



Test Report: DRS-480-36

480W All-In-One Intelligent Security Power

■ 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

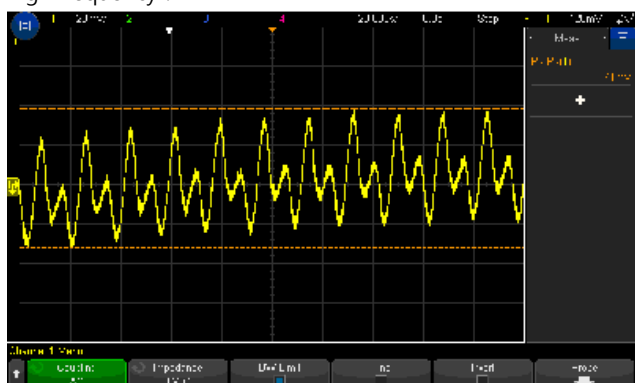
ENVIRONMENT TEST

DESIGN VERIFY TEST

OUTPUT FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	OUTPUT VOLTAGE(Max) TOLERANCE	V1: -1.0 %~ +1.0 %	I/P: 90VAC /305VAC O/P:FULL/ MIN. LOAD Ta:25°C	V1: -0.04 %~0.05%
2	LINE REGULATION (Max)	V1: -0.5 %~ +0.5 %	I/P: 90VAC~ 305VAC O/P:FULL LOAD Ta:25°C	V1: -0.03%~ 0.03 %
3	LOAD REGULATION(Max)	V1: -0.5 %~ +0.5 %	I/P: 230VAC O/P:FULL ~MIN LOAD Ta:25°C	V1: -0.04 %~0.05%
4	OVER/UNDERSHOOT TEST	<±5%	I/P: 230VAC O/P:FULL LOAD Ta:25°C	0.78 %
5	RIPPLE & NOISE(Max)	V1: 360mVp-p	I/P:230VAC O/P: TESTING LOAD Ta:25°C	V1: 213mVp-p

high frequency :



low frequency :



6	SET UP TIME(Max)	230VAC/2400ms 115VAC/2400ms	I/P : 230 VAC I/P : 115 VAC O/P : FULL LOAD Ta : 25°C	230VAC/ 421.9 ms 115VAC/ 419.0 ms
---	------------------	--------------------------------	--	--------------------------------------

