



Test Report: LOP-500-27

500W 5"×3" Low Profile 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: 25.6V~28.4V | I/P : 230 VAC I/P : 115 VAC O/P : MIN LOAD Ta : 25°C | 24.84V~29.11V/230VAC 24.84V~29.11V/115VAC |
| 2 | OUTPUT VOLTAGE TOLERANCE | V1: -1% ~ +1% | I/P: 80VAC~ 264VAC O/P:FULL~ MIN. LOAD Ta:25°C | V1: -0.02 % ~0.03 % |
| 3 | LINE REGULATION | V1: -0.5% ~ +0.5% | I/P: 80VAC~ 264VAC O/P:FULL LOAD Ta:25°C | V1: 0 % ~0 % |
| 4 | LOAD REGULATION | V1: -1% ~ +1% | I/P: 230VAC O/P:FULL ~MIN LOAD Ta:25°C | V1: -0.02 % ~0.03 % |
| 5 | OVER/UNDERSHOOT TEST | <±5% | I/P: 230VAC O/P:FULL LOAD/NO LOAD Ta:25°C | 1.48 % |
| 6 | RIPPLE & NOISE (Max) | V1: 200mVp-p | I/P:230VAC O/P: FULL LOAD Ta:25°C | V1: 55mVp-p / high frequency 79mVp-p / low frequency |
| | | high frequency : | low frequency : | |
| | | | | |
| 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/ 676ms 115VAC/ 588ms |
| | | 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 | <p>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/ 12.05ms 115VAC/ 12.0ms</p> |
| <p>INPUT=230VAC/50HZ @ FULL LOAD CH1: Output Voltage</p> | | <p>INPUT=115VAC/60HZ @ FULL LOAD CH1: Output Voltage</p> | |
| | | | |
| 9 | <p>HOLD UP TIME (Typ.)</p> <p>16ms /500W load 30ms /300W load</p> | <p>I/P : 230 VAC O/P : TESTING Ta : 25°C</p> | <p>23.2ms /500W load 38ms /300W load</p> |
| <p>INPUT=230VAC/50HZ @ 400W load CH1: Output Voltage CH2: AC Input Voltage</p> | | <p>INPUT=230VAC/50HZ @ 250W load CH1: Output Voltage CH2: AC Input Voltage</p> | |
| | | | |
| 10 | <p>DYNAMIC LOAD</p> <p>V1: 2700mVp-p</p> | <p>I/P: 230VAC O/P: (1) FULL/0% LOAD 50%DUTY / 120HZ (2) FULL/0% LOAD 50%DUTY / 1KHZ Ta:25°C</p> | <p>681mVp-p 474mVp-p</p> |
| <p>FULL /0% LOAD 50%DUTY / 120HZ</p> | | <p>FULL /0% LOAD 50%DUTY / 1KHZ</p> | |

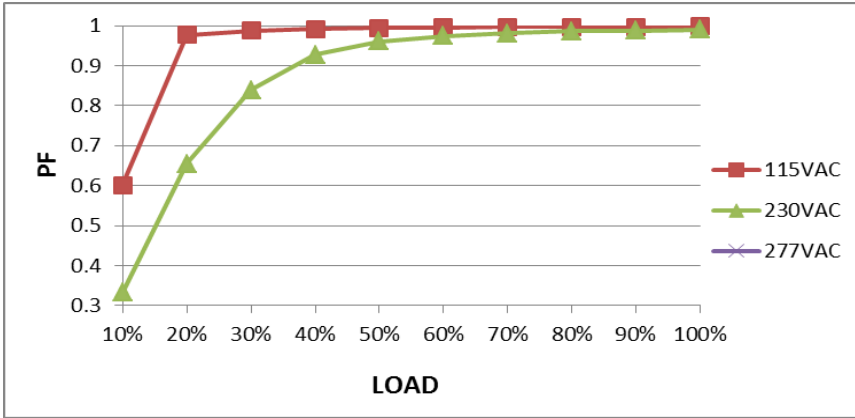
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| | | | |
| <p>11 TRANSIENT RECOVERY TIME</p> | <p>V1: 2700mVp-p < 500us</p> | <p>I/P: 230VAC O/P:40% LOAD CHANGE 50%DUTY/120HZ 1.25A/us</p> | <p>326mVp-p 0us</p> |
| <p>12 PEAK LOAD</p> | <p>150% PEAK LOAD@3S</p> | <p>I/P: 264VAC I/P: 115VAC O/P: PEAK LOAD</p> | <p>TEST : OK</p> |

