**MODEL：NSD15-48D5**

**OUTPUT FUNCTION TEST**

| NO | TEST ITEM | SPECICATION | TEST CONDITION | RESULT | VERDICT |
|---|---|---|---|---|---|
| 1 | RIPPLE & NOISE | V1: 100 mVp-p (Max )<br>V2: 100 mVp-p (Max ) | I/P: 48VDC<br>O/P:FULL LOAD<br>Ta:25℃ | V1: 20 mVp-p (Max )<br>V2: 20 mVp-p (Max ) | P |
| 2 | OUTPUT VOLTAGE TOLERANCE | V1: 3 %~ -3 % (Max)<br>V2: 3 %~ -3 % (Max) | I/P: 18VDC / 72VDC<br>O/P:FULL/ 10% LOAD<br>Ta:25℃ | V1: 1.7 %~ -1.7 %<br>V2: 1.7 %~ -1.7 % | P |
| 3 | LINE REGULATION | V1: 1%~ -1 % (Max)<br>V2: 1%~ -1% (Max) | I/P: 18VDC ~ 72VDC<br>O/P:FULL LOAD<br>Ta:25℃ | V1: 0 %~ 0 %<br>V2: 0 %~ 0 % | P |
| 4 | LOAD REGULATION | V1: 2 %~ -2 % (Max)<br>V2: 2 %~ -2 % (Max) | I/P: 48VDC<br>O/P:FULL ~10% LOAD<br>Ta:25℃ | V1: 0.12 %~ -0.12 %<br>V2: 0.12 %~ -0.12 % | P |
| 5 | CROSS REGULATION | V1: 2 %~ -2 % (Max)<br>V2: 2 %~ -2 % (Max) | I/P: 48V VDC<br>O/P: Testing O/P 60%LOAD<br>Other O/P 40%LOAD<br>Change<br>Ta:25℃ | V1: 1.2 %~ -1.2 %<br>V2: 1.2 %~ -1.2 % | P |
| 6 | OVER/UNDERSHOOT TEST | < ±5% | I/P: 48 VDC<br>O/P:FULL LOAD<br>Ta:25℃ | TEST: < 5 % | P |
| 7 | DYNAMIC LOAD | V1: 1000 mVp-p | I/P: 48VDC<br>O/P:FULL /Min LOAD<br>90%DUTY/1KHZ<br>Ta:25℃ | 247 mVp-p | P |

**INPUT FUNCTION TEST**

| NO | TEST ITEM | SPECICATION | TEST CONDITION | RESULT | VERDICT |
|---|---|---|---|---|---|
| 1 | INPUT VOLTAGE RANGE | 18VDC~ 72 VDC | I/P:TESTING<br>O/P:FULL LOAD<br>Ta:25℃ | 15.5 V~ 72 V | P |
| | | | I/P:<br>LOW-LINE-0.2V= 17.8 V<br>HIGH-LINE+5%= 75.6 V<br>O/P:FULL/MIN LOAD<br>ON: 30 Sec . OFF: 30 Sec 10MIN<br>( AC POWER ON/OFF NO DAMAGE ) | TEST: OK | |
| 2 | EFFICIENCY | 80 % (TYP) | I/P: 48 VDC<br>O/P:FULL LOAD<br>Ta:25℃ | 81.3 % | P |
| 3 | INPUT CURRENT | 48 VDC/ 0.4A(TYP) | I/P: 48 VDC<br>O/P:FULL LOAD<br>Ta:25℃ | I = 0.38 A | P |
| 4 | SHUTDOWN IDLE CURRENT | 20 mA / 48VDC | I/P: 48 VDC<br>O/P:FULL LOAD<br>Ta:25℃ | 18.4 mA / 48VDC | P |

## PROTECTION FUNCTION TEST

| NO | TEST ITEM | SPECICATION | TEST CONDITION | RESULT | VERDICT |
|---|---|---|---|---|---|
| 1 | OVER LOAD PROTECTION | Above 105% | I/P: 48VDC<br>O/P:TESTING<br>Ta:25℃ | 175 %<br>Over power Limiting,<br>recovers automatically after fault condition is removed | P |
| 2 | OVER VOLTAGE PROTECTION | CH1: 7.25 V~ 9V<br>CH2: -7.25 V~ -9V | I/P: DC SOURSE<br>O/P:MIN LOAD<br>Ta:25℃ | 7.6 V / CH1 / 0.05A<br>7.6 V / CH2 / 0.05A<br>Recovers automatically after fault condition is removed | P |
| 4 | SHORT PROTECTION | SHORT EVERY OUTPUT<br>60 SECOND NO DAMAGE | I/P: 72 VDC<br>O/P: FULL LOAD<br>Ta:25℃ | NO DAMAGE<br>Constant Current Limiting | p |

