



Test Report:RPB-1600-12

1600W Intelligent Single Output Battery Charger

■ DESIGN VERIFY TEST

Output Function Test

Input Function Test

Protection Function Test

Control Function Test

Component Stress Test

■ SAFETY & E.M.C. TEST

Safety Test

E.M.C. Test

■ RELIABILITY TEST

ENVIRONMENT TEST

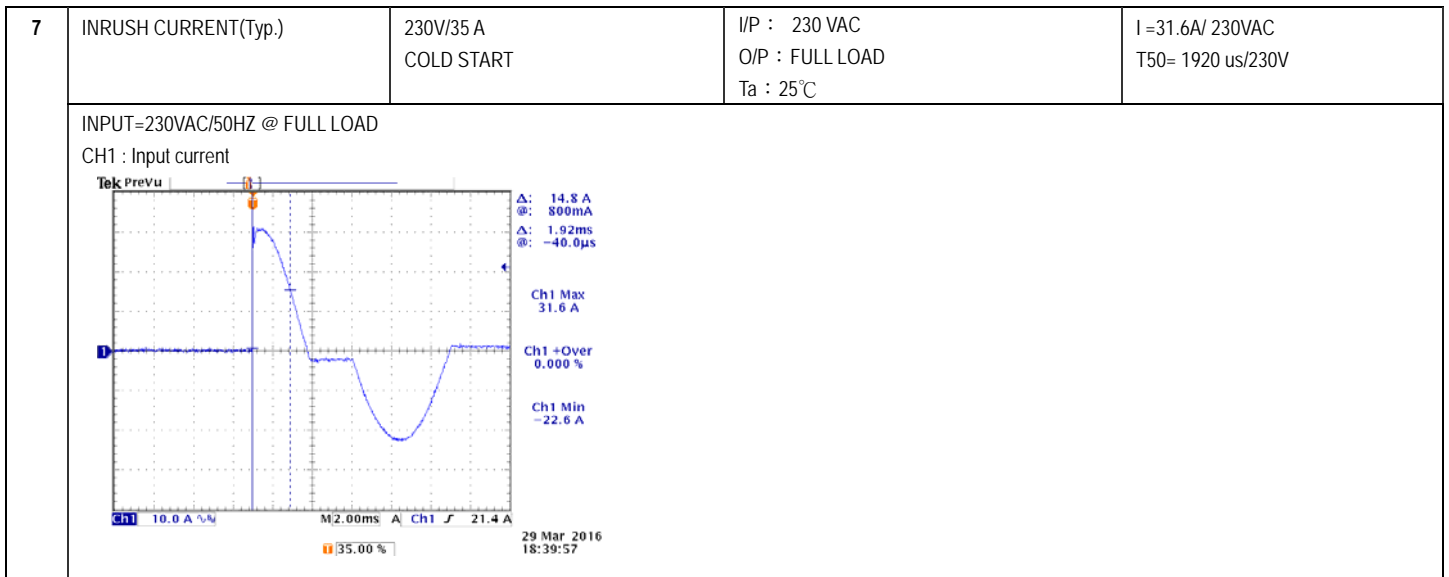
■ DESIGN VERIFY TEST

OUTPUT FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	BOOST CHARGE VOLTAGE(Vboost)(default)	Default, programmable 14.4V±0.12V	I/P: 230 VAC O/P: CV MODE Ta:25°C	14.43V
2	FLOAT CHARGE VOLTAGE	Default, programmable 13.8V±0.12V	I/P: 230 VAC O/P: CV MODE Ta:25°C	13.82V
3	OUTPUT CURRENT	100A±3A	I/P: 230 VAC O/P:CV MODE-2V Ta:25°C	100.4A
4	VOLTAGE ADJ. RANGE	11.5V-15V (D0 - -V short)	I/P: 230 VAC O/P:NO LOAD Ta:25°C	11.03V-15.26V/230VAC 11.03V-15.26V/115VAC
5	LEAKAGE CURRENT FROM BATTERY (Typ.)	<45mA	I/P: AC OFF O/P:BATTERY Ta:25°C	39.8mA

