



Test Report: DDR-480C-48

480W DIN RailTypeDC-DC Converter

■ DESIGN VERIFY TEST

Output Function Test

Input Function Test

Protection Function Test

Control Function Test

Component Stress Test

■ SAFETY&E.M.C. TEST

Safety Test

E.M.C. Test

■ RELIABILITY TEST

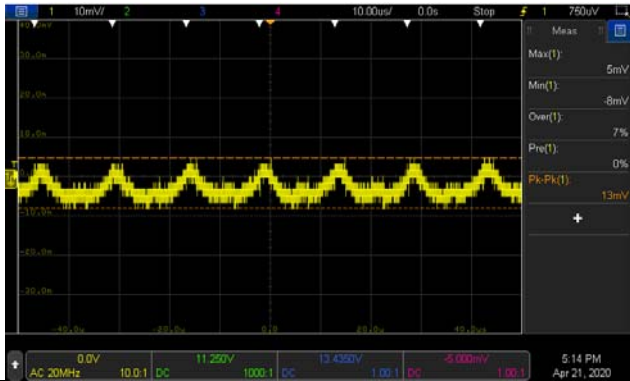
ENVIRONMENT TEST

DESIGN VERIFY TEST

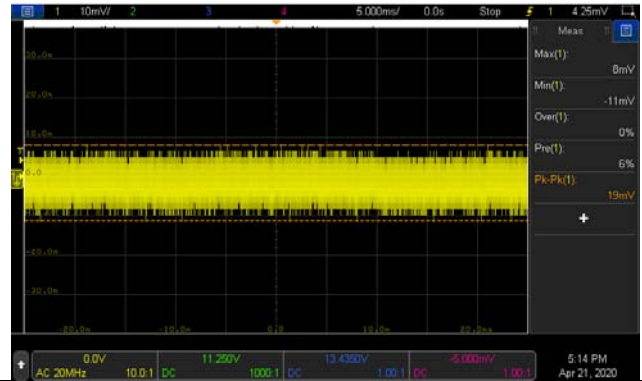
OUTPUT FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	OUTPUT VOLTAGE ADJUST RANGE	CH1: 48V~56V	I/P: NORMAL VOLTAGE O/P: MIN LOAD Ta: 25°C	CH1: 45.59V~58.20V
2	OUTPUT VOLTAGE TOLERANCE(Max)	V1: -1%~1%	I/P: 33.6 VDC /67.2 VDC O/P: FULL / MIN. LOAD Ta: 25°C	V1: -0.24%~0.10%
3	LINE REGULATION(Max)	V1: -0.5%~0.5%	I/P: 33.6 VDC /67.2 VDC O/P: FULL LOAD Ta: 25°C	V1: 0%~0.02%
4	LOAD REGULATION(Max)	V1: -1%~1%	I/P: 48VDC O/P: FULL ~MIN LOAD Ta: 25°C	V1: -0.24%~0.10%
5	OVER/UNDERSHOOT TEST	$\leq \pm 5\%$	I/P: 48 VDC O/P: FULL LOAD Ta: 25°C	TEST: 1.2%
6	Peak Loading	720W/5sec.	I/P: 48 VDC O/P: 720W Ta: 25°C	OK
7	RIPPLE & NOISE (Max)	V1: 150mVp-p	I/P: 48 VDC O/P: FULL LOAD Ta: 25°C	V1: 19mVp-p

high frequency :



low frequency :

