

MODEL : NES-350-5

## 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°C	V1: 70 mVp-p (Max)	PASS
2	OUTPUT VOLTAGE ADJUST RANGE	CH1: 4.5V ~ 5.6V	I/P: 230 VAC I/P:115 VAC O/P:MIN LOAD Ta:25°C	4.378V~5.718V/230VAC 4.378V~5.718V//115VAC	PASS
3	OUTPUT VOLTAGE TOLERANCE	V1: -2 %~ +2 % (Max)	I/P: 180VAC / 264 VAC O/P:FULL/ 0% LOAD Ta:25°C	V1: -0.733%~ +1.493 %	PASS
4	LINE REGULATION	V1: -0.5 %~ +0.5 % (Max)	I/P: 180 VAC ~ 264VAC O/P:FULL LOAD Ta:25°C	V1: 0 %~ 0 %	PASS
5	LOAD REGULATION	V1: -2 %~ +2 % (Max)	I/P: 230 VAC O/P:FULL ~MIN LOAD Ta:25°C	V1: -0.733 %~ 0.733 %	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°C	230 VAC/ 237.968 ms 115 VAC/ 166.883 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°C	230 VAC/1.714ms 115 VAC/1.755ms	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°C	230 VAC/30.482ms 115 VAC/25.431ms	PASS
9	OVER/UNDERSHOOT TEST	< ±10 %	I/P: 230 VAC O/P:FULL LOAD Ta:25°C	TEST: +3.162 % -1.186 %	PASS
10	DYNAMIC LOAD	V1: 1000 mVp-p	I/P: 230 VAC O/P: (1)FULL /Min LOAD 90%DUTY/1KHZ (2)FULL /Min LOAD 50%DUTY/120HZ Ta:25°C	(1) 700 mVp-p (2) 980 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°C	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°C	TEST: OK	PASS
3	EFFICIENCY	78 % (Typ)	I/P: 230 VAC O/P: FULL LOAD Ta: 25°C	79.96 %	PASS
4	INPUT CURRENT	230 V/ 4 A (Typ) 115 V/ 7 A (Typ)	I/P: 230 VAC I/P: 115 VAC O/P: FULL LOAD Ta: 25°C	I = 3.255A / 230VAC I = 5.506A / 115VAC	PASS
5	INRUSH CURRENT	230 V/ 60 A 115 V/ 40 A COLD START	I/P: 230 VAC I/P: 115 VAC O/P: FULL LOAD Ta: 25°C	I = 44.921 A / 230VAC I = 38.796 A / 115VAC	PASS

## PROTECTION FUNCTION TEST

NO	TEST ITEM	SPECICATION	TEST CONDITION	RESULT	VERDICT
1	OVER LOAD PROTECTION	105%~ 135 % RATED OUTPUT POWER	I/P: 264 VAC I/P: 230 VAC I/P: 180 VAC O/P: TESTING Ta: 25°C	125.5 %/264VAC 123.0 %/ 230VAC 121.7 %/ 180 VAC  Constant Current Limiting	PASS
2	OVER VOLTAGE PROTECTION	CH1: 5.75 V~ 7.5 V	I/P: 264 VAC I/P: 230 VAC I/P: 180 VAC O/P: MIN LOAD Ta: 25°C	6.61 V/264VAC 6.63 V/ 230VAC 6.63 V/ 180VAC  Shut off o/p voltage, Re- power ON to recover	PASS
3	OVER TEMPERATURE PROTECTION	SPEC: TSW1= 85 °C ±5 °C O.T.P. NO DAMAGE	I/P: 230 VAC O/P: FULL LOAD	89.5 °C / 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°C	NO DAMAGE Constant Current Limiting	PASS

## CONTROL FUNCTION TEST

NO	TEST ITEM	SPECICATION	TEST CONDITION	RESULT	VERDICT
1	FAN ON/OFF CONTROL	$\geq 50\text{ }^{\circ}\text{C}$ FAN ON $\leq 45\text{ }^{\circ}\text{C}$ FAN OFF	I/P: 230 VAC O/P: FULL LOAD Ta: 25 $^{\circ}\text{C}$	52.0 $^{\circ}\text{C}$ FAN ON 40.3 $^{\circ}\text{C}$ FAN OFF	PASS