INPUT FUNCTION TEST

| NO | TEST ITEM | SPECIFICATION | TEST CONDITION | RESULT |
|----|-----------------------|--|---|--|
| 1 | INPUT VOLTAGE RANGE | 80VAC~264VAC 113VDC~ 370VDC | (1) I/P: TESTING O/P: FULL / 70% LOAD (2) I/P: DC TESTING (L: + N: -) O/P: FULL / 70% LOAD (3) I/P: DC TESTING (L: - N: +) O/P: FULL / 70% LOAD Ta:25°C I/P: HIGH-LINE+15%=300V O/P:FULL/MIN LOAD (PLEASE CHECK DERATING CURVE) ON: 30 Sec OFF: 30 Sec 10MIN (POWER ON/OFF NO DAMAGE) | (1) 75V~264V/ FULL LOAD 75V~264V/ 70% LOAD (2) 105Vdc~370Vdc/FULL LOAD 105Vdc~370Vdc/70% LOAD (3) 105Vdc~370Vdc/FULL LOAD 105Vdc~370Vdc/70% LOAD 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/ 2.6A 115V/ 5.2A | I/P : 230 VAC I/P : 115 VAC O/P : FULL LOAD Ta : 25°C | I =2.30A/ 230VAC I =4.79A/ 115VAC |
| 4 | LEAKAGE CURRENT | Earth leakage current <500uA(rms) @ 264VAC touch current <70uA(rms) @ 264VAC | I/P : 264 VAC/60HZ O/P : Min LOAD Ta : 25°C | 278 uA / 264 VAC@ For Earth 28uA / 264 VAC@For Touch |
| 5 | NO LOAD CONSUMPTION | <0.5W | I/P : 240VAC O/P : NO LOAD Ta : 25°C | 0.3W |

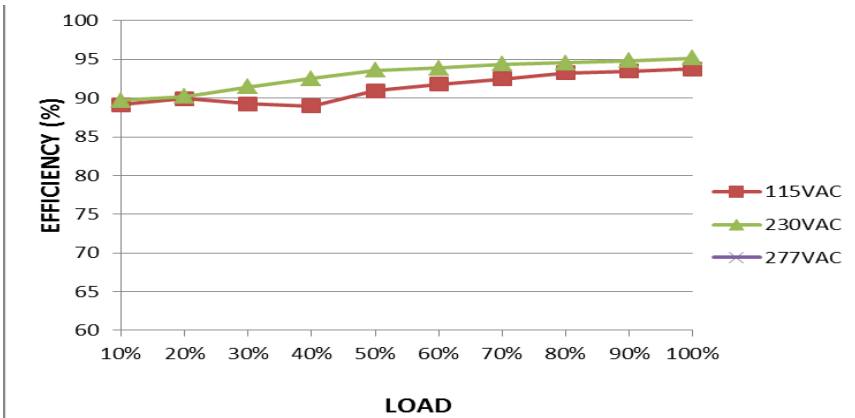
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|---|---------------------|-----------------------------|--|--------------------------------------|
| 6 | POWER FACTOR (Typ.) | 0.94/ 230VAC 0.98/115VAC | I/P : 230 VAC I/P : 115 VAC O/P : FULL LOAD Ta : 25°C | PF=0.9958/230VAC PF=0.9962/115VAC |
|---|---------------------|-----------------------------|--|--------------------------------------|

P.F vs LOAD



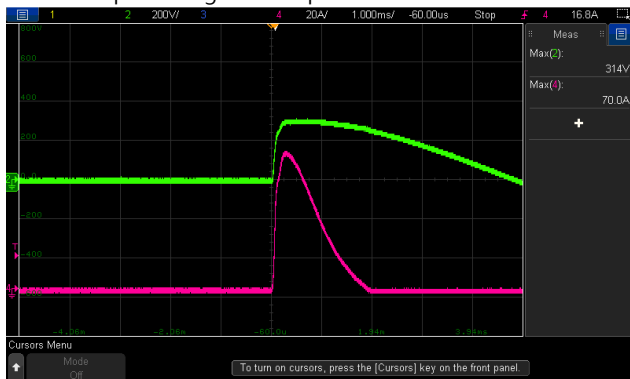
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|---|------------------|-------|---|---------|
| 7 | EFFICIENCY(Typ.) | 94.5% | I/P:230 VAC O/P:FULL LOAD Ta:25°C | 95.16 % |
|---|------------------|-------|---|---------|