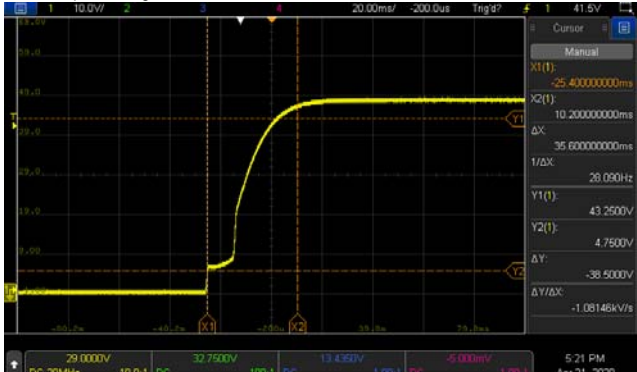


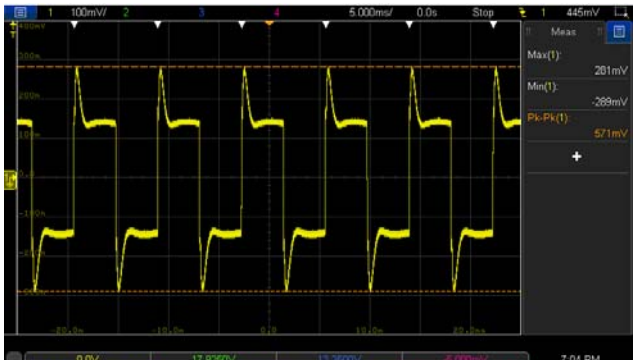



8	SET UP TIME(Max)	48VDC/500ms	I/P: 48 VDC O/P: FULL LOAD Ta: 25°C	91.4ms
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INPUT=48VDC @ FULL LOAD

CH1 : Output Voltage CH2 : DC Input Voltage



9	RISE TIME (Max)	48VDC/ 60ms	I/P: 48VDC O/P: FULL LOAD Ta: 25°C	35.6ms
<p>INPUT=48VDC @ FULL LOAD CH1: Output Voltage</p> 				
10	HOLD UP TIME (TYP)	48VDC/ 11 ms 48VDC/ 17 ms@70%LOAD	I/P: 48VDC O/P: FULL LOAD/70%LOAD Ta: 25°C	48VDC/13ms @FULL LOAD 48VDC/19ms@70%LOAD
<p>INPUT=48VDC @ FULL LOAD CH1 : Output Voltage CH2 : DC Input Voltage</p>  <p>INPUT=48VDC @ 70% LOAD CH1 : Output Voltage CH2 : DC Input Voltage</p> 				
11	TRANSIENT RECOVERY TIME	V1: 4800mVp-p	I/P: 48VDC O/P: 40% LOAD CHANGE 50%DUTY/120HZ	474mVp-p
12	DYNAMIC LOAD	V1: 4800mVp-p	I/P: 48VDC O/P: (1) FULL /50% LOAD 50%DUTY/120HZ (2) FULL /50% LOAD 50%DUTY/ 1KHZ Ta: 25°C	571mVp-p 507mVp-p
<p>FULL /50% LOAD 50%DUTY/120HZ</p>  <p>FULL /50% LOAD 50%DUTY/ 1KHZ</p> 				

