



Test Report: EPP-500-12

500W 5"×3" Green Open Frame 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

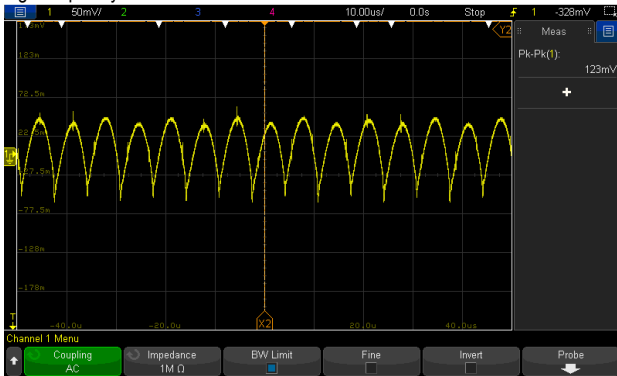
ENVIRONMENT TEST

DESIGN VERIFY TEST

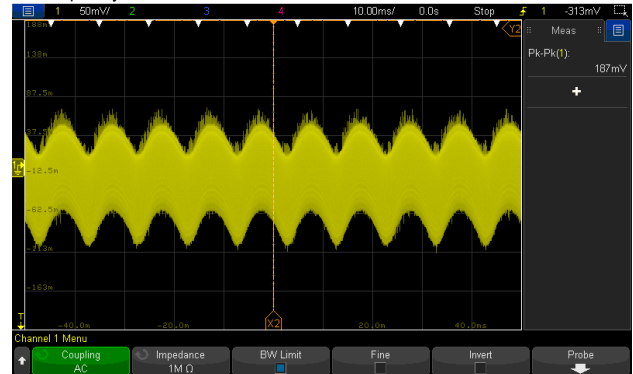
OUTPUT FUNCTION TEST

| NO | TEST ITEM | SPECIFICATION | TEST CONDITION | RESULT |
|----|-------------------------------|-------------------|------------------------------------------------------|-------------------|
| 1 | OUTPUT VOLTAGE ADJUST RANGE | CH1: 11.4V~ 12.6V | I/P : 230 VAC O/P : MIN LOAD Ta : 25°C | 10.96V~12.92V |
| 2 | OUTPUT VOLTAGE(Max) TOLERANCE | V1 : -3.0%~3.0% | I/P: 80VAC /264VAC O/P:FULL/ MIN. LOAD Ta:25°C | V1 : -0.17%~0.17% |
| 3 | LINE REGULATION (Max) | V1: -0.5%~0.5% | I/P: 80VAC~ 264VAC O/P:FULL LOAD Ta:25°C | V1 : -0.02%~0.10% |
| 4 | LOAD REGULATION(Max) | V1: -1.0%~1.0% | I/P: 230VAC O/P:FULL ~MIN LOAD Ta:25°C | V1 : -0.17%~0.17% |
| 5 | OVER/UNDERSHOOT TEST | < ±5% | I/P: 230VAC O/P:FULL LOAD Ta:25°C | 2.5% |
| 6 | RIPPLE & NOISE(Max) | V1: 200mVp-p | I/P:230VAC O/P:FULL LOAD Ta:25°C | V1: 187mVp-p |

high frequency (V1) :



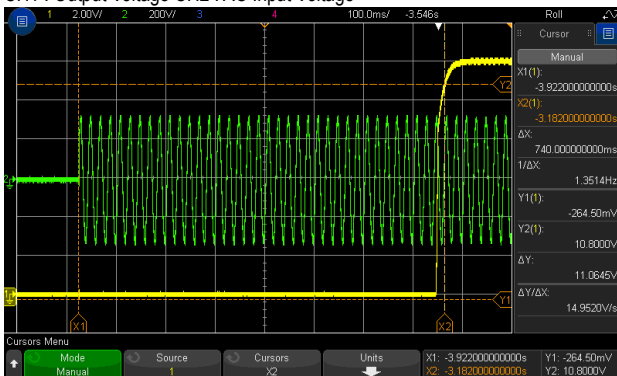
low frequency (V1):



| | | | | |
|---|------------------|--------------------------------|----------------------------------------------------------------|-------------------------------|
| 7 | SET UP TIME(Max) | 230VAC/1000ms 115VAC/1500ms | I/P : 230 VAC I/P : 115 VAC O/P : FULL LOAD Ta : 25°C | 230VAC/740ms 115VAC/ 199ms |
|---|------------------|--------------------------------|----------------------------------------------------------------|-------------------------------|