EFFICIENCY vs LOAD

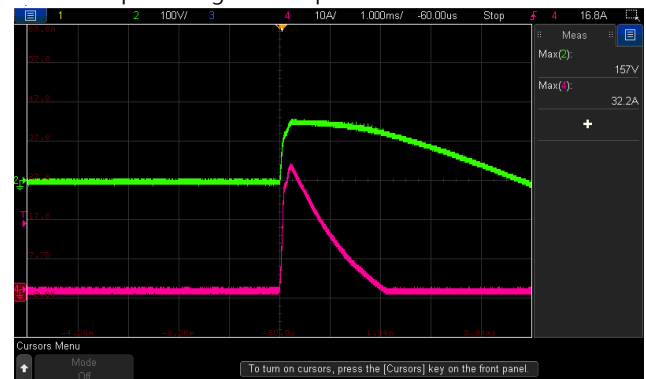


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|---|----------------------|------------------------------------|--|---|
| 8 | INRUSH CURRENT(Typ.) | 230V/80A 115V/40A COLD START | I/P : 230 VAC I/P : 115 VAC O/P : FULL LOAD Ta : 25°C | I =70.0A/ 230VAC I =32.2A/ 115VAC T50= 880us/230V |
|---|----------------------|------------------------------------|--|---|

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



INPUT=115VAC/ 60HZ @ 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% PROTECTION TYPE : Hiccup after 3 sec, recovers automatically after fault condition is removed | I/P: 264VAC I/P: 230VAC I/P: 115VAC O/P:TESTING Ta:25°C | 131.35%/ 264VAC 130.81%/ 230VAC 131.35%/ 115VAC PROTECTION TYPE : Hiccup after 3 sec, recovers automatically after fault condition is removed |
| 2 | OVER VOLTAGE PROTECTION | 29.7V~35.1V Protection type: Shut down o/p voltage, re-power on to recover | I/P: 264VAC I/P: 80VAC O/P:MIN LOAD Ta:25°C | 32.0V/ 264VAC 32.0V/ 80VAC Protection type: Shut down o/p voltage, re-power on to recover |
| 3 | OVER TEMPERATURE PROTECTION | Protection type: Shut down o/p voltage, recovers automatically after temperature goes down or re-power on to recover | I/P: 264VAC I/P: 80VAC O/P:FULL LOAD | O.T.P Active Protection type : Shut down o/p voltage, recovers automatically after temperature goes down or re-power on to recover |
| 4 | SHORT PROTECTION | SHORT EVERY OUTPUT 1 HOUR NO DAMAGE Protection type: Hiccup mode, recovers automatically after fault condition is removed | 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 |

CONTROL FUNCTION TEST

| NO | TEST ITEM | SPECIFICATION | TEST CONDITION | RESULT |
|----|---------------------|---|--|------------------------|
| 1 | EXTERNAL FAN SUPPLY | 12V@0.5A for driving a fan ; tolerance -15% ~ +15% at main output 20% rated current (23CFM) | I/P: 230 VAC O/P: TESTING Ta:25°C | TEST : <u>-0.8%~0%</u> |
| 2 | REMOTE SENSE | S+ / S- The remote sensing compensates voltage drop on the load wiring up to 0.5V | I/P: 230 VAC O/P:FULL LOAD Ta:25°C | TEST : <u>OK</u> |

