



# Test Report: NTS-2200-148

---

2200W High Reliable True Sine Wave DC-AC Power Inverter

- **DESIGN VERIFY TEST**
  - Output Function Test
  - Input Function Test
  - Protection Function Test
  - Control Function Test
  - APPLICATION 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	RATED POWER	2200W	IP: 48VDC Ta:25°C	<u>2245</u> W
2	MAXIMUM OUTPUT POWER (TYP)	(1)2530W/180sec. (2)3300w/10sec (3)SURGE POWER 4400W FOR 30CYCLE Vin (30 ± 5 CYCLE)	IP: 50VDC OP:TESTING LOAD Ta:25°C	(1) <u>108.36</u> V / <u>22.12</u> A / <u>180.09</u> Sec (2) <u>108.06</u> V / <u>29.88</u> A / <u>10.07</u> Sec (3) <u>108.14</u> V / <u>39.4</u> A / <u>33</u> Cycle

CH3:O/P VAC CH4:O/P IAC

Fig1

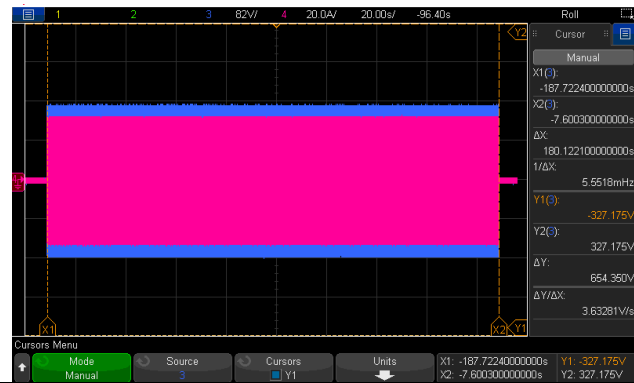


Fig2

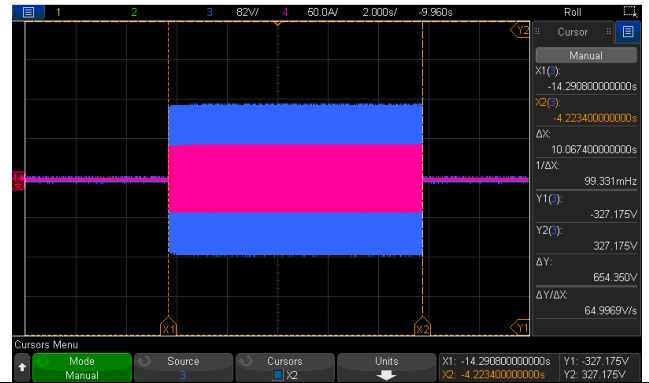
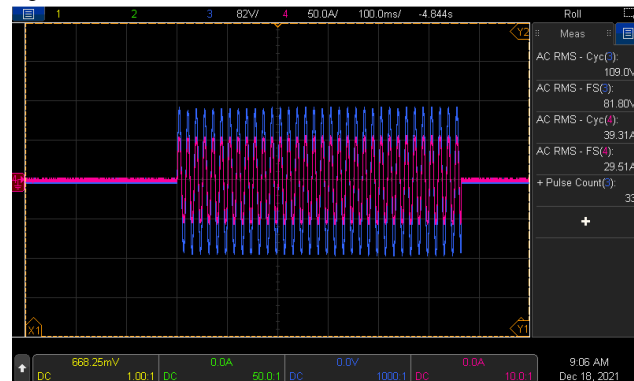


Fig3



3	AC Voltage	100 / 110 / 115 / 120Vac selectable by DIP S.W	IP: 48VDC OP: FULL LOAD Ta:25°C	DIP S.W 100VAC: <u>98.48</u> V DIP S.W 110VAC: <u>108.38</u> V DIP S.W 115VAC: <u>113.68</u> V DIP S.W 120VAC: <u>118.36</u> V
4	FREQUENCY	50/60Hz (±0.1HZ) selectable by DIP S.W	IP: 48VDC OP: FULL LOAD Ta:25°C	DIP S.W 50HZ: <u>50.06</u> HZ DIP S.W 60HZ: <u>59.95</u> HZ
5	WAVEFORM	True sine wave (THD<3%)	IP: 50VDC OP: 1650W (1) Vo(min) (2) Vo(nor) (3) Vo(max) Ta:25°C	(1) <u>1.85</u> % / Vo(min) /1650W (2) <u>2.13</u> % / Vo(nor) /1650W (3) <u>2.11</u> % / Vo(max) /1650W

