



# 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

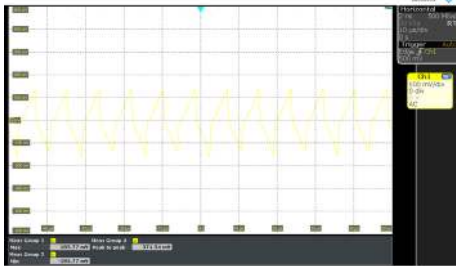
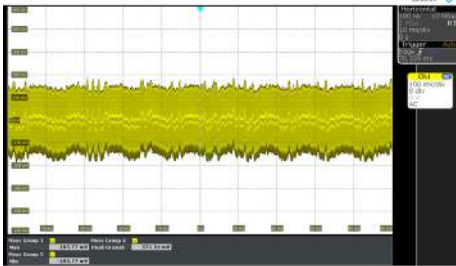
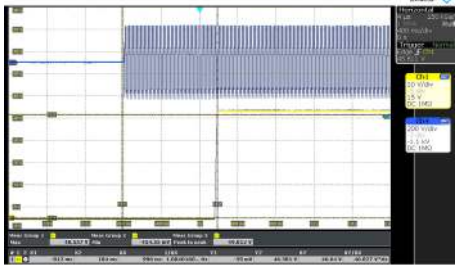
Safety Test