COMPONENT STRESS TEST

| NO | TEST ITEM | SPECIFICATION | TEST CONDITION | RESULT |
|----|--|-------------------------------|--|--|
| 1 | PWM Transistor (D to S) or (C to E) Peak Voltage | Q2/ Q3 Rated: 22A/ 600V | AC ON/OFF I/P: High-Line +3V =267V 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 | Q2: Q3: VDS: VDS: (1) 434V (1) 426V (2) 483V (2) 450V (3) 434V (3) 430V (4) 430V (4) 430V (5) 434V (5) 426V (6) 430V (6) 430V (7) 442V (7) 442V (8) 466V (8) 450V |



| | | | | |
|---|---|----------------------------------|---|--|
| | | | (6) Dynamic Load 100% Load/ Min. Load 50%Duty/120Hz (7)0%→400% Load (8) Peak Load Ta:25°C | |
| 2 | P.F.C Transistor (D to S) or (C to E) Peak Voltage | Q1 Rated: 34A/600V | AC ON/OFF I/P: High-Line +3V =267V 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 (8) Peak Load Ta:25°C | VDS: (1) 483V (2) 458V (3) 474V (4) 474V (5) 474V (6) 466V (7) 499V (8) 483V |
| 3 | P.F.C DIODE | D2 Rated: 6A/ 650V | I/P: High-Line +3V =267 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 (5) Peak Load Ta:25°C | (1) 437V (2) 415V (3) 427V (4) 423V (5) 435V |
| 4 | Diode Peak Voltage | Q101/Q103 Rated: 120A/ 80V | AC ON/OFF I/P: High-Line +3V =267 V <u>VO=Vomax</u> 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 (9) burst Mode (10) Peak Load <u>VO=Vnormal</u> | Q101: <u>VO=Vomax</u> Q103: <u>VO=Vomax</u> VDS: (1) 69.5V (1) 68.3V (2) 69.5V (2) 68.3V (3) 69.5V (3) 68.3V (4) 69.5V (4) 68.3V (5) 69.5V (5) 68.3V (6) 70.7V (6) 68.9V (7) 71.9V (7) 70.7V (8) 65.3V (8) 62.9V (9) 67.1V (9) 65.3V (10) 71.3V (10) 70.1V <u>VO=Vnormal</u> (1) 66.5V (1) 65.9V |

| | | | | |
|---|-------------------------|---|---|---|
| | | | O/P: (1) Full Load Ta:25°C | |
| 5 | Input Capacitor Voltage | C5 Rated: 270μ / 420V SURGE:462V | 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) 414V (2) 406V (3) 418V (4) 414V |
| 6 | Control IC Voltage Test | PFC /PWM IC U1: Rated : 10.4V~28.7 V O/P IC U101 Rated : 4.75V~38 V IC U103 Rated : 2V~ 7V | 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 (1) 18.9V (2) 18.9V (3) 18.9V (4) 18.9V (5) 18.9V U103 (1) 5.33V (2) 5.17V (3) 5.17V (4) 5.17V (5) 5.13V U101 (1) 11.60V (2) 11.44V (3) 11.44V (4) 11.55V (5) 9.35V |

■ SAFETY& E.M.C. TEST

SAFETY TEST

| NO | TEST ITEM | SPECIFICATION | TEST CONDITION | RESULT |
|----|----------------------|---|---|---|
| 1 | WITHSTAND VOLTAGE | I/P-O/P: 4KVAC/min I/P-FG :2KVAC/min O/P-FG:1.5KVAC/min | I/P-O/P: 4.4 KVAC/min I/P-FG: 2.4 KVAC/min O/P-FG:1.8 KVAC/min Ta:25°C | I/P-O/P: 1.760mA I/P-FG: 2.78mA O/P-FG:0.784mA NO DAMAGE |
| 2 | ISOLATION RESISTANCE | I/P-O/P:500VDC>100MΩ I/P-FG: 500VDC>100MΩ O/P-FG:500VDC>100MΩ | I/P-O/P: 600 VDC I/P-FG: 600 VDC O/P-FG: 600 VDC Ta:25°C | I/P-O/P:50GΩ I/P-FG:50GΩ O/P-FG:50GΩ 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 | PASS |
| 2 | CONDUCTION | BS EN/EN55032(CISPR32) Class I: Class B , Class II: Class A | I/P : 230 VAC (50HZ) O/P : FULL/50% LOAD Ta : 25°C | PASS Test by certified Lab |