## CONTROL FUNCTION TEST

| NO | TEST ITEM | SPECICATION | TEST CONDITION | RESULT | VERDICT |
|---|---|---|---|---|---|
| 1 | REMOTE CONTROL | Logic “1” OPEN : ON<br>Logic “0” GON : OFF | I/P: 48VDC<br>O/P:FULL LOAD<br>Ta:25℃ | Logic “1” : POWER ON<br>Logic “0” :POWER OFF | p |

## 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：NSD15-48D5<br>1. ROOM AMBIENT BURN-IN：1 HRS<br>I/P: 48VDC O/P: FULL LOAD Ta= 23.9 ℃<br>2. HIGH AMBIENT BURN-IN： 1 HRS<br>I/P: 48 VDC O/P: FULL LOAD Ta= 63.2 ℃<br><br>
<table>
<tr><th>NO</th><th>Position</th><th>P/N</th><th>ROOM AMBIENT Ta= 23.9 ℃</th><th>HIGH AMBIENT Ta= 63.2 ℃</th></tr>
<tr><td>1</td><td>L100</td><td>TS026</td><td>67.6℃</td><td>99.7℃</td></tr>
<tr><td>2</td><td>T1 COIL</td><td>147PE5155</td><td>71.8℃</td><td>103.7℃</td></tr>
<tr><td>3</td><td>Q2</td><td>IRFR220N 5A/200V</td><td>67.9℃</td><td>102.6℃</td></tr>
<tr><td>4</td><td>L1</td><td>1.4UH</td><td>63.4℃</td><td>96.5℃</td></tr>
<tr><td>5</td><td>Q1</td><td>BCX56 1A/80V</td><td>63.7℃</td><td>96.6℃</td></tr>
<tr><td>6</td><td>U1</td><td>TL3843D</td><td>68.6℃</td><td>101.4℃</td></tr>
<tr><td>7</td><td>D100</td><td>MBRD660CT 6A/60V</td><td>70.0℃</td><td>102.1℃</td></tr>
<tr><td>8</td><td>D200</td><td>MBRD660CT 6A/60V</td><td>69.5℃</td><td>101.5℃</td></tr>
<tr><td>9</td><td>C106</td><td>100U/10V 125℃</td><td>62.2℃</td><td>94.5℃</td></tr>
<tr><td>10</td><td>ZD2</td><td>SMAJ170A</td><td>67.5℃</td><td>101.4℃</td></tr>
<tr><td>11</td><td>CASE</td><td>上方中間處</td><td>62.3℃</td><td>95.4℃</td></tr>
</table></td><td>P</td></tr>
<tr><td>2</td><td>OVER LOAD BURN-IN TEST</td><td>NO DAMAGE<br>1 HOUR ( MIN )</td><td>I/P: 48VDC<br>O/P: 120 % LOAD<br>Ta:25℃</td><td>TEST： OK</td><td>P</td></tr>
<tr><td>3</td><td>LOW TEMPERATURE<br>TURN ON TEST</td><td>TURN ON AFTER 2 HOUR</td><td>I/P: 48VDC<br>O/P: 100 % LOAD<br>Ta= -25 ℃</td><td>TEST： OK</td><td>P</td></tr>
<tr><td>4</td><td>HIGH HUMIDITY<br>HIGH TEMPERATURE<br>HIGH VOLTAGE<br>TURN ON TEST</td><td>AFTER 12 HOURS<br>IN CHAMBER ON<br>CONTROL 60 ℃<br>NO DAMAGE</td><td>I/P: 75VDC<br>O/P:FULL LOAD<br>Ta= 60 ℃<br>HUMIDITY= 95 %R.H</td><td>TEST： OK</td><td>P</td></tr>
<tr><td>5</td><td>TEMPERATURE<br>COEFFICIENT</td><td>± 0.03 %(0~60℃)</td><td>I/P: 48 VDC<br>O/P:FULL LOAD</td><td>± 0.006 %(0~60℃)</td><td>P</td></tr>
<tr><td>6</td><td>VIBRATION TEST</td><td colspan="2">1 Carton & 1 Set<br>(1) Waveform: Sine Wave<br>(2) Frequency:10~500Hz<br>(3) Sweep Time:10min/sweep cycle<br>(4) Acceleration:2G<br>(5) Test Time:1 hour in each axis (X.Y.Z)<br>(6) Ta:25℃</td><td>TEST： OK</td><td>P</td></tr>
</table>