CH3:O/P VAC CH4:O/P IAC

Fig1

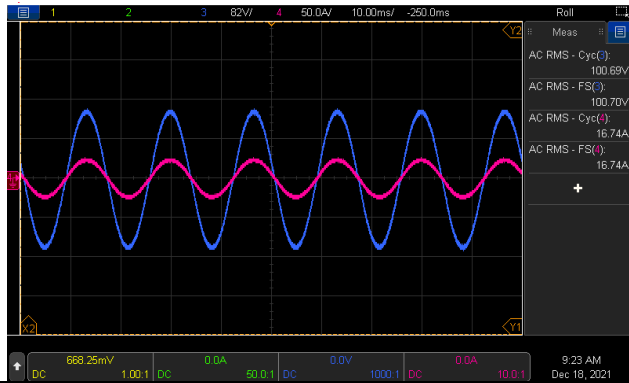


Fig2

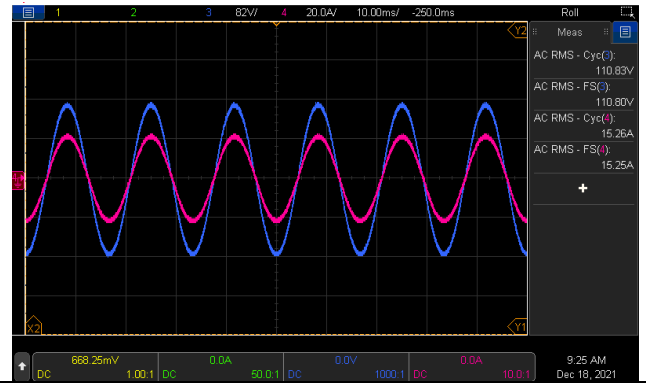
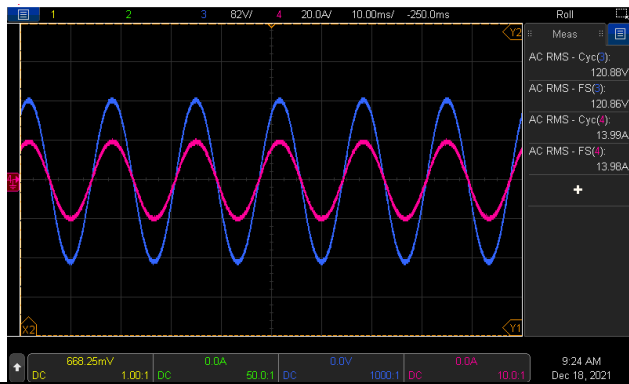


Fig3



6	AC REGULATION	±3%	IP: 50VDC OP: 1650W Ta:25°C	<u>    -1.38    </u> %
7	Overshoot /Undershoot	<±10%	IP: 48VDC OP: (1) full load turn on (2) no load turn on (3) full /no load change Ta:25°C	(1) <u>    -6.36    </u> % (2) <u>    1.82    </u> % (3) <u>    -6.54    </u> %
8	O/P voltage DC offset	Vin(nor)= <u>    48    </u> V · Vo<200mV · no load : <u>    66.7    </u> mV / full load: <u>    86.7    </u> mV		