INPUT FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	INPUT VOLTAGE RANGE	90VAC-264VAC	I/P:TESTING O/P: FULL LOAD O/P:60% LOAD Ta:25°C	150 V - 264 V 87V-264V
			I/P: LOW-LINE-3V=87 V HIGH-LINE+15%= 300 V O/P: FULL LOAD (PLEASE CHECK DERATING CURVE) ON: 30 Sec . OFF: 30 Sec 10MIN (AC POWER ON/OFF NO DAMAGE)	TEST: OK
2	INPUT FREQUENCY RANGE	47HZ -63 HZ NO DAMAGE	I/P: 100 VAC ~264 VAC O/P:FULL-MIN LOAD Ta:25°C	TEST: OK
3	LEAKAGE CURRENT	< 2 mA / 240VAC	I/P: 240 VAC O/P:Min LOAD Ta:25°C	L-FG: 0.74 mA N-FG:0.74 mA
4	INPUT CURRENT (TYP)	230 V/ 8 A 115 V/ 14 A	I/P: 230 VAC I/P: 115 VAC O/P: FULL LOAD (PLEASE CHECK DERATING CURVE) Ta:25°C	I =7.49A/ 230VAC I =12.41A/ 115VAC
5	POWER FACTOR (TYP)	0.97/ 230 VAC	I/P: 230 VAC O/P: FULL LOAD Ta:25°C	PF= 0.977 / 230VAC
6	EFFICIENCY (TYP)	91%	I/P: 230 VAC O/P: FULL LOAD Ta:25°C	91.1 %

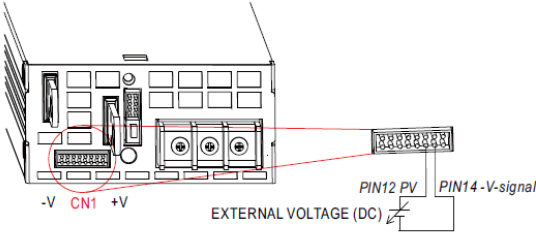
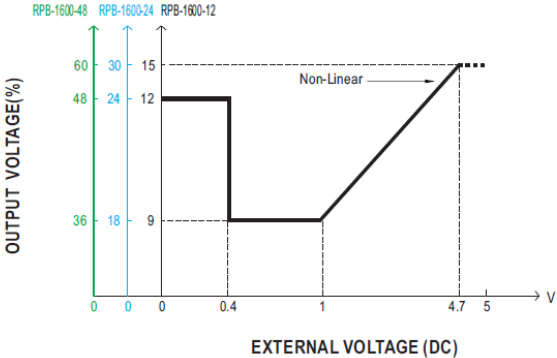


PROTECTION FUNCTION TEST

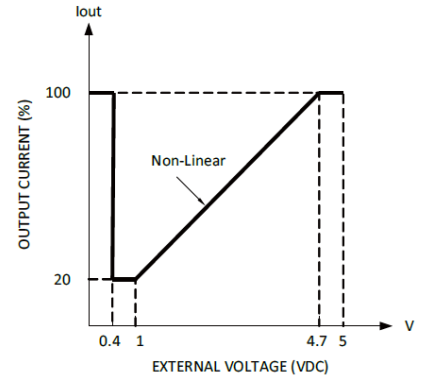
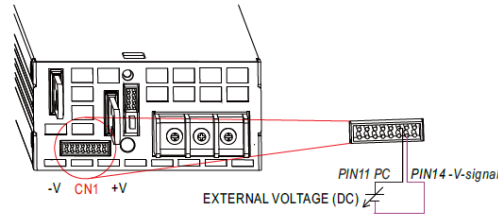
NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	OVER VOLTAGE PROTECTION	15.75 V~ 18.75 V PROTECTION TYPE : Shut down o/p voltage, re-power on to recover	I/P: 264VAC I/P: 230VAC I/P: 90VAC O/P:MIN LOAD Ta:25°C	17.5V/ 264VAC 17.5V/ 230VAC 17.5V/ 90VAC PROTECTION TYPE : Shut down o/p voltage, re-power on to recover
2	OVER TEMPERATURE PROTECTION	NO DAMAGE PROTECTION TYPE : Shut down o/p voltage, recovers automatically after temperature goes down	I/P: 264VAC I/P: 90VAC O/P:FULL LOAD	O.T.P. Active PROTECTION TYPE : Shut down o/p voltage, recovers automatically after temperature goes down

