



# Test Report: BIC-2200-48

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AC<->DC Bidirectional Power Supply with Energy Recycle Function

## ■ DESIGN VERIFY TEST

Output Function Test (AC to DC Direction)

Input Function Test(AC to DC Direction)

Output Function Test (DC to AC Direction)

Input Function Test(DC to AC Direction)

Protection Function Test

Control Function Test

Component Stress Test

## ■ SAFETY & E.M.C. TEST

Safety Test

E.M.C. Test

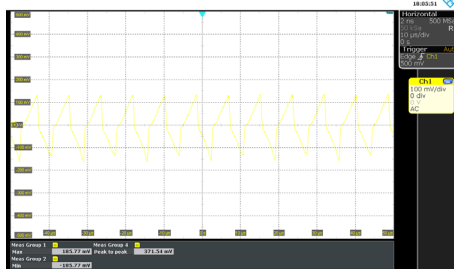
## ■ RELIABILITY TEST

ENVIRONMENT TEST

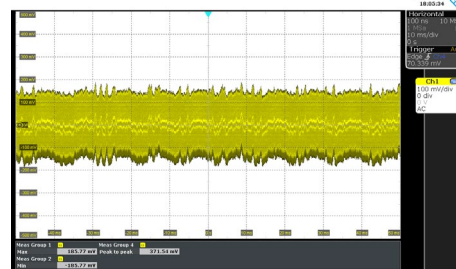
■ **DESIGN VERIFY TEST**

| NO | TEST ITEM                        | SPECIFICATION     | TEST CONDITION  | RESULT              |
|----|----------------------------------|-------------------|---|---------------------|
| 1  | OUTPUT VOLTAGE<br>ADJUST RANGE   | CH1: 38V~65 V     | I/P : 230 VAC<br>O/P : MIN LOAD<br>Ta : 25°C          | 36.646V~66.93V      |
| 2  | OUTPUT VOLTAGE(Max)<br>TOLERANCE | V1: 1%~ -1 %      | I/P: 180VAC /264VAC<br>O/P:FULL/ MIN. LOAD<br>Ta:25°C | V1: 0.66%~ -0.59 %  |
| 3  | LINE REGULATION (Max)            | V1: 0.5 %~ -0.5 % | I/P: 180VAC~264VAC<br>O/P:FULL LOAD<br>Ta:25°C        | V1: 0.06 %~ -0.06 % |
| 4  | LOAD REGULATION(Max)             | V1: 0.5%~ -0.5%   | I/P: 230VAC<br>O/P:FULL ~MIN LOAD<br>Ta:25°C          | V1: 0.05 %~ 0.03 %  |
| 5  | OVER/UNDERSHOOT TEST             | < ±10%            | I/P: 230VAC<br>O/P:FULL LOAD<br>Ta:25°C               | <10%                |
| 6  | RIPPLE & NOISE(Max )             | V1: 300mVp-p      | I/P:230VAC<br>O/P:FULL LOAD<br>Ta:25°C                | V1: 233.99mVp-p     |

high frequency :



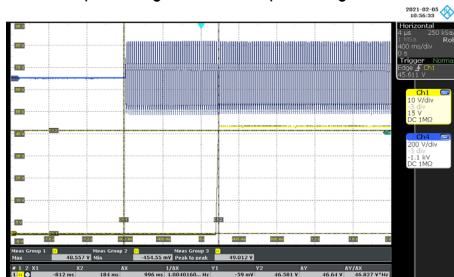
low frequency :



|   |                  |               |   |               |
|---|------------------|---------------|---|---------------|
| 7 | SET UP TIME(Max) | 230VAC/1800ms | I/P : 230 VAC<br>O/P : FULL LOAD<br>Ta : 25°C | 230VAC/ 996ms |
|---|------------------|---------------|---|---------------|

INPUT=230VAC/50HZ @ FULL LOAD

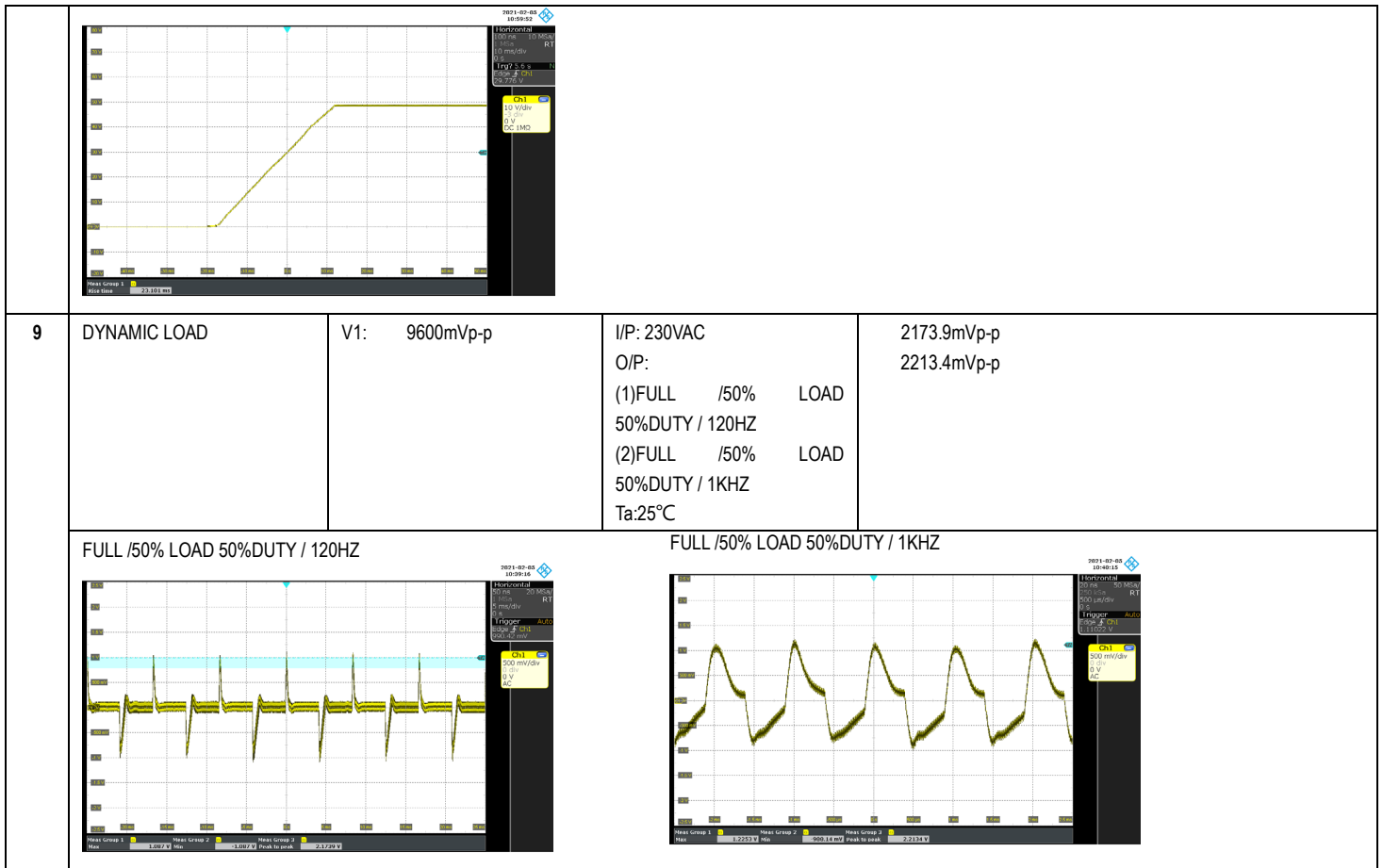
CH1 : Output Voltage CH2 : AC Input Voltage



|   |                 |             |   |                 |
|---|-----------------|-------------|---|-----------------|
| 8 | RISE TIME (Max) | 230VAC/60ms | I/P : 230 VAC<br>O/P : FULL LOAD<br>Ta : 25°C | 230VAC/23.101ms |
|---|-----------------|-------------|---|-----------------|

INPUT=230VAC/50HZ @ FULL LOAD

CH1 : Output Voltage



**INPUT FUNCTION TEST(AC to DC Direction)**

| NO | TEST ITEM             | SPECIFICATION            | TEST CONDITION  | RESULT                         |
|----|-----------------------|--------------------------|---|--------------------------------|
| 1  | INPUT VOLTAGE RANGE   | 180VAC~264VAC            | I/P: TESTING<br>O/P: FULL LOAD<br>Ta:25°C   | (1) 166V~264V                  |
|    |                       |                          | I/P:<br>LOW-LINE-3V=177 V<br>HIGH-LINE+15%=300 V<br>O/P: FULL/MIN LOAD<br>(PLEASE CHECK DERATING CURVE)<br>ON: 30 Sec OFF: 30 Sec 10MIN<br>(POWER ON/OFF NO DAMAGE) | TEST:OK                        |
| 2  | INPUT FREQUENCY RANGE | 47HZ ~63 HZ<br>NO DAMAGE | I/P:180VAC ~264 VAC<br>O/P:FULL~MIN LOAD<br>Ta:25°C   | TEST: OK                       |
| 3  | INPUT CURRENT (Typ.)  | 230V/ 11A                | I/P : 230 VAC<br>O/P : FULL LOAD<br>Ta : 25°C   | I=10.28A/ 230VAC               |
| 4  | LEAKAGE CURRENT       | < 2mA / 230 VAC          | I/P : 230 VAC<br>O/P : Min LOAD<br>Ta : 25°C  | L-FG : 1.2 mA<br>N-FG : 1.2 mA |
| 5  | POWER FACTOR (Typ.)   | 0.98/ 230VAC             | I/P : 230 VAC<br>O/P : FULL LOAD<br>Ta : 25°C   | PF=0.9958/230VAC               |