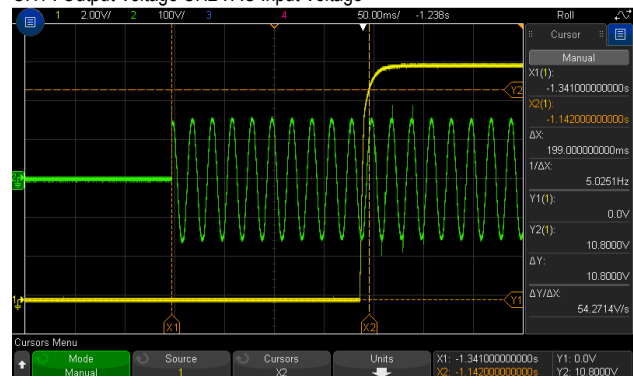
INPUT=230VAC/50HZ @ FULL LOAD

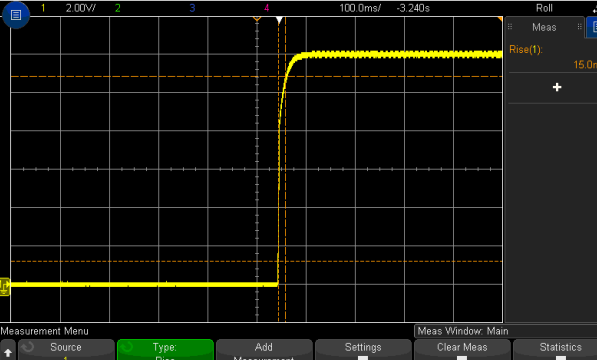
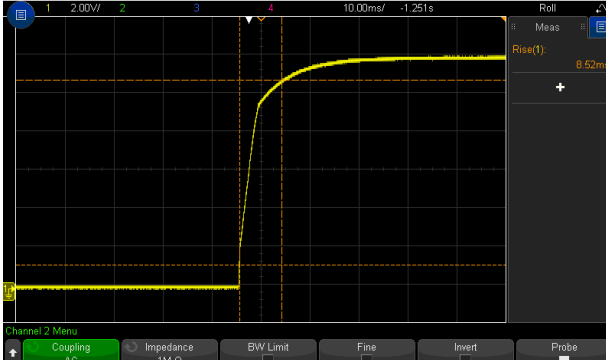
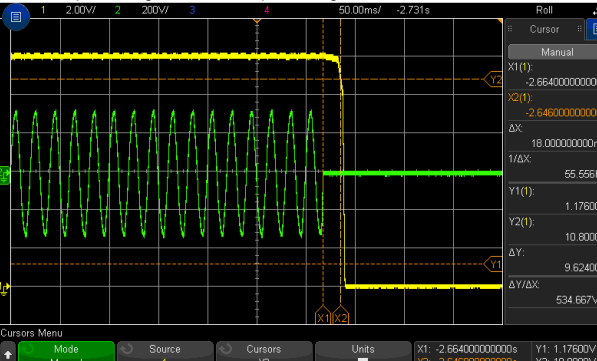
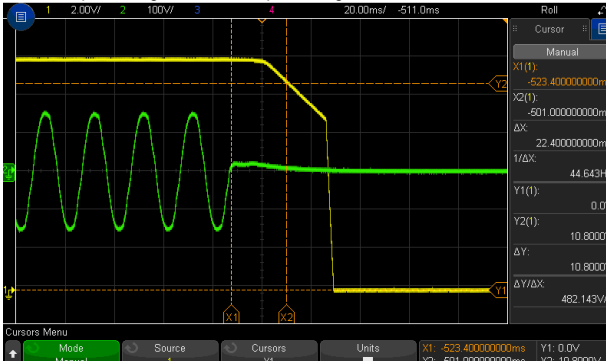
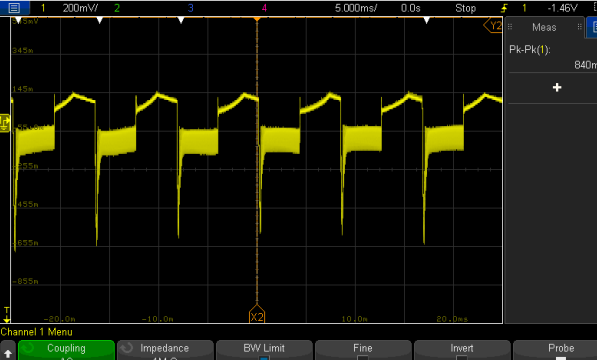
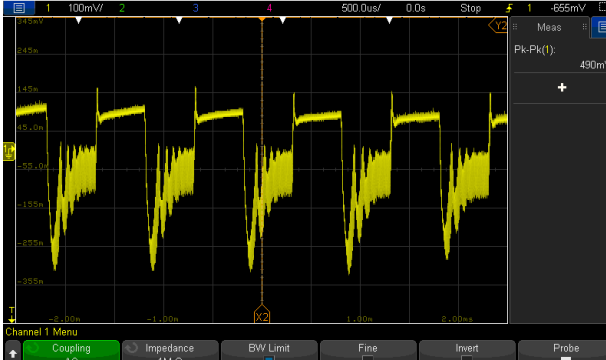
CH1 : Output Voltage CH2 : AC Input Voltage