9	LED STATUS	<ul style="list-style-type: none"> <li>• Status test</li> </ul>		
		<b>LED</b>	<b>Status</b>	<b>RESULT</b>
		Green ●	Inverter OK	OK
		Orange ●	Remote off	OK
		Orange ☀	No AC Output at Saving mode	OK
		Red ●	Inverter Fail	OK
		<ul style="list-style-type: none"> <li>• DC Input test</li> </ul>		
		<b>LED</b>	<b>Battery RANGE</b>	<b>RESULT</b>
		Green ●	50.0~62.0 Vdc±1V	50.185Vdc ~ 61.96 Vdc
		Orange ●	44.0~50.0Vdc ±1V	44.143Vdc ~ 50.125 Vdc
		Red ●	<44.0 Vdc ±1V > 62.0Vdc±1V	< 44.043 Vdc > 62.15 Vdc
		<ul style="list-style-type: none"> <li>• Load test</li> </ul>		
		<b>LED</b>	<b>LOAD RANGE</b>	<b>RESULT</b>
		Green ●	Min. load ~ 40%±5% LOAD	Min. load ~ 38.41 %
		Orange ●	40%±5% ~ 80%±5% LOAD	41.18% ~ 78.64 %
Red ●	≥ 80%±5% LOAD	≥ 80.81%		

**INPUT FUNCTION TEST**

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	VOLTAGE RANGE (TYP)	40VDC~66VDC	IP: TESTING OP:NO LOAD/FULL LOAD Ta:25°C	<u>40.183</u> VDC~ <u>66.06</u> VDC/NO LOAD <u>40.187</u> VDC~ <u>66.02</u> VDC/FULL LOAD

			<p>I/P:          LOW-LINE=42V          HIGH-LINE=65V          O/P:FULL/MIN LOAD          (PLEASE CHECK DERATING CURVE)          ON:30Sec OFF:30Sec          10MIN          (POWER ON/OFF NO DAMAGE)          I/P: 48V          O/P:FULL LOAD          ON:30ec OFF:30ec 12Hr          (POWER ON/OFF NO DAMAGE)</p>	<p>10MIN Test: <u>OK</u>          12Hr Test: <u>OK</u></p>
2	DC CURRENT (TYP)	60A	<p>IP: 48VDC          OP:FULL LOAD          Ta:25°C</p>	<u>50.2</u> A
3	NO LOAD DISSIPATION	<p>≤ 1.7W@ saving mode          ≤ 25W@NON-Saving Mode</p>	<p>IP: 48VDC          OP:NO LOAD          Ta:25°C</p>	<p><u>1.43</u> W@ saving mode  <u>19.43</u> W@NON- Saving Mode</p>
4	SAVING MODE TO NORMAL	Po ≥ 25W	<p>IP: 48VDC          OP: TESTING LOAD          Ta:25°C</p>	≥ <u>15</u> W
5	NORMAL TO SAVING MODE	Po ≤ 10W	<p>IP: 48VDC          OP: TESTING LOAD          Ta:25°C</p>	≤ <u>11</u> W
6	OFF MODE CURRENT DRAW (Typ.)	≤ 2mA	<p>IP: 48VDC          OP: Sw off          Ta:25°C</p>	<u>1.06</u> mA
7	EFFICIENCY(TYP)	1650W /91%	<p>IP:50VDC          OP: Po=1650W          110V/60HZ          Ta:25°C</p>	<u>91.8</u> %

**PROTECTION TEST**

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	BAT LOW ALARM	44V±1VDC	<p>IP: TESTING          OP:FULL LOAD          SW:ON          Ta:25°C</p>	<u>43.983</u> V
2	BAT LOW SHUT DOWN	40V±1VDC	<p>IP: TESTING          OP: FULL LOAD          SW:ON          Ta:25°C</p>	<u>40.10</u> V

3	BAT LOW RESTART	50V±1VDC	IP: TESTING OP: FULL LOAD SW:ON Ta:25°C	<u>50.143</u> V
4	BAT HIGH ALARM	62V±1VDC	IP: TESTING OP:FULL LOAD SW:ON Ta:25°C	<u>62.12</u> V
5	BAT HIGH SHUT DOWN	66V±1VDC	IP: TESTING OP: FULL LOAD SW:ON Ta:25°C	<u>66.08</u> V
6	BAT HIGH RESTART	60V±1VDC	IP: TESTING OP: FULL LOAD SW:ON Ta:25°C	<u>60.06</u> V
7	BAT. POLARITY	By internal fuse open	IP: BAT +/- (Reverse) OP: FULL LOAD Ta:25°C	TEST: <u>OK</u>
8	OVER TEMPERATURE	Shut down o/p voltage: re-power on.	IP: HI LINE/LOW-LINE OP: FULL LOAD SW:ON Ta:25°C	Shut down o/p voltage, re-power on to recover LED DISPLAY: <u>OK</u>
9	OUTPUT SHORT	Shut down o/p voltage: re-power on	IP: 48VDC O/P: FULL LOAD SW:ON Ta:25°C	Shut down o/p voltage, re-power on to recover LED DISPLAY: <u>OK</u>
10	OVER LOAD (typ.)	105%~115%LOAD 180sec 115%~150%LOAD 10 sec Shut down o/p voltage, re-power on to recover	IP: 48VDC OP: TESTING SW:ON Ta:25°C	(1). <u>105.72 % ~ 114.55%</u> <u>180.09 sec</u> (2). <u>115.23% ~ 148.3%</u> <u>10.066 sec</u> Shut down o/p voltage, re-power on to recover