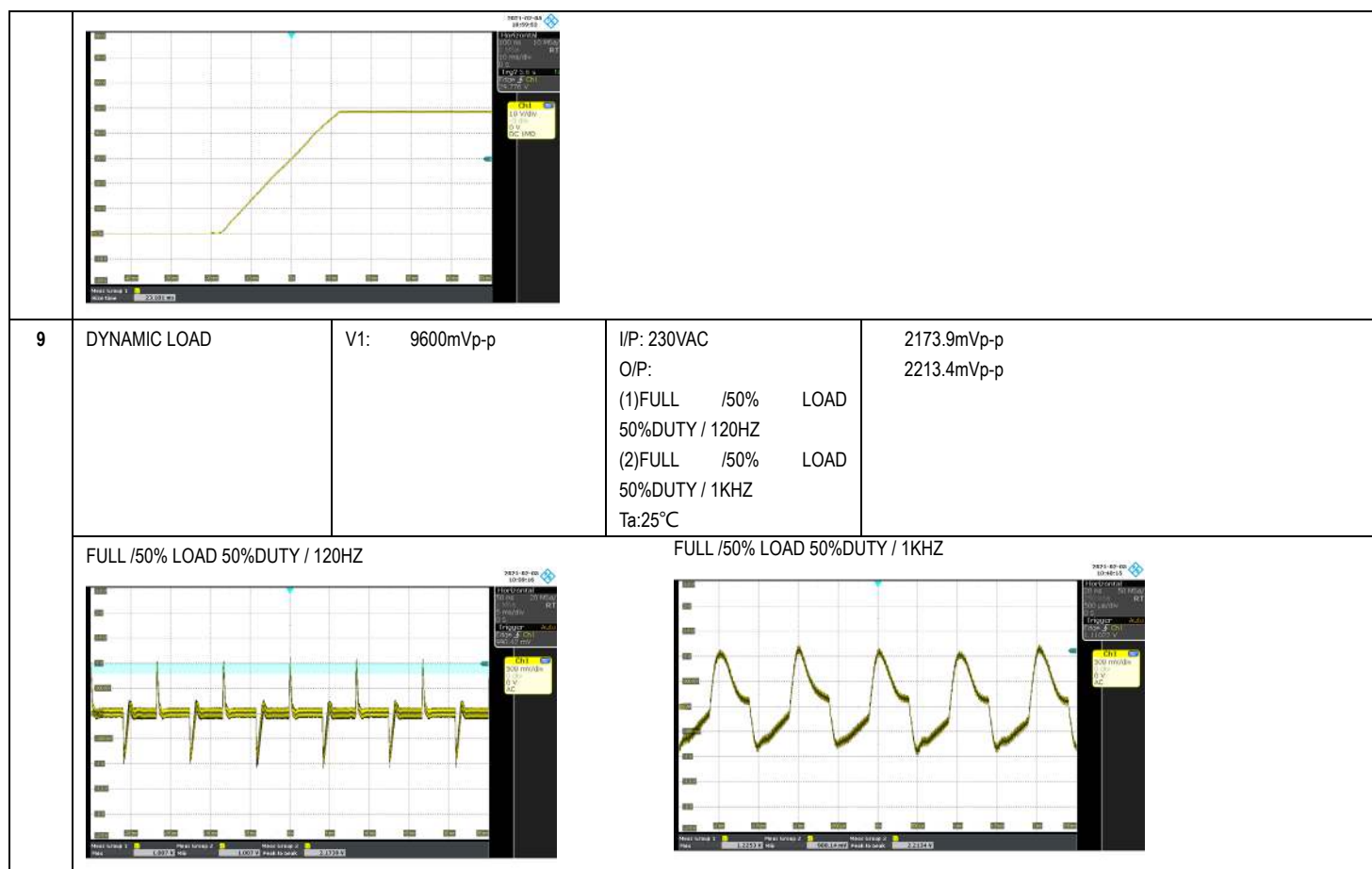
E.M.C. Test

## ■ RELIABILITY TEST

ENVIRONMENT TEST

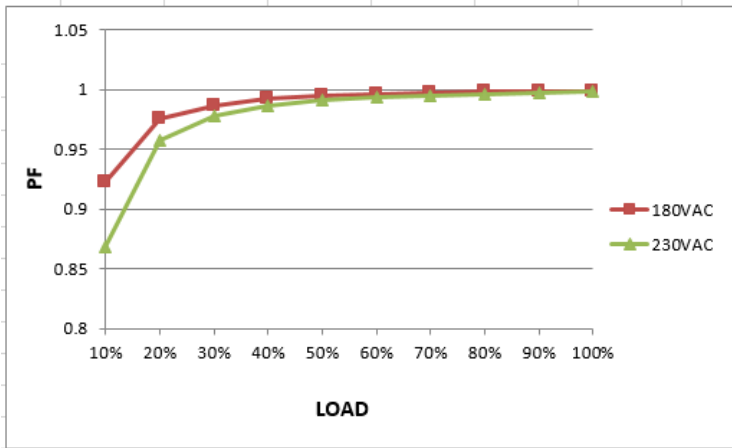
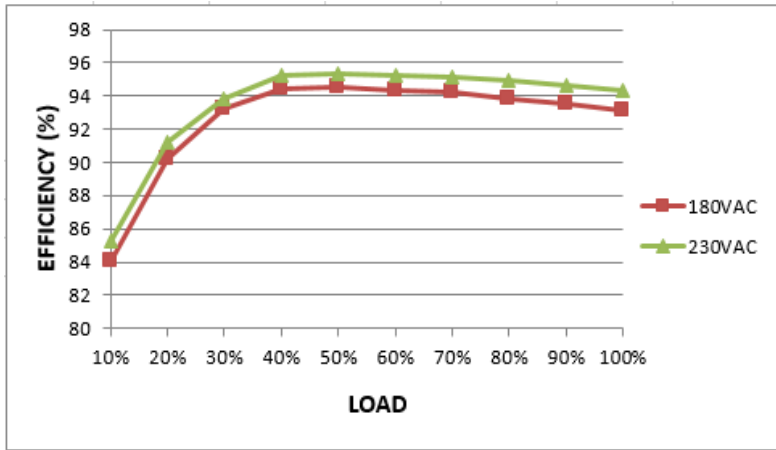
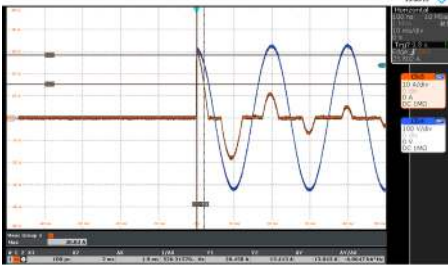
## DESIGN VERIFY TEST