INPUT FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT																																												
1	INPUT VOLTAGE RANGE	33.6VDC-67.2 VDC 28.8VDC-33.6 VDC \geq 100ms	I/P:TESTING O/P:FULL LOAD Ta:25°C	(1) 28V~ 67.2V (2) TEST : OK																																												
			I/P: LOW-LINE-0.2=33.4 V HIGH-LINE+3V= 70.2V O/P:FULL/MIN LOAD (PLEASE CHECK DERATING CURVE) ON: 30 Sec . OFF: 30 Sec 10MIN (POWER ON/OFF NO DAMAGE)	TEST : OK																																												
2	INPUT CURRENT(TYP)	48VDC/11.2A	I/P: 48VDC O/P:FULL LOAD Ta:25°C	I=10.8A																																												
3	EFFICIENCY(TYP)	92%	I/P:48VDC O/P:FULL LOAD Ta:25°C	92.49%																																												
<p>EFFICIENCY vs LOAD</p> <table border="1"> <caption>Efficiency vs Load Data</caption> <thead> <tr> <th>LOAD (%)</th> <th>48VDC (%)</th> <th>67.2VDC (%)</th> <th>43.2VDC (%)</th> </tr> </thead> <tbody> <tr><td>10%</td><td>85</td><td>81</td><td>85</td></tr> <tr><td>20%</td><td>91</td><td>88</td><td>91</td></tr> <tr><td>30%</td><td>92</td><td>91</td><td>92</td></tr> <tr><td>40%</td><td>93</td><td>92</td><td>93</td></tr> <tr><td>50%</td><td>93</td><td>92</td><td>93</td></tr> <tr><td>60%</td><td>93</td><td>92</td><td>93</td></tr> <tr><td>70%</td><td>93</td><td>92</td><td>93</td></tr> <tr><td>80%</td><td>93</td><td>92</td><td>93</td></tr> <tr><td>90%</td><td>93</td><td>92</td><td>93</td></tr> <tr><td>100%</td><td>93</td><td>92</td><td>93</td></tr> </tbody> </table>					LOAD (%)	48VDC (%)	67.2VDC (%)	43.2VDC (%)	10%	85	81	85	20%	91	88	91	30%	92	91	92	40%	93	92	93	50%	93	92	93	60%	93	92	93	70%	93	92	93	80%	93	92	93	90%	93	92	93	100%	93	92	93
LOAD (%)	48VDC (%)	67.2VDC (%)	43.2VDC (%)																																													
10%	85	81	85																																													
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40%	93	92	93																																													
50%	93	92	93																																													
60%	93	92	93																																													
70%	93	92	93																																													
80%	93	92	93																																													
90%	93	92	93																																													
100%	93	92	93																																													
4	INRUSH CURRENT(TYP)	48VDC/30A COLD START	I/P: 48VDC O/P:FULL LOAD Ta:25°C	17.6A																																												
<p>INPUT=48VDC @ FULL LOAD CH2 : Input current</p>																																																
5	INTERRUPTION OF VOLTAGE SUPPLY	COMPLY WITH S2 LEVEL (10ms)	I/P: 48VDC O/P:FULL LOAD Ta:25°C	12.98ms																																												



PROTECTION FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	OVER LOADPROTECTION	105%~ 135%RATED OUTPUT POWER 5SNO DAMAGE	I/P: 43.2VDC I/P: 48VDC I/P: 67.2VDC O/P: TESTING Ta:25°C	126.9%/ 43.2VDC 125.6%/48VDC 126.2%/67.2VDC PROTECTION TYPE : Normally works within 150% rated output power for more than 5 seconds and thenconstant current protection 105%~135% rated output powerwith auto-recovery.
2	OVER VOLTAGE PROTECTION	CH: 57.6 V~65 V	I/P: 33.6VDC I/P: 48VDC I/P: 67.2VDC O/P: MIN LOAD Ta:25°C	59.7V/33.6VDC 59.7V/ 48VDC 59.7V/67.2 VDC PROTECTION TYPE : Shut down O/P voltage,re-power on to recover
3	OVER TEMPERATUREPROTECTION	SPEC: NO DAMAGE	I/P: 67.2/33.6VDC O/P: FULL LOAD Ta:25°C	O.T.P. Active PROTECTION TYPE : Shut down O/P voltage,re-power on to recover
4	SHORT PROTECTION	SHORT EVERY OUTPUT 1 HOUR NO DAMAGE	I/P: 67.2VDC O/P: FULL LOAD Ta:25°C	NO DAMAGE PROTECTION TYPE : Constant current limiting with auto-recovery recovers automatically after fault condition is removed
6.	INPUT REVERSE	POWER OK	I/P: 67.2/33.6VDC O/P: FULL LOAD Ta:25°C	NO DAMAGE
7	INPUT UNDER VOLTAGE PROTECTION	48 VIN (C-TYPE) : POWER ON >=33.6V POWER OFF<=33V	I/P: TESTING O/P: FULL LOAD Ta:25°C	POWER ON >=28V POWER OFF<=27.4V

CONTROL FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
2	REMOTE ON/OFF CONTROL	I/P: 48VDC O/P:FULL LOAD Ta:25°C Test Result :		
		Remote ON-OFF (TB1 PIN2,4)	Power Output Status	
		Open or 5.5~10VDC	ON 2.66VDC	
		Short or 0~0.8VDC	OFF 0.811VDC	
7	DC OK CONTACT RATINGS	30VDC/1A RESISTIVE LOAD	I/P: 48VDC O/P:FULL LOAD Ta:25°C	TEST : OK