**CONTROL FUNCTION TEST**

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	REMOTE CONTROL	(1) Power ON-OFF remote control by front panel dry contact connector (by RELAY) Open : Normal work Short : Remote off (2) IRC3	IP: 48VDC OP: FULL LOAD Ta:25°C	Open : <u>Normal work</u> Short : <u>Remote off</u> (1). TEST: Vo= <u>0.002 V</u> Pin= <u>6.27W</u> (2).TEST: <u>OK</u>

**APPLICATION TEST**

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	LAMP	LAMP: <u>839</u> · turn on <u>OK</u> LAMP: <u>1222</u> · turn on <u>OK</u> LAMP: <u>1622</u> · turn on <u>OK</u>	1. Vin=HIGH LINE 2. 110V/60Hz	TEST: <u>OK</u>

2	INDUCTION MOTOR	0.22 HP	1. Vin=HIGH LINE 2. 110V/60Hz	TEST: <u>OK</u>
3	SWITCHING POWER SUPPLY	WITH PFC: <u>RSP-3000-48</u> O/P= <u>1743</u> W	1. Vin=HIGH LINE 2. 110V/60Hz	TEST: <u>OK</u>
		NO PFC: <u>SE-1000-48</u> O/P= <u>1188</u> W	1. Vin=HIGH LINE 2. 110V/60Hz	TEST: <u>OK</u>

**COMPONENT WEAFORM TEST**

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	DC TO DC Power Transistor ( D to S) or (C to E) Peak Voltage	Q106 /Q112/Q126/Q132  Rated: 200 V / 65 A	I/P: high line O/P: V(max)/Freq 60HZ VDS: O/P: (1)Full Load Turn On (2) Output Short (3)O.L.P(4400W) Turn On (4) NO LOAD Turn On (5) Saving mode Ta:25°C	Q112                  Q126 VDS:                  VDS: (1) 166V              (1) 169V (2) 164V              (2) 168V (3) 165V              (3) 169V (4) 166V              (4) 170V (5) 165V              (5) 170V  Q106                  Q132 VDS:                  VDSS: (1) 166V              (1) 170V (2) 165V              (2) 170V (3) 166V              (3) 170V (4) 168V              (4) 171V (5) 168V              (5) 171V
2	DC TO DC Diode Peak Voltage	D 901 Rated : 400V/ 20 A	I/P: high line O/P: V(max) /Freq 60HZ O/P: (1)Full Load Turn On (2) Output Short (3)O.L.P(4400W) Turn On (4) NO LOAD Turn On (5) Saving mode Ta:25°C	(1) 273V (2) 276V (3) 276V (4) 281V (5) 281V
3	DC BUS Capacitor Voltage	C905 Rated: 680u/315V	I/P: high line O/P: V(max) /Freq 60HZ O/P: (1)Full Load Turn On (2) Output Short (3)O.L.P(4400W) Turn On (4) NO LOAD Turn On (5) Saving mode Ta:25°C	C905 (1) 273V (2) 292V (3) 279V (4) 273V (5) 273V