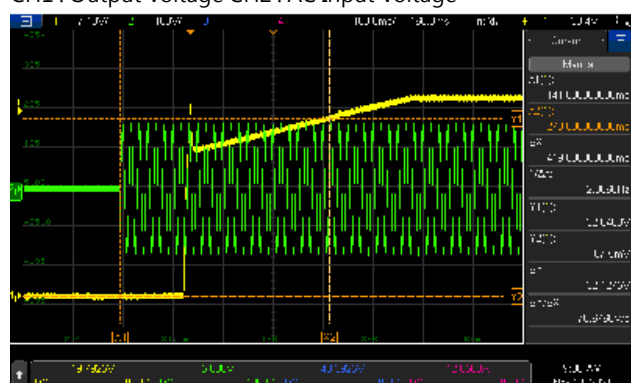
INPUT=230VAC/50HZ @ FULL LOAD

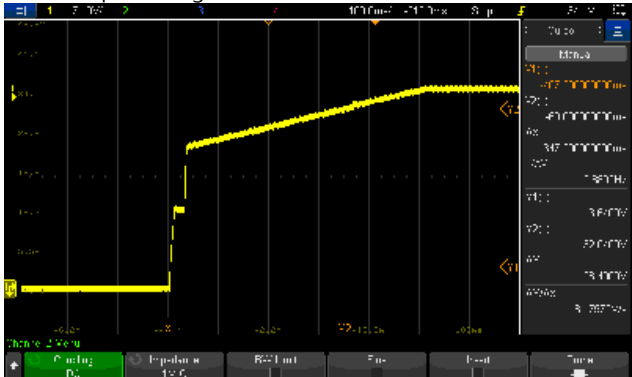
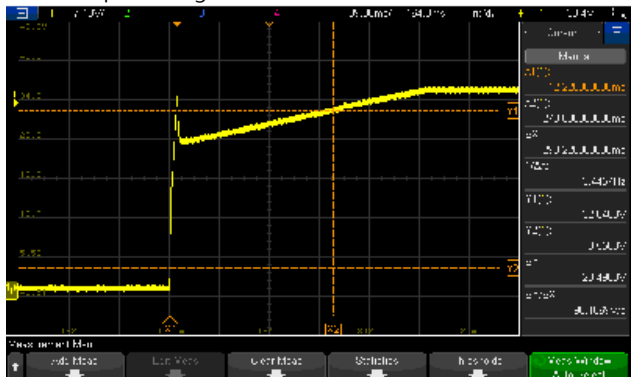
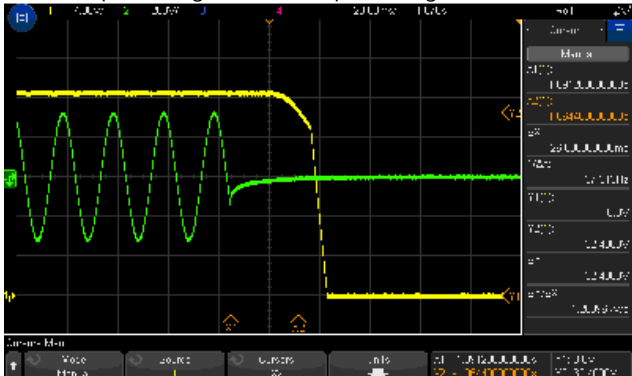
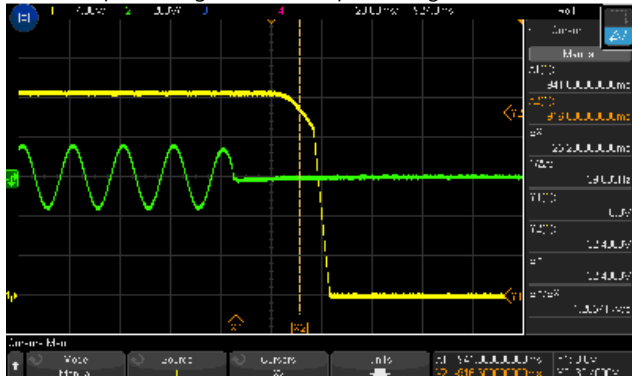
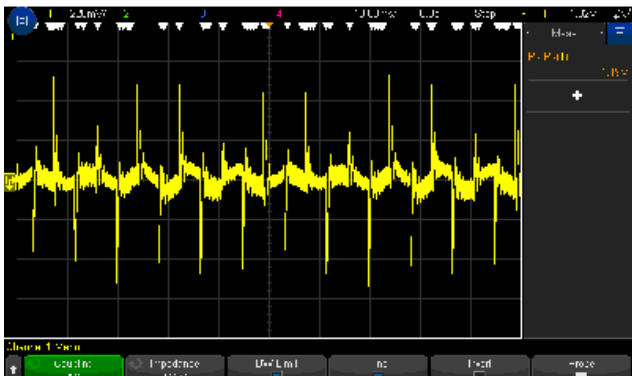
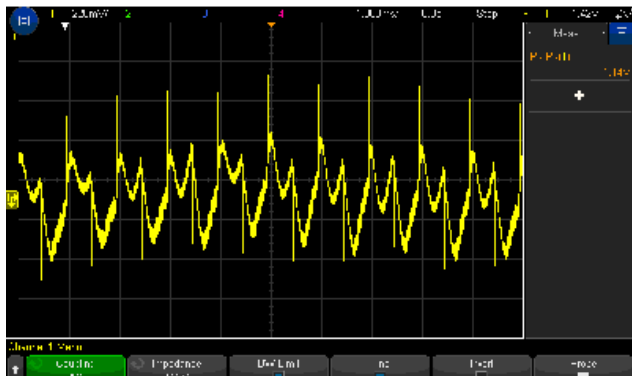
CH1 : Output Voltage CH2 : AC Input Voltage