COMPONENT STRESS TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	PWM Transistor (D to S) or (C to E)Peak Voltage	Q 8/Q19 Rated : 65A/200V Q12/Q17 Rated : 65A/200V	DC ON/OFF I/P:High-Line +3V =70.2V VDS: O/P: (1)Full Load (2)Output Short	Q8 Q19 VDS: VDS: (1) 114.2V (1) 114V (2) 161V (2) 154V (3) 114.9V (3) 115V



			<p>(3)Dynamic Load Full Load/ Min. Load 90%Duty/1KHz (4)Dynamic Load Full Load/ Min. Load 90%Duty/3KHz (5)Dynamic Load Full Load/ Min. Load 90%Duty/5KHz (6)Dynamic Load 100% Load/ Min. Load 50%Duty/120Hz (7)0%→400% Load. Ta:25°C</p>	<p>(4) 114.9V (5) 115.7V (6) 115.7V (7) 132.5V</p> <p>Q17 VDS: (1) 118.6V (2) 152V (3) 118.6V (4) 118.6V (5) 118.6V (6) 120.2V (7) 127.8V</p>	<p>(4) 114.2V (5) 115V (6) 115V (7) 131.8V</p> <p>Q12 VDS: (1) 119.2V (2) 152V (3) 120.1V (4) 120.1V (5) 120.1V (6) 120.9V (7) 127.4V</p>
2	Clamp MOSFET (D to S) or (C to E) Peak Voltage	Q20/Q4 Rated : 34A/200V	<p>DC ON/OFF I/P:High-Line +3V =70.2V VDS: O/P: (1)Full Load (2)Output Short (3)Dynamic Load Full Load/ Min. Load 90%Duty/1KHz (4)Dynamic Load Full Load/ Min. Load 90%Duty/3KHz (5)Dynamic Load Full Load/ Min. Load 90%Duty/5KHz (6)Dynamic Load 100% Load/ Min. Load 50%Duty/120Hz (7)0%→400% Load. Ta:25°C</p>	<p>Q20 VDS: (1) 86.2V (2) 99.8V (3) 99V (4) 97.4V (5) 97.4V (6) 103.4V (7) 127.8V</p>	<p>Q4 VDS: (1) 72.1V (2) 110.7V (3) 102V (4) 94.8V (5) 94.8V (6) 104.5V (7) 136V</p>
3	Diode PeakVoltage	<p>Q101/Q105 Rated : 10A/400V Q200/Q202 Rated : 10A/400V</p>	<p>DC ON/OFF I/P:High-Line +3V =70.2 V VOmax: O/P: (1)Full Load (2)Output Short (3)Dynamic Load Full Load/ Min. Load 90%Duty/1KHz (4)Dynamic Load Full Load/ Min. Load 90%Duty/3KHz (5)Dynamic Load Full Load/ Min. Load 90%Duty/5KHz (6)Dynamic Load 100% Load/ Min. Load 50%Duty/120Hz (7)0%→400% Load. (8).NO LOAD VO: O/P: (1)Full Load Ta:25°C</p>	<p>Q101: VOmax: VDS: (1) 204V (2) 272V (3) 234V (4) 242V (5) 244V (6) 236V (7) 214V (8) 158V VO: (1) 186V Q200: VOmax: VDS: (1) 177V (2) 245V (3) 219V (4) 219V (5) 221V (6) 219V (7) 213V (8) 143V VO: (1) 168V</p>	<p>Q105: VOmax: VDS: (1) 355V (2) 371V (3) 359V (4) 351V (5) 351V (6) 355V (7) 359V (8) 323V VO: (1) 351V Q202: VOmax: VDS: (1) 334V (2) 350V (3) 338V (4) 338V (5) 338V (6) 338V (7) 334V (8) 302V VO: (1) 338V</p>