| | | <table border="1"> <thead> <tr> <th>NO</th> <th>Position</th> <th>ROOM AMBIENT Ta= 25 °C</th> <th>HIGH AMBIENT Ta= 50 °C</th> </tr> </thead> <tbody> <tr><td>13</td><td>T1core</td><td>39.0°C</td><td>66.1°C</td></tr> <tr><td>14</td><td>D2</td><td>44.6°C</td><td>71.6°C</td></tr> <tr><td>15</td><td>Q1</td><td>43.7°C</td><td>70.7°C</td></tr> <tr><td>16</td><td>Q3</td><td>43.3°C</td><td>70.8°C</td></tr> <tr><td>17</td><td>Q2</td><td>43.1°C</td><td>70.4°C</td></tr> <tr><td>18</td><td>U1</td><td>40.7°C</td><td>67.0°C</td></tr> <tr><td>19</td><td>C5</td><td>38.6°C</td><td>64.9°C</td></tr> <tr><td>20</td><td>C55</td><td>40.6°C</td><td>67.9°C</td></tr> <tr><td>21</td><td>D103</td><td>42.6°C</td><td>70.2°C</td></tr> <tr><td>22</td><td>C120</td><td>45.3°C</td><td>73.6°C</td></tr> <tr><td>23</td><td>C104</td><td>52.6°C</td><td>80.6°C</td></tr> <tr><td>24</td><td>Q103</td><td>57.0°C</td><td>86.6°C</td></tr> <tr><td>25</td><td>Q102</td><td>55.8°C</td><td>85.6°C</td></tr> <tr><td>26</td><td>C103</td><td>44.7°C</td><td>72.9°C</td></tr> <tr><td>27</td><td>C102</td><td>48.1°C</td><td>76.4°C</td></tr> <tr><td>28</td><td>L100</td><td>70.7°C</td><td>99.5°C</td></tr> <tr><td>29</td><td>R3</td><td>35.2°C</td><td>62.0°C</td></tr> <tr><td>30</td><td>D1</td><td>32.0°C</td><td>58.5°C</td></tr> <tr><td>31</td><td>U103</td><td>34.7°C</td><td>61.5°C</td></tr> <tr><td>32</td><td>U101</td><td>37.1°C</td><td>63.9°C</td></tr> <tr><td>33</td><td>RG100</td><td>42.1°C</td><td>69.1°C</td></tr> <tr><td>34</td><td>U3</td><td>32.4°C</td><td>58.8°C</td></tr> <tr><td>35</td><td>D105</td><td>37.8°C</td><td>63.5°C</td></tr> <tr><td>36</td><td>D20</td><td>28.7°C</td><td>55.4°C</td></tr> <tr><td>37</td><td>R100</td><td>51.1°C</td><td>78.0°C</td></tr> <tr><td>38</td><td>R122</td><td>43.9°C</td><td>70.7°C</td></tr> </tbody> </table> | | | NO | Position | ROOM AMBIENT Ta= 25 °C | HIGH AMBIENT Ta= 50 °C | 13 | T1core | 39.0°C | 66.1°C | 14 | D2 | 44.6°C | 71.6°C | 15 | Q1 | 43.7°C | 70.7°C | 16 | Q3 | 43.3°C | 70.8°C | 17 | Q2 | 43.1°C | 70.4°C | 18 | U1 | 40.7°C | 67.0°C | 19 | C5 | 38.6°C | 64.9°C | 20 | C55 | 40.6°C | 67.9°C | 21 | D103 | 42.6°C | 70.2°C | 22 | C120 | 45.3°C | 73.6°C | 23 | C104 | 52.6°C | 80.6°C | 24 | Q103 | 57.0°C | 86.6°C | 25 | Q102 | 55.8°C | 85.6°C | 26 | C103 | 44.7°C | 72.9°C | 27 | C102 | 48.1°C | 76.4°C | 28 | L100 | 70.7°C | 99.5°C | 29 | R3 | 35.2°C | 62.0°C | 30 | D1 | 32.0°C | 58.5°C | 31 | U103 | 34.7°C | 61.5°C | 32 | U101 | 37.1°C | 63.9°C | 33 | RG100 | 42.1°C | 69.1°C | 34 | U3 | 32.4°C | 58.8°C | 35 | D105 | 37.8°C | 63.5°C | 36 | D20 | 28.7°C | 55.4°C | 37 | R100 | 51.1°C | 78.0°C | 38 | R122 | 43.9°C | 70.7°C |
|----|---|---|--|--------------------|----|----------|------------------------|------------------------|----|--------|--------|--------|----|----|--------|--------|----|----|--------|--------|----|----|--------|--------|----|----|--------|--------|----|----|--------|--------|----|----|--------|--------|----|-----|--------|--------|----|------|--------|--------|----|------|--------|--------|----|------|--------|--------|----|------|--------|--------|----|------|--------|--------|----|------|--------|--------|----|------|--------|--------|----|------|--------|--------|----|----|--------|--------|----|----|--------|--------|----|------|--------|--------|----|------|--------|--------|----|-------|--------|--------|----|----|--------|--------|----|------|--------|--------|----|-----|--------|--------|----|------|--------|--------|----|------|--------|--------|