|          | <p>P.F vs LOAD</p> <table border="1"> <caption>PF vs LOAD Data</caption> <thead> <tr> <th>LOAD (%)</th> <th>180VAC PF</th> <th>230VAC PF</th> </tr> </thead> <tbody> <tr><td>10%</td><td>0.92</td><td>0.87</td></tr> <tr><td>20%</td><td>0.97</td><td>0.96</td></tr> <tr><td>30%</td><td>0.98</td><td>0.98</td></tr> <tr><td>40%</td><td>0.99</td><td>0.99</td></tr> <tr><td>50%</td><td>0.995</td><td>0.99</td></tr> <tr><td>60%</td><td>0.995</td><td>0.995</td></tr> <tr><td>70%</td><td>0.995</td><td>0.995</td></tr> <tr><td>80%</td><td>0.995</td><td>0.995</td></tr> <tr><td>90%</td><td>0.995</td><td>0.995</td></tr> <tr><td>100%</td><td>0.995</td><td>0.995</td></tr> </tbody> </table> |                        |   |                                      | LOAD (%) | 180VAC PF             | 230VAC PF             | 10% | 0.92 | 0.87 | 20% | 0.97 | 0.96 | 30% | 0.98 | 0.98 | 40% | 0.99 | 0.99 | 50% | 0.995 | 0.99 | 60% | 0.995 | 0.995 | 70% | 0.995 | 0.995 | 80% | 0.995 | 0.995 | 90% | 0.995 | 0.995 | 100% | 0.995 | 0.995 |
|----------|--|------------------------|---|--------------------------------------|----------|-----------------------|-----------------------|-----|------|------|-----|------|------|-----|------|------|-----|------|------|-----|-------|------|-----|-------|-------|-----|-------|-------|-----|-------|-------|-----|-------|-------|------|-------|-------|
| LOAD (%) | 180VAC PF  | 230VAC PF              |   |                                      |          |                       |                       |     |      |      |     |      |      |     |      |      |     |      |      |     |       |      |     |       |       |     |       |       |     |       |       |     |       |       |      |       |       |
| 10%      | 0.92   | 0.87                   |   |                                      |          |                       |                       |     |      |      |     |      |      |     |      |      |     |      |      |     |       |      |     |       |       |     |       |       |     |       |       |     |       |       |      |       |       |
| 20%      | 0.97   | 0.96                   |   |                                      |          |                       |                       |     |      |      |     |      |      |     |      |      |     |      |      |     |       |      |     |       |       |     |       |       |     |       |       |     |       |       |      |       |       |
| 30%      | 0.98   | 0.98                   |   |                                      |          |                       |                       |     |      |      |     |      |      |     |      |      |     |      |      |     |       |      |     |       |       |     |       |       |     |       |       |     |       |       |      |       |       |
| 40%      | 0.99   | 0.99                   |   |                                      |          |                       |                       |     |      |      |     |      |      |     |      |      |     |      |      |     |       |      |     |       |       |     |       |       |     |       |       |     |       |       |      |       |       |
| 50%      | 0.995  | 0.99                   |   |                                      |          |                       |                       |     |      |      |     |      |      |     |      |      |     |      |      |     |       |      |     |       |       |     |       |       |     |       |       |     |       |       |      |       |       |
| 60%      | 0.995  | 0.995                  |   |                                      |          |                       |                       |     |      |      |     |      |      |     |      |      |     |      |      |     |       |      |     |       |       |     |       |       |     |       |       |     |       |       |      |       |       |
| 70%      | 0.995  | 0.995                  |   |                                      |          |                       |                       |     |      |      |     |      |      |     |      |      |     |      |      |     |       |      |     |       |       |     |       |       |     |       |       |     |       |       |      |       |       |
| 80%      | 0.995  | 0.995                  |   |                                      |          |                       |                       |     |      |      |     |      |      |     |      |      |     |      |      |     |       |      |     |       |       |     |       |       |     |       |       |     |       |       |      |       |       |
| 90%      | 0.995  | 0.995                  |   |                                      |          |                       |                       |     |      |      |     |      |      |     |      |      |     |      |      |     |       |      |     |       |       |     |       |       |     |       |       |     |       |       |      |       |       |
| 100%     | 0.995  | 0.995                  |   |                                      |          |                       |                       |     |      |      |     |      |      |     |      |      |     |      |      |     |       |      |     |       |       |     |       |       |     |       |       |     |       |       |      |       |       |
| 6        | EFFICIENCY(Typ.)   | 93%                    | I/P:230 VAC<br>O/P:75% LOAD<br>Ta:25°C        | 93.34 %                              |          |                       |                       |     |      |      |     |      |      |     |      |      |     |      |      |     |       |      |     |       |       |     |       |       |     |       |       |     |       |       |      |       |       |
|          | <p>EFFICIENCY vs LOAD</p> <table border="1"> <caption>Efficiency vs LOAD Data</caption> <thead> <tr> <th>LOAD (%)</th> <th>180VAC Efficiency (%)</th> <th>230VAC Efficiency (%)</th> </tr> </thead> <tbody> <tr><td>10%</td><td>84</td><td>85</td></tr> <tr><td>20%</td><td>90</td><td>91</td></tr> <tr><td>30%</td><td>93</td><td>94</td></tr> <tr><td>40%</td><td>94</td><td>95</td></tr> <tr><td>50%</td><td>94.5</td><td>95</td></tr> <tr><td>60%</td><td>94.5</td><td>95</td></tr> <tr><td>70%</td><td>94</td><td>95</td></tr> <tr><td>80%</td><td>93.5</td><td>94.5</td></tr> <tr><td>90%</td><td>93</td><td>94.5</td></tr> <tr><td>100%</td><td>92.5</td><td>94</td></tr> </tbody> </table> |                        |   |                                      | LOAD (%) | 180VAC Efficiency (%) | 230VAC Efficiency (%) | 10% | 84   | 85   | 20% | 90   | 91   | 30% | 93   | 94   | 40% | 94   | 95   | 50% | 94.5  | 95   | 60% | 94.5  | 95    | 70% | 94    | 95    | 80% | 93.5  | 94.5  | 90% | 93    | 94.5  | 100% | 92.5  | 94    |
| LOAD (%) | 180VAC Efficiency (%)  | 230VAC Efficiency (%)  |   |                                      |          |                       |                       |     |      |      |     |      |      |     |      |      |     |      |      |     |       |      |     |       |       |     |       |       |     |       |       |     |       |       |      |       |       |
| 10%      | 84   | 85                     |   |                                      |          |                       |                       |     |      |      |     |      |      |     |      |      |     |      |      |     |       |      |     |       |       |     |       |       |     |       |       |     |       |       |      |       |       |
| 20%      | 90   | 91                     |   |                                      |          |                       |                       |     |      |      |     |      |      |     |      |      |     |      |      |     |       |      |     |       |       |     |       |       |     |       |       |     |       |       |      |       |       |
| 30%      | 93   | 94                     |   |                                      |          |                       |                       |     |      |      |     |      |      |     |      |      |     |      |      |     |       |      |     |       |       |     |       |       |     |       |       |     |       |       |      |       |       |
| 40%      | 94   | 95                     |   |                                      |          |                       |                       |     |      |      |     |      |      |     |      |      |     |      |      |     |       |      |     |       |       |     |       |       |     |       |       |     |       |       |      |       |       |
| 50%      | 94.5   | 95                     |   |                                      |          |                       |                       |     |      |      |     |      |      |     |      |      |     |      |      |     |       |      |     |       |       |     |       |       |     |       |       |     |       |       |      |       |       |
| 60%      | 94.5   | 95                     |   |                                      |          |                       |                       |     |      |      |     |      |      |     |      |      |     |      |      |     |       |      |     |       |       |     |       |       |     |       |       |     |       |       |      |       |       |
| 70%      | 94   | 95                     |   |                                      |          |                       |                       |     |      |      |     |      |      |     |      |      |     |      |      |     |       |      |     |       |       |     |       |       |     |       |       |     |       |       |      |       |       |
| 80%      | 93.5   | 94.5                   |   |                                      |          |                       |                       |     |      |      |     |      |      |     |      |      |     |      |      |     |       |      |     |       |       |     |       |       |     |       |       |     |       |       |      |       |       |
| 90%      | 93   | 94.5                   |   |                                      |          |                       |                       |     |      |      |     |      |      |     |      |      |     |      |      |     |       |      |     |       |       |     |       |       |     |       |       |     |       |       |      |       |       |
| 100%     | 92.5   | 94                     |   |                                      |          |                       |                       |     |      |      |     |      |      |     |      |      |     |      |      |     |       |      |     |       |       |     |       |       |     |       |       |     |       |       |      |       |       |
| 7        | INRUSH CURRENT(Typ.)   | 230V/35A<br>COLD START | I/P : 230 VAC<br>O/P : FULL LOAD<br>Ta : 25°C | I =30.83A/ 230VAC<br>T50=1900us/230V |          |                       |                       |     |      |      |     |      |      |     |      |      |     |      |      |     |       |      |     |       |       |     |       |       |     |       |       |     |       |       |      |       |       |
|          | <p>INPUT=230VAC/50HZ @ FULL LOAD<br/>CH4 : AC Input Voltage CH3 : Input current</p>  |                        |   |                                      |          |                       |                       |     |      |      |     |      |      |     |      |      |     |      |      |     |       |      |     |       |       |     |       |       |     |       |       |     |       |       |      |       |       |
| 8        | TOTAL HARMONIC DISTORTION  | <3%                    | I/P : 230VAC<br>O/P : FULL LOAD<br>Ta : 25°C  | THD = 1.81%                          |          |                       |                       |     |      |      |     |      |      |     |      |      |     |      |      |     |       |      |     |       |       |     |       |       |     |       |       |     |       |       |      |       |       |

**OUTPUT FUNCTION TEST(DC to AC Direction)**

| NO | TEST ITEM                               | SPECIFICATION            | TEST CONDITION                              | RESULT           |
|----|---|--------------------------|---|------------------|
| 1  | RATED OUTPUT POWER (Typ.) (@230V, 50Hz) | 1725VA                   | I/P:12VDC<br>O/P: FULL LOAD<br>Ta:25°C      | 1708VA           |
| 2  | VOLTAGE RANGE                           | 180VAC~264VAC            | I/P:48VDC<br>O/P: TESTING<br>Ta:25°C        | 175 VAC~280VAC   |
| 3  | FREQUENCY RANGE                         | 47HZ ~63 HZ<br>NO DAMAGE | I/P:48VDC<br>O/P:FULL~MIN LOAD<br>Ta:25°C   | TEST: OK         |
| 4  | AC CURRENT (Typ.)                       | 230VAC/ 7.5 A            | I/P : 48VDC<br>O/P : FULL LOAD<br>Ta : 25°C | I =7.44A/ 230VAC |
| 5  | POWER FACTOR (Typ.)                     | 0.99/ 230VAC             | I/P : 48VDC<br>O/P : FULL LOAD<br>Ta : 25°C | PF=0.9963/230VAC |
| 6  | EFFICIENCY(Typ.)                        | 93%                      | I/P: 48VDC<br>O/P:75% LOAD<br>Ta:25°C       | 93.6%            |
| 7  | TOTAL HARMONIC DISTORTION               | <3%                      | I/P : 48VDC<br>O/P : FULL LOAD<br>Ta : 25°C | THD = 2.75%      |

**INPUT FUNCTION TEST(DC to AC Direction)**

| NO | TEST ITEM         | SPECIFICATION | TEST CONDITION                              | RESULT  |
|----|-------------------|---------------|---|---|
| 1  | RATED INPUT POWER | 1800W         | I/P : 48VDC<br>O/P : FULL LOAD<br>Ta : 25°C | 1832W   |
| 2  | DC VOLTAGE RANGE  | 38VDC ~65VDC  | I/P : 48VDC<br>O/P : FULL LOAD<br>Ta : 25°C | 38VDC/38.46A<br>48VDC/38.1A<br>65VDC/28A/ AUTO DERATING |
| 3  | MAX INPUT CURRENT | 37.5A         | I/P : 48VDC<br>O/P : FULL LOAD<br>Ta : 25°C | 38.1A   |