INPUT=115VAC/60HZ @ FULL LOAD

CH1 : Output Voltage CH2 : AC Input Voltage

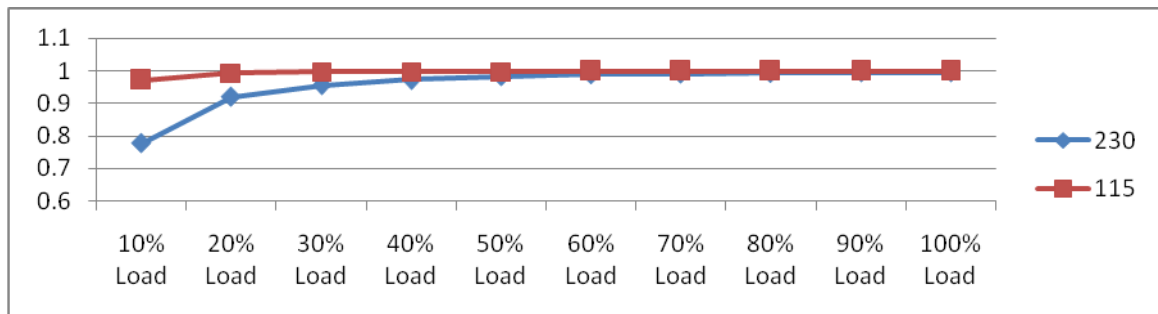


| | | | |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------|
| <p>8 RISE TIME (Max)</p> | <p>230VAC/30ms 115VAC/30ms</p> | <p>I/P : 230 VAC I/P : 115 VAC O/P : FULL LOAD Ta : 25°C</p> | <p>230VAC/15ms 115VAC/8.52ms</p> |
| <p>INPUT=230VAC/50HZ @ FULL LOAD CH1 : Output Voltage</p>  | | <p>INPUT=115VAC/60HZ @ FULL LOAD CH1 : Output Voltage</p>  | |
| <p>9 HOLD UP TIME (Typ.)</p> | <p>230VAC/10ms 115VAC/10ms</p> | <p>I/P : 230 VAC I/P : 115 VAC O/P : FULL LOAD Ta : 25°C</p> | <p>230VAC/18ms 115VAC/22.4ms</p> |
| <p>INPUT=230VAC/50HZ @ FULL LOAD CH1 : Output Voltage CH2 : AC Input Voltage</p>  | | <p>INPUT=115VAC/60HZ @ FULL LOAD CH1 : Output Voltage CH2 : AC Input Voltage</p>  | |
| <p>10 DYNAMIC LOAD</p> | <p>V1: 1200 mVp-p</p> | <p>I/P: 230VAC O/P: (1)FULL /50% LOAD 50%DUTY / 120HZ (2)FULL /50% LOAD 50%DUTY / 1KHZ Ta:25°C</p> | <p>(1) (2) V1: 840mVp-p 490mVp-p</p> |
| <p>FULL /50% LOAD 50%DUTY / 120HZ (V1)</p>  | | <p>FULL /50% LOAD 50%DUTY / 1KHZ (V1)</p>  | |