4	Input Capacitor Voltage	C20/C28 Rated: : 680 μ / 80V	I/P:High-Line +3V =70.2V O/P: (1)Full Load input on/off (2) Min load input on /Off (3)Full Load /Min load Change (4)Full load continue Ta:25 $^{\circ}$ C	C20 (1) 75.3V (2) 74.1V (3) 71.3V (4) 69.7V	C28 (1) 74.9V (2) 74.1V (3) 71.3V (4) 69.7V
5	Control IC Voltage Test	PWM IC U1 Rated 7.5V~ 15 V / VCC O/PU100Rated -0.3V~ 32 V	DC ON/OFF I/P:High-Line +3V =70.2 V O/P(1)FULL LOAD (2) Output Short (3)O.L.P (4)O.V.P. (5)NO LOAD VRmin(LOW LINE) Ta:25 $^{\circ}$ C	U1 /VCC1/VCC2 (1) 13.52V/13.12V (2) 13.20V/13.20V (3) 13.44V/13.44V (4) 13.20V/13.12V (5) 10.70V/10.62V	U100 (1) 11.64V (2) 11.64V (3) 11.89V (4) 11.72V (5) 11.4V

SAFETY TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	WITHSTANDVOLTAGE	I/P-O/P:4KVDC/min I/P-FG:2.5KVDC/min O/P-FG:0.71KVDC/min	I/P-O/P: 4.4KVDC/min I/P-FG: 3KVDC/min O/P-FG:0.852KVDC/min Ta:25 $^{\circ}$ C	I/P-O/P:0.2uA I/P-FG:0.1uA O/P-FG:0.4uA NO DAMAGE
2	ISOLATIONRESISTANCE	I/P-O/P:500VDC>100M Ω I/P-FG: 500VDC>100M Ω O/P-FG:500VDC>100M Ω	I/P-O/P: 600 VDC I/P-FG: 600VDC O/P-FG: 600VDC Ta:25 $^{\circ}$ C	I/P-O/P:9999M Ω I/P-FG:9999M Ω O/P-FG:9999M Ω NO DAMAGE
3	GROUNDINGCONTINUITY	FG(PE) TO CHASSIS OR TRACE < 100 m Ω	40A / 2min Ta:25 $^{\circ}$ C	3m Ω

E.M.C TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	RADIATION	EN55032 CLASS B	I/P: 48VDC O/P:FULL LOAD Ta:25 $^{\circ}$ C	PASS Test by certified Lab
2	CONDUCTION	EN55032 CLASS A	I/P:48VDC O/P:FULL LOAD Ta:25 $^{\circ}$ C	PASS Test by certified Lab
3	E.S.D	EN61000-4-2 ■INDUSTRY AIR: 8KV / Contact: 6KV	I/P: 48VDC O/P:FULL LOAD Ta:25 $^{\circ}$ C	■CRITERIA A <input type="checkbox"/> CRITERIA B
4	E.F.T	EN61000-4-4 ■INDUSTRY INPUT: 2KV	I/P:48VDC O/P:FULL LOAD Ta:25 $^{\circ}$ C	■CRITERIA A <input type="checkbox"/> CRITERIA B
5	SURGE	IEC61000-4-5 ■INDUSTRY L-N :1KV L,N-PE:2KV	I/P: 48VDC O/P:FULL LOAD Ta:25 $^{\circ}$ C	■CRITERIA A <input type="checkbox"/> CRITERIA B
6	Test by certified Lab & Test Report Prepare Any contradictions of the test results, please refer to the latest EMC test report			