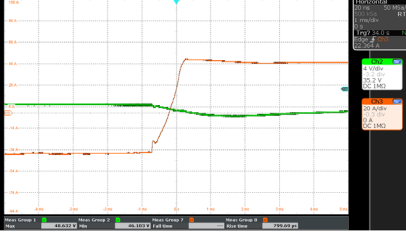
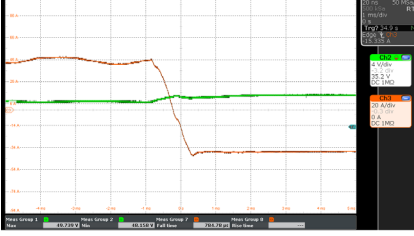
**PROTECTION FUNCTION TEST**

| NO | TEST ITEM            | SPECIFICATION  | TEST CONDITION  | RESULT  |
|----|----------------------|--|---|---|
| 1  | OVER LOAD PROTECTION | 105%~ 115 %<br><b>AC to DC Direction:</b><br>Constant current limiting, shut down DC O/P voltage 5 sec. after DC O/P voltage is down low, re-power on to recover<br><br><b>DC to AC Direction:</b><br>Not accurable with constant power design | <b>AC to DC Direction</b><br>I/P: 264VAC<br>I/P: 230VAC<br>I/P: 180VAC<br><br><b>DC to AC Direction</b><br>I/P: 38VDC<br>I/P: 48VDC<br>I/P: 65VDC<br>O/P:FULL LOAD<br>Ta:25°C | <b>AC to DC Direction</b><br>110.2%/ 264VAC<br>110.2%/ 230VAC<br>110.2%/180VAC<br>PROTECTION TYPE :<br>Constant current limiting, shut down DC O/P voltage 5 sec. after DC O/P voltage is down low, re-power on to recover<br><br><b>DC to AC Direction:</b><br>38VDC/38.46A<br>48VDC/38.1A |

|   |                             |   |   |  |
|---|-----------------------------|---|---|--|
|   |                             |   |   | 65VDC/28A/ AUTO DERATING<br>PROTECTION TYPE :<br>Not accurable with constant power design  |
| 2 | OVER VOLTAGE PROTECTION     | 72.6V~86V<br>Protection type :Shut down o/p voltage, re-power on to recover                 | I/P: 264VAC<br>I/P: 230VAC<br>I/P: 180VAC<br>O/P:MIN LOAD<br>Ta:25°C  | <b>AC to DC Direction</b><br>77.945V/ 264VAC<br>77.945V/ 230VAC<br>77.945V/ 180VAC<br>PROTECTION TYPE :<br>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 | <b>AC to DC Direction</b><br>I/P: 264VAC<br>I/P: 180VAC<br><br><b>DC to AC Direction</b><br>I/P: 38VDC<br>I/P: 65VDC<br>O/P:FULL LOAD             | <b>AC to DC Direction</b><br>O.T.P. Active<br>Protection type :<br>voltage, recovers automatically after temperature goes down<br><b>DC to AC Direction</b><br>O.T.P. Active<br>Protection type :<br>voltage, recovers automatically after temperature goes down |
| 4 | SHORT PROTECTION            | SHORT EVERY OUTPUT<br>1 HOUR NO DAMAGE  | <b>AC to DC Direction</b><br>I/P: 264VAC<br>I/P: 180VAC<br><br><b>DC to AC Direction</b><br>I/P: 38VDC<br>I/P: 65VDC<br>O/P: FULL LOAD<br>Ta:25°C | <b>AC to DC Direction</b><br>NO DAMAGE<br>PROTECTION TYPE :<br>Shut down o/p current, re-power on to recover<br><b>DC to AC Direction</b><br>NO DAMAGE<br>PROTECTION TYPE :<br>Shut down o/p current, re-power on to recover                                     |
| 5 | ISLANDING PROTECTION        | NO DAMAGE<br>PROTECTION TYPE :<br>Shut down o/p voltage, re-power on to recover             | IEC62116<br>I/P: 62.3VDC<br>O/P: FULL LOAD<br><br>I/P: 51.5VDC<br>O/P: 50% LOAD<br><br>I/P: 40.7VDC<br>O/P: 10% LOAD<br><br>Ta:25°C               | <b>DC to AC Direction</b><br>NO DAMAGE<br>PROTECTION TYPE :<br>Shut down o/p voltage, re-power on to recover   |

**CONTROL FUNCTION TEST**

| NO | TEST ITEM | SPECIFICATION | TEST CONDITION | RESULT |
|----|-----------|---------------|----------------|--------|
|----|-----------|---------------|----------------|--------|

| 1                  | AUXILIARY POWER (AUX)   | <p>1. Auxiliary voltage output, 11.4~12.6V, referenced to GND-AUX (pin 2,4). The maximum load current is 0.5A. This output has the built-in "Oring diodes" and is not controlled by the Remote ON/OFF control.</p> <p>I/P: 230 VAC /12VDC<br/>O/P:FULL LOAD<br/>Ta:25°C</p> <p>Test Result :</p> <table border="1" data-bbox="507 465 1129 633"> <thead> <tr> <th></th> <th>TOLERANCE</th> <th>RIPPLE</th> </tr> </thead> <tbody> <tr> <td>SPEC</td> <td>11.4~12.6 V</td> <td>150mVp-p</td> </tr> <tr> <td>TEST RESULT</td> <td>11.88V</td> <td>48mV</td> </tr> </tbody> </table>   |      | TOLERANCE   | RIPPLE              | SPEC               | 11.4~12.6 V     | 150mVp-p      | TEST RESULT        | 11.88V  | 48mV               |          |    |         |     |
|--------------------|---|---|------|---|---------------------|--------------------|-----------------|---------------|--------------------|---------|--------------------|----------|----|---------|-----|
|                    | TOLERANCE   | RIPPLE  |      |   |                     |                    |                 |               |                    |         |                    |          |    |         |     |
| SPEC               | 11.4~12.6 V   | 150mVp-p  |      |   |                     |                    |                 |               |                    |         |                    |          |    |         |     |
| TEST RESULT        | 11.88V  | 48mV  |      |   |                     |                    |                 |               |                    |         |                    |          |    |         |     |
| 2                  | REMOTE ON/OFF CONTROL   | <p>I/P: 230 VAC /12VDC<br/>O/P:FULL LOAD<br/>Ta:25°C</p> <p>Test Result :</p> <table border="1" data-bbox="507 779 1329 1014"> <thead> <tr> <th>MODE</th> <th>electrical signal or dry contact between Remote ON/OFF and +12V-AUX</th> <th>Power Supply Status</th> </tr> </thead> <tbody> <tr> <td rowspan="2">AC to DC Direction</td> <td>SW SHORT</td> <td>ON</td> </tr> <tr> <td>SW OPEN</td> <td>OFF</td> </tr> <tr> <td rowspan="2">DC to AC Direction</td> <td>SW SHORT</td> <td>ON</td> </tr> <tr> <td>SW OPEN</td> <td>OFF</td> </tr> </tbody> </table>  | MODE | electrical signal or dry contact between Remote ON/OFF and +12V-AUX | Power Supply Status | AC to DC Direction | SW SHORT        | ON            | SW OPEN            | OFF     | DC to AC Direction | SW SHORT | ON | SW OPEN | OFF |
| MODE               | electrical signal or dry contact between Remote ON/OFF and +12V-AUX | Power Supply Status   |      |   |                     |                    |                 |               |                    |         |                    |          |    |         |     |
| AC to DC Direction | SW SHORT  | ON  |      |   |                     |                    |                 |               |                    |         |                    |          |    |         |     |
|                    | SW OPEN   | OFF   |      |   |                     |                    |                 |               |                    |         |                    |          |    |         |     |
| DC to AC Direction | SW SHORT  | ON  |      |   |                     |                    |                 |               |                    |         |                    |          |    |         |     |
|                    | SW OPEN   | OFF   |      |   |                     |                    |                 |               |                    |         |                    |          |    |         |     |
| 3                  | BIDIRECTION SWITCH TIME(DEFAULT)                                    | <p>I/P: 230 VAC /48VDC<br/>O/P:FULL LOAD<br/>Ta:25°C</p> <p>Test Result :</p> <table border="1" data-bbox="507 1160 1329 1272"> <thead> <tr> <th>MODE</th> <th>BIDIRECTION SWITCH TIME</th> <th>Result</th> </tr> </thead> <tbody> <tr> <td>AC to DC Direction</td> <td>1ms</td> <td><u>799 us</u></td> </tr> <tr> <td>DC to AC Direction</td> <td>1ms</td> <td><u>784 us</u></td> </tr> </tbody> </table> <div style="display: flex; justify-content: space-around;">   </div>          | MODE | BIDIRECTION SWITCH TIME   | Result              | AC to DC Direction | 1ms             | <u>799 us</u> | DC to AC Direction | 1ms     | <u>784 us</u>      |          |    |         |     |
| MODE               | BIDIRECTION SWITCH TIME   | Result  |      |   |                     |                    |                 |               |                    |         |                    |          |    |         |     |
| AC to DC Direction | 1ms   | <u>799 us</u>   |      |   |                     |                    |                 |               |                    |         |                    |          |    |         |     |
| DC to AC Direction | 1ms   | <u>784 us</u>   |      |   |                     |                    |                 |               |                    |         |                    |          |    |         |     |
| 4                  | ALARM SIGNAL  | <p>1. DC OK SIGNAL<br/>High (4.5 ~ 5.5V) : When the Vout <math>\geq</math> 80%<math>\pm</math>5%.<br/>Low (-0.5 ~ 0.5V) : When the Vout <math>\geq</math> 80%<math>\pm</math>5%.<br/>The maximum sourcing current is 4mA and only for output.</p> <p>I/P: 230 VAC/12VDC<br/>O/P:FULL LOAD<br/>Ta:25°C</p> <p>Test Result :</p> <table border="1" data-bbox="627 1787 1345 1874"> <thead> <tr> <th>MODE</th> <th>Vout</th> <th>DC OK SIGNAL</th> </tr> </thead> <tbody> <tr> <td rowspan="2">AC to DC Direction</td> <td>Vout <math>\leq</math> 75%</td> <td>4.994V</td> </tr> <tr> <td>Vout <math>\geq</math> 85%</td> <td>-0.038V</td> </tr> </tbody> </table> | MODE | Vout  | DC OK SIGNAL        | AC to DC Direction | Vout $\leq$ 75% | 4.994V        | Vout $\geq$ 85%    | -0.038V |                    |          |    |         |     |
| MODE               | Vout  | DC OK SIGNAL  |      |   |                     |                    |                 |               |                    |         |                    |          |    |         |     |
| AC to DC Direction | Vout $\leq$ 75%   | 4.994V  |      |   |                     |                    |                 |               |                    |         |                    |          |    |         |     |
|                    | Vout $\geq$ 85%   | -0.038V   |      |   |                     |                    |                 |               |                    |         |                    |          |    |         |     |