| 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     |
| <div> <div>high frequency :</div>  </div> <div> <div>low frequency :</div>  </div> |                                  |                   |                                                       |                     |
| 7                                                                                                                                                                                                                                                         | SET UP TIME(Max)                 | 230VAC/1800ms     | I/P : 230 VAC<br>O/P : FULL LOAD<br>Ta : 25°C         | 230VAC/ 996ms       |
| <div> <div>INPUT=230VAC/50HZ @ FULL LOAD</div> <div>CH1 : Output Voltage CH2 : AC Input Voltage</div>  </div>                                                          |                                  |                   |                                                       |                     |
| 8                                                                                                                                                                                                                                                         | RISE TIME (Max)                  | 230VAC/60ms       | I/P : 230 VAC<br>O/P : FULL LOAD<br>Ta : 25°C         | 230VAC/23.101ms     |
| <div> <div>INPUT=230VAC/50HZ @ FULL LOAD</div> <div>CH1 : Output Voltage</div> </div>                                                                                                                                                                     |                                  |                   |                                                       |                     |



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

| NO | TEST ITEM             | SPECIFICATION            | TEST CONDITION                                                                                                                                                       | RESULT                         |
|----|-----------------------|--------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------|
| 1  | INPUT VOLTAGE RANGE   | 180VAC~264VAC            | (1) I/P:TESTING<br>O/P:FULL LOAD<br>Ta:25 ~                                                                                                                          | (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 ~                                                                                                                  | TEST: OK                       |
| 3  | INPUT CURRENT (Typ.)  | 230V/ 11A                | I/P : 230 VAC<br>O/P : FULL LOAD<br>Ta : 25 ~                                                                                                                        | I =10.28A/ 230VAC              |
| 4  | LEAKAGE CURRENT       | < 2mA / 230 VAC          | I/P : 230 VAC<br>O/P : Min LOAD<br>Ta : 25 ~                                                                                                                         | 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 ~                                                                                                                        | PF=0.9958/230VAC               |

|   |                                                                                                                                                                    |                                                                                     |                                               |                                      |
|---|--------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-----------------------------------------------|--------------------------------------|
|   | P.F vs LOAD                                                                                                                                                        |   |                                               |                                      |
| 6 | EFFICIENCY(Typ.)                                                                                                                                                   | 93%                                                                                 | I/P:230 VAC<br>O/P:75% LOAD<br>Ta:25 ~        | 93.34 %                              |
|   | EFFICIENCY vs LOAD                                                                                                                                                 |  |                                               |                                      |
| 7 | INRUSH CURRENT(Typ.)                                                                                                                                               | 230V/35A<br>COLD START                                                              | I/P : 230 VAC<br>O/P : FULL LOAD<br>Ta : 25 ~ | I =30.83A/ 230VAC<br>T50=1900us/230V |
|   | INPUT=230VAC/50HZ @ FULL LOAD<br>CH4 : AC Input Voltage CH3 : Input current<br> |                                                                                     |                                               |                                      |
| 8 | TOTAL HARMONIC DISTORTION                                                                                                                                          | <3%                                                                                 | I/P : 230VAC<br>O/P : FULL LOAD<br>Ta : 25 ~  | THD = 1.81%                          |

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

| NO | TEST ITEM                                  | SPECIFICATION            | TEST CONDITION                              | RESULT           |
|----|--------------------------------------------|--------------------------|---------------------------------------------|------------------|
| 1  | RATED OUTPUT POWER<br>(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 ~        | 175 VAC~280VAC   |
| 3  | FREQUENCY RANGE                            | 47HZ ~63 HZ<br>NO DAMAGE | I/P:48VDC<br>O/P:FULL~MIN LOAD<br>Ta:25 ~   | TEST: OK         |
| 4  | AC CURRENT (Typ.)                          | 230VAC/ 7.5 A            | I/P : 48VDC<br>O/P : FULL LOAD<br>Ta : 25 ~ | I =7.44A/ 230VAC |
| 5  | POWER FACTOR (Typ.)                        | 0.99/ 230VAC             | I/P : 48VDC<br>O/P : FULL LOAD<br>Ta : 25 ~ | PF=0.9963/230VAC |
| 6  | EFFICIENCY(Typ.)                           | 93%                      | I/P: 48VDC<br>O/P:75% LOAD<br>Ta:25 ~       | 93.6%            |
| 7  | TOTAL HARMONIC<br>DISTORTION               | <3%                      | I/P : 48VDC<br>O/P : FULL LOAD<br>Ta : 25 ~ | 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 ~ | 1832W                                                   |
| 2  | DC VOLTAGE RANGE  | 38VDC ~65VDC  | I/P : 48VDC<br>O/P : FULL LOAD<br>Ta : 25 ~ | 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 ~ | 38.1A                                                   |