INPUT FUNCTION TEST

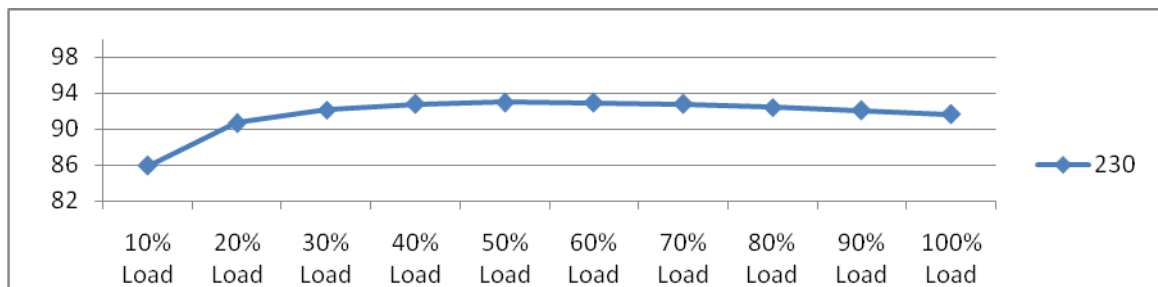
| NO | TEST ITEM | SPECIFICATION | TEST CONDITION | RESULT |
|----|---------------------------|-------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------|
| 1 | INPUT VOLTAGE RANGE | 80VAC~264VAC 113VDC~370VDC | I/P:TESTING O/P:FULL LOAD Ta:25°C | 72.5V~264V |
| | | | I/P: LOW-LINE-3V=77 V HIGH-LINE+15%=300 V O/P:FULL/MIN LOAD (PLEASE CHECK DERATING CURVE) ON: 30 Sec OFF: 30 Sec 10MIN (POWER ON/OFF NO DAMAGE) | TEST:OK |
| 2 | INPUT FREQUENCY RANGE | 47HZ ~63 HZ NO DAMAGE | I/P:80 VAC ~264 VAC O/P:FULL~MIN LOAD Ta:25°C | TEST: OK |
| 3 | INPUT CURRENT (Typ.) | 230V/ 2.9A 115V/5.8A | I/P : 230 VAC I/P : 115 VAC O/P : FULL LOAD Ta : 25°C | I =2.38A/ 230VAC I = 4.95A/ 115VAC |
| 4 | LEAKAGE CURRENT | <0.75mA/240VAC | I/P : 240VAC O/P : Min LOAD Ta : 25°C | 0.19mA |
| 5 | NO LOAD POWER CONSUMPTION | < 0.5W | I/P : 230 VAC O/P : Min LOAD Ta : 25°C | 0.43W |
| 6 | POWER FACTOR (Typ.) | 0.94/ 230VAC 0.98/115VAC | I/P : 230 VAC I/P : 115 VAC O/P : FULL LOAD Ta : 25°C | PF=0.993/230VAC PF=0.998/115VAC |