|                    |  | <p>2. T-ALARM<br/>High (4.5 ~ 5.5V) : When the internal temperature exceeds the limit of temperature alarm, or when fan fails.<br/>Low (-0.5 ~ 0.5V) : When the internal temperature is normal, and when fan works normally.<br/>The maximum sourcing current is 4mA and only for output.</p> <p>I/P: 230 VAC/12VDC<br/>O/P:FULL LOAD<br/>Ta:25°C</p> <p>Test Result :</p> <table border="1" data-bbox="560 488 1517 600"> <thead> <tr> <th>MODE</th> <th>PSU STATUS</th> <th>Vo</th> <th>T-ALARM SPEC</th> <th>T-ALARM TEST</th> </tr> </thead> <tbody> <tr> <td rowspan="3">AC to DC Direction</td> <td>NORMAL</td> <td>100%±2%</td> <td>-0.5 ~0.5V</td> <td>0V</td> </tr> <tr> <td>OTP</td> <td>0V</td> <td>4.5~5.5V</td> <td>5.16V</td> </tr> <tr> <td>FAN LOCK</td> <td>0V</td> <td>4.5~5.5V</td> <td>5.16V</td> </tr> </tbody> </table> | MODE  | PSU STATUS   | Vo   | T-ALARM SPEC | T-ALARM TEST | AC to DC Direction | NORMAL | 100%±2% | -0.5 ~0.5V | 0V | OTP | 0V | 4.5~5.5V | 5.16V | FAN LOCK | 0V | 4.5~5.5V | 5.16V |  |  |
|--------------------|--|---|---|--|--|--------------|--------------|--------------------|--------|---------|------------|----|-----|----|----------|-------|----------|----|----------|-------|--|--|
| MODE               | PSU STATUS   | Vo  | T-ALARM SPEC  | T-ALARM TEST   |  |              |              |                    |        |         |            |    |     |    |          |       |          |    |          |       |  |  |
| AC to DC Direction | NORMAL   | 100%±2%   | -0.5 ~0.5V  | 0V   |  |              |              |                    |        |         |            |    |     |    |          |       |          |    |          |       |  |  |
|                    | OTP  | 0V  | 4.5~5.5V  | 5.16V  |  |              |              |                    |        |         |            |    |     |    |          |       |          |    |          |       |  |  |
|                    | FAN LOCK   | 0V  | 4.5~5.5V  | 5.16V  |  |              |              |                    |        |         |            |    |     |    |          |       |          |    |          |       |  |  |
| 5                  | CURRENT SHARING                                    | CURRENT SHARING<br>TOLERANCE < ±10%   | I/P : 230 VAC<br>O/P : 95/50% LOAD<br>Ta : 25°C   | <b>AC to DC Direction</b><br>O/P : 95%<br>PSU1 : 42.8A<br>PSU2 : 42.6A<br>PSU3 : 42 A<br>PSU4 : 42.2A<br>PSU5 : 41.8A<br>O/P : 50%<br>PSU1 : 22.64 A<br>PSU2 : 22.6A<br>PSU3 : 21.4A<br>PSU4 : 22.6A<br>PSU5 : 22.8A | <b>DC to AC Direction</b><br>O/P : 100%<br>PSU1 : 37.83A<br>PSU2 : 37.92A<br>PSU3 : 37.34A<br>PSU4 : 37.14A<br>PSU5 : 37.2A<br>O/P : 50%<br>PSU1 : 18.56 A<br>PSU2 : 18.74A<br>PSU3 : 18.71A<br>PSU4 : 18.46 A<br>PSU5 : 18.7A |              |              |                    |        |         |            |    |     |    |          |       |          |    |          |       |  |  |
| 6                  | BATTERY MODE RATED<br>CURRENT( CAN BUS model only) | AC to DC Direction:40A<br>DC to AC Direction:32A<br>Can be adjusted by communication  | <b>AC to DC Direction</b><br>I/P: 230VAC<br><b>DC to AC Direction</b><br>I/P: 48VDC<br>O/P:FULL LOAD<br>Ta:25°C | <b>AC to DC Direction:</b><br>40.08A/230VAC<br><br><b>DC to AC Direction</b><br>32.2A/48VDC  |  |              |              |                    |        |         |            |    |     |    |          |       |          |    |          |       |  |  |

**COMPONENT STRESS TEST**

| NO | TEST ITEM  | SPECIFICATION   | TEST CONDITION   | RESULT   |
|----|--|---|--|--|
| 1  | PWM Transistor<br>( D to S) or (C to E) Peak Voltage | <b>AC to DC Direction &amp; DC to AC Direction</b><br><br>Q903 Rated: 36A/ 600V<br>VGS :± 20V | AC ON/OFF<br><b>AC to DC Direction</b><br>I/P:High-Line +3V =267V<br>VDS:<br>O/P: (1)Full Load<br>(2)Output Short<br>(3)0%→400% Load.<br><br>I/P:Low-Line -3V = 177V<br>O/P: (1)Full Load<br>(2)Output Short<br>(3)0%→400% Load. | <b>AC to DC Direction</b><br>I/P:High-Line +3V =267V<br>VDS:<br>(1) 419V/20.38A<br>(2) 408V/ 15.21A<br>(3) 403V/16.05 A<br><br>I/P:Low-Line -3V = 177V<br>VDS:<br>(1) 406V/ 19.98A |



|   |  |   |  |   |
|---|--|---|--|---|
|   |  |   | <p><b>DC to AC Direction</b><br/> I/P: 15VDC<br/> VDS:<br/> O/P: (1)Full Load<br/> (2)+100%Io/1S~-100%Io/1S<br/> (3)-100%Io AC Off<br/> I/P: 10VDC<br/> O/P: (1)Full Load<br/> (2)+100%Io~-100%Io<br/> (3)-100%Io AC Off<br/> Ta:25°C</p>  | <p>(2) 398V/ 14.85A<br/> (3) 402V/ 16.03A<br/> <b>DC to AC Direction</b><br/> I/P: 15VDC<br/> VDS:<br/> (1) 423 V/5.32A<br/> (2) 431 V/6.91A<br/> (3) 510 V/6.29A<br/> I/P: 10VDC<br/> VDS:<br/> (1) 424V/ 5.34A<br/> (2) 435V/6.57A<br/> (3) 510V/6.37A</p>  |
| 2 | P.F.C Transistor<br>( D to S) or (C to E) Peak Voltage | <p><b>AC to DC Direction</b><br/> Q2 Rated: 53A/ 650V<br/> VGS :-8~19V<br/> <br/> Q4 Rated: 52A/ 600V<br/> VGS :± 25V</p>   | <p>I/P:High-Line +3V =267 V<br/> AC ON/OFF<br/> (1)Full Load<br/> (2)Output Short<br/> (3)0%→400% Load.<br/> <br/> VGS:<br/> (1)OLP<br/> (2)Output Short<br/> (3)NO LOAD<br/> <br/> I/P:Low-Line -3V = 177V<br/> AC ON/OFF<br/> O/P:(1)Full Load<br/> (2)Output Short<br/> (3)0%→400% Load.<br/> <br/> Ta:25°C</p>   | <p>I/P:High-Line +3V =267<br/> Q2 VDS:<br/> (1) 469V/21.8A<br/> (2) 423V/10.9A<br/> (3) 418V/9.56A<br/> <br/> Q4 VDS:<br/> (1) 411V/18.5A<br/> (2) 412V/10.29A<br/> (3) 412V/11.28A<br/> <br/> I/P:Low-Line -3V = 177V<br/> Q2 VDS:<br/> (1) 429V/13.61A<br/> (2) 413V/9.5A<br/> (3) 417V/15.58A<br/> <br/> Q4 VDS:<br/> (1) 441V/15.65A<br/> (2) 441V/13.98A<br/> (3) 417V/13.81A</p>  |
| 3 | Diode Peak Voltage                                     | <p><b>AC to DC Direction &amp; DC to AC Direction</b><br/> <br/> Q950 Rated: 24A/250V<br/> VGS :±20V<br/> <br/> Q951 Rated: 24A/250V<br/> VGS :±20V<br/> <br/> Q958 Rated: 225A/ 60V<br/> VGS :±20V<br/> <br/> Q959 Rated: 24A/250V<br/> VGS :±20V<br/> <br/> <b>AC to DC Direction only</b><br/> Q74 Rated:24A/250V<br/> VGS :±20V</p> | <p><b>AC to DC Direction</b><br/> AC ON/OFF<br/> I/P:High-Line +3V =267 V<br/> <u>VO=SPEC VR MAX</u><br/> O/P: (1)Full Load<br/> (2)Output Short<br/> (3)0%→400% Load.<br/> <br/> <u>VO=RATED VOLTAGE</u><br/> O/P: (1)Full Load<br/> <br/> <b>DC to AC Direction</b><br/> I/P:65VDC<br/> <u>VO=SPEC VR MAX</u><br/> O/P: (1)Full Load<br/> (2)+100%Io/1S~-100%Io/1S<br/> (3)-100%Io AC Off<br/> <br/> <u>VO=RATED VOLTAGE</u></p> | <p><b>AC to DC Direction</b><br/> Q950:<br/> <u>VO=SPEC VR MAX</u><br/> VDS:<br/> (1) 182.77V<br/> (2) 175.2V<br/> (3) 176.67V<br/> <u>VO=RATED VOLTAGE</u><br/> (1) 182.77V<br/> <br/> Q951:<br/> <u>VO=SPEC VR MAX</u><br/> VDS:<br/> (1) 184.24V<br/> (2) 162.21V<br/> (3) 167.18V<br/> <u>VO=RATED VOLTAGE</u><br/> (1) 185.93V<br/> <br/> Q958:</p> <p><b>DC to AC Direction</b><br/> Q950:<br/> <u>VO=SPEC VR MAX</u><br/> VDS:<br/> (1) 184.8V<br/> (2) 190.67V<br/> (3) 230.8V<br/> <u>VO=RATED VOLTAGE</u><br/> (1) 184.87V<br/> <br/> Q951:<br/> <u>VO=SPEC VR MAX</u><br/> VDS:<br/> (1) 184.77V<br/> (2) 191.67V<br/> (3) 227.45V<br/> <u>VO=RATED VOLTAGE</u><br/> (1) 185.43V</p> |