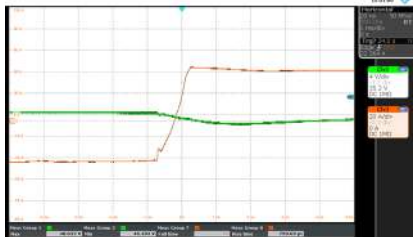
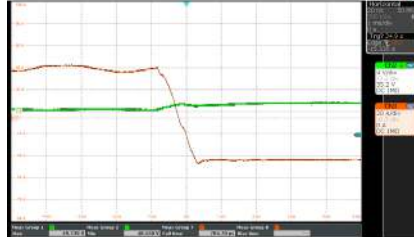
### PROTECTION FUNCTION TEST

| NO | TEST ITEM            | SPECIFICATION                                                                                                                                                                                                                                      | TEST CONDITION                                                                                                                                                                | RESULT                                                                                                                                                                                                                                                                                      |
|----|----------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1  | OVER LOAD PROTECTION | 105%~ 115 %<br><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 ~ | <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 ~                                                                | AC to DC Direction<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 | AC to DC Direction<br>I/P: 264VAC<br>I/P: 180VAC<br><br>DC to AC Direction<br>I/P: 38VDC<br>I/P: 65VDC<br>O/P:FULL LOAD             | AC to DC Direction<br>O.T.P. Active<br>Protection type :<br>voltage, recovers automatically after temperature goes down<br>DC to AC Direction<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                                                      | AC to DC Direction<br>I/P: 264VAC<br>I/P: 180VAC<br><br>DC to AC Direction<br>I/P: 38VDC<br>I/P: 65VDC<br>O/P: FULL LOAD<br>Ta:25 ~ | AC to DC Direction<br>NO DAMAGE<br>PROTECTION TYPE :<br>Shut down o/p current, re-power on to recover<br>DC to AC Direction<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: 108.4VDC<br>O/P: FULL LOAD<br><br>I/P: 94VDC<br>O/P: 50% LOAD<br><br>I/P: 79.6VDC<br>O/P: 10% LOAD<br><br>Ta:25 ~  | DC to AC Direction<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 ~</p> <p>Test Result :</p> <table> <tr> <th></th><th>TOLERANCE</th><th>RIPPLE</th></tr> <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> </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 ~</p> <p>Test Result :</p> <table> <tr> <th>MODE</th><th>electrical signal or dry contact between Remote ON/OFF and +12V-AUX</th><th>Power Supply Status</th></tr> <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> </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 ~ Test Result :</p> <table> <tr> <th>MODE</th><th>BIDIRECTION SWITCH TIME</th><th>Result</th></tr> <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> </table> <div>   </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 80\% \pm 5\%</math>.<br/>Low (-0.5 ~ 0.5V) : When the Vout <math>\leq 80\% \pm 5\%</math>.<br/>The maximum sourcing current is 4mA and only for output.<br/>I/P: 230 VAC/12VDC<br/>O/P:FULL LOAD<br/>Ta:25 ~</p> <p>Test Result :</p> <table> <tr> <th>MODE</th><th>Vout</th><th>DC OK SIGNAL</th></tr> <tr> <td rowspan="2">AC to DC Direction</td><td>Vout <math>\geq 75\%</math></td><td>4.994V</td></tr> <tr> <td>Vout <math>\leq 85\%</math></td><td>-0.038V</td></tr> </table> | MODE | Vout                                                                | DC OK SIGNAL        | AC to DC Direction | Vout $\geq 75\%$ | 4.994V        | Vout $\leq 85\%$   | -0.038V |                    |          |    |         |     |
| MODE               | Vout                                                                | DC OK SIGNAL                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |      |                                                                     |                     |                    |                  |               |                    |         |                    |          |    |         |     |
| AC to DC Direction | Vout $\geq 75\%$                                                    | 4.994V                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |      |                                                                     |                     |                    |                  |               |                    |         |                    |          |    |         |     |
|                    | Vout $\leq 85\%$                                                    | -0.038V                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |      |                                                                     |                     |                    |                  |               |                    |         |                    |          |    |         |     |