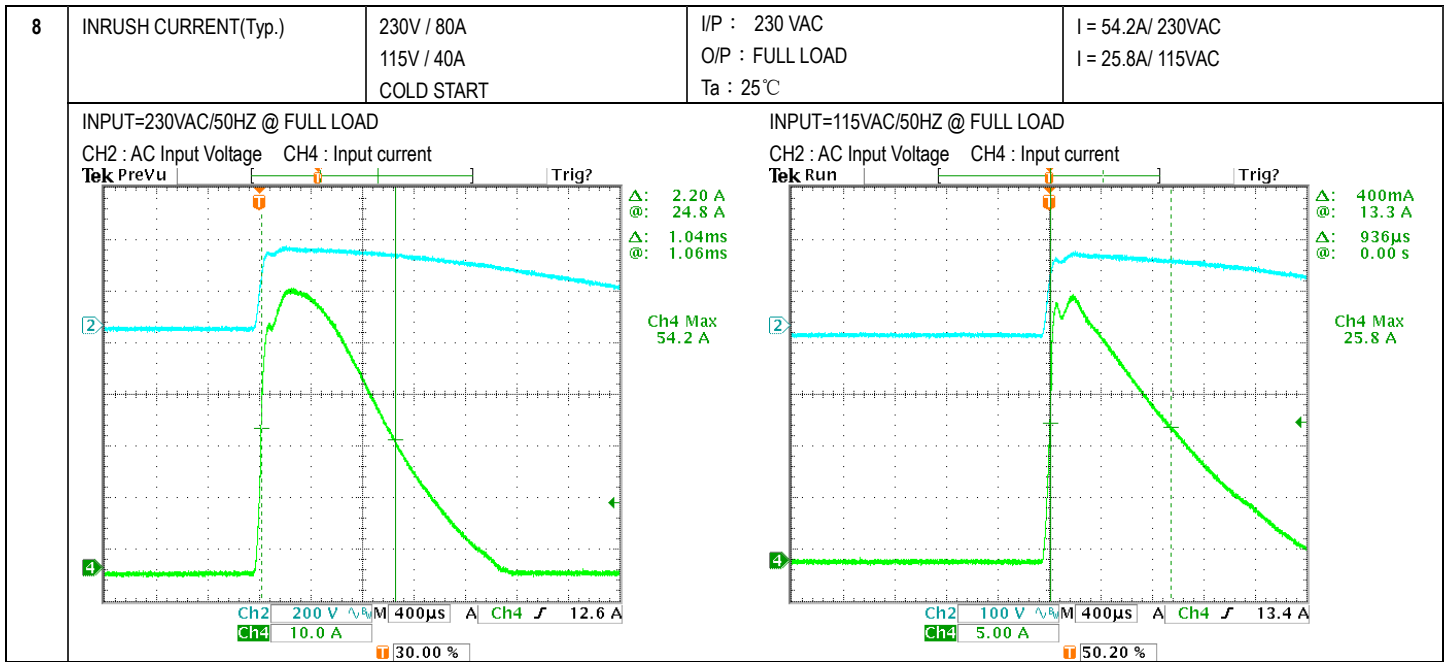
P.F vs LOAD



| | | | | |
|---|------------------|-----|-----------------------------------------|-------|
| 7 | EFFICIENCY(Typ.) | 91% | I/P:230 VAC O/P:FULL LOAD Ta:25°C | 91.2% |
|---|------------------|-----|-----------------------------------------|-------|

EFFICIENCY vs LOAD





PROTECTION FUNCTION TEST

| NO | TEST ITEM | SPECIFICATION | TEST CONDITION | RESULT |
|----|-----------------------------|----------------------------------------|----------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------|
| 1 | OVER LOAD PROTECTION | 105%~135% | I/P: 264VAC I/P: 230VAC I/P: 115VAC O/P: TESTING Ta:25°C | 120.8%/ 264VAC 120.8%/ 230VAC 120.8%/115VAC PROTECTION TYPE : Hiccup mode, recovers automatically after fault condition is removed |
| 2 | OVER VOLTAGE PROTECTION | 13.2V~15.6V | I/P: 264VAC I/P: 230VAC I/P: 80VAC O/P: MIN LOAD Ta:25°C | 14.87V/ 264VAC 14.79V/ 230VAC 14.87V/ 80VAC PROTECTION TYPE : Hiccup mode, recovers automatically after fault condition is removed |
| 3 | SHORT PROTECTION | SHORT EVERY OUTPUT 1 HOUR NO DAMAGE | I/P: 264VAC I/P: 80VAC O/P: FULL LOAD Ta:25°C | NO DAMAGE PROTECTION TYPE : Hiccup mode, recovers automatically after fault condition is removed |
| 4 | OVER TEMPERATURE PROTECTION | Protection type : Shut down | I/P: 264VAC I/P: 90VAC O/P: FULL LOAD | O.T.P Active PROTECTION TYPE : Shut down o/p voltage, recovers automatically after temperature goes down |

Control Function Test

| NO | TEST ITEM | SPECIFICATION | TEST CONDITION | RESULT |
|----|-----------------|----------------------------------|------------------------------------------|-------------------------|
| 1 | REMOTE SENSE | >0.3V | I/P: 230VAC O/P: FULL LOAD Ta:25°C | TEST : 0.5V |
| 2 | AUXILIARY POWER | O/P: 12V/0.5A TOLERANCE: ±10% | I/P: 230VAC O/P: FULL LOAD Ta:25°C | TOLERANCE: -0.61%~0.72% |



| | | | | |
|---|--------------------|----------------------------------------------------------------|---------------------------------------------------------|-----------------------------------------------------|
| 3 | AUXILIARY POWER | O/P:5V/0.6A RIPPLE & NOISE:120 mVp-p TOLERANCE: ±2% | I/P: 230VAC O/P: FULL LOAD Ta:25°C | RIPPLE & NOISE :63 mVp-p TOLERANCE: -0.12%~0.12% |
| 4 | PS-ON INPUT SIGNAL | Power on: PS-ON=Hi or >2~5V Power off: PS-ON=LOW or <0~0.5V | I/P: 230VAC O/P: FULL LOAD Ta:25°C | TEST : OK |
| 5 | POWER GOOD | 10ms<PG<500ms | I/P: 230VAC I/P: 115VAC O/P: FULL LOAD Ta:25°C | 103ms/230VAC 118ms/115VAC |
| 6 | POWER FAIL | > 1ms | I/P: 230VAC I/P: 115VAC O/P: FULL LOAD Ta:25°C | 8ms/230VAC 8ms/115VAC |