■ RELIABILITY TEST

ENVIRONMENT TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT																																																																																																																																																																								
1	TEMPERATURE RISE TEST	MODEL : DDR-480C-48 1. ROOM AMBIENT BURN-IN : 2 HRS I/P : 48 VDC O/P : FULL LOAD Ta= 25.1 °C 2. HIGH AMBIENT BURN-IN : 2 HRS I/P : 48 VDC O/P : FULL LOAD Ta= 60.6 °C																																																																																																																																																																										
			<table border="1"> <thead> <tr> <th>NO</th> <th>Position</th> <th>ROOM AMBIENT Ta= 25.1 °C</th> <th>HIGH AMBIENT Ta=60.6 °C</th> </tr> </thead> <tbody> <tr><td>1</td><td>LF2</td><td>62.7°C</td><td>105.7°C</td></tr> <tr><td>2</td><td>ZNR1</td><td>51°C</td><td>92.6°C</td></tr> <tr><td>3</td><td>Q6</td><td>54.5°C</td><td>97.4°C</td></tr> <tr><td>4</td><td>C65</td><td>60.3°C</td><td>104.1°C</td></tr> <tr><td>5</td><td>LF3</td><td>57.6°C</td><td>100.2°C</td></tr> <tr><td>6</td><td>C29</td><td>49.5°C</td><td>89.5°C</td></tr> <tr><td>7</td><td>TSW1</td><td>66.9°C</td><td>108.5°C</td></tr> <tr><td>8</td><td>T7</td><td>55°C</td><td>97.4°C</td></tr> <tr><td>9</td><td>U1</td><td>51.3°C</td><td>93.9°C</td></tr> <tr><td>10</td><td>T3</td><td>56.4°C</td><td>105.7°C</td></tr> <tr><td>11</td><td>Q4</td><td>62.7°C</td><td>101.8°C</td></tr> <tr><td>12</td><td>Q12</td><td>69.9°C</td><td>111.8°C</td></tr> <tr><td>13</td><td>T2</td><td>68.1°C</td><td>112.8°C</td></tr> <tr><td>14</td><td>L200</td><td>75.1°C</td><td>118.6°C</td></tr> <tr><td>15</td><td>Q201</td><td>72.4°C</td><td>113°C</td></tr> <tr><td>16</td><td>Q203</td><td>73.1°C</td><td>114.9°C</td></tr> <tr><td>17</td><td>C204</td><td>64.7°C</td><td>106.2°C</td></tr> <tr><td>18</td><td>U101</td><td>59°C</td><td>100.8°C</td></tr> <tr><td>19</td><td>U100</td><td>58.7°C</td><td>99.6°C</td></tr> <tr><td>20</td><td>ZD209</td><td>66.5°C</td><td>109.1°C</td></tr> <tr><td>21</td><td>Q13</td><td>78.6°C</td><td>109.5°C</td></tr> <tr><td>22</td><td>Q204</td><td>64.5°C</td><td>108.5°C</td></tr> <tr><td>23</td><td>C64</td><td>48.3°C</td><td>88°C</td></tr> <tr><td>24</td><td>LF4</td><td>59.2°C</td><td>99.9°C</td></tr> <tr><td>25</td><td>TSW3</td><td>67.3°C</td><td>107.6°C</td></tr> <tr><td>26</td><td>T8</td><td>55.7°C</td><td>96.1°C</td></tr> <tr><td>27</td><td>Q101</td><td>71.4°C</td><td>112°C</td></tr> <tr><td>28</td><td>T4</td><td>63.6°C</td><td>105.6°C</td></tr> <tr><td>29</td><td>Q19</td><td>68.5°C</td><td>111.2°C</td></tr> <tr><td>30</td><td>Q8</td><td>66.7°C</td><td>109.1°C</td></tr> <tr><td>31</td><td>Q20</td><td>58.5°C</td><td>99°C</td></tr> <tr><td>32</td><td>R91</td><td>59°C</td><td>99.9°C</td></tr> <tr><td>33</td><td>T1</td><td>67.6°C</td><td>111.1°C</td></tr> <tr><td>34</td><td>L101</td><td>78.2°C</td><td>120.1°C</td></tr> <tr><td>35</td><td>Q104</td><td>75.2°C</td><td>115.7°C</td></tr> <tr><td>36</td><td>C110</td><td>65.8°C</td><td>106.8°C</td></tr> <tr><td>37</td><td>C111</td><td>64.5°C</td><td>104.3°C</td></tr> <tr><td>38</td><td>ZD109</td><td>65.7°C</td><td>106.9°C</td></tr> <tr><td>39</td><td>ZD102</td><td>65.1°C</td><td>106.6°C</td></tr> <tr><td>40</td><td>D107</td><td>65.8°C</td><td>107.2°C</td></tr> <tr><td>41</td><td>Q14</td><td>69.6°C</td><td>110.3°C</td></tr> </tbody> </table>	NO	Position	ROOM AMBIENT Ta= 25.1 °C	HIGH AMBIENT Ta=60.6 °C	1	LF2	62.7°C	105.7°C	2	ZNR1	51°C	92.6°C	3	Q6	54.5°C	97.4°C	4	C65	60.3°C	104.1°C	5	LF3	57.6°C	100.2°C	6	C29	49.5°C	89.5°C	7	TSW1	66.9°C	108.5°C	8	T7	55°C	97.4°C	9	U1	51.3°C	93.9°C	10	T3	56.4°C	105.7°C	11	Q4	62.7°C	101.8°C	12	Q12	69.9°C	111.8°C	13	T2	68.1°C	112.8°C	14	L200	75.1°C	118.6°C	15	Q201	72.4°C	113°C	16	Q203	73.1°C	114.9°C	17	C204	64.7°C	106.2°C	18	U101	59°C	100.8°C	19	U100	58.7°C	99.6°C	20	ZD209	66.5°C	109.1°C	21	Q13	78.6°C	109.5°C	22	Q204	64.5°C	108.5°C	23	C64	48.3°C	88°C	24	LF4	59.2°C	99.9°C	25	TSW3	67.3°C	107.6°C	26	T8	55.7°C	96.1°C	27	Q101	71.4°C	112°C	28	T4	63.6°C	105.6°C	29	Q19	68.5°C	111.2°C	30	Q8	66.7°C	109.1°C	31	Q20	58.5°C	99°C	32	R91	59°C	99.9°C	33	T1	67.6°C	111.1°C	34	L101	78.2°C	120.1°C	35	Q104	75.2°C	115.7°C	36	C110	65.8°C	106.8°C	37	C111	64.5°C	104.3°C	38	ZD109	65.7°C	106.9°C	39	ZD102	65.1°C	106.6°C	40	D107	65.8°C	107.2°C	41	Q14	69.6°C	110.3°C	
NO	Position	ROOM AMBIENT Ta= 25.1 °C	HIGH AMBIENT Ta=60.6 °C																																																																																																																																																																									
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4	C65	60.3°C	104.1°C																																																																																																																																																																									
5	LF3	57.6°C	100.2°C																																																																																																																																																																									
6	C29	49.5°C	89.5°C																																																																																																																																																																									
7	TSW1	66.9°C	108.5°C																																																																																																																																																																									
8	T7	55°C	97.4°C																																																																																																																																																																									
9	U1	51.3°C	93.9°C																																																																																																																																																																									
10	T3	56.4°C	105.7°C																																																																																																																																																																									