CONTROL FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT												
1	AUXILIARY POWER (AUX)	1. 5V±10%@0.3A ripple:150mVp-p 2. 12V±10%@0.8A ripple:250mVp-p	I/P: 230 VAC O/P:FULL LOAD Ta:25°C	4.74 V 0.3 A ; ripple: 24mVp-p 11.28V 0.8 A ; ripple: 195 mVp-p												
2	REMOTE ON/OFF CONTROL	<p>The power supply can be turned ON/OFF individually or along with other units in parallel by using the "Remote ON-OFF" function.</p> <table border="1"> <tr> <td>Between Remote ON-OFF and +5V-AUX</td> <td>Power Supply Status</td> </tr> <tr> <td>Switch Short</td> <td>ON</td> </tr> <tr> <td>Switch Open</td> <td>OFF</td> </tr> </table> <p>I/P: 230 VAC O/P:FULL LOAD Ta:25°C Test Result :</p> <table border="1"> <tr> <td>Between Remote ON-OFF and +5V-AUX</td> <td>OUTPUT</td> </tr> <tr> <td>SW SHORT</td> <td>ON</td> </tr> <tr> <td>SW OPEN</td> <td>OFF</td> </tr> </table>			Between Remote ON-OFF and +5V-AUX	Power Supply Status	Switch Short	ON	Switch Open	OFF	Between Remote ON-OFF and +5V-AUX	OUTPUT	SW SHORT	ON	SW OPEN	OFF
Between Remote ON-OFF and +5V-AUX	Power Supply Status															
Switch Short	ON															
Switch Open	OFF															
Between Remote ON-OFF and +5V-AUX	OUTPUT															
SW SHORT	ON															
SW OPEN	OFF															

<p>3 ALARM SIGNAL</p>	<p>1. DC OK SIGNAL High (4.5 ~ 5.5V) : When the $V_{out} \leq 8V/16V/32V \pm 1V$. Low (0 ~ 0.5V) : When $V_{out} \geq 8V/16V/32V \pm 1V$. The maximum sourcing current is 10mA and only for output. DC OK is associated with battery low protection. I/P: 230 VAC O/P: FULL LOAD Ta: 25°C Test Result :</p> <table border="1" data-bbox="539 456 1091 560"> <thead> <tr> <th>Vout</th> <th>DC OK SIGNAL</th> </tr> </thead> <tbody> <tr> <td>$V_{out} \leq 75\%$</td> <td>5V</td> </tr> <tr> <td>$V_{out} \geq 85\%$</td> <td>-0.09V</td> </tr> </tbody> </table> <p>2. T-ALARM</p> <table border="1" data-bbox="526 611 1115 692"> <thead> <tr> <th>P.S.U STATUS</th> <th>Vo</th> <th>T-ALARM</th> </tr> </thead> <tbody> <tr> <td>NORMAL</td> <td>100%±2%</td> <td>-0.1 ~-0.5V</td> </tr> <tr> <td>OTP OR FAN LOCK</td> <td>0V</td> <td>4.5~5.5V</td> </tr> </tbody> </table> <p>I/P: 230 VAC O/P: FULL LOAD Ta: 25°C Test Result :</p> <table border="1" data-bbox="531 790 1059 891"> <thead> <tr> <th>P.S.U STATUS</th> <th>T-ALARM</th> </tr> </thead> <tbody> <tr> <td>NORMAL</td> <td>-0.09V</td> </tr> <tr> <td>OTP OR FAN LOCK</td> <td>4.937V</td> </tr> </tbody> </table>	Vout	DC OK SIGNAL	$V_{out} \leq 75\%$	5V	$V_{out} \geq 85\%$	-0.09V	P.S.U STATUS	Vo	T-ALARM	NORMAL	100%±2%	-0.1 ~-0.5V	OTP OR FAN LOCK	0V	4.5~5.5V	P.S.U STATUS	T-ALARM	NORMAL	-0.09V	OTP OR FAN LOCK	4.937V
Vout	DC OK SIGNAL																					
$V_{out} \leq 75\%$	5V																					
$V_{out} \geq 85\%$	-0.09V																					
P.S.U STATUS	Vo	T-ALARM																				
NORMAL	100%±2%	-0.1 ~-0.5V																				
OTP OR FAN LOCK	0V	4.5~5.5V																				
P.S.U STATUS	T-ALARM																					
NORMAL	-0.09V																					
OTP OR FAN LOCK	4.937V																					
<p>4 OUTPUT VOLTAGE PROGRAMMABLE (PV)</p>	<p>(D0 - -V short) ※ In addition to the adjustment via the built-in potentiometer, the output voltage can be trimmed by applying EXTERNAL VOLTAGE.</p>  <p>RPB-1600-48 RPB-1600-24 RPB-1600-12</p>  <p>I/P: 230 VAC O/P: FULL LOAD Ta: 25°C Test Result :</p> <table border="1" data-bbox="472 1744 1485 1955"> <thead> <tr> <th>MODEL \ PV</th> <th><0.4V</th> <th>1V</th> <th>4.7V</th> <th>5V</th> </tr> </thead> <tbody> <tr> <td>SPEC</td> <td>12V±5%</td> <td>9V±5%</td> <td>15V±5%</td> <td>15V±5%</td> </tr> <tr> <td>Vout</td> <td>12.088V</td> <td>8.941V</td> <td>14.929V</td> <td>15.132V</td> </tr> </tbody> </table>	MODEL \ PV	<0.4V	1V	4.7V	5V	SPEC	12V±5%	9V±5%	15V±5%	15V±5%	Vout	12.088V	8.941V	14.929V	15.132V						
MODEL \ PV	<0.4V	1V	4.7V	5V																		
SPEC	12V±5%	9V±5%	15V±5%	15V±5%																		
Vout	12.088V	8.941V	14.929V	15.132V																		
<p>5 OUTPUT CURRENT PROGRAMMABLE (PC)</p>	<p>(D0 - -V short)</p>																					