COMPONENT STRESS TEST

| NO | TEST ITEM | SPECIFICATION | TEST CONDITION | RESULT |
|----|------------------------------------------------------|------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1 | PWM Transistor (D to S) or (C to E) Peak Voltage | Q5 Rated : 650 V Q6 Rated : 650 V | AC ON/OFF I/P:High-Line +3V =267V VDS: O/P: (1)Full Load (2)Output Short (3) Full Load Continue Ta:25°C | Q5 VDS: Q6 VDS: (1) 434V (2) 434V (3) 409V (1) 530V (2) 522V (3) 534V |
| 2 | PWM Transistor (D to S) or (C to E) Peak Voltage | U900 Rated : 725 V | AC ON/OFF I/P:High-Line +3V =267V VDS: O/P: (1)Full Load (2)Output Short (3) Full Load Continue Ta:25°C | VDS: (1) 541V (2) 472V (3) 537V |
| 3 | O/P MOFET | Q101 Rated : 60 V Q102 Rated : 60 V | AC ON/OFF I/P:High-Line +3V =267 V O/P: (1)Full Load (2)Output Short (3) Full Load Continue Ta:25°C | Q101 VDS: Q102 VDS: (1) 43.0V (2) 27.4V (3) 43.8V (1) 37.8V (2) 23.7V (3) 37.8V |
| 4 | Input Capacitor Voltage | C5 Rated :270 μ / 400 V | I/P:High-Line +3V =267V 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°C | (1) 394V (2) 390V (3) 394V (4) 394 V |
| 5 | Control IC Voltage Test | U1 Rated : 0V~ 16 V U2 Rated : 0V~ 26 V | AC ON/OFF I/P:High-Line +3V =267 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°C | U1 U2 (1) 15.3V (2) 14.7V (3) 13.9V (4) 14.1V (5) 14.5V (1) 12.9V (2) 16.3V (3) 15.5V (4) 15.9V (5) 16.3V |

| | | | | |
|---|------------------|----------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------|
| 6 | P.F.C Transistor | Q1 Rated : 650 V | AC ON/OFF I/P:High-Line +3V =267 V O/P: (1)Full Load (2)Output Short (3) Full Load Continue Ta:25°C | VDS: (1) 471V (2) 414V (3) 446V |
| 7 | PFC Diode | D10 Rated : 650 V | AC ON/OFF I/P : High-Line +3V = 267 V 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°C | (1) 410V (2) 406V (3) 410V (4) 414V |

SAFETY TEST

| NO | TEST ITEM | SPECIFICATION | TEST CONDITION | RESULT |
|----|----------------------|----------------------------------------------------------------|-------------------------------------------------------------------------------------|--------------------------------------------------------------------|
| 1 | WITHSTAND VOLTAGE | I/P-O/P: 4KVAC/min I/P-FG:2 KVAC/min O/P-FG: 0.5KVAC/min | I/P-O/P: 4.4 KVAC/min I/P- FG: 2.4 KVAC/min O/P - FG: 0.6 KVAC/min Ta:25°C | I/P-O/P:1.41mA I/P- FG:1.26 mA O/P - FG:0.96 mA NO DAMAGE |
| 2 | ISOLATION RESISTANCE | I/P-O/P:500VDC>100MΩ I/P- FG:500VDC>100MΩ | I/P-O/P: 600 VDC I/P- FG: 600 VDC Ta:25°C | I/P-O/P: 9999MΩ I/P- FG: 9999MΩ NO DAMAGE |