4	DC TO AC Power Transistor ( D to S) or (C to E) Peak Voltage	Q 1 Rated : 650 V/ 40 A	I/P: high line O/P:V(max)/Freq 60HZ VDS: O/P: (1)Full Load Turn On (2) Output Short (3)O.L.P(4400W) Turn On (4) NO LOAD Turn On (5) Saving mode Ta:25°C	Q1: VDS: (1) 305V (2) 366V (3) 316V (4) 300V (5) 300V
5	AUX PWM MOS	Q201 Rated: 65 A/ 200 V  Q504 Rated : 46 A/ 250 V	I/P: high line O/P:V(max) /Freq 60HZ O/P: (1)Full Load Turn On (2) Output Short (3)O.L.P(4400W) Turn On (4) NO LOAD Turn On (5) Saving mode Ta:25°C	Q201 (1) 169V (2) 169V (3) 169V (4) 170V (5) 169V  Q504 (1) 121V (2) 121V (3) 122V (4) 122V (5) 122V
6	Control IC Voltage Test	MCU IC U301 Rated 2.4 V~ 3.6 V  AUX IC U201 Rated 8.2V~30V  CHARGE IC U501 Rated 8.4V~30V  Gate Driver IC U1 Rated 3V~18V	I/P: high line O/P:V(max) /Freq 60HZ O/P: (1)Full Load Turn On (2) Output Short (3)O.L.P(4400W) Turn On (4) NO LOAD Turn On (5) Saving mode Ta:25°C	U301 (1) 3.30V (2) 3.30V (3) 3.30V (4) 3.30V (5) 3.30V  U201 (1) 12.2V (2) 12.2V (3) 12.2V (4) 12.2V (5) 12.2V  U501 (1) 12.47V (2) 12.47V (3) 12.47V (4) 12.47V (5) 12.47V  U1 (1) 5.07V (2) 5.07V (3) 5.07V (4) 5.07V (5) 5.07V

## SAFETY & EMC TEST

### SAFETY TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	WITHSTAND VOLTAGE	BAT I/P-AC O/P: 3 KVAC/min BAT I/P-AC I/P: 3 KVAC/min AC O/P-FG: 1.5 KVAC/min	BAT I/P-AC O/P 3.6 KVAC/min BAT I/P-AC I/P: 3.6 KVAC/min AC O/P-FG:1.8 KVAC/min Ta:25°C	BAT I/P-ACO/P: 11.47 mA AC O/P-FG: 11.32 mA AC O/P-FG: 7.57 mA NO DAMAGE
2	GROUNDING CONTINUITY	EN 60950 FG(PE) TO CHASSIS OR TRACE < 100 mΩ	40 A / 2min Ta:25°C	6mΩ

### E.M.C TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	CONDUCTION	FCC CLASS A	I/P: 24 VDC O/P: FULL LOAD/50% LOAD Ta:25°C	PASS



2	RADIATION	FCC CLASS A	I/P:24 VDC O/P: :FULL/50% LOAD Ta:25°C	PASS
3	Test by certified Lab & Test Report Prepare Any contradictions of the test results, please refer to the latest EMC test report			