※ The output current can be trimmed to 20~100% of the rated current by applying EXTERNAL VOLTAGE.

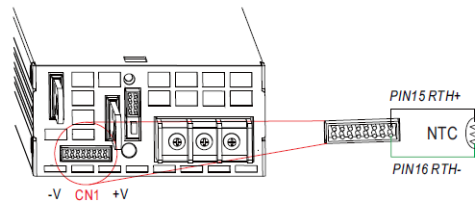


I/P: 230 VAC
 O/P: TESTING
 Ta: 25°C
 Test Result :

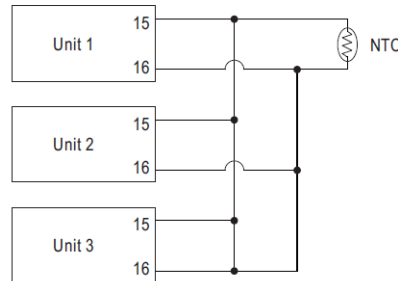
ADJ V	<0.4V	1V	4.7V	5V
SPEC	100%±10%	20%±10%	100%±10%	100%±10%
I _{out}	101.6%	19.8%	100.8%	101.68%

6 Temperature Compensation

Temperature sense associated with the temperature compensation function.



- To exploit the temperature compensation function, please attach the temperature sensor, NTC, which is enclosed with the charger, to the battery or the battery's vicinity.
- The charger is able to work normally without the NTC.



When multiple chargers are connected in parallel, please configure with the NTC as exhibited in the diagram .
 If the temperature compensation is not required, RTH+ (PIN15) and RTH- (PIN16) from each unit still need to be connected.

I/P: 230 VAC
 O/P: FULL LOAD
 Ta: 25°C
 Test Result :

TEMP	Voltage compensation	Temperature compensation	
		BEFORE	AFTER
(Ta=0°C)	14.4V = + 0.45V ±0.12V	14.438V	14.871V
(Ta=25°C)	14.4V = 0V	14.443V	14.443V
(Ta=50°C)	14.4V = - 0.45V ±0.12V	14.444V	14.038V