INPUT=115VAC/60HZ @ FULL LOAD

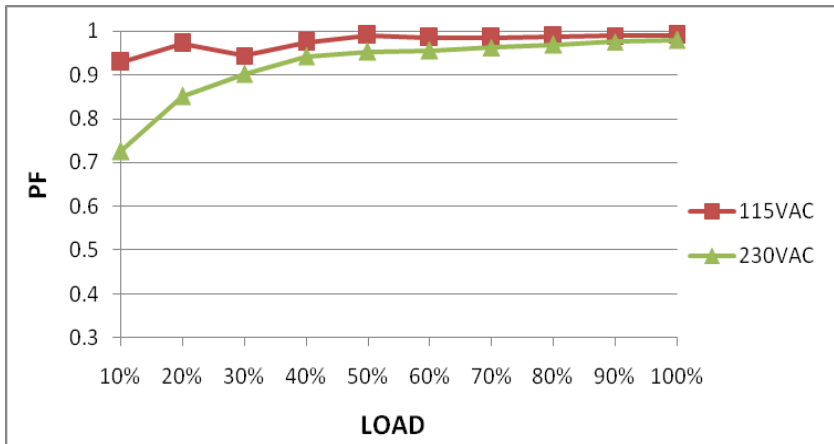
CH1 : Output Voltage CH2 : AC Input Voltage