## Reliability Test

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT																																																																																																																												
1	TEMPERATURE RISE TEST	MODEL : NTU-2200-124 1. ROOM AMBIENT BURN-IN : 2 HRS I/P : 24 VDC O/P : FULL LOAD Ta= 25 °C 2. HIGH AMBIENT BURN-IN : 2 HRS I/P : 24 VDC O/P : FULL LOAD Ta= 40 °C																																																																																																																														
			<table border="1"> <thead> <tr> <th>NO</th> <th>Position</th> <th>ROOM AMBIENT Ta= 25 °C</th> <th>HIGH AMBIENT Ta= 40 °C</th> </tr> </thead> <tbody> <tr><td>1</td><td>C140</td><td>53.3°C</td><td>62.6°C</td></tr> <tr><td>2</td><td>C144</td><td>52.4°C</td><td>61.8°C</td></tr> <tr><td>3</td><td>T102 Coil1</td><td>61.3°C</td><td>70.0°C</td></tr> <tr><td>4</td><td>T102 Core</td><td>57.2°C</td><td>65.4°C</td></tr> <tr><td>5</td><td>C100</td><td>55.5°C</td><td>64.0°C</td></tr> <tr><td>6</td><td>C105</td><td>53.0°C</td><td>61.9°C</td></tr> <tr><td>7</td><td>T102 NTC</td><td>54.3°C</td><td>63.8°C</td></tr> <tr><td>8</td><td>T101 Coil1</td><td>65.4°C</td><td>73.7°C</td></tr> <tr><td>9</td><td>T101 Core</td><td>59.0°C</td><td>67.4°C</td></tr> <tr><td>10</td><td>Q104</td><td>49.3°C</td><td>59.4°C</td></tr> <tr><td>11</td><td>Q115</td><td>42.9°C</td><td>53.3°C</td></tr> <tr><td>12</td><td>D902</td><td>64.0°C</td><td>71.2°C</td></tr> <tr><td>13</td><td>D912</td><td>61.4°C</td><td>70.1°C</td></tr> <tr><td>14</td><td>D908</td><td>67.6°C</td><td>74.8°C</td></tr> <tr><td>15</td><td>L100</td><td>55.4°C</td><td>65.8°C</td></tr> <tr><td>16</td><td>T501</td><td>32.7°C</td><td>43.8°C</td></tr> <tr><td>17</td><td>Q504</td><td>31.4°C</td><td>43.4°C</td></tr> <tr><td>18</td><td>D530</td><td>29.7°C</td><td>42.3°C</td></tr> <tr><td>19</td><td>U501</td><td>32.2°C</td><td>44.3°C</td></tr> <tr><td>20</td><td>LF1</td><td>44.5°C</td><td>56.1°C</td></tr> <tr><td>21</td><td>ZNR1</td><td>35.4°C</td><td>46.9°C</td></tr> <tr><td>22</td><td>C6</td><td>35.4°C</td><td>46.6°C</td></tr> <tr><td>23</td><td>LF26</td><td>44.7°C</td><td>55.1°C</td></tr> <tr><td>24</td><td>CC53</td><td>51.2°C</td><td>60.2°C</td></tr> <tr><td>25</td><td>T201</td><td>50.3°C</td><td>61.2°C</td></tr> <tr><td>26</td><td>T202</td><td>52.5°C</td><td>63.6°C</td></tr> <tr><td>27</td><td>Q201</td><td>58.2°C</td><td>65.6°C</td></tr> <tr><td>28</td><td>U301</td><td>38.7°C</td><td>49.6°C</td></tr> <tr><td>29</td><td>R79</td><td>66.3°C</td><td>74.0°C</td></tr> <tr><td>30</td><td>Q8</td><td>85.9°C</td><td>94.1°C</td></tr> </tbody> </table>	NO	Position	ROOM AMBIENT Ta= 25 °C	HIGH AMBIENT Ta= 40 °C	1	C140	53.3°C	62.6°C	2	C144	52.4°C	61.8°C	3	T102 Coil1	61.3°C	70.0°C	4	T102 Core	57.2°C	65.4°C	5	C100	55.5°C	64.0°C	6	C105	53.0°C	61.9°C	7	T102 NTC	54.3°C	63.8°C	8	T101 Coil1	65.4°C	73.7°C	9	T101 Core	59.0°C	67.4°C	10	Q104	49.3°C	59.4°C	11	Q115	42.9°C	53.3°C	12	D902	64.0°C	71.2°C	13	D912	61.4°C	70.1°C	14	D908	67.6°C	74.8°C	15	L100	55.4°C	65.8°C	16	T501	32.7°C	43.8°C	17	Q504	31.4°C	43.4°C	18	D530	29.7°C	42.3°C	19	U501	32.2°C	44.3°C	20	LF1	44.5°C	56.1°C	21	ZNR1	35.4°C	46.9°C	22	C6	35.4°C	46.6°C	23	LF26	44.7°C	55.1°C	24	CC53	51.2°C	60.2°C	25	T201	50.3°C	61.2°C	26	T202	52.5°C	63.6°C	27	Q201	58.2°C	65.6°C	28	U301	38.7°C	49.6°C	29	R79	66.3°C	74.0°C	30	Q8	85.9°C	94.1°C	
NO	Position	ROOM AMBIENT Ta= 25 °C	HIGH AMBIENT Ta= 40 °C																																																																																																																													
1	C140	53.3°C	62.6°C																																																																																																																													
2	C144	52.4°C	61.8°C																																																																																																																													
3	T102 Coil1	61.3°C	70.0°C																																																																																																																													