## SAFETY TEST

| NO | TEST ITEM | SPECICATION | TEST CONDITION | RESULT | VERDICT |
|---|---|---|---|---|---|
| 1 | WITHSTAND VOLTAGE | I/P-O/P: 1.5KVDC/min | I/P-O/P: 1.8KVDC/min<br>Ta:25℃ | I/P-O/P: 0.002 mA<br>NO DAMAGE | P |
| 2 | ISOLATION RESISTANCE | I/P-O/P:500VDC>100MΩ | I/P-O/P: 500 VDC<br>Ta:25℃ / 70% RH | I/P-O/P: 30GΩ<br>NO DAMAGE | P |
| 3 | APPROVAL | TUV: Certificate NO ：<br>UL: File NO ：E183223 | | | P |

## E.M.C TEST

| NO | TEST ITEM | SPECICATION | TEST CONDITION | RESULT | VERDICT |
|---|---|---|---|---|---|
| 1 | RADIATION | EN55022<br>CLASS B | I/P: 48VDC<br>O/P:FULL LOAD<br>Ta:25℃ | PASS<br>Test by certified Lab | P |
| 2 | E.S.D | EN61000-4-2<br>LIGHT INDUSTRY<br>AIR:8KV / Contact:4KV | I/P: 48 VDC<br>O/P:FULL LOAD<br>Ta:25℃ | CRITERIA A | P |
| 3 | E.F.T | EN61000-4-4<br>LIGHT INDUSTRY<br>INPUT: 1KV | I/P: 48 VDC<br>O/P:FULL LOAD<br>Ta:25℃ | CRITERIA A | P |
| 7 | Test by certified Lab & Test Report Prepare | | | | |

## M.T.B.F & LIFE CYCLE CALCULATION

| NO | TEST ITEM | SPECICATION | TEST CONDITION | RESULT | VERDICT |
|---|---|---|---|---|---|
| 1 | MTBF | MIL-HDBK-217F NOTICES2 PARTS COUNT<br>TOTAL FAILURE RATE: 1673.1K HRS | | | P |

## COMPONENT STRESS TEST

| NO | TEST ITEM | SPECICATION | TEST CONDITION | RESULT | VERDICT |
|---|---|---|---|---|---|
| 1 | Power Transistor<br>( D to S) or (C to E) **Peak Voltage** | Q2 Rated<br>IRFR220N 5A/200V | I/P:High-Line +3V = 75 V<br>O/P: (1)Full Load Turn on<br>(2) Output Short<br>Ta:25℃ | (1) 148 V<br>(2) 148 V | P |
| 2 | Diode Peak **Voltage** | D100 Rated<br>MBRD660CT: 6A/60V<br><br>D200 Rated<br>MBRD660CT: 6A/60V | I/P:High-Line +3V = 75 V<br>O/P: (1)Full Load Turn on<br>(2)Output Short<br>Ta:25℃ | (1) 26 V<br>(2) 16 V<br><br>(1) 44 V<br>(2) 40 V | P |
| 3 | **Input Capacitor Voltage** | C5 Rated<br>: 105 / 100V | I/P:High-Line +3V = 75 V<br>O/P: (1)Full Load Turn on /Off<br>(2) Min load Turn on /Off<br>(3)Full Load /Min load Change<br>Ta:25℃ | (1) 75 V<br>(2) 75 V<br>(3) 75 V | P |
| 4 | **Control IC Voltage Test** | U1 Rated<br>TL3843D : 20 V | I/P:High-Line +3V = 75 V<br>O/P: (1)Full Load Turn on /Off<br>(2) Min load Turn on /Off<br>(3)Full Load /Min load Change<br>Ta:25℃ | (1) 12.1 V<br>(2) 10.7 V<br>(3) 12.1 V | P |

| DATE | SAMPLE | TEST RESULT | TESTER | APPROVAL |
|---|---|---|---|---|
| 2007/2/16 | RD SAMPLE | PASS | VINCENT TSENG | MAX LIN |
| 2007/5/7 | PRODUCT SAMPLE W0703C68 | PASS | VINCENT TSENG | MAX LIN |

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