<p>7 Charging Curve</p>	<p>※ By factory default, this charger performs the default curve which can be programmed via PMBus. ※ To disable / enable the charging curve, change to a 2 stage curve, a different curve frequently used for certain types of batteries in the industry, and so on, please refer to the Installation Manual.</p> <p>⊙ Default 3 stage charging curve</p> <p>⊙ Embedded 3 stage charging curve</p> <table border="1"> <thead> <tr> <th>MODEL</th> <th>Description</th> <th>Vboost</th> <th>Vfloat</th> </tr> </thead> <tbody> <tr> <td rowspan="4">12V</td> <td>Default, programmable</td> <td>14.4</td> <td>13.8</td> </tr> <tr> <td>Pre-defined, gel batter</td> <td>14</td> <td>13.6</td> </tr> <tr> <td>Pre-defined, flooded battery</td> <td>14.2</td> <td>13.4</td> </tr> <tr> <td>Pre-defined, AGM battery</td> <td>14.5</td> <td>13.5</td> </tr> <tr> <td rowspan="4">24V</td> <td>Default, programmable</td> <td>28.8</td> <td>27.6</td> </tr> <tr> <td>Pre-defined, gel batter</td> <td>28</td> <td>27.2</td> </tr> <tr> <td>Pre-defined, flooded battery</td> <td>28.4</td> <td>26.8</td> </tr> <tr> <td>Pre-defined, AGM battery</td> <td>29</td> <td>27</td> </tr> <tr> <td rowspan="4">48V</td> <td>Default, programmable</td> <td>57.6</td> <td>55.2</td> </tr> <tr> <td>Pre-defined, gel batter</td> <td>56</td> <td>54.4</td> </tr> <tr> <td>Pre-defined, flooded battery</td> <td>56.8</td> <td>53.6</td> </tr> <tr> <td>Pre-defined, AGM battery</td> <td>58</td> <td>54</td> </tr> </tbody> </table> <p>⊙ Suitable for lead-acid batteries (flooded, Gel and AGM) and Li-ion batteries (lithium iron and lithium manganese).</p> <p>I/P: 230 VAC O/P: FULL LOAD Ta: 25°C Test Result :</p> <table border="1"> <thead> <tr> <th>MODEL</th> <th>Constant voltage(V_{boost})</th> <th>Float (V_{float})</th> <th>Turn state current</th> </tr> </thead> <tbody> <tr> <td rowspan="2">12V</td> <td>14.4V± 0.12V</td> <td>13.8V± 0.12V</td> <td>10A± 3A</td> </tr> <tr> <td>14.43V</td> <td>13.82V</td> <td>9.85A</td> </tr> </tbody> </table>	MODEL	Description	Vboost	Vfloat	12V	Default, programmable	14.4	13.8	Pre-defined, gel batter	14	13.6	Pre-defined, flooded battery	14.2	13.4	Pre-defined, AGM battery	14.5	13.5	24V	Default, programmable	28.8	27.6	Pre-defined, gel batter	28	27.2	Pre-defined, flooded battery	28.4	26.8	Pre-defined, AGM battery	29	27	48V	Default, programmable	57.6	55.2	Pre-defined, gel batter	56	54.4	Pre-defined, flooded battery	56.8	53.6	Pre-defined, AGM battery	58	54	MODEL	Constant voltage(V _{boost})	Float (V _{float})	Turn state current	12V	14.4V± 0.12V	13.8V± 0.12V	10A± 3A	14.43V	13.82V	9.85A
MODEL	Description	Vboost	Vfloat																																																				
12V	Default, programmable	14.4	13.8																																																				
	Pre-defined, gel batter	14	13.6																																																				
	Pre-defined, flooded battery	14.2	13.4																																																				
	Pre-defined, AGM battery	14.5	13.5																																																				
24V	Default, programmable	28.8	27.6																																																				
	Pre-defined, gel batter	28	27.2																																																				
	Pre-defined, flooded battery	28.4	26.8																																																				
	Pre-defined, AGM battery	29	27																																																				
48V	Default, programmable	57.6	55.2																																																				
	Pre-defined, gel batter	56	54.4																																																				
	Pre-defined, flooded battery	56.8	53.6																																																				
	Pre-defined, AGM battery	58	54																																																				
MODEL	Constant voltage(V _{boost})	Float (V _{float})	Turn state current																																																				
12V	14.4V± 0.12V	13.8V± 0.12V	10A± 3A																																																				
	14.43V	13.82V	9.85A																																																				
<p>8 LED Status Indicators</p>	<table border="1"> <thead> <tr> <th>LED</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td></td> <td>Float (stage 3)</td> </tr> <tr> <td></td> <td>Charging (stage 1 or stage 2)</td> </tr> <tr> <td></td> <td>Abnormal status (OTP, OLP, Fan Fail, Charging timeout.)</td> </tr> </tbody> </table> <p>TEST : OK</p>	LED	Description		Float (stage 3)		Charging (stage 1 or stage 2)		Abnormal status (OTP, OLP, Fan Fail, Charging timeout.)																																														
LED	Description																																																						
	Float (stage 3)																																																						
	Charging (stage 1 or stage 2)																																																						
	Abnormal status (OTP, OLP, Fan Fail, Charging timeout.)																																																						

COMPONENT STRESS TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	PWM Transistor (D to S) or (C to E) Peak Voltage	Q901 Rated 37A/600V	I/P: High-Line +3V = 267V AC ON/OFF VDS: O/P: (1) Full Load Ta: 25°C	VDS: (1) 494V
2	P.F.C Transistor (D to S) or (C to E) Peak Voltage	Q52 Rated 52 A/600 V	I/P: High-Line +3V = 267 V AC ON/OFF O/P: (1) Full Load Ta: 25°C	VDS: (1) 439V
4	Input Capacitor Voltage	C5 Rated: 680 μ / 400V SURGE VOLTAGE: 450V	I/P: High-Line +3V = 267 V O/P: (1) Full Load Ta: 25°C	(1) 395V
5	Control IC Voltage Test	PWM IC U901 Rated 6.5 V-24 V PFC IC U51 Rated 6V-16V O/P IC U142 Rated 4V- 15V	I/P: High-Line +3V = 267 V AC ON/OFF O/P(1) FULL LOAD Ta: 25°C	U901 13.4 V U51 12.93V U142 12.5 V
6	Transistor	Q154 Rated : 100A/40V	I/P: High-Line +3V = 267 V O/P: (1) FULL LOAD	(1) 2.4 V
7	Transistor	Q163 Rated :	I/P: High-Line +3V = 267 V	(1) 0.948V