11	Q4	62.7°C	101.8°C																																																																																																																																																																									
12	Q12	69.9°C	111.8°C																																																																																																																																																																									
13	T2	68.1°C	112.8°C																																																																																																																																																																									
14	L200	75.1°C	118.6°C																																																																																																																																																																									
15	Q201	72.4°C	113°C																																																																																																																																																																									
16	Q203	73.1°C	114.9°C																																																																																																																																																																									
17	C204	64.7°C	106.2°C																																																																																																																																																																									
18	U101	59°C	100.8°C																																																																																																																																																																									
19	U100	58.7°C	99.6°C																																																																																																																																																																									
20	ZD209	66.5°C	109.1°C																																																																																																																																																																									
21	Q13	78.6°C	109.5°C																																																																																																																																																																									
22	Q204	64.5°C	108.5°C																																																																																																																																																																									
23	C64	48.3°C	88°C																																																																																																																																																																									
24	LF4	59.2°C	99.9°C																																																																																																																																																																									
25	TSW3	67.3°C	107.6°C																																																																																																																																																																									
26	T8	55.7°C	96.1°C																																																																																																																																																																									
27	Q101	71.4°C	112°C																																																																																																																																																																									
28	T4	63.6°C	105.6°C																																																																																																																																																																									
29	Q19	68.5°C	111.2°C																																																																																																																																																																									
30	Q8	66.7°C	109.1°C																																																																																																																																																																									
31	Q20	58.5°C	99°C																																																																																																																																																																									
32	R91	59°C	99.9°C																																																																																																																																																																									
33	T1	67.6°C	111.1°C																																																																																																																																																																									
34	L101	78.2°C	120.1°C																																																																																																																																																																									
35	Q104	75.2°C	115.7°C																																																																																																																																																																									
36	C110	65.8°C	106.8°C																																																																																																																																																																									
37	C111	64.5°C	104.3°C																																																																																																																																																																									
38	ZD109	65.7°C	106.9°C																																																																																																																																																																									
39	ZD102	65.1°C	106.6°C																																																																																																																																																																									
40	D107	65.8°C	107.2°C																																																																																																																																																																									
41	Q14	69.6°C	110.3°C																																																																																																																																																																									