| NO | Position | ROOM AMBIENT Ta= 25 °C | HIGH AMBIENT Ta= 50 °C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 13 | T1core | 39.0°C | 66.1°C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 14 | D2 | 44.6°C | 71.6°C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 15 | Q1 | 43.7°C | 70.7°C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 16 | Q3 | 43.3°C | 70.8°C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 17 | Q2 | 43.1°C | 70.4°C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 18 | U1 | 40.7°C | 67.0°C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 19 | C5 | 38.6°C | 64.9°C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 20 | C55 | 40.6°C | 67.9°C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 21 | D103 | 42.6°C | 70.2°C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 22 | C120 | 45.3°C | 73.6°C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 23 | C104 | 52.6°C | 80.6°C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 24 | Q103 | 57.0°C | 86.6°C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 25 | Q102 | 55.8°C | 85.6°C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 26 | C103 | 44.7°C | 72.9°C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 27 | C102 | 48.1°C | 76.4°C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 28 | L100 | 70.7°C | 99.5°C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 29 | R3 | 35.2°C | 62.0°C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 30 | D1 | 32.0°C | 58.5°C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 31 | U103 | 34.7°C | 61.5°C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 32 | U101 | 37.1°C | 63.9°C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 33 | RG100 | 42.1°C | 69.1°C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 34 | U3 | 32.4°C | 58.8°C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 35 | D105 | 37.8°C | 63.5°C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 36 | D20 | 28.7°C | 55.4°C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 37 | R100 | 51.1°C | 78.0°C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 38 | R122 | 43.9°C | 70.7°C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2 | OVER LOAD BURN-IN TEST | NO DAMAGE 1 HOUR (MIN) | I/P : 230 VAC O/P : 124.7%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= -45°C | TEST : OK | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4 | HIGH HUMIDITY HIGH TEMPERATURE HIGH VOLTAGE TURN ON TEST | AFTER 12 HOURS IN CHAMBER ON CONTROL 50 °C/95 %R.H NO DAMAGE | I/P : 272 VAC O/P : FULL LOAD Ta= 50 °C HUMIDITY= 95 %R.H | TEST : OK | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5 | TEMPERATURE COEFFICIENT | ± 0.03%/°C(0~50°C) | I/P : 230 VAC O/P : FULL LOAD | ±0.006%/°C(0~50°C) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 6 | STORAGE TEMPERATURE TEST | -40~85°C | 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 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

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| 7 | THERMAL SHOCK TEST | -40~50°C | 1. Thermal shock Temperature : -45°C~ +55°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 |
| 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 : 12min/sweep cycle (4) Acceleration : 3G (5) Test Time : 180min in each axis (X.Y.Z) (6) Ta : 25°C |
| 9 | CAPACITOR LIFE CYCLE | SUPPOSE C102 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= 50 °C LIFE TIME (3) I/P : 230VAC O/P : 75% LOAD Ta= 50 °C LIFE TIME (4) I/P : 230VAC O/P : 50% LOAD Ta= 50 °C LIFE TIME | (1) 461096.6HRS (2) 64845.1HRS (3) 182371.4HRS (4) 345280.8HRS |
| 10 | MTBF | Conducted by Parts Stress Analysis Prediction 1695.7K hrs min. Telcordia SR-332 (Bellcore) ; 230.7K 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 | Yuwei | Liutt | Wangdz |

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