## ENVIRONMENT TEST

NO	TEST ITEM	SPECICATION	TEST CONDITION	RESULT	VERDICT																																																																																
1	TEMPERATURE RISE TEST	MODEL : NES-350-5 1. ROOM AMBIENT BURN-IN : 2 HRS I/P: 230 VAC O/P: 100% LOAD Ta= 30.7 $^{\circ}\text{C}$ 2. HIGH AMBIENT BURN-IN : 2 HRS I/P: 230 VAC O/P: 100% LOAD Ta= 50.5 $^{\circ}\text{C}$			PASS																																																																																
		<table border="1"> <thead> <tr> <th>NO</th> <th>Position</th> <th>P/N</th> <th>ROOM AMBIENT Ta= 30.7 <math>^{\circ}\text{C}</math></th> <th>HIGH AMBIENT Ta= 50.5 <math>^{\circ}\text{C}</math></th> </tr> </thead> <tbody> <tr><td>1</td><td>LF1</td><td>LF-203</td><td>48.5<math>^{\circ}\text{C}</math></td><td>73.8<math>^{\circ}\text{C}</math></td></tr> <tr><td>2</td><td>BD1</td><td>KBJ1008G</td><td>55.7<math>^{\circ}\text{C}</math></td><td>78.5<math>^{\circ}\text{C}</math></td></tr> <tr><td>3</td><td>C6</td><td>680u/200V LP</td><td>38.3<math>^{\circ}\text{C}</math></td><td>60.6<math>^{\circ}\text{C}</math></td></tr> <tr><td>4</td><td>Q1</td><td>FMH07N90E</td><td>55.4<math>^{\circ}\text{C}</math></td><td>80.0<math>^{\circ}\text{C}</math></td></tr> <tr><td>5</td><td>T1</td><td>TF6313</td><td>65.7<math>^{\circ}\text{C}</math></td><td>89.3<math>^{\circ}\text{C}</math></td></tr> <tr><td>6</td><td>U1</td><td>TL3845P</td><td>48.8<math>^{\circ}\text{C}</math></td><td>71.5<math>^{\circ}\text{C}</math></td></tr> <tr><td>7</td><td>L100</td><td>TR6074</td><td>70.8<math>^{\circ}\text{C}</math></td><td>96.5<math>^{\circ}\text{C}</math></td></tr> <tr><td>8</td><td>D100</td><td>S60SC4MT</td><td>93.7<math>^{\circ}\text{C}</math></td><td>119.3<math>^{\circ}\text{C}</math></td></tr> <tr><td>9</td><td>RG1</td><td>L7812CV</td><td>63.9<math>^{\circ}\text{C}</math></td><td>85.5<math>^{\circ}\text{C}</math></td></tr> <tr><td>10</td><td>C151</td><td>10u/50V KM</td><td>46.4<math>^{\circ}\text{C}</math></td><td>69.8<math>^{\circ}\text{C}</math></td></tr> <tr><td>11</td><td>C106</td><td>4700u/10V KY</td><td>52.4<math>^{\circ}\text{C}</math></td><td>76.8<math>^{\circ}\text{C}</math></td></tr> <tr><td>12</td><td>C155</td><td>47uF/25V KM</td><td>51.4<math>^{\circ}\text{C}</math></td><td>74.8<math>^{\circ}\text{C}</math></td></tr> <tr><td>13</td><td>C185</td><td>10u/50V KM</td><td>54.6<math>^{\circ}\text{C}</math></td><td>76.4<math>^{\circ}\text{C}</math></td></tr> <tr><td>14</td><td>D31</td><td>HER203</td><td>56.5<math>^{\circ}\text{C}</math></td><td>80.5<math>^{\circ}\text{C}</math></td></tr> <tr><td>15</td><td>RTH2</td><td>10K<math>\Omega</math> 4<math>\Phi</math> 1%</td><td>54.1<math>^{\circ}\text{C}</math></td><td>85.5<math>^{\circ}\text{C}</math></td></tr> </tbody> </table>	NO	Position		P/N	ROOM AMBIENT Ta= 30.7 $^{\circ}\text{C}$	HIGH AMBIENT Ta= 50.5 $^{\circ}\text{C}$	1	LF1	LF-203	48.5 $^{\circ}\text{C}$	73.8 $^{\circ}\text{C}$	2	BD1	KBJ1008G	55.7 $^{\circ}\text{C}$	78.5 $^{\circ}\text{C}$	3	C6	680u/200V LP	38.3 $^{\circ}\text{C}$	60.6 $^{\circ}\text{C}$	4	Q1	FMH07N90E	55.4 $^{\circ}\text{C}$	80.0 $^{\circ}\text{C}$	5	T1	TF6313	65.7 $^{\circ}\text{C}$	89.3 $^{\circ}\text{C}$	6	U1	TL3845P	48.8 $^{\circ}\text{C}$	71.5 $^{\circ}\text{C}$	7	L100	TR6074	70.8 $^{\circ}\text{C}$	96.5 $^{\circ}\text{C}$	8	D100	S60SC4MT	93.7 $^{\circ}\text{C}$	119.3 $^{\circ}\text{C}$	9	RG1	L7812CV	63.9 $^{\circ}\text{C}$	85.5 $^{\circ}\text{C}$	10	C151	10u/50V KM	46.4 $^{\circ}\text{C}$	69.8 $^{\circ}\text{C}$	11	C106	4700u/10V KY	52.4 $^{\circ}\text{C}$	76.8 $^{\circ}\text{C}$	12	C155	47uF/25V KM	51.4 $^{\circ}\text{C}$	74.8 $^{\circ}\text{C}$	13	C185	10u/50V KM	54.6 $^{\circ}\text{C}$	76.4 $^{\circ}\text{C}$	14	D31	HER203	56.5 $^{\circ}\text{C}$	80.5 $^{\circ}\text{C}$	15	RTH2	10K $\Omega$ 4 $\Phi$ 1%	54.1 $^{\circ}\text{C}$	85.5 $^{\circ}\text{C}$		
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2	OVER LOAD BURN-IN TEST	NO DAMAGE 1 HOUR ( MIN )	I/P: 230 VAC O/P: 113.5% LOAD Ta: 25 $^{\circ}\text{C}$	TEST : OK	PASS																																																																																
3	LOW TEMPERATURE TURN ON TEST	TURN ON AFTER 2 HOUR	I/P: 264 VAC/180 VAC O/P: 100% LOAD Ta= -20 $^{\circ}\text{C}$	TEST : OK	PASS																																																																																
4	HIGH HUMIDITY HIGH TEMPERATURE HIGH VOLTAGE TURN ON TEST	AFTER 12 HOURS IN CHAMBER ON CONTROL 50 $^{\circ}\text{C}$ NO DAMAGE	I/P: 272 VAC O/P: FULL LOAD Ta= 50 $^{\circ}\text{C}$ HUMIDITY= 95 %R.H	TEST : OK	PASS																																																																																
5	TEMPERATURE COEFFICIENT	$\pm 0.03\%$ (0~50 $^{\circ}\text{C}$ )	I/P: 230 VAC O/P: FULL LOAD	$\pm 0.01\%$ (0~50 $^{\circ}\text{C}$ )	PASS																																																																																
6	STORAGE TEMPERATURE TEST	1. Thermal shock Temperature : -40 $^{\circ}\text{C}$ ~ +90 $^{\circ}\text{C}$ 2. Temperature change rate : 25 $^{\circ}\text{C}$ / MIN 3. Dwell time low and high temperature : 30 MIN/EACH 4. Total test cycle : 5 CYCLE 5. Input/Output condition : STATIC		TEST : OK	PASS																																																																																