|                    |                                                    | <div>2. T-ALARM</div> <div>High (4.5 ~ 5.5V) : When the internal temperature exceeds the limit of temperature alarm, or when fan fails.</div> <div>Low (-0.5 ~ 0.5V) : When the internal temperature is normal, and when fan works normally.</div> <div>The maximum sourcing current is 4mA and only for output.</div> <div>I/P: 230 VAC/12VDC</div> <div>O/P:FULL LOAD</div> <div>Ta:25 ~</div> <div>Test Result :</div> <table><tr><th>MODE</th><th>P.SU STATUS</th><th>Vo</th><th>T-ALARM SPEC</th><th>T-ALARM TEST</th></tr><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></table> <div>3. FAULT</div> <div>High (4.5 ~ 5.5V) : When the input voltage is <math>\geq 175V_{rms}</math> OLP, SCP,OTP,OVP,AC Fail,fan lock,islanding protection</div> <div>Low (-0.5 ~ 0.5V) : When the input voltage is <math>\leq 165V_{rms}</math>.</div> <div>The maximum sourcing current is 4mA and only for output.</div> <table><tr><th>MODE</th><th>Vout</th><th>FAULT SIGNAL</th></tr><tr><td rowspan="2">AC to DC Direction</td><td>VAC <math>\geq 175V_{rms}</math></td><td>5.027v</td></tr><tr><td>VAC <math>\leq 165V_{rms}</math>.</td><td>-0.004V</td></tr></table> | MODE                                                                                                                                                                                                                                                              | P.SU 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 | Vout | FAULT SIGNAL | AC to DC Direction | VAC $\geq 175V_{rms}$ | 5.027v | VAC $\leq 165V_{rms}$ . | -0.004V |  |
|--------------------|----------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----|--------------|--------------|--------------------|--------|---------|------------|----|-----|----|----------|-------|----------|----|----------|-------|------|------|--------------|--------------------|-----------------------|--------|-------------------------|---------|--|
| MODE               | P.SU 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               | Vout                                               | FAULT SIGNAL                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |    |              |              |                    |        |         |            |    |     |    |          |       |          |    |          |       |      |      |              |                    |                       |        |                         |         |  |
| AC to DC Direction | VAC $\geq 175V_{rms}$                              | 5.027v                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |    |              |              |                    |        |         |            |    |     |    |          |       |          |    |          |       |      |      |              |                    |                       |        |                         |         |  |
|                    | VAC $\leq 165V_{rms}$ .                            | -0.004V                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |    |              |              |                    |        |         |            |    |     |    |          |       |          |    |          |       |      |      |              |                    |                       |        |                         |         |  |
| 5                  | CURRENT SHARING                                    | CURRENT SHARING<br>TOLERANCE <±10%                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | I/P : 230 VAC<br>O/P : 95/50% LOAD<br>Ta : 25°C                                                                                                                                                                                                                   | <div>AC to DC Direction</div> <div>O/P : 95%</div> <div>PSU1 : 42.8A</div> <div>PSU2 : 42.6A</div> <div>PSU3 : 42 A</div> <div>PSU4 : 42.2A</div> <div>PSU5 : 41.8A</div> <div>O/P : 50%</div> <div>PSU1 : 22.64 A</div> <div>PSU2 : 22.6A</div> <div>PSU3 : 21.4A</div> <div>PSU4 : 22.6A</div> <div>PSU5 : 22.8A</div> <div>DC to AC Direction</div> <div>O/P : 100%</div> <div>PSU1 : 37.83A</div> <div>PSU2 : 37.92A</div> <div>PSU3 : 37.34A</div> <div>PSU4 : 37.14A</div> <div>PSU5 : 37.2A</div> <div>O/P : 50%</div> <div>PSU1 : 18.56 A</div> <div>PSU2 : 18.74A</div> <div>PSU3 : 18.71A</div> <div>PSU4 : 18.46 A</div> <div>PSU5 : 18.7A</div> |    |              |              |                    |        |         |            |    |     |    |          |       |          |    |          |       |      |      |              |                    |                       |        |                         |         |  |
| 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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | <div>AC to DC Direction</div> <div>I/P: 230VAC</div> <div>DC to AC Direction</div> <div>I/P: 48VDC</div> <div>O/P:FULL LOAD</div> <div>Ta:25°C</div> <div>AC to DC Direction:</div> <div>40.08A/230VAC</div> <div>DC to AC Direction</div> <div>32.2A/48VDC</div> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |    |              |              |                    |        |         |            |    |     |    |          |       |          |    |          |       |      |      |              |                    |                       |        |                         |         |  |