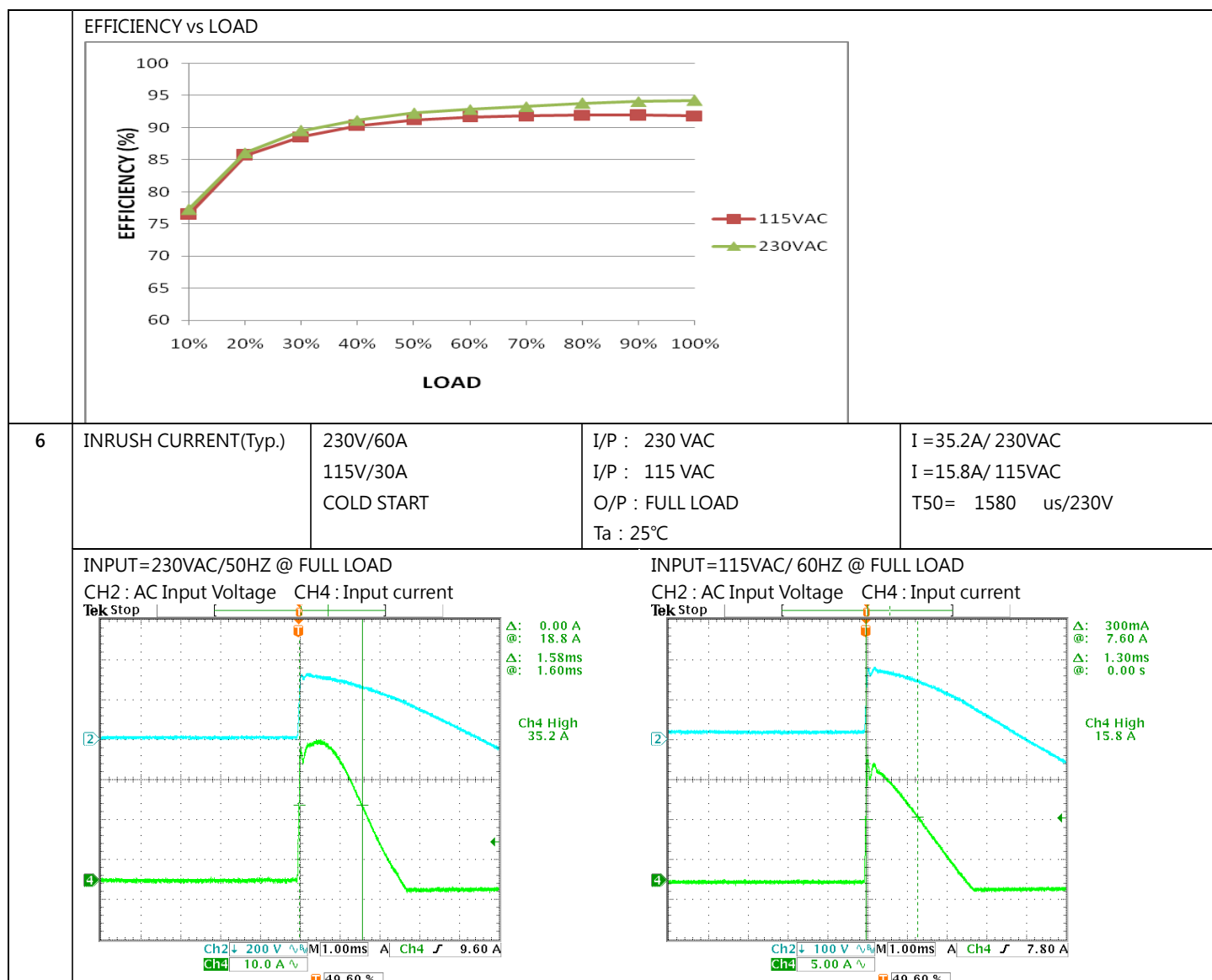


7	RISE TIME (Max)	230VAC/1000ms 115VAC/1000ms	I/P : 230 VAC I/P : 115 VAC O/P : FULL LOAD Ta : 25°C	230VAC/ 347.2 ms 115VAC/ 290.2 ms
INPUT=230VAC/50HZ @ FULL LOAD CH1 : Output Voltage				
INPUT=115VAC/60HZ @ FULL LOAD CH1 : Output Voltage				
8	HOLD UP TIME (Typ.)	230VAC/16ms 115VAC/10ms	I/P : 230 VAC I/P : 115 VAC O/P : FULL LOAD Ta : 25°C	230VAC/ 26.8 ms 115VAC/ 25.2 ms
INPUT=230VAC/50HZ @ FULL LOAD CH1 : Output Voltage CH2 : AC Input Voltage				
INPUT=115VAC/60HZ @ FULL LOAD CH1 : Output Voltage CH2 : AC Input Voltage				
9	DYNAMIC LOAD	V1: 3600mVp-p	I/P: 230VAC O/P: (1)FULL/50% LOAD 50%DUTY / 120HZ (2)FULL/50%LOAD50%DUTY/1KHZ Ta:25°C	(1) 1190mVp-p (2) 1140mVp-p
FULL /50% LOAD 50%DUTY / 120HZ				
FULL /50% LOAD 50%DUTY / 1KHZ				

10	TRANSIENT RECOVERY TIME	V1: 3600mVp-p	I/P: 230VAC O/P:40% LOAD CHANGE 50%DUTY/120HZ 1.25A/us	1640 mVp-p
----	-------------------------	---------------	--	------------

INPUT FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT																														
1	INPUT VOLTAGE RANGE	90VAC~305VAC 127VDC~ 431VDC	(1) I/P:TESTING O/P:FULL LOAD (2) I/P:DC TESTING(L:+ N:-) O/P: FULL / 50% LOAD (3) I/P:DC TESTING(L:- N:+) O/P: FULL / 50% LOAD Ta:25°C	(1) 86.5V~305V/ FULL LOAD 86.5V~305V/90% LOAD (2) 120Vdc~431Vdc/FULL LOAD 120Vdc~431Vdc/50% LOAD (3) 120Vdc~431Vdc/FULL LOAD 120Vdc~431Vdc/50% LOAD																														
			I/P: LOW-LINEV=90 V HIGH-LINE+10=315 V 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 FREQUENCY RANGE	47HZ ~63 HZ NO DAMAGE	I/P:90 VAC ~305VAC O/P:FULL~MIN LOAD Ta:25°C	TEST: OK																														
3	INPUT CURRENT (Typ.)	230V/ 2.7 A 115V/ 5.4 A	I/P : 230 VAC I/P : 115 VAC O/P : FULL LOAD Ta : 25°C	I =2.24A/ 230VAC I =4.57A/ 115VAC																														
4	POWER FACTOR (Typ.)	0.95/ 230VAC 0.98/115VAC	I/P : 230 VAC I/P : 115 VAC O/P : FULL LOAD Ta : 25°C	PF=0.979/230VAC PF=0.990/115VAC																														
			P.F vs LOAD  <table><caption>P.F vs LOAD Data</caption><thead><tr><th>LOAD</th><th>115VAC</th><th>230VAC</th></tr></thead><tbody><tr><td>10%</td><td>0.95</td><td>0.72</td></tr><tr><td>20%</td><td>0.97</td><td>0.85</td></tr><tr><td>30%</td><td>0.96</td><td>0.92</td></tr><tr><td>40%</td><td>0.97</td><td>0.94</td></tr><tr><td>50%</td><td>0.98</td><td>0.95</td></tr><tr><td>60%</td><td>0.97</td><td>0.95</td></tr><tr><td>70%</td><td>0.98</td><td>0.96</td></tr><tr><td>80%</td><td>0.98</td><td>0.97</td></tr><tr><td>90%</td><td>0.98</td><td>0.97</td></tr><tr><td>100%</td><td>0.98</td><td>0.98</td></tr></tbody></table>		LOAD	115VAC	230VAC	10%	0.95	0.72	20%	0.97	0.85	30%	0.96	0.92	40%	0.97	0.94	50%	0.98	0.95	60%	0.97	0.95	70%	0.98	0.96	80%	0.98	0.97	90%	0.98	0.97
LOAD	115VAC	230VAC																																
10%	0.95	0.72																																
20%	0.97	0.85																																
30%	0.96	0.92																																
40%	0.97	0.94																																
50%	0.98	0.95																																
60%	0.97	0.95																																
70%	0.98	0.96																																
80%	0.98	0.97																																
90%	0.98	0.97																																
100%	0.98	0.98																																
5	EFFICIENCY(Typ.)	93%	I/P:230 VAC O/P:FULL LOAD Ta:25°C	94.3%																														