		3.8A/100V	O/P: (1) FULL LOAD (2)NO LOAD	(2)0.744V
8	Diode Peak Voltage	Q101 Rated 210A/75V VGS:±20V Q104 Rated 210A/75V	I/P:High-Line +3V =267 V AC ON/OFF O/P: (1) FULL LOAD (2)Output Short (3).NO LOAD Ta:25°C	VDS: (1)58.4V (2)51.2V (3)61.0V VDS: (1)49.4V (2)51.4V (3)72.3V

SAFETY TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	WITHSTAND VOLTAGE	I/P-O/P: 3KVAC/min I/P-FG : 2KVAC/min O/P-FG:1.5KVAC/min	I/P-O/P: 3.6 KVAC/min I/P-FG: 2.4 KVAC/min O/P-FG:1.8 KVAC/min Ta:25°C	I/P-O/P:6.23mA I/P-FG:5.77mA O/P-FG:6.08mA NO DAMAGE
2	ISOLATION RESISTANCE	I/P-O/P:500VDC>100MΩ I/P-FG: 500VDC>100MΩ O/P-FG:500VDC>100MΩ	I/P-O/P: 500 VDC I/P-FG: 500 VDC O/P-FG: 500 VDC Ta:25°C	I/P-O/P: 7.28GΩ I/P-FG: 5.7GΩ O/P-FG: 9.2GΩ NO DAMAGE
3	GROUNDING CONTINUITY	FG(PE) TO CHASSIS OR TRACE < 100 mΩ	40A / 2min Ta:25°C	17mΩ

E.M.C TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	HARMONIC	EN61000-3-2 CLASS A	I/P:230VAC/50HZ O/P:100% LOAD Ta:25°C	PASS
2	CONDUCTION	EN55022 CLASS B	I/P : 230 VAC (50HZ) O/P : FULL/50% LOAD Ta : 25°C	PASS Test by certified Lab
3	RADIATION	EN55022 CLASS A	I/P : 230 VAC (50HZ) O/P : FULL LOAD Ta : 25°C	PASS Test by certified Lab
4	E.S.D	EN61000-4-2 INDUSTRY AIR : 8KV / Contact : 4KV	I/P : 230 VAC/50HZ O/P : FULL LOAD Ta : 25°C	CRITERIA A
5	E.F.T	EN61000-4-4 INDUSTRY INPUT : 2KV	I/P : 230 VAC/50HZ O/P : FULL LOAD Ta : 25°C	CRITERIA A
6	SURGE	IEC61000-4-5 INDUSTRY L-N : 2KV L,N-PE : 4KV	I/P : 230 VAC/50HZ O/P : FULL LOAD Ta : 25°C	CRITERIA A
7	Test by certified Lab & Test Report Prepare			