## COMPONENT STRESS TEST

| NO | TEST ITEM                                               | SPECIFICATION                                                                                              | TEST CONDITION                                                                                                                                                                                                                                            | RESULT                                                                                                                                                                                                            |
|----|---------------------------------------------------------|------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1  | PWM Transistor<br>( D to S) or (C to E) Peak<br>Voltage | <p><b>AC to DC Direction &amp;<br/>DC to AC Direction</b></p> <p>Q903 Rated: 36A/ 600V<br/> VGS :± 20V</p> | <p>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.</p> <p>I/P:Low-Line -3V = 177V<br/> O/P: (1)Full Load<br/> (2)Output Short<br/> (3)0%→400% Load.</p> | <p><b>AC to DC Direction</b><br/> I/P:High-Line +3V<br/> =267V<br/> VDS:<br/> (1) 419V/20.38A<br/> (2) 408V/ 15.21A<br/> (3) 403V/16.05 A</p> <p>I/P:Low-Line -3V =<br/> 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><br>I/P: 10VDC<br>O/P: (1)Full Load<br>(2)+100%Io~100%Io<br>(3)-100%Io AC Off<br><br>Ta:25 ~                                                                                                                                                                | (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><br>I/P: 10VDC<br>VDS:<br>(1) 424V/ 5.34A<br>(2) 435V/6.57A<br>(3) 510V/6.37A                                                                                                                                                                                                                                                                                                                                                                                     |
| 2 | P.F.C Transistor<br>( D to S) or (C to E) Peak<br>Voltage | <b>AC to DC Direction</b><br>Q2 Rated: 53A/ 650V<br>VGS :-8~19V<br><br><br>Q4 Rated: 52A/ 600V<br>VGS :± 25V                                                                                                                                                                                          | 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 ~                                                                                                           | I/P:High-Line +3V<br>=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 =<br>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                                                                                                                                                                                                                                                                         |
| 3 | Diode Peak Voltage                                        | <b>AC to DC Direction &amp;<br/>DC to AC Directio n</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 | <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><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>VO=RATED VOLTAGE | <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>Q958:<br><br><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<br>Q958: |