|   |                         |   |   |  |
|---|-------------------------|---|---|--|
|   |                         |   | <p>O/P: (1)Full Load</p> <p>Ta:25°C</p>   | <p><u>VO=SPEC VR MAX</u></p> <p>VDS:</p> <p>(1) 184.8V</p> <p>(2) 121.45V</p> <p>(3) 143.39V</p> <p><u>VO=RATED VOLTAGE</u></p> <p>(1) 186.03V</p> <p>Q959:</p> <p><u>VO=SPEC VR MAX</u></p> <p>VDS:</p> <p>(1) 184.88V</p> <p>(2) 146.93V</p> <p>(3) 153.01V</p> <p><u>VO=RATED VOLTAGE</u></p> <p>(1) 187.93V</p> <p>Q959:</p> <p><u>VO=SPEC VR MAX</u></p> <p>VDS:</p> <p>(1) 185.27V</p> <p>(2) 191.54V</p> <p>(3) 230.99V</p> <p><u>VO=RATED VOLTAGE</u></p> <p>(1) 185.3V</p> <p>Q959:</p> <p><u>VO=SPEC VR MAX</u></p> <p>VDS:</p> <p>(1) 185.35V</p> <p>(2) 191.67V</p> <p>(3) 231.02V</p> <p><u>VO=RATED VOLTAGE</u></p> <p>185.25 V</p> <p>Q74</p> <p><u>VO=SPEC VR MAX</u></p> <p>VDS:</p> <p>(1) 94.783V</p> <p>(2) 105.85V</p> <p>(3) 106.64V</p> <p><u>VO=RATED VOLTAGE</u></p> <p>(1) 93.202V</p> |
| 4 | Input Capacitor Voltage | C6 Rated:: 470µ/ 450V   | <p>I/P:High-Line +3V =267V</p> <p><b>AC to DC Direction</b></p> <p>O/P: (1)Full Load input on/off</p> <p>(2) Min load input on /Off</p> <p>(3)Full Load /Min load Change</p> <p>(4)Full load continue</p> <p><b>DC to AC Direction</b></p> <p>(1)+100%Io~100%Io</p> <p>(2)-100%Io AC Off</p> <p>Ta:25°C</p> | <p><b>AC to DC Direction</b></p> <p>(1) 414.3V</p> <p>(2) 410.1V</p> <p>(3) 429.9V</p> <p>(4) 412.1V</p> <p>.</p> <p><b>DC to AC Direction</b></p> <p>(1)429.84V</p> <p>(2)432V</p>  |
| 5 | Control IC Voltage Test | <p>PWM IC U57 Rated -0.3V~ 20V</p> <p>PFC IC U551 Rated -0.3V~ 20V</p> <p>O/P IC U308 Rated -0.3V~ 20V</p> <p>MCU IC U201 Rated 1.71V~3.6V</p> <p>AUX IC U701 Rated -0.3V~35V</p> | <p>AC ON/OFF</p> <p><b>AC to DC Direction</b></p> <p>I/P:High-Line +3V =267 V</p> <p>O/P(1)FULL LOAD</p> <p>(2) Output Short</p> <p>(3)O.L.P</p> <p>(4)O.V.P.</p> <p>(5)NO LOAD VRmin(Low LINE)</p> <p>Ta:25°C</p>  | <p>U57:</p> <p>(1) 11.39V</p> <p>(2) 11.39V</p> <p>(3) 11.39V</p> <p>(4) 11.4V</p> <p>(5) 11.4V</p> <p>U551:</p> <p>(1) 11.95V</p> <p>(2) 11.95V</p> <p>(3) 11.94V</p> <p>(4) 11.95V</p> <p>(5) 11.95V</p> <p>U308:</p> <p>(1) 12.46V</p> <p>(2) 12.45V</p> <p>(3) 12.46V</p> <p>(4) 12.44V</p> <p>(5)12.43V</p> <p>U201:</p> <p>(1) 3.304V</p> <p>(2) 3.302V</p> <p>(3) 3.301V</p> <p>(4) 3.302V</p> <p>(5) 3.303V</p> <p>U701:</p> <p>(1) 13.69V</p> <p>(2) 13.76V</p> <p>(3) 13.57V</p> <p>(4) 13.76V</p> <p>(5)13.96V</p>  |
| 6 | STAND BY POWER          | Q700 Rated: 4.5A/ 800V  | <p>AC ON/OFF</p> <p><b>AC to DC Direction</b></p> <p>I/P:High-Line +3V =267 V</p>   | <p>(1) 557V/1.976 A</p>  |

|  |  |  |   |  |
|--|--|--|---|--|
|  |  |  | O/P: (1)Full Load<br>(2)Remote On/Off<br><br>I/P:Low-Line -3V =177V<br>O/P: (1)Full Load<br>(2)Remote On/Off<br><br>Ta:25°C | (2) 561V/ 2.052A<br><br>(1) 557V/ 1.846A<br>(2) 565V/1.862 A |
|--|--|--|---|--|

■ **SAFETY& E.M.C. TEST**

**SAFETY TEST**

| NO | TEST ITEM            | SPECIFICATION   | TEST CONDITION   | RESULT  |
|----|----------------------|---|--|---|
| 1  | WITHSTAND VOLTAGE    | I/P-O/P:3KVAC/min<br>I/P-FG :2KVAC/min<br>O/P-FG:0.5KVAC/min        | I/P-O/P: 3.6KVAC/min<br>I/P-FG: 2.4KVAC/min<br>O/P-FG:0.6KVAC/min<br>Ta:25°C | I/P-O/P: 12.4 mA<br>I/P-FG: 10.9mA<br>O/P-FG: 11.6mA<br>NO DAMAGE |
| 2  | ISOLATION RESISTANCE | I/P-O/P:500VDC>100MΩ<br>I/P-FG: 500VDC>100MΩ<br>O/P-FG:500VDC>100MΩ | I/P-O/P: 500 VDC<br>I/P-FG: 500 VDC<br>O/P-FG: 500 VDC<br>Ta:25°C            | I/P-O/P: 30GΩ<br>I/P-FG: 28.8GΩ<br>O/P-FG:21.7 GΩ<br>NO DAMAGE    |
| 3  | GROUNDING CONTINUITY | FG(PE) TO CHASSIS<br>OR TRACE < 100 mΩ                              | 40A / 2min<br>Ta:25°C  | 13mΩ  |