			42	D17	65.7°C	102.7°C
			43	Q105	75°C	115.4°C
			44	LF100	62.8°C	102.8°C
			45	C207	59.3°C	99.2°C
			46	Q22	52.4°C	93.6°C
2	OVER LOAD BURN-IN TEST	NO DAMAGE 1 HOUR (MIN)	I/P : 48 VDC O/P : 144% LOAD Ta : 25°C		TEST : OK	
3	LOW TEMPERATURE TURN ON TEST	TURN ON AFTER 2 HOUR	I/P : 43.2VDC /67.2VDC O/P : 100% LOAD Ta= -45°C		TEST : OK	
4	HIGH HUMIDITY HIGH TEMPERATURE HIGH VOLTAGE TURN ON TEST	AFTER 12 HOURS IN CHAMBER ON CONTROL 60 °C /95 %R.H NO DAMAGE	I/P : 70.2VDC O/P : FULL LOAD Ta=60 °C HUMIDITY= 95 %R.H		TEST : OK	
5	TEMPERATURE COEFFICIENT	± 0.03%/°C (0~55°C)	I/P : 48VDC O/P : FULL LOAD		±0.0061 %/°C (0~55°C)	
6	STORAGE TEMPERATURE TEST	-40~85°C	1. Thermal shock Temperature : -45°C~ +90°C 2. Temperature change rate : 25°C / MIN 3. Dwell time low and high temperature : 30 MIN/EACH 4. Total test cycle : 10 CYCLE 5. Input/Output condition : STATIC			
7	THERMAL SHOCK TEST	-40~60°C	1. Thermal shock Temperature : -45°C~ +65°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: 48 VDC / FULL LOAD AC ON 3sec/AC OFF 1sec TEST 1cycle: 48 VDC / FULL LOAD Burn In Test			
8	VIBRATION TEST	10 ~ 500Hz, 5G 10min./1cycle, 60min. each along X, Y, Z axes	1 Carton & 1 Set (1) Waveform : Sine Wave (2) Frequency : 10~500Hz (3) Sweep Time : 10min/sweep cycle (4) Acceleration : 6G (5) Test Time : 180min in each axis (X.Y.Z) (6) Ta : 25°C			
9	CAPACITOR LIFE CYCLE	SUPPOSE C204 IS THE MOST CRITICAL COMPONENT (1) I/P : 48VDC O/P : FULL LOAD Ta= 25 °C LIFE TIME (2) I/P : 48VDC O/P : FULL LOAD Ta= 60 °C LIFE TIME (3) I/P : 48VDC O/P : 75% LOAD Ta= 60 °C LIFE TIME (4) I/P : 48VDC O/P : 50% LOAD Ta= 60 °C LIFE TIME	(1) 406982.9 HRS (2) 37761HRS (3) 83841HRS (4) 136644.3HRS			
10	MTBF	Conducted by Parts Stress Analysis Prediction 280.0 K hrs min. Telcordia SR-332 (Bellcore) ; 101.7K hrs min. MIL-HDBK-217F (25°C)				
11	Ongoing Reliability Test	I/P : 48VDC O/P : FULL LOAD TA=50°C Demonstration Mean Time Between Failure : 30,000 hours				

TEST RESULT	TESTER	REVIEW	APPROVAL
PASS	LIUTT		Wangdz

2018.4.30 GP-A50-F010