4	T102 Core	57.2°C	65.4°C																																																																																																																													
5	C100	55.5°C	64.0°C																																																																																																																													
6	C105	53.0°C	61.9°C																																																																																																																													
7	T102 NTC	54.3°C	63.8°C																																																																																																																													
8	T101 Coil1	65.4°C	73.7°C																																																																																																																													
9	T101 Core	59.0°C	67.4°C																																																																																																																													
10	Q104	49.3°C	59.4°C																																																																																																																													
11	Q115	42.9°C	53.3°C																																																																																																																													
12	D902	64.0°C	71.2°C																																																																																																																													
13	D912	61.4°C	70.1°C																																																																																																																													
14	D908	67.6°C	74.8°C																																																																																																																													
15	L100	55.4°C	65.8°C																																																																																																																													
16	T501	32.7°C	43.8°C																																																																																																																													
17	Q504	31.4°C	43.4°C																																																																																																																													
18	D530	29.7°C	42.3°C																																																																																																																													
19	U501	32.2°C	44.3°C																																																																																																																													
20	LF1	44.5°C	56.1°C																																																																																																																													
21	ZNR1	35.4°C	46.9°C																																																																																																																													
22	C6	35.4°C	46.6°C																																																																																																																													
23	LF26	44.7°C	55.1°C																																																																																																																													
24	CC53	51.2°C	60.2°C																																																																																																																													
25	T201	50.3°C	61.2°C																																																																																																																													
26	T202	52.5°C	63.6°C																																																																																																																													
27	Q201	58.2°C	65.6°C																																																																																																																													
28	U301	38.7°C	49.6°C																																																																																																																													
29	R79	66.3°C	74.0°C																																																																																																																													
30	Q8	85.9°C	94.1°C																																																																																																																													