**E.M.C TEST**

| NO | TEST ITEM   | SPECIFICATION   | TEST CONDITION   | RESULT                        |
|----|---|---|--|-------------------------------|
| 1  | HARMONIC  | EN61000-3-2<br>CLASS A                                | I/P:230VAC/50HZ<br>O/P:FULL LOAD<br>Ta:25°C              | PASS                          |
| 2  | CONDUCTION  | EN55032<br>CLASS B                                    | I/P : 230 VAC (50HZ)<br>O/P : FULL/50% LOAD<br>Ta : 25°C | PASS<br>Test by certified Lab |
| 3  | RADIATION   | EN55032<br>CLASS A                                    | I/P : 230 VAC (50HZ)<br>O/P : FULL LOAD<br>Ta : 25°C     | PASS<br>Test by certified Lab |
| 4  | E.S.D   | EN61000-4-2<br><br>AIR : 8KV / Contact : 4KV          | I/P : 230 VAC/50HZ<br>O/P : FULL LOAD<br>Ta : 25°C       | CRITERIA A                    |
| 5  | E.F.T   | EN61000-4-4<br><br>INPUT : 2KV                        | I/P : 230 VAC/50HZ<br>O/P : FULL LOAD<br>Ta : 25°C       | CRITERIA A                    |
| 6  | SURGE   | IEC61000-4-5<br>INDUSTRY<br>L-N : 2KV<br>L,N-PE : 4KV | I/P : 230 VAC/50HZ<br>O/P : FULL LOAD<br>Ta : 25°C       | CRITERIA A                    |
| 7  | Test by certified Lab & Test Report Prepare<br>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 : BIC-2200-96<br><b>AC to DC Direction:</b><br>1. ROOM AMBIENT BURN-IN : 1.5 HRS<br>I/P : 230VAC O/P : FULL LOAD Ta= 25 °C<br>2. HIGH AMBIENT BURN-IN : 1.5 HRS<br>I/P : 230VAC O/P : FULL LOAD Ta= 45 °C<br><br><b>DC to AC Direction:</b><br>1. ROOM AMBIENT BURN-IN : 1 HRS<br>I/P : 96VDC O/P : FULL LOAD Ta= 25 °C<br>2. HIGH AMBIENT BURN-IN : 1 HRS<br>I/P : 96VDC O/P : FULL LOAD Ta= 45 °C   |                           |                          |                           |    |          |                     |  |                     |  |                          |                           |                          |                           |   |    |        |        |        |        |   |    |        |        |        |        |   |      |        |        |        |        |   |      |        |        |        |        |   |         |        |        |        |        |   |      |        |        |        |        |   |      |        |        |        |        |   |      |        |        |        |        |   |     |        |        |        |        |    |    |        |        |        |        |    |      |        |        |        |        |    |      |        |        |        |        |    |      |        |        |        |        |    |         |        |        |        |        |    |      |        |        |        |        |    |      |        |        |        |        |    |      |        |        |        |        |    |      |        |        |        |        |    |      |        |        |        |        |    |      |        |        |        |        |    |      |        |        |        |        |    |      |        |        |        |        |    |      |        |        |        |        |    |      |        |        |        |        |
|    |                       | <table border="1"> <thead> <tr> <th rowspan="2">NO</th> <th rowspan="2">Position</th> <th colspan="2">AC to DC Direction:</th> <th colspan="2">DC to AC Direction:</th> </tr> <tr> <th>ROOM AMBIENT<br/>Ta= 25°C</th> <th>HIGH AMBIENT<br/>Ta= 45 °C</th> <th>ROOM AMBIENT<br/>Ta= 25°C</th> <th>HIGH AMBIENT<br/>Ta= 45 °C</th> </tr> </thead> <tbody> <tr><td>1</td><td>Q1</td><td>59.5°C</td><td>73.4°C</td><td>50.9°C</td><td>66.8°C</td></tr> <tr><td>2</td><td>Q4</td><td>40.1°C</td><td>57.2°C</td><td>38.4°C</td><td>56.3°C</td></tr> <tr><td>3</td><td>Q906</td><td>37.3°C</td><td>57.8°C</td><td>34.6°C</td><td>54.5°C</td></tr> <tr><td>4</td><td>Q907</td><td>43.3°C</td><td>61.8°C</td><td>38.8°C</td><td>57.6°C</td></tr> <tr><td>5</td><td>T1 coil</td><td>56.2°C</td><td>72.4°C</td><td>47.9°C</td><td>65.5°C</td></tr> <tr><td>6</td><td>Q950</td><td>40.8°C</td><td>59.3°C</td><td>44.0°C</td><td>63.5°C</td></tr> <tr><td>7</td><td>Q957</td><td>38.7°C</td><td>58.0°C</td><td>40.4°C</td><td>59.4°C</td></tr> <tr><td>8</td><td>Q700</td><td>37.8°C</td><td>56.9°C</td><td>37.2°C</td><td>58.7°C</td></tr> <tr><td>9</td><td>T55</td><td>31.2°C</td><td>48.5°C</td><td>31.2°C</td><td>51.3°C</td></tr> <tr><td>10</td><td>Q3</td><td>39.2°C</td><td>56.8°C</td><td>36.2°C</td><td>54.4°C</td></tr> <tr><td>11</td><td>Q959</td><td>36.7°C</td><td>57.5°C</td><td>43.7°C</td><td>63.0°C</td></tr> <tr><td>12</td><td>Q964</td><td>35.5°C</td><td>55.7°C</td><td>42.2°C</td><td>61.4°C</td></tr> <tr><td>13</td><td>D972</td><td>33.1°C</td><td>52.7°C</td><td>37.9°C</td><td>57.9°C</td></tr> <tr><td>14</td><td>T1 core</td><td>37.6°C</td><td>54.9°C</td><td>37.0°C</td><td>55.9°C</td></tr> <tr><td>15</td><td>C722</td><td>34.5°C</td><td>51.4°C</td><td>34.7°C</td><td>56.0°C</td></tr> <tr><td>16</td><td>L700</td><td>39.8°C</td><td>57.3°C</td><td>39.9°C</td><td>61.8°C</td></tr> <tr><td>17</td><td>D707</td><td>35.6°C</td><td>54.5°C</td><td>37.1°C</td><td>55.3°C</td></tr> <tr><td>18</td><td>U701</td><td>37.7°C</td><td>56.2°C</td><td>38.2°C</td><td>58.5°C</td></tr> <tr><td>19</td><td>C711</td><td>37.8°C</td><td>55.3°C</td><td>38.6°C</td><td>58.6°C</td></tr> <tr><td>20</td><td>RG70</td><td>41.3°C</td><td>63.0°C</td><td>33.9°C</td><td>53.7°C</td></tr> <tr><td>21</td><td>D706</td><td>37.5°C</td><td>56.8°C</td><td>38.6°C</td><td>63.0°C</td></tr> <tr><td>22</td><td>D705</td><td>33.9°C</td><td>47.8°C</td><td>34.5°C</td><td>53.2°C</td></tr> <tr><td>23</td><td>U551</td><td>38.8°C</td><td>54.0°C</td><td>37.4°C</td><td>56.0°C</td></tr> <tr><td>24</td><td>U201</td><td>37.2°C</td><td>53.4°C</td><td>35.8°C</td><td>54.7°C</td></tr> </tbody> </table> |                           |                          |                           | NO | Position | AC to DC Direction: |  | DC to AC Direction: |  | ROOM AMBIENT<br>Ta= 25°C | HIGH AMBIENT<br>Ta= 45 °C | ROOM AMBIENT<br>Ta= 25°C | HIGH AMBIENT<br>Ta= 45 °C | 1 | Q1 | 59.5°C | 73.4°C | 50.9°C | 66.8°C | 2 | Q4 | 40.1°C | 57.2°C | 38.4°C | 56.3°C | 3 | Q906 | 37.3°C | 57.8°C | 34.6°C | 54.5°C | 4 | Q907 | 43.3°C | 61.8°C | 38.8°C | 57.6°C | 5 | T1 coil | 56.2°C | 72.4°C | 47.9°C | 65.5°C | 6 | Q950 | 40.8°C | 59.3°C | 44.0°C | 63.5°C | 7 | Q957 | 38.7°C | 58.0°C | 40.4°C | 59.4°C | 8 | Q700 | 37.8°C | 56.9°C | 37.2°C | 58.7°C | 9 | T55 | 31.2°C | 48.5°C | 31.2°C | 51.3°C | 10 | Q3 | 39.2°C | 56.8°C | 36.2°C | 54.4°C | 11 | Q959 | 36.7°C | 57.5°C | 43.7°C | 63.0°C | 12 | Q964 | 35.5°C | 55.7°C | 42.2°C | 61.4°C | 13 | D972 | 33.1°C | 52.7°C | 37.9°C | 57.9°C | 14 | T1 core | 37.6°C | 54.9°C | 37.0°C | 55.9°C | 15 | C722 | 34.5°C | 51.4°C | 34.7°C | 56.0°C | 16 | L700 | 39.8°C | 57.3°C | 39.9°C | 61.8°C | 17 | D707 | 35.6°C | 54.5°C | 37.1°C | 55.3°C | 18 | U701 | 37.7°C | 56.2°C | 38.2°C | 58.5°C | 19 | C711 | 37.8°C | 55.3°C | 38.6°C | 58.6°C | 20 | RG70 | 41.3°C | 63.0°C | 33.9°C | 53.7°C | 21 | D706 | 37.5°C | 56.8°C | 38.6°C | 63.0°C | 22 | D705 | 33.9°C | 47.8°C | 34.5°C | 53.2°C | 23 | U551 | 38.8°C | 54.0°C | 37.4°C | 56.0°C | 24 | U201 | 37.2°C | 53.4°C | 35.8°C | 54.7°C |
| NO | Position              | AC to DC Direction:   |                           | DC to AC Direction:      |                           |    |          |                     |  |                     |  |                          |                           |                          |                           |   |    |        |        |        |        |   |    |        |        |        |        |   |      |        |        |        |        |   |      |        |        |        |        |   |         |        |        |        |        |   |      |        |        |        |        |   |      |        |        |        |        |   |      |        |        |        |        |   |     |        |        |        |        |    |    |        |        |        |        |    |      |        |        |        |        |    |      |        |        |        |        |    |      |        |        |        |        |    |         |        |        |        |        |    |      |        |        |        |        |    |      |        |        |        |        |    |      |        |        |        |        |    |      |        |        |        |        |    |      |        |        |        |        |    |      |        |        |        |        |    |      |        |        |        |        |    |      |        |        |        |        |    |      |        |        |        |        |    |      |        |        |        |        |
|    |                       | ROOM AMBIENT<br>Ta= 25°C  | HIGH AMBIENT<br>Ta= 45 °C | ROOM AMBIENT<br>Ta= 25°C | HIGH AMBIENT<br>Ta= 45 °C |    |          |                     |  |                     |  |                          |                           |                          |                           |   |    |        |        |        |        |   |    |        |        |        |        |   |      |        |        |        |        |   |      |        |        |        |        |   |         |        |        |        |        |   |      |        |        |        |        |   |      |        |        |        |        |   |      |        |        |        |        |   |     |        |        |        |        |    |    |        |        |        |        |    |      |        |        |        |        |    |      |        |        |        |        |    |      |        |        |        |        |    |         |        |        |        |        |    |      |        |        |        |        |    |      |        |        |        |        |    |      |        |        |        |        |    |      |        |        |        |        |    |      |        |        |        |        |    |      |        |        |        |        |    |      |        |        |        |        |    |      |        |        |        |        |    |      |        |        |        |        |    |      |        |        |        |        |
| 1  | Q1                    | 59.5°C  | 73.4°C                    | 50.9°C                   | 66.8°C                    |    |          |                     |  |                     |  |                          |                           |                          |                           |   |    |        |        |        |        |   |    |        |        |        |        |   |      |        |        |        |        |   |      |        |        |        |        |   |         |        |        |        |        |   |      |        |        |        |        |   |      |        |        |        |        |   |      |        |        |        |        |   |     |        |        |        |        |    |    |        |        |        |        |    |      |        |        |        |        |    |      |        |        |        |        |    |      |        |        |        |        |    |         |        |        |        |        |    |      |        |        |        |        |    |      |        |        |        |        |    |      |        |        |        |        |    |      |        |        |        |        |    |      |        |        |        |        |    |      |        |        |        |        |    |      |        |        |        |        |    |      |        |        |        |        |    |      |        |        |        |        |    |      |        |        |        |        |
| 2  | Q4                    | 40.1°C  | 57.2°C                    | 38.4°C                   | 56.3°C                    |    |          |                     |  |                     |  |                          |                           |                          |                           |   |    |        |        |        |        |   |    |        |        |        |        |   |      |        |        |        |        |   |      |        |        |        |        |   |         |        |        |        |        |   |      |        |        |        |        |   |      |        |        |        |        |   |      |        |        |        |        |   |     |        |        |        |        |    |    |        |        |        |        |    |      |        |        |        |        |    |      |        |        |        |        |    |      |        |        |        |        |    |         |        |        |        |        |    |      |        |        |        |        |    |      |        |        |        |        |    |      |        |        |        |        |    |      |        |        |        |        |    |      |        |        |        |        |    |      |        |        |        |        |    |      |        |        |        |        |    |      |        |        |        |        |    |      |        |        |        |        |    |      |        |        |        |        |
| 3  | Q906                  | 37.3°C  | 57.8°C                    | 34.6°C                   | 54.5°C                    |    |          |                     |  |                     |  |                          |                           |                          |                           |   |    |        |        |        |        |   |    |        |        |        |        |   |      |        |        |        |        |   |      |        |        |        |        |   |         |        |        |        |        |   |      |        |        |        |        |   |      |        |        |        |        |   |      |        |        |        |        |   |     |        |        |        |        |    |    |        |        |        |        |    |      |        |        |        |        |    |      |        |        |        |        |    |      |        |        |        |        |    |         |        |        |        |        |    |      |        |        |        |        |    |      |        |        |        |        |    |      |        |        |        |        |    |      |        |        |        |        |    |      |        |        |        |        |    |      |        |        |        |        |    |      |        |        |        |        |    |      |        |        |        |        |    |      |        |        |        |        |    |      |        |        |        |        |
| 4  | Q907                  | 43.3°C  | 61.8°C                    | 38.8°C                   | 57.6°C                    |    |          |                     |  |                     |  |                          |                           |                          |                           |   |    |        |        |        |        |   |    |        |        |        |        |   |      |        |        |        |        |   |      |        |        |        |        |   |         |        |        |        |        |   |      |        |        |        |        |   |      |        |        |        |        |   |      |        |        |        |        |   |     |        |        |        |        |    |    |        |        |        |        |    |      |        |        |        |        |    |      |        |        |        |        |    |      |        |        |        |        |    |         |        |        |        |        |    |      |        |        |        |        |    |      |        |        |        |        |    |      |        |        |        |        |    |      |        |        |        |        |    |      |        |        |        |        |    |      |        |        |        |        |    |      |        |        |        |        |    |      |        |        |        |        |    |      |        |        |        |        |    |      |        |        |        |        |
| 5  | T1 coil               | 56.2°C  | 72.4°C                    | 47.9°C                   | 65.5°C                    |    |          |                     |  |                     |  |                          |                           |                          |                           |   |    |        |        |        |        |   |    |        |        |        |        |   |      |        |        |        |        |   |      |        |        |        |        |   |         |        |        |        |        |   |      |        |        |        |        |   |      |        |        |        |        |   |      |        |        |        |        |   |     |        |        |        |        |    |    |        |        |        |        |    |      |        |        |        |        |    |      |        |        |        |        |    |      |        |        |        |        |    |         |        |        |        |        |    |      |        |        |        |        |    |      |        |        |        |        |    |      |        |        |        |        |    |      |        |        |        |        |    |      |        |        |        |        |    |      |        |        |        |        |    |      |        |        |        |        |    |      |        |        |        |        |    |      |        |        |        |        |    |      |        |        |        |        |
| 6  | Q950                  | 40.8°C  | 59.3°C                    | 44.0°C                   | 63.5°C                    |    |          |                     |  |                     |  |                          |                           |                          |                           |   |    |        |        |        |        |   |    |        |        |        |        |   |      |        |        |        |        |   |      |        |        |        |        |   |         |        |        |        |        |   |      |        |        |        |        |   |      |        |        |        |        |   |      |        |        |        |        |   |     |        |        |        |        |    |    |        |        |        |        |    |      |        |        |        |        |    |      |        |        |        |        |    |      |        |        |        |        |    |         |        |        |        |        |    |      |        |        |        |        |    |      |        |        |        |        |    |      |        |        |        |        |    |      |        |        |        |        |    |      |        |        |        |        |    |      |        |        |        |        |    |      |        |        |        |        |    |      |        |        |        |        |    |      |        |        |        |        |    |      |        |        |        |        |
| 7  | Q957                  | 38.7°C  | 58.0°C                    | 40.4°C                   | 59.4°C                    |    |          |                     |  |                     |  |                          |                           |                          |                           |   |    |        |        |        |        |   |    |        |        |        |        |   |      |        |        |        |        |   |      |        |        |        |        |   |         |        |        |        |        |   |      |        |        |        |        |   |      |        |        |        |        |   |      |        |        |        |        |   |     |        |        |        |        |    |    |        |        |        |        |    |      |        |        |        |        |    |      |        |        |        |        |    |      |        |        |        |        |    |         |        |        |        |        |    |      |        |        |        |        |    |      |        |        |        |        |    |      |        |        |        |        |    |      |        |        |        |        |    |      |        |        |        |        |    |      |        |        |        |        |    |      |        |        |        |        |    |      |        |        |        |        |    |      |        |        |        |        |    |      |        |        |        |        |
| 8  | Q700                  | 37.8°C  | 56.9°C                    | 37.2°C                   | 58.7°C                    |    |          |                     |  |                     |  |                          |                           |                          |                           |   |    |        |        |        |        |   |    |        |        |        |        |   |      |        |        |        |        |   |      |        |        |        |        |   |         |        |        |        |        |   |      |        |        |        |        |   |      |        |        |        |        |   |      |        |        |        |        |   |     |        |        |        |        |    |    |        |        |        |        |    |      |        |        |        |        |    |      |        |        |        |        |    |      |        |        |        |        |    |         |        |        |        |        |    |      |        |        |        |        |    |      |        |        |        |        |    |      |        |        |        |        |    |      |        |        |        |        |    |      |        |        |        |        |    |      |        |        |        |        |    |      |        |        |        |        |    |      |        |        |        |        |    |      |        |        |        |        |    |      |        |        |        |        |
| 9  | T55                   | 31.2°C  | 48.5°C                    | 31.2°C                   | 51.3°C                    |    |          |                     |  |                     |  |                          |                           |                          |                           |   |    |        |        |        |        |   |    |        |        |        |        |   |      |        |        |        |        |   |      |        |        |        |        |   |         |        |        |        |        |   |      |        |        |        |        |   |      |        |        |        |        |   |      |        |        |        |        |   |     |        |        |        |        |    |    |        |        |        |        |    |      |        |        |        |        |    |      |        |        |        |        |    |      |        |        |        |        |    |         |        |        |        |        |    |      |        |        |        |        |    |      |        |        |        |        |    |      |        |        |        |        |    |      |        |        |        |        |    |      |        |        |        |        |    |      |        |        |        |        |    |      |        |        |        |        |    |      |        |        |        |        |    |      |        |        |        |        |    |      |        |        |        |        |
| 10 | Q3                    | 39.2°C  | 56.8°C                    | 36.2°C                   | 54.4°C                    |    |          |                     |  |                     |  |                          |                           |                          |                           |   |    |        |        |        |        |   |    |        |        |        |        |   |      |        |        |        |        |   |      |        |        |        |        |   |         |        |        |        |        |   |      |        |        |        |        |   |      |        |        |        |        |   |      |        |        |        |        |   |     |        |        |        |        |    |    |        |        |        |        |    |      |        |        |        |        |    |      |        |        |        |        |    |      |        |        |        |        |    |         |        |        |        |        |    |      |        |        |        |        |    |      |        |        |        |        |    |      |        |        |        |        |    |      |        |        |        |        |    |      |        |        |        |        |    |      |        |        |        |        |    |      |        |        |        |        |    |      |        |        |        |        |    |      |        |        |        |        |    |      |        |        |        |        |
| 11 | Q959                  | 36.7°C  | 57.5°C                    | 43.7°C                   | 63.0°C                    |    |          |                     |  |                     |  |                          |                           |                          |                           |   |    |        |        |        |        |   |    |        |        |        |        |   |      |        |        |        |        |   |      |        |        |        |        |   |         |        |        |        |        |   |      |        |        |        |        |   |      |        |        |        |        |   |      |        |        |        |        |   |     |        |        |        |        |    |    |        |        |        |        |    |      |        |        |        |        |    |      |        |        |        |        |    |      |        |        |        |        |    |         |        |        |        |        |    |      |        |        |        |        |    |      |        |        |        |        |    |      |        |        |        |        |    |      |        |        |        |        |    |      |        |        |        |        |    |      |        |        |        |        |    |      |        |        |        |        |    |      |        |        |        |        |    |      |        |        |        |        |    |      |        |        |        |        |
| 12 | Q964                  | 35.5°C  | 55.7°C                    | 42.2°C                   | 61.4°C                    |    |          |                     |  |                     |  |                          |                           |                          |                           |   |    |        |        |        |        |   |    |        |        |        |        |   |      |        |        |        |        |   |      |        |        |        |        |   |         |        |        |        |        |   |      |        |        |        |        |   |      |        |        |        |        |   |      |        |        |        |        |   |     |        |        |        |        |    |    |        |        |        |        |    |      |        |        |        |        |    |      |        |        |        |        |    |      |        |        |        |        |    |         |        |        |        |        |    |      |        |        |        |        |    |      |        |        |        |        |    |      |        |        |        |        |    |      |        |        |        |        |    |      |        |        |        |        |    |      |        |        |        |        |    |      |        |        |        |        |    |      |        |        |        |        |    |      |        |        |        |        |    |      |        |        |        |        |
| 13 | D972                  | 33.1°C  | 52.7°C                    | 37.9°C                   | 57.9°C                    |    |          |                     |  |                     |  |                          |                           |                          |                           |   |    |        |        |        |        |   |    |        |        |        |        |   |      |        |        |        |        |   |      |        |        |        |        |   |         |        |        |        |        |   |      |        |        |        |        |   |      |        |        |        |        |   |      |        |        |        |        |   |     |        |        |        |        |    |    |        |        |        |        |    |      |        |        |        |        |    |      |        |        |        |        |    |      |        |        |        |        |    |         |        |        |        |        |    |      |        |        |        |        |    |      |        |        |        |        |    |      |        |        |        |        |    |      |        |        |        |        |    |      |        |        |        |        |    |      |        |        |        |        |    |      |        |        |        |        |    |      |        |        |        |        |    |      |        |        |        |        |    |      |        |        |        |        |
| 14 | T1 core               | 37.6°C  | 54.9°C                    | 37.0°C                   | 55.9°C                    |    |          |                     |  |                     |  |                          |                           |                          |                           |   |    |        |        |        |        |   |    |        |        |        |        |   |      |        |        |        |        |   |      |        |        |        |        |   |         |        |        |        |        |   |      |        |        |        |        |   |      |        |        |        |        |   |      |        |        |        |        |   |     |        |        |        |        |    |    |        |        |        |        |    |      |        |        |        |        |    |      |        |        |        |        |    |      |        |        |        |        |    |         |        |        |        |        |    |      |        |        |        |        |    |      |        |        |        |        |    |      |        |        |        |        |    |      |        |        |        |        |    |      |        |        |        |        |    |      |        |        |        |        |    |      |        |        |        |        |    |      |        |        |        |        |    |      |        |        |        |        |    |      |        |        |        |        |
| 15 | C722                  | 34.5°C  | 51.4°C                    | 34.7°C                   | 56.0°C                    |    |          |                     |  |                     |  |                          |                           |                          |                           |   |    |        |        |        |        |   |    |        |        |        |        |   |      |        |        |        |        |   |      |        |        |        |        |   |         |        |        |        |        |   |      |        |        |        |        |   |      |        |        |        |        |   |      |        |        |        |        |   |     |        |        |        |        |    |    |        |        |        |        |    |      |        |        |        |        |    |      |        |        |        |        |    |      |        |        |        |        |    |         |        |        |        |        |    |      |        |        |        |        |    |      |        |        |        |        |    |      |        |        |        |        |    |      |        |        |        |        |    |      |        |        |        |        |    |      |        |        |        |        |    |      |        |        |        |        |    |      |        |        |        |        |    |      |        |        |        |        |    |      |        |        |        |        |
| 16 | L700                  | 39.8°C  | 57.3°C                    | 39.9°C                   | 61.8°C                    |    |          |                     |  |                     |  |                          |                           |                          |                           |   |    |        |        |        |        |   |    |        |        |        |        |   |      |        |        |        |        |   |      |        |        |        |        |   |         |        |        |        |        |   |      |        |        |        |        |   |      |        |        |        |        |   |      |        |        |        |        |   |     |        |        |        |        |    |    |        |        |        |        |    |      |        |        |        |        |    |      |        |        |        |        |    |      |        |        |        |        |    |         |        |        |        |        |    |      |        |        |        |        |    |      |        |        |        |        |    |      |        |        |        |        |    |      |        |        |        |        |    |      |        |        |        |        |    |      |        |        |        |        |    |      |        |        |        |        |    |      |        |        |        |        |    |      |        |        |        |        |    |      |        |        |        |        |
| 17 | D707                  | 35.6°C  | 54.5°C                    | 37.1°C                   | 55.3°C                    |    |          |                     |  |                     |  |                          |                           |                          |                           |   |    |        |        |        |        |   |    |        |        |        |        |   |      |        |        |        |        |   |      |        |        |        |        |   |         |        |        |        |        |   |      |        |        |        |        |   |      |        |        |        |        |   |      |        |        |        |        |   |     |        |        |        |        |    |    |        |        |        |        |    |      |        |        |        |        |    |      |        |        |        |        |    |      |        |        |        |        |    |         |        |        |        |        |    |      |        |        |        |        |    |      |        |        |        |        |    |      |        |        |        |        |    |      |        |        |        |        |    |      |        |        |        |        |    |      |        |        |        |        |    |      |        |        |        |        |    |      |        |        |        |        |    |      |        |        |        |        |    |      |        |        |        |        |
| 18 | U701                  | 37.7°C  | 56.2°C                    | 38.2°C                   | 58.5°C                    |    |          |                     |  |                     |  |                          |                           |                          |                           |   |    |        |        |        |        |   |    |        |        |        |        |   |      |        |        |        |        |   |      |        |        |        |        |   |         |        |        |        |        |   |      |        |        |        |        |   |      |        |        |        |        |   |      |        |        |        |        |   |     |        |        |        |        |    |    |        |        |        |        |    |      |        |        |        |        |    |      |        |        |        |        |    |      |        |        |        |        |    |         |        |        |        |        |    |      |        |        |        |        |    |      |        |        |        |        |    |      |        |        |        |        |    |      |        |        |        |        |    |      |        |        |        |        |    |      |        |        |        |        |    |      |        |        |        |        |    |      |        |        |        |        |    |      |        |        |        |        |    |      |        |        |        |        |
| 19 | C711                  | 37.8°C  | 55.3°C                    | 38.6°C                   | 58.6°C                    |    |          |                     |  |                     |  |                          |                           |                          |                           |   |    |        |        |        |        |   |    |        |        |        |        |   |      |        |        |        |        |   |      |        |        |        |        |   |         |        |        |        |        |   |      |        |        |        |        |   |      |        |        |        |        |   |      |        |        |        |        |   |     |        |        |        |        |    |    |        |        |        |        |    |      |        |        |        |        |    |      |        |        |        |        |    |      |        |        |        |        |    |         |        |        |        |        |    |      |        |        |        |        |    |      |        |        |        |        |    |      |        |        |        |        |    |      |        |        |        |        |    |      |        |        |        |        |    |      |        |        |        |        |    |      |        |        |        |        |    |      |        |        |        |        |    |      |        |        |        |        |    |      |        |        |        |        |
| 20 | RG70                  | 41.3°C  | 63.0°C                    | 33.9°C                   | 53.7°C                    |    |          |                     |  |                     |  |                          |                           |                          |                           |   |    |        |        |        |        |   |    |        |        |        |        |   |      |        |        |        |        |   |      |        |        |        |        |   |         |        |        |        |        |   |      |        |        |        |        |   |      |        |        |        |        |   |      |        |        |        |        |   |     |        |        |        |        |    |    |        |        |        |        |    |      |        |        |        |        |    |      |        |        |        |        |    |      |        |        |        |        |    |         |        |        |        |        |    |      |        |        |        |        |    |      |        |        |        |        |    |      |        |        |        |        |    |      |        |        |        |        |    |      |        |        |        |        |    |      |        |        |        |        |    |      |        |        |        |        |    |      |        |        |        |        |    |      |        |        |        |        |    |      |        |        |        |        |
| 21 | D706                  | 37.5°C  | 56.8°C                    | 38.6°C                   | 63.0°C                    |    |          |                     |  |                     |  |                          |                           |                          |                           |   |    |        |        |        |        |   |    |        |        |        |        |   |      |        |        |        |        |   |      |        |        |        |        |   |         |        |        |        |        |   |      |        |        |        |        |   |      |        |        |        |        |   |      |        |        |        |        |   |     |        |        |        |        |    |    |        |        |        |        |    |      |        |        |        |        |    |      |        |        |        |        |    |      |        |        |        |        |    |         |        |        |        |        |    |      |        |        |        |        |    |      |        |        |        |        |    |      |        |        |        |        |    |      |        |        |        |        |    |      |        |        |        |        |    |      |        |        |        |        |    |      |        |        |        |        |    |      |        |        |        |        |    |      |        |        |        |        |    |      |        |        |        |        |
| 22 | D705                  | 33.9°C  | 47.8°C                    | 34.5°C                   | 53.2°C                    |    |          |                     |  |                     |  |                          |                           |                          |                           |   |    |        |        |        |        |   |    |        |        |        |        |   |      |        |        |        |        |   |      |        |        |        |        |   |         |        |        |        |        |   |      |        |        |        |        |   |      |        |        |        |        |   |      |        |        |        |        |   |     |        |        |        |        |    |    |        |        |        |        |    |      |        |        |        |        |    |      |        |        |        |        |    |      |        |        |        |        |    |         |        |        |        |        |    |      |        |        |        |        |    |      |        |        |        |        |    |      |        |        |        |        |    |      |        |        |        |        |    |      |        |        |        |        |    |      |        |        |        |        |    |      |        |        |        |        |    |      |        |        |        |        |    |      |        |        |        |        |    |      |        |        |        |        |
| 23 | U551                  | 38.8°C  | 54.0°C                    | 37.4°C                   | 56.0°C                    |    |          |                     |  |                     |  |                          |                           |                          |                           |   |    |        |        |        |        |   |    |        |        |        |        |   |      |        |        |        |        |   |      |        |        |        |        |   |         |        |        |        |        |   |      |        |        |        |        |   |      |        |        |        |        |   |      |        |        |        |        |   |     |        |        |        |        |    |    |        |        |        |        |    |      |        |        |        |        |    |      |        |        |        |        |    |      |        |        |        |        |    |         |        |        |        |        |    |      |        |        |        |        |    |      |        |        |        |        |    |      |        |        |        |        |    |      |        |        |        |        |    |      |        |        |        |        |    |      |        |        |        |        |    |      |        |        |        |        |    |      |        |        |        |        |    |      |        |        |        |        |    |      |        |        |        |        |
| 24 | U201                  | 37.2°C  | 53.4°C                    | 35.8°C                   | 54.7°C                    |    |          |                     |  |                     |  |                          |                           |                          |                           |   |    |        |        |        |        |   |    |        |        |        |        |   |      |        |        |        |        |   |      |        |        |        |        |   |         |        |        |        |        |   |      |        |        |        |        |   |      |        |        |        |        |   |      |        |        |        |        |   |     |        |        |        |        |    |    |        |        |        |        |    |      |        |        |        |        |    |      |        |        |        |        |    |      |        |        |        |        |    |         |        |        |        |        |    |      |        |        |        |        |    |      |        |        |        |        |    |      |        |        |        |        |    |      |        |        |        |        |    |      |        |        |        |        |    |      |        |        |        |        |    |      |        |        |        |        |    |      |        |        |        |        |    |      |        |        |        |        |    |      |        |        |        |        |

