ta 30℃for 3.3v/5v； Ta 40℃for 7.5v~48v		PASS

SAFETY TEST

1	WITHSTAND VOLTAGE	I/P-FG: 1.5 KVAC/min I/P-O/P: 3.0 KVAC/min O/P-FG: 0.5 KVAC/min EN 60950	I/P-FG: 1.8 KVAC/min I/P-O/P: 3.6 KVAC/min O/P-FG: 0.6 KVAC/min Ta:25℃	I/P-FG: 3.705 mA I/P-O/P: 3.824 mA O/P-FG: 5.30 mA NO DAMAGE	PASS
2	ISOLATION RESISTANCE	I/P-FG: 500VDC>100MΩ I/P-O/P:500VDC>100MΩ O/P-FG:500VDC>100MΩ	I/P-FG: 500 VDC I/P-O/P: 500 VDC O/P-FG: 500 VDC Ta:25℃	I/P-FG: ＞9999 MΩ I/P-O/P: ＞9999 MΩ O/P-FG: ＞9999 MΩ NO DAMAGE	PASS
3	GROUNDING CONTINUITY	FG(PE) TO CHASSIS OR TRACE < 100 mΩ EN 60950	40 A / 2 min Ta:25℃	3 mΩ	PASS
4	LEAKAGE CURRENT	< 3.5 mA / 240VAC EN 60950	I/P: 264 VAC O/P:NO LOAD Ta:25℃	L-FG: 1.020 mA N-FG: 0.979 mA	PASS

E.M.C TEST

NO	TEST ITEM	SPECICATION	TEST CONDITION	RESULT	VERDICT
1	E.S.D	EN61000-4-2 LIGHT INDUSTRY AIR:8KV / Contact:4KV	I/P: 230 VAC/50HZ O/P:FULL LOAD Ta:25℃	CRITERIA A	PASS
2	E.F.T	EN61000-4-4 LIGHT INDUSTRY INPUT: 1KV	I/P: 230 VAC/50HZ O/P:FULL LOAD Ta:25℃	CRITERIA A	PASS
3	SURGE	IEC61000-4-5 LIGHT INDUSTRY L-N :1KV L,N-PE:2KV	I/P: 230 VAC/50HZ O/P:FULL LOAD Ta:25℃	CRITERIA A	PASS

COMPONENT STRESS TEST

NO	TEST ITEM	SPECICATION	TEST CONDITION	RESULT	VERDICT
1	Power Transistor (D to S) or (C to E) **Peak Voltage**	Q 1 Rated FMH09N90E : 900 V 9 A	I/P:High-Line +3V = 267 V O/P: (1)Full Load Turn on (2)Output Short (3)Dynamic Load 50% Load/ Min. Load 90%Duty/1KHz (4)Dynamic Load Full Load/ Min. Load 90%Duty/1KHz Ta:25℃	(1) 884 V (2) 796 V (3) 792 V (4) 796 V	PASS
2	Diode **Peak Voltage**	D 100 Rated ESAD83-004R : 40 V 30 A	I/P:High-Line +3V = 267 V O/P: (1)Full Load Turn on (2)Output Short (3)Dynamic Load 50% Load/ Min. Load 90%Duty/1KHz (4)Dynamic Load Full Load/ Min. Load 90%Duty/1KHz Ta:25℃	(1) 26.6 V (2) 20.7 V (3) 20.5 V (4) 20.6 V	PASS
3	**Control IC Voltage Test**	U 1 Rated TL3845P : 30 V	I/P:High-Line +3V =267 V O/P: (1) Output Short (2)O.L.P (3)O.V.P (4)NO LOAD VR 下限 LOW LINE Ta:25℃	(1) 14.4 V (2) 14.4 V (3) 13.8 V (4) 13.0 V	PASS

2007/11/26 A50-G058

DATE	SAMPLE	TEST RESULT	TESTER	APPROVAL
2010/7/19	RD SAMPLE	PASS	SKY	HOWAY
2011/1/5	PRODUCT SAMPLE (W1012I046)	PASS	SKY	HOWAY
2011/7/1	PRODUCT SAMPLE (W1106J023)	PASS	SKY	HOWAY