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

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

|   |                                                                   |                                                                       |    |      |                                                                                                                                                                                                                        |        |                     |        |
|---|-------------------------------------------------------------------|-----------------------------------------------------------------------|----|------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|---------------------|--------|
|   |                                                                   |                                                                       | 25 | Q2   | 60.0 ~                                                                                                                                                                                                                 | 77.8 ~ | 52.3 ~              | 67.6 ~ |
|   |                                                                   |                                                                       | 26 | T550 | 33.1 ~                                                                                                                                                                                                                 | 48.7 ~ | 32.7 ~              | 52.0 ~ |
|   |                                                                   |                                                                       | 27 | L900 | 60.3 ~                                                                                                                                                                                                                 | 74.8 ~ | 43.7 ~              | 61.8 ~ |
|   |                                                                   |                                                                       | 28 | T3   | 30.1 ~                                                                                                                                                                                                                 | 47.1 ~ | 32.0 ~              | 51.0 ~ |
|   |                                                                   |                                                                       | 29 | RT51 | 48.0 ~                                                                                                                                                                                                                 | 62.3 ~ | 44.6 ~              | 61.0 ~ |
|   |                                                                   |                                                                       | 30 | RT52 | 36.7 ~                                                                                                                                                                                                                 | 52.8 ~ | 34.1 ~              | 52.8 ~ |
|   |                                                                   |                                                                       | 31 | L1   | 41.1 ~                                                                                                                                                                                                                 | 57.2 ~ | 35.6 ~              | 54.2 ~ |
|   |                                                                   |                                                                       | 32 | BD1  | 29.4 ~                                                                                                                                                                                                                 | 45.8 ~ | 26.7 ~              | 46.6 ~ |
|   |                                                                   |                                                                       | 33 | RY1  | 34.1 ~                                                                                                                                                                                                                 | 49.4 ~ | 32.0 ~              | 50.9 ~ |
|   |                                                                   |                                                                       | 34 | Q902 | 50.5 ~                                                                                                                                                                                                                 | 75.7 ~ | 36.6 ~              | 56.2 ~ |
|   |                                                                   |                                                                       | 35 | LF3  | 35.0 ~                                                                                                                                                                                                                 | 52.3 ~ | 32.8 ~              | 52.6 ~ |
|   |                                                                   |                                                                       | 36 | C2   | 27.4 ~                                                                                                                                                                                                                 | 44.5 ~ | 27.7 ~              | 47.8 ~ |
|   |                                                                   |                                                                       | 37 | C963 | 25.5 ~                                                                                                                                                                                                                 | 43.3 ~ | 26.7 ~              | 46.6 ~ |
|   |                                                                   |                                                                       | 38 | C958 | 25.7 ~                                                                                                                                                                                                                 | 44.9 ~ | 26.2 ~              | 46.1 ~ |
|   |                                                                   |                                                                       | 39 | L950 | 40.7 ~                                                                                                                                                                                                                 | 60.4 ~ | 38.5 ~              | 57.4 ~ |
|   |                                                                   |                                                                       | 40 | RG61 | 33.4 ~                                                                                                                                                                                                                 | 51.5 ~ | 32.8 ~              | 52.2 ~ |
|   |                                                                   |                                                                       | 41 | T92  | 28.9 ~                                                                                                                                                                                                                 | 48.0 ~ | 30.2 ~              | 49.5 ~ |
|   |                                                                   |                                                                       | 42 | U405 | 29.7 ~                                                                                                                                                                                                                 | 48.8 ~ | 32.2 ~              | 51.8 ~ |
|   |                                                                   |                                                                       | 43 | U51  | 28.9 ~                                                                                                                                                                                                                 | 48.3 ~ | 32.0 ~              | 51.3 ~ |
|   |                                                                   |                                                                       | 44 | R143 | 35.0 ~                                                                                                                                                                                                                 | 58.8 ~ | 36.8 ~              | 60.6 ~ |
|   |                                                                   |                                                                       | 45 | D906 | 37.7 ~                                                                                                                                                                                                                 | 56.3 ~ | 41.5 ~              | 58.9 ~ |
|   |                                                                   |                                                                       | 46 | D905 | 37.5 ~                                                                                                                                                                                                                 | 55.3 ~ | 40.3 ~              | 57.9 ~ |
|   |                                                                   |                                                                       | 47 | U120 | 29.2 ~                                                                                                                                                                                                                 | 47.8 ~ | 29.9 ~              | 49.6 ~ |
|   |                                                                   |                                                                       | 48 | Q74  | 31.7 ~                                                                                                                                                                                                                 | 49.8 ~ | 33.5 ~              | 52.8 ~ |
|   |                                                                   |                                                                       | 49 | RG50 | 31.2 ~                                                                                                                                                                                                                 | 48.9 ~ | 31.5 ~              | 51.6 ~ |
|   |                                                                   |                                                                       | 50 | C6   | 37.0 ~                                                                                                                                                                                                                 | 52.6 ~ | 35.8 ~              | 54.1 ~ |
|   |                                                                   |                                                                       | 51 | Q903 | 49.9 ~                                                                                                                                                                                                                 | 68.6 ~ | 39.5 ~              | 58.0 ~ |
|   |                                                                   |                                                                       | 52 | Q952 | 37.8 ~                                                                                                                                                                                                                 | 55.2 ~ | 41.0 ~              | 60.5 ~ |
|   |                                                                   |                                                                       | 53 | D982 | 37.0 ~                                                                                                                                                                                                                 | 53.8 ~ | 38.0 ~              | 57.0 ~ |
| 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) 84027HRS<br>(3) 427509HRS<br>(4) 884926HRS                                                                                                                                                                                                                                               |
| 10 | MTBF                     | Conducted by Parts Stress Analysis Prediction<br>155.56K 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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