|   |   |   |  |      |                     |        |        |        |
|---|---|---|--|------|---------------------|--------|--------|--------|
|   |   |   | 25   | Q2   | 60.0°C              | 77.8°C | 52.3°C | 67.6°C |
|   |   |   | 26   | T550 | 33.1°C              | 48.7°C | 32.7°C | 52.0°C |
|   |   |   | 27   | L900 | 60.3°C              | 74.8°C | 43.7°C | 61.8°C |
|   |   |   | 28   | T3   | 30.1°C              | 47.1°C | 32.0°C | 51.0°C |
|   |   |   | 29   | RT51 | 48.0°C              | 62.3°C | 44.6°C | 61.0°C |
|   |   |   | 30   | RT52 | 36.7°C              | 52.8°C | 34.1°C | 52.8°C |
|   |   |   | 31   | L1   | 41.1°C              | 57.2°C | 35.6°C | 54.2°C |
|   |   |   | 32   | BD1  | 29.4°C              | 45.8°C | 26.7°C | 46.6°C |
|   |   |   | 33   | RY1  | 34.1°C              | 49.4°C | 32.0°C | 50.9°C |
|   |   |   | 34   | Q902 | 50.5°C              | 75.7°C | 36.6°C | 56.2°C |
|   |   |   | 35   | LF3  | 35.0°C              | 52.3°C | 32.8°C | 52.6°C |
|   |   |   | 36   | C2   | 27.4°C              | 44.5°C | 27.7°C | 47.8°C |
|   |   |   | 37   | C963 | 25.5°C              | 48.1°C | 26.7°C | 46.6°C |
|   |   |   | 38   | C958 | 25.7°C              | 48.2°C | 26.2°C | 46.1°C |
|   |   |   | 39   | L950 | 40.7°C              | 60.4°C | 38.5°C | 57.4°C |
|   |   |   | 40   | RG61 | 33.4°C              | 51.5°C | 32.8°C | 52.2°C |
|   |   |   | 41   | T92  | 28.9°C              | 48.0°C | 30.2°C | 49.5°C |
|   |   |   | 42   | U405 | 29.7°C              | 48.8°C | 32.2°C | 51.8°C |
|   |   |   | 43   | U51  | 28.9°C              | 48.3°C | 32.0°C | 51.3°C |
|   |   |   | 44   | R143 | 35.0°C              | 58.8°C | 36.8°C | 60.6°C |
|   |   |   | 45   | D906 | 37.7°C              | 56.3°C | 41.5°C | 58.9°C |
|   |   |   | 46   | D905 | 37.5°C              | 55.3°C | 40.3°C | 57.9°C |
|   |   |   | 47   | U120 | 29.2°C              | 47.8°C | 29.9°C | 49.6°C |
|   |   |   | 48   | Q74  | 31.7°C              | 49.8°C | 33.5°C | 52.8°C |
|   |   |   | 49   | RG50 | 31.2°C              | 48.9°C | 31.5°C | 51.6°C |
|   |   |   | 50   | C6   | 37.0°C              | 52.6°C | 35.8°C | 54.1°C |
|   |   |   | 51   | Q903 | 49.9°C              | 68.6°C | 39.5°C | 58.0°C |
|   |   |   | 52   | Q952 | 37.8°C              | 55.2°C | 41.0°C | 60.5°C |
|   |   |   | 53   | D982 | 37.0°C              | 53.8°C | 38.0°C | 57.0°C |
| 2 | OVER LOAD BURN-IN TEST  | NO DAMAGE<br>1 HOUR ( MIN )   | I/P : 230 VAC<br>O/P : 110% LOAD<br>Ta : 25°C  |      | TEST : OK           |        |        |        |
| 3 | LOW TEMPERATURE<br>TURN ON TEST                                   | TURN ON AFTER 2 HOUR  | I/P : 264VAC/100VAC<br>O/P : 100 %LOAD<br>Ta= -35 °C   |      | TEST : OK           |        |        |        |
| 4 | HIGH HUMIDITY<br>HIGH TEMPERATURE<br>HIGH VOLTAGE<br>TURN ON TEST | AFTER 12 HOURS<br>IN CHAMBER ON<br>CONTROL 45 °C/95 %R.H<br>NO DAMAGE | I/P : 268 VAC<br>O/P : FULL LOAD<br>Ta= 45 °C<br>HUMIDITY= 95 %R.H   |      | TEST : OK           |        |        |        |
| 5 | TEMPERATURE<br>COEFFICIENT  | ± 0.03%/°C(0~45°C)  | I/P : 230 VAC<br>O/P : FULL LOAD   |      | ± 0.001%/°C(0~45°C) |        |        |        |
| 6 | STORAGE TEMPERATURE<br>TEST                                       | -40~85°C  | 1. Thermal shock Temperature : -45°C~ +90°C<br>2. Temperature change rate : 25°C / MIN<br>3. Dwell time low and high temperature : 30 MIN/EACH<br>4. Total test cycle : 10 CYCLE<br>5. Input/Output condition : STATIC |      |                     |        |        |        |