■ **RELIABILITY TEST**

ENVIRONMENT TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT																																																																																																																																					
1	TEMPERATURE RISE TEST	MODEL : RPB-1600-24																																																																																																																																							
		1. ROOM AMBIENT BURN-IN : 1 HRS I/P : 230VAC O/P : FULL LOAD Ta= 28.3 °C																																																																																																																																							
		2. HIGH AMBIENT BURN-IN : 3 HRS I/P : 230VAC O/P : FULL LOAD Ta= 52.5 °C																																																																																																																																							
				<table border="1"> <thead> <tr> <th>NO</th> <th>Position</th> <th>ROOM AMBIENT Ta= 28.3 °C</th> <th>HIGH AMBIENT Ta= 52.5 °C</th> </tr> </thead> <tbody> <tr><td>1</td><td>Q901</td><td>48.6°C</td><td>72.3°C</td></tr> <tr><td>2</td><td>Q904</td><td>75.5°C</td><td>81.5°C</td></tr> <tr><td>3</td><td>Q52</td><td>63.2°C</td><td>87.8°C</td></tr> <tr><td>4</td><td>D50</td><td>68.9°C</td><td>99.6°C</td></tr> <tr><td>5</td><td>BD1</td><td>58.1°C</td><td>85.6°C</td></tr> <tr><td>6</td><td>L900</td><td>45.9°C</td><td>68.6°C</td></tr> <tr><td>7</td><td>T3</td><td>37.6°C</td><td>61.7°C</td></tr> <tr><td>8</td><td>RG301</td><td>53.9°C</td><td>81.7°C</td></tr> <tr><td>9</td><td>RG302</td><td>51.7°C</td><td>76.2°C</td></tr> <tr><td>10</td><td>C302</td><td>30.3°C</td><td>55.3°C</td></tr> <tr><td>11</td><td>C355</td><td>38.1°C</td><td>59.4°C</td></tr> <tr><td>12</td><td>T1</td><td>30.2°C</td><td>76.1°C</td></tr> <tr><td>13</td><td>Q101</td><td>47.8°C</td><td>76.0°C</td></tr> <tr><td>14</td><td>Q104</td><td>48.7°C</td><td>77.2°C</td></tr> <tr><td>15</td><td>U921</td><td>41.9°C</td><td>70.4°C</td></tr> <tr><td>16</td><td>C5</td><td>38.4°C</td><td>64.2°C</td></tr> <tr><td>17</td><td>L100</td><td>65.7°C</td><td>97.8°C</td></tr> <tr><td>18</td><td>C980</td><td>33.4°C</td><td>63.9°C</td></tr> <tr><td>19</td><td>C11</td><td>42.8°C</td><td>69.2°C</td></tr> <tr><td>20</td><td>ZNR1</td><td>46.0°C</td><td>70.9°C</td></tr> <tr><td>21</td><td>ZNR2</td><td>42.3°C</td><td>75.6°C</td></tr> <tr><td>22</td><td>LF1</td><td>43.8°C</td><td>69.7°C</td></tr> <tr><td>23</td><td>C2</td><td>43.0°C</td><td>69.7°C</td></tr> <tr><td>24</td><td>D2</td><td>42.9°C</td><td>65.1°C</td></tr> <tr><td>25</td><td>L1</td><td>49.1°C</td><td>77.9°C</td></tr> <tr><td>26</td><td>L2</td><td>51.0°C</td><td>79.1°C</td></tr> <tr><td>27</td><td>RY1</td><td>45.3°C</td><td>71.4°C</td></tr> <tr><td>28</td><td>C101</td><td>47.0°C</td><td>73.6°C</td></tr> <tr><td>29</td><td>T52</td><td>37.9°C</td><td>65.3°C</td></tr> <tr><td>30</td><td>RTH21</td><td>54.0°C</td><td>76.4°C</td></tr> <tr><td>31</td><td>RTH9</td><td>45.3°C</td><td>72.3°C</td></tr> <tr><td>32</td><td>U671</td><td>43.8°C</td><td>70.0°C</td></tr> </tbody> </table>	NO	Position	ROOM AMBIENT Ta= 28.3 °C	HIGH AMBIENT Ta= 52.5 °C	1	Q901	48.6°C	72.3°C	2	Q904	75.5°C	81.5°C	3	Q52	63.2°C	87.8°C	4	D50	68.9°C	99.6°C	5	BD1	58.1°C	85.6°C	6	L900	45.9°C	68.6°C	7	T3	37.6°C	61.7°C	8	RG301	53.9°C	81.7°C	9	RG302	51.7°C	76.2°C	10	C302	30.3°C	55.3°C	11	C355	38.1°C	59.4°C	12	T1	30.2°C	76.1°C	13	Q101	47.8°C	76.0°C	14	Q104	48.7°C	77.2°C	15	U921	41.9°C	70.4°C	16	C5	38.4°C	64.2°C	17	L100	65.7°C	97.8°C	18	C980	33.4°C	63.9°C	19	C11	42.8°C	69.2°C	20	ZNR1	46.0°C	70.9°C	21	ZNR2	42.3°C	75.6°C	22	LF1	43.8°C	69.7°C	23	C2	43.0°C	69.7°C	24	D2	42.9°C	65.1°C	25	L1	49.1°C	77.9°C	26	L2	51.0°C	79.1°C	27	RY1	45.3°C	71.4°C	28	C101	47.0°C	73.6°C	29	T52	37.9°C	65.3°C	30	RTH21	54.0°C	76.4°C	31	RTH9	45.3°C	72.3°C	32	U671	43.8°C	70.0°C	
		NO	Position	ROOM AMBIENT Ta= 28.3 °C	HIGH AMBIENT Ta= 52.5 °C																																																																																																																																				
		1	Q901	48.6°C	72.3°C																																																																																																																																				
		2	Q904	75.5°C	81.5°C																																																																																																																																				
		3	Q52	63.2°C	87.8°C																																																																																																																																				
		4	D50	68.9°C	99.6°C																																																																																																																																				
		5	BD1	58.1°C	85.6°C																																																																																																																																				
		6	L900	45.9°C	68.6°C																																																																																																																																				
		7	T3	37.6°C	61.7°C																																																																																																																																				
		8	RG301	53.9°C	81.7°C																																																																																																																																				
		9	RG302	51.7°C	76.2°C																																																																																																																																				
		10	C302	30.3°C	55.3°C																																																																																																																																				
		11	C355	38.1°C	59.4°C																																																																																																																																				
		12	T1	30.2°C	76.1°C																																																																																																																																				
		13	Q101	47.8°C	76.0°C																																																																																																																																				
		14	Q104	48.7°C	77.2°C																																																																																																																																				
		15	U921	41.9°C	70.4°C																																																																																																																																				
		16	C5	38.4°C	64.2°C																																																																																																																																				
		17	L100	65.7°C	97.8°C																																																																																																																																				
		18	C980	33.4°C	63.9°C																																																																																																																																				
		19	C11	42.8°C	69.2°C																																																																																																																																				
		20	ZNR1	46.0°C	70.9°C																																																																																																																																				
		21	ZNR2	42.3°C	75.6°C																																																																																																																																				
		22	LF1	43.8°C	69.7°C																																																																																																																																				
		23	C2	43.0°C	69.7°C																																																																																																																																				
		24	D2	42.9°C	65.1°C																																																																																																																																				
		25	L1	49.1°C	77.9°C																																																																																																																																				
		26	L2	51.0°C	79.1°C																																																																																																																																				
		27	RY1	45.3°C	71.4°C																																																																																																																																				
		28	C101	47.0°C	73.6°C																																																																																																																																				
29	T52	37.9°C	65.3°C																																																																																																																																						
30	RTH21	54.0°C	76.4°C																																																																																																																																						
31	RTH9	45.3°C	72.3°C																																																																																																																																						
32	U671	43.8°C	70.0°C																																																																																																																																						
2	LOW TEMPERATURE TURN ON TEST	TURN ON AFTER 2 HOUR	I/P : 230VAC/180VAC O/P : 100 % LOAD Ta= -35°C / -30°C	TEST : OK																																																																																																																																					
3	HIGH HUMIDITY HIGH TEMPERATURE HIGH VOLTAGE TURN ON TEST	AFTER 12 HOURS IN CHAMBER ON CONTROL 50 °C NO DAMAGE	I/P : 272 VAC O/P : FULL LOAD Ta= 50 °C HUMIDITY= 95 %R.H	TEST : OK																																																																																																																																					