PROTECTION FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	OVER LOAD PROTECTION	105%~135% Protection type: Constant current limiting, shutdown output voltage after 5 sec	I/P: 305VAC I/P: 230VAC I/P: 100VAC O/P:TESTING Ta:25°C	120.24%/ 305VAC 120.03%/ 230VAC 120.24%/100VAC Protection type: Constant current limiting, shutdown output voltage after 5 sec
2	OVER VOLTAGE PROTECTION	Load main output : 48.6V~55.9V Protection type : Shut down o/p voltage, re-power on to recover	I/P: 305VAC I/P: 230VAC I/P: 90VAC O/P:MIN LOAD Ta:25°C	49.8V/ 305VAC 49.8V/ 230VAC 49.8V/ 90VAC Protection type : Shut down o/p voltage, re-power on to recover

3	OVER TEMPERATURE PROTECTION	Protection type : Automatically drop load with temperature only for bat. load Shut down o/p voltage, recovers automatically after temperature goes down	I/P: 305VAC I/P: 90VAC O/P:FULL LOAD	O.T.P. Active OK Protection type : Automatically drop load with temperature only for bat. load Shut down o/p voltage, recovers automatically after temperature goes down
4	SHORT PROTECTION	SHORT EVERY OUTPUT Constant current Range: 15.3A~16.6A 1 HOUR NO DAMAGE	I/P: 305VAC I/P: 90VAC O/P: FULL LOAD Ta:25°C	NO DAMAGE OK Constant current Range: 15.953A
5	BATTERY CUT OFF	31.3±0.7V	I/P: 230 VAC O/P:BAT. LOAD Ta:25°C	31.32 V
6	REVERSE POLARITY	By internal MOSFET, no damage, recovers automatically after fault condition is removed.	I/P: 230 VAC O/P:BAT. LOAD Ta:25°C	OK By internal MOSFET, no damage, recovers automatically after fault condition is removed.

CONTROL FUNCTION TEST

N O	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	FORM-C RELAY	AC FAIL	Signals AC failure and activates when input voltage drops below : 79V~89V of 120VAC, 132V~187 of 220VAC. Relay contact output, ON : AC OK ; OFF : AC Fail ; max. rating : 30V/1A	TEST : <u>OK</u> <u>86.1 V</u> of 120VAC, <u>172.7 V</u> of 220VAC.
		CHARGER FAIL	Relay contact output, ON : Charger OK ; OFF : Charger Fail ; max. rating : 30V/1A	TEST : <u>OK</u>
		DC OK	Signals normal DC output and activates when output voltage > 90% rated value. Relay contact output, ON : DC OK ; OFF : DC Fail ; max. rating : 30V/1A	TEST : <u>OK</u>
		BATTERY LOW/ ABNORMAL/ DISCONNECTED	Relay contact output, ON : Battery OK ; OFF : Battery Low ; max. rating : 30V/1A ; Battery low voltage : < 33V	TEST : <u>OK</u> Vbat <u><33.1V</u>