|    |                          |  |   |
|----|--------------------------|--|---|
| 7  | THERMAL SHOCK TEST       | -30~45°C   | 1. Thermal shock Temperature : -35°C~ +50°C<br>2. Temperature change rate : 25°C / MIN<br>3. Dwell time low and high temperature : 30 MIN/EACH<br>4. Total test cycle : 16 CYCLE<br>5. Input/Output condition :<br>15cycle:230V/ FULL LOAD AC ON 3sec/AC OFF 1sec TEST<br>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<br>(1) Waveform : Sine Wave<br>(2) Frequency : 10~500Hz<br>(3) Sweep Time : 10min/sweep cycle<br>(4) Acceleration : 3G<br>(5) Test Time : 180min in each axis (X.Y.Z)<br>(6) Ta : 25°C   |
| 9  | CAPACITOR LIFE CYCLE     | SUPPOSE C963 IS THE MOST CRITICAL COMPONENT<br>(1) I/P : 230VAC O/P : FULL LOAD Ta= 25 °C LIFE TIME<br>(2) I/P : 230VAC O/P : FULL LOAD Ta= 45 °C LIFE TIME<br>(3) I/P : 230VAC O/P : 75% LOAD Ta= 45°C LIFE TIME<br>(4) I/P : 230VAC O/P : 50% LOAD Ta= 45 °C LIFE TIME | (1) 288572HRS<br>(2) 60245HRS<br>(3) 287977HRS<br>(4) 612859HRS   |
| 10 | MTBF                     | Conducted by Parts Stress Analysis Prediction<br>462.9K hrs min. Telcordia SR-332 (Bellcore) ; 46K hrs min. MIL-HDBK-217F (25°C)   |   |
| 11 | Ongoing Reliability Test | I/P : 230VAC O/P : FULL LOAD TA=45°C<br>Demonstration Mean Time Between Failure : 50,000 hours   |   |

| TEST RESULT | TESTER     | REVIEW     | APPROVAL      |
|-------------|------------|------------|---------------|
| PASS        | DANIEL GAO | SANFORD SU | VINCENT TSENG |

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