E.M.C TEST

| NO | TEST ITEM | SPECIFICATION | TEST CONDITION | RESULT |
|----|------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------|---------------------------------------------------------------------------|
| 1 | HARMONIC | BS EN/EN61000-3-2 CLASS A | I/P:230VAC/50HZ O/P:FULL LOAD Ta:25°C | <input checked="" type="checkbox"/> PASS <input type="checkbox"/> FAIL |
| 2 | CONDUCTION | BS EN/EN55032 Class I: CLASS B CNS13438 Class II : CLASS A | I/P : 230 VAC (50HZ) O/P : FULL/50% LOAD Ta : 25°C | PASS Test by certified Lab |
| 3 | RADIATION | BS EN/EN55032/ CNS13438 CLASS A | I/P : 230 VAC (50HZ) O/P : FULL LOAD/50% LOAD Ta : 25°C | PASS Test by certified Lab |
| 4 | E.S.D | BS EN/EN61000-4-2 AIR: 8KV / Contact: 4KV | I/P : 230 VAC/50HZ O/P : FULL LOAD Ta : 25°C | CRITERIA A |
| 5 | E.F.T | BS EN/EN61000-4-4 <input type="checkbox"/> LIGHT INDUSTRY INPUT : 1KV <input checked="" type="checkbox"/> INDUSTRY INPUT : 2KV | I/P : 230 VAC/50HZ O/P : FULL LOAD Ta : 25°C | CRITERIA A |
| 6 | SURGE | BS EN/EN61000-4-5 INDUSTRY L-N : 2KV | I/P : 230 VAC/50HZ O/P : FULL LOAD Ta : 25°C | 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 : EPP-500-12 1. ROOM AMBIENT BURN-IN : 1 HRS I/P : 230VAC O/P : FULL LOAD Ta= 25.9 °C 2. HIGH AMBIENT BURN-IN : 1 HRS I/P : 230VAC O/P : FULL LOAD Ta= 45.1 °C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | <table border="1"> <thead> <tr> <th>NO</th> <th>Position</th> <th>ROOM AMBIENT Ta= 25.9 °C</th> <th>HIGH AMBIENT Ta= 45.1 °C</th> </tr> </thead> <tbody> <tr><td>1</td><td>BD1</td><td>76.2°C</td><td>87.8°C</td></tr> <tr><td>2</td><td>L1</td><td>85.9°C</td><td>97.2°C</td></tr> <tr><td>3</td><td>LF3</td><td>54.9°C</td><td>71.2°C</td></tr> <tr><td>4</td><td>LF1</td><td>55.2°C</td><td>69.6°C</td></tr> <tr><td>5</td><td>C1</td><td>60.3°C</td><td>72.7°C</td></tr> <tr><td>6</td><td>C2</td><td>55.2°C</td><td>70.3°C</td></tr> <tr><td>7</td><td>D10</td><td>64.1°C</td><td>80.0°C</td></tr> <tr><td>8</td><td>Q1</td><td>80.3°C</td><td>83.6°C</td></tr> <tr><td>9</td><td>C33</td><td>75.0°C</td><td>90.9°C</td></tr> <tr><td>10</td><td>Q5</td><td>95.5°C</td><td>107.1°C</td></tr> <tr><td>11</td><td>Q6</td><td>95.5°C</td><td>107.2°C</td></tr> <tr><td>12</td><td>LF2</td><td>61.8°C</td><td>79.4°C</td></tr> <tr><td>13</td><td>T1</td><td>97.8°C</td><td>107.5°C</td></tr> <tr><td>14</td><td>L2</td><td>101.3°C</td><td>105.9°C</td></tr> <tr><td>15</td><td>C5</td><td>74.8°C</td><td>79.0°C</td></tr> <tr><td>16</td><td>Q101</td><td>105.9°C</td><td>104.4°C</td></tr> <tr><td>17</td><td>Q102</td><td>108.7°C</td><td>107.4°C</td></tr> <tr><td>18</td><td>T900</td><td>70.6°C</td><td>84.4°C</td></tr> <tr><td>19</td><td>D951</td><td>61.6°C</td><td>75.6°C</td></tr> <tr><td>20</td><td>U900</td><td>75.4°C</td><td>88.9°C</td></tr> <tr><td>21</td><td>C105</td><td>84.2°C</td><td>88.7°C</td></tr> <tr><td>22</td><td>C106</td><td>86.6°C</td><td>91.0°C</td></tr> <tr><td>23</td><td>U1</td><td>80.3°C</td><td>89.5°C</td></tr> <tr><td>24</td><td>U2</td><td>84.7°C</td><td>89.7°C</td></tr> <tr><td>25</td><td>TSW1</td><td>63.0°C</td><td>97.6°C</td></tr> </tbody> </table> | NO | Position | ROOM AMBIENT Ta= 25.9 °C | HIGH AMBIENT Ta= 45.1 °C | 1 | BD1 | 76.2°C | 87.8°C | 2 | L1 | 85.9°C | 97.2°C | 3 | LF3 | 54.9°C | 71.2°C | 4 | LF1 | 55.2°C | 69.6°C | 5 | C1 | 60.3°C | 72.7°C | 6 | C2 | 55.2°C | 70.3°C | 7 | D10 | 64.1°C | 80.0°C | 8 | Q1 | 80.3°C | 83.6°C | 9 | C33 | 75.0°C | 90.9°C | 10 | Q5 | 95.5°C | 107.1°C | 11 | Q6 | 95.5°C | 107.2°C | 12 | LF2 | 61.8°C | 79.4°C | 13 | T1 | 97.8°C | 107.5°C | 14 | L2 | 101.3°C | 105.9°C | 15 | C5 | 74.8°C | 79.0°C | 16 | Q101 | 105.9°C | 104.4°C | 17 | Q102 | 108.7°C | 107.4°C | 18 | T900 | 70.6°C | 84.4°C | 19 | D951 | 61.6°C | 75.6°C | 20 | U900 | 75.4°C | 88.9°C | 21 | C105 | 84.2°C | 88.7°C | 22 | C106 | 86.6°C | 91.0°C | 23 | U1 | 80.3°C | 89.5°C | 24 | U2 | 84.7°C | 89.7°C | 25 | TSW1 | 63.0°C | 97.6°C |
| NO | Position | ROOM AMBIENT Ta= 25.9 °C | HIGH AMBIENT Ta= 45.1 °C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | BD1 | 76.2°C | 87.8°C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2 | L1 | 85.9°C | 97.2°C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3 | LF3 | 54.9°C | 71.2°C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4 | LF1 | 55.2°C | 69.6°C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5 | C1 | 60.3°C | 72.7°C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 6 | C2 | 55.2°C | 70.3°C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 7 | D10 | 64.1°C | 80.0°C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 8 | Q1 | 80.3°C | 83.6°C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 9 | C33 | 75.0°C | 90.9°C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 10 | Q5 | 95.5°C | 107.1°C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 11 | Q6 | 95.5°C | 107.2°C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 12 | LF2 | 61.8°C | 79.4°C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 13 | T1 | 97.8°C | 107.5°C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 14 | L2 | 101.3°C | 105.9°C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 15 | C5 | 74.8°C | 79.0°C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 16 | Q101 | 105.9°C | 104.4°C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 17 | Q102 | 108.7°C | 107.4°C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 18 | T900 | 70.6°C | 84.4°C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 19 | D951 | 61.6°C | 75.6°C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 20 | U900 | 75.4°C | 88.9°C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 21 | C105 | 84.2°C | 88.7°C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 22 | C106 | 86.6°C | 91.0°C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 23 | U1 | 80.3°C | 89.5°C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 24 | U2 | 84.7°C | 89.7°C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 25 | TSW1 | 63.0°C | 97.6°C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2 | OVER LOAD BURN-IN TEST | NO DAMAGE 1 HOUR (MIN) | I/P : 230 VAC O/P : 138% LOAD Ta : 25°C | TEST : OK | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3 | LOW TEMPERATURE TURN ON TEST | TURN ON AFTER 2 HOUR | I/P : 264VAC/115VAC O/P : 100 % LOAD Ta= -35 °C | TEST : OK | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4 | HIGH HUMIDITY HIGH TEMPERATURE HIGH VOLTAGE TURN ON TEST | AFTER 12 HOURS IN CHAMBER ON CONTROL 45°C /95 %R.H NO DAMAGE | I/P : 272VAC O/P : FULL LOAD Ta= 45 °C HUMIDITY= 95 %R.H | TEST : OK | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5 | TEMPERATURE COEFFICIENT | ± 0.03%/°C (0~50°C) | I/P : 230 VAC O/P : FULL LOAD | ± 0.0043 %/°C (0~50°C) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |



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| 6 | STORAGE TEMPERATURE TEST | 1. Thermal shock Temperature : -45°C~ +90°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 : STATIC | TEST : OK |
| 7 | THERMAL SHOCK TEST | 1. Thermal shock Temperature : -35°C~ +50°C 2. Temperature change rate : 25°C / 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 | TEST : OK |
| 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 : 180min in each axis (X.Y.Z) (6) Ta : 25°C | TEST : OK |
| 9 | CAPACITOR LIFE CYCLE | SUPPOSE C106 IS THE MOST CRITICAL COMPONENT (1) I/P : 230VAC O/P : FULL LOAD Ta= 25 °C LIFE TIME (2) I/P : 230VAC O/P : FULL LOAD Ta= 45 °C LIFE TIME (3) I/P : 230VAC O/P : 75% LOAD Ta= 45 °C LIFE TIME (4) I/P : 230VAC O/P : 50% LOAD Ta= 45 °C LIFE TIME | (1) 52730.4 HRS (2) 30032.8 HRS (3) 62974.8 HRS (4) 159578 HRS |
| 10 | MTBF | Conducted by Parts Stress Analysis Prediction 194.1K hrs min. MIL-HDBK-217F (25°C) | |
| 11 | Ongoing Reliability Test | I/P : 230VAC O/P : FULL LOAD TA=50°C Demonstration Mean Time Between Failure : 30,000 hours | |

| TEST RESULT | TESTER | REVIEW | APPROVAL |
|-------------|--------|--------|----------|
| PASS | LIUTT | | WANGDZ |

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