		<table border="1"> <thead> <tr> <th>NO</th> <th>Position</th> <th>ROOM AMBIENT Ta= 25 °C</th> <th>HIGH AMBIENT Ta= 40 °C</th> </tr> </thead> <tbody> <tr><td>31</td><td>Q3</td><td>81.0°C</td><td>89.6°C</td></tr> <tr><td>32</td><td>C906</td><td>44.3°C</td><td>53.9°C</td></tr> <tr><td>33</td><td>L10</td><td>42.4°C</td><td>53.2°C</td></tr> <tr><td>34</td><td>R275</td><td>63.1°C</td><td>75.7°C</td></tr> <tr><td>35</td><td>R115</td><td>55.3°C</td><td>64.7°C</td></tr> <tr><td>36</td><td>U201</td><td>57.5°C</td><td>67.3°C</td></tr> <tr><td>37</td><td>U102</td><td>52.2°C</td><td>61.9°C</td></tr> <tr><td>38</td><td>TSW3</td><td>44.6°C</td><td>54.7°C</td></tr> <tr><td>39</td><td>TSW2</td><td>64.2°C</td><td>73.8°C</td></tr> <tr><td>40</td><td>U1</td><td>43.7°C</td><td>52.7°C</td></tr> <tr><td>41</td><td>R70</td><td>67.0°C</td><td>75.7°C</td></tr> <tr><td>42</td><td>Q133</td><td>51.8°C</td><td>61.7°C</td></tr> <tr><td>43</td><td>Q123</td><td>43.2°C</td><td>52.7°C</td></tr> <tr><td>44</td><td>RTH7</td><td>50.4°C</td><td>60.4°C</td></tr> <tr><td>45</td><td>Q125</td><td>42.1°C</td><td>52.5°C</td></tr> </tbody> </table>				NO	Position	ROOM AMBIENT Ta= 25 °C	HIGH AMBIENT Ta= 40 °C	31	Q3	81.0°C	89.6°C	32	C906	44.3°C	53.9°C	33	L10	42.4°C	53.2°C	34	R275	63.1°C	75.7°C	35	R115	55.3°C	64.7°C	36	U201	57.5°C	67.3°C	37	U102	52.2°C	61.9°C	38	TSW3	44.6°C	54.7°C	39	TSW2	64.2°C	73.8°C	40	U1	43.7°C	52.7°C	41	R70	67.0°C	75.7°C	42	Q133	51.8°C	61.7°C	43	Q123	43.2°C	52.7°C	44	RTH7	50.4°C	60.4°C	45	Q125	42.1°C	52.5°C
NO	Position	ROOM AMBIENT Ta= 25 °C	HIGH AMBIENT Ta= 40 °C																																																																		
31	Q3	81.0°C	89.6°C																																																																		
32	C906	44.3°C	53.9°C																																																																		
33	L10	42.4°C	53.2°C																																																																		
34	R275	63.1°C	75.7°C																																																																		
35	R115	55.3°C	64.7°C																																																																		
36	U201	57.5°C	67.3°C																																																																		
37	U102	52.2°C	61.9°C																																																																		
38	TSW3	44.6°C	54.7°C																																																																		
39	TSW2	64.2°C	73.8°C																																																																		
40	U1	43.7°C	52.7°C																																																																		
41	R70	67.0°C	75.7°C																																																																		
42	Q133	51.8°C	61.7°C																																																																		
43	Q123	43.2°C	52.7°C																																																																		
44	RTH7	50.4°C	60.4°C																																																																		
45	Q125	42.1°C	52.5°C																																																																		
2	OVER LOAD BURN-IN TEST	NO DAMAGE 1 HOUR ( MIN )	I/P : 24VDC O/P : 102%LOAD Ta : 25°C	TEST : OK																																																																	
3	LOW TEMPERATURE TURN ON TEST	TURN ON AFTER 2 HOUR	I/P : 24VDC O/P : 100%LOAD Ta= -30 °C	TEST : OK																																																																	
4	HIGH HUMIDITY HIGH TEMPERATURE HIGH VOLTAGE TURN ON TEST	AFTER 12 HOURS IN CHAMBER ON CONTROL 40 °C NO DAMAGE	I/P : 32.5VDC O/P : FULL LOAD Ta= 38.7 °C HUMIDITY= 95 %R.H	TEST : OK																																																																	
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 : 10 CYCLE 5. Input /Output condition : STATIC		TEST : OK																																																																	
6	THERMAL SHOCK TEST	1. Thermal shock Temperature : -30°C~ +45°C 2. Temperature change rate : 25°C / MIN 3. Dwell time low and high temperature : 30 MIN/EACH 4. Total test cycle : 16 CYCLE 5. Input /Output condition : 15cycle:24VDC/ FULL LOAD DC ON 11sec/DC OFF 1sec TEST 1cycle:24VDC/ FULL LOAD Burn In Test		TEST : OK																																																																	
7	VIBRATION TEST	1 Carton & 1 Set (1) Waveform : Sine Wave (2) Frequency : 10~500Hz (3) Sweep Time : 10min/sweep cycle (4) Acceleration : 4G (5) Test Time : 60min in each axis (X.Y.Z) (6) Ta : 25°C		TEST : OK																																																																	



8	CAPACITOR LIFE CYCLE	SUPPOSE C100 IS THE MOST CRITICAL COMPONENT (1) I/P : 24VDC O/P : FULL LOAD Ta= 25 °C LIFE TIME (2) I/P : 24VDC O/P : FULL LOAD Ta= 40 °C LIFE TIME (3) I/P : 24VDC O/P : 75% LOAD Ta= 40 °C LIFE TIME (4) I/P : 24VDC O/P : 50% LOAD Ta= 40 °C LIFE TIME	(1) 455777.6HRS (2) 252858.4HRS (3) 432600.8HRS (4) 675704.3HRS
9	MTBF	Conducted by Parts Stress Analysis Prediction 364.7K hrs min. Telcordia SR-332 (Bellcore) ; 34.9K hrs min. MIL-HDBK-217F (25°C)	
10	Ongoing Reliability Test	I/P : 25VDC O/P : 80% LOAD TA=50°C Demonstration Mean Time Between Failure : 30,000 hours	

TEST RESULT	TESTER	REVIEW	APPROVAL
PASS	Liutt		Wangdz

2020.10.1 TAG-QA-009