4	TEMPERATURE COEFFICIENT	$\pm 0.03\%/^{\circ}\text{C}$ (0-50°C)	I/P : 230 VAC O/P : FULL LOAD	$\pm 0.005\%/^{\circ}\text{C}$ (0-50°C)
5	STORAGE TEMPERATURE TEST	1. Thermal shock Temperature : -45°C~ +90°C 2. Temperature change rate : 25°C / MIN 3. Dwell time low and high temperature : 30 MIN/EACH 4. Total test cycle : 5 CYCLE 5. Input/Output condition : STATIC		OK
6	THERMAL SHOCK TEST	1. Thermal shock Temperature : -35°C~ +55°C 2. Temperature change rate : 25°C / MIN 3. Dwell time low and high temperature : 30 MIN/EACH 4. Total test cycle : 10 CYCLE 5. Input/Output condition : 15cycle:230V/ FULL LOAD AC ON 3sec/AC OFF 1sec TEST(13500 TIMES) 1cycle:230V/ FULL LOAD Burn In Test		OK
7	VIBRATION TEST	1 Carton & 1 Set (1) Waveform : Sine Wave (2) Frequency : 10-500Hz (3) Sweep Time : 12min/sweep cycle (4) Acceleration : 2G (5) Test Time : 60min in each axis (X.Y.Z) (6) Ta : 25°C		TEST : OK
8	CAPACITOR LIFE CYCLE	SUPPOSE C101 IS THE MOST CRITICAL COMPONENT (1) I/P : 230VAC O/P : FULL LOAD Ta= 25°C LIFE TIME (2) I/P : 230VAC O/P : FULL LOAD Ta= 50°C LIFE TIME (3) I/P : 230VAC O/P : 75% LOAD Ta= 50°C LIFE TIME (4) I/P : 230VAC O/P : 50% LOAD Ta= 50°C LIFE TIME		(1) 781466HRS (2) 119480HRS (3) 179758HRS (4) 222934HRS
9	MTBF	Conducted by Parts Stress Analysis Prediction 154K hrs min. Telcordia SR-332 (Bellcore) ; 100.3K hrs min. MIL-HDBK-217F (25°C)		
10	DMTBF/Accelerated Life Test	Demonstration Mean Time Between Failure (Expected Life): Above 50,000 hours @ TA 50°C		

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

12.10.30 A50-F031