7.	THERMAL SHOCK TEST	1. Thermal shock Temperature : -25 °C~ +55 °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 : 230VAC/Full Load 58SEC ON/2SEC OFF	TEST : OK	PASS
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°C	TEST : OK	PASS
9	CAPACITOR LIFE CYCLE	SUPPOSE C106 IS THE MOST CRITICAL COMPONENT (1) I/P: 230 VAC O/P:FULL LOAD Ta= 25 °C LIFE TIME= 529759 HRS (2) I/P: 230 VAC O/P:FULL LOAD Ta= 50 °C LIFE TIME= 68071 HRS (3) I/P: 230 VAC O/P:75% LOAD Ta= 50 °C LIFE TIME= 127016 HRS (4) I/P: 230 VAC O/P:50% LOAD Ta= 50 °C LIFE TIME= 197973 HRS		PASS
10	MTBF	MIL-HDBK-217F NOTICES2 PARTS COUNT TOTAL FAILURE RATE: 234.3K HRS		PASS
11	DMTBF/Accelerated Life Test	Demonstration Mean Time Between Failure(Expected Life) : 20,000 hours @ Ta 50°C		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°C	I/P-FG: 3.776 mA I/P-O/P: 3.913 mA O/P-FG: 4.99 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°C	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°C	3 mΩ	PASS
4	LEAKAGE CURRENT	< 3.5 mA / 240VAC EN 60950	I/P: 264 VAC O/P:NO LOAD Ta:25°C	L-FG: 0.7986 mA N-FG: 0.8164 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°C	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°C	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°C	CRITERIA A	PASS



COMPONENT STRESS TEST

NO	TEST ITEM	SPECICATION	TEST CONDITION	RESULT	VERDICT
1	Power Transistor ( D to S) or (C to E) <b>Peak Voltage</b>	Q 1 Rated FMH07N90E : 900 V 7 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°C	(1) 896 V (2) 804 V (3) 864 V (4) 847 V	PASS
2	Diode <b>Peak Voltage</b>	D 100 Rated S60SC4MT : 40 V 60 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°C	(1) 39.6 V (2) 31.8 V (3) 35.4 V (4) 38.8 V	PASS
3	<b>Control IC Voltage Test</b>	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°C	(1) 15.2 V (2) 15.4 V (3) 14.0 V (4) 14.0 V	PASS

2007/11/26 A50-G058

DATE	SAMPLE	TEST RESULT	TESTER	APPROVAL
2010/7/12	RD SAMPLE	PASS	SKY	HOWAY
2010/11/11	PRODUCT SAMPLE (W1010G151)	PASS	SKY	HOWAY
2010/12/21	PRODUCT SAMPLE (W1012E051)	PASS	SKY	HOWAY