2	BATTERY START	Restart system directly from battery and does not require AC power	I/P: BAT O/P:FULL LOAD Ta:25°C	TEST : <u>OK</u>																																									
3	DC-UPS	UPS switch to battery power within 10ms of AC failure	I/P: 230 VAC O/P:BAT. LOAD Ta:25°C	TEST : <u>OK</u>																																									
4	ADJUSTABLE CURRENT RANGE	20% ~ 100% charging current adjustable by VR	I/P : 230 VAC O/P : TESTING LOAD Ta : 25°C	17.2% ~100.1%																																									
5	LED INDICATOR	<table border="1"><thead><tr><th colspan="2">Function</th><th>Description</th><th>Output of alarm</th></tr></thead><tbody><tr><td rowspan="2">DC OK</td><td></td><td>DC fail</td><td>OFF </td></tr><tr><td></td><td>DC OK</td><td>Green </td></tr><tr><td rowspan="2">AC fail</td><td></td><td>AC fail</td><td>Red </td></tr><tr><td></td><td>AC OK</td><td>OFF </td></tr><tr><td rowspan="10">Status</td><td rowspan="2">Charging status</td><td>Float</td><td>Green </td></tr><tr><td>Charging: CC/CV</td><td>Orange </td></tr><tr><td rowspan="8">System diagnosis</td><td>Discharging</td><td>Orange: 1Blink/Pause  </td></tr><tr><td>Charger fail</td><td>Red : 1 Blink/Pause  </td></tr><tr><td>Battery overvoltage / Battery reverse polarity</td><td>Red : 2 Blink/Pause  </td></tr><tr><td>Battery low / No Battery</td><td>Red : 3 Blink/Pause  </td></tr><tr><td>Battery discharge peak power timeout.</td><td>Red : 4 Blink/Pause  </td></tr><tr><td>Overload / short</td><td>Red : 5 Blink/Pause  </td></tr><tr><td>Over temperature</td><td>Red : 6 Blink/Pause  </td></tr><tr><td>Timeout</td><td>Red : 7 Blink/Pause  </td></tr></tbody></table> I/P: TESTING VAC O/P:TESTING LOAD Ta:25°C		Function		Description	Output of alarm	DC OK		DC fail	OFF 		DC OK	Green 	AC fail		AC fail	Red 		AC OK	OFF 	Status	Charging status	Float	Green 	Charging: CC/CV	Orange 	System diagnosis	Discharging	Orange: 1Blink/Pause  	Charger fail	Red : 1 Blink/Pause  	Battery overvoltage / Battery reverse polarity	Red : 2 Blink/Pause  	Battery low / No Battery	Red : 3 Blink/Pause  	Battery discharge peak power timeout.	Red : 4 Blink/Pause  	Overload / short	Red : 5 Blink/Pause  	Over temperature	Red : 6 Blink/Pause  	Timeout	Red : 7 Blink/Pause  	TEST : <u>OK</u>
Function		Description	Output of alarm																																										
DC OK		DC fail	OFF 																																										
		DC OK	Green 																																										
AC fail		AC fail	Red 																																										
		AC OK	OFF 																																										
Status	Charging status	Float	Green 																																										
		Charging: CC/CV	Orange 																																										
	System diagnosis	Discharging	Orange: 1Blink/Pause  																																										
		Charger fail	Red : 1 Blink/Pause  																																										
		Battery overvoltage / Battery reverse polarity	Red : 2 Blink/Pause  																																										
		Battery low / No Battery	Red : 3 Blink/Pause  																																										
		Battery discharge peak power timeout.	Red : 4 Blink/Pause  																																										
		Overload / short	Red : 5 Blink/Pause  																																										
		Over temperature	Red : 6 Blink/Pause  																																										
		Timeout	Red : 7 Blink/Pause  																																										
6	FORCE BUTTON	Bat over discharge protection < 70%Bat rated	I/P: 230 VAC O/P:BAT. LOAD Ta:25°C	TEST : <u>70.8%</u>																																									
7	Battery Discharge Peak power	a) 2 Peak power > 4 min ; b) 3 Peak power > 4 s ;	I/P: 230 VAC O/P:BAT. LOAD Ta:25°C	a) TEST : <u>OK</u> b) TEST : <u>OK</u>																																									
8	TEMPERATURE COMPENSATION	I/P: 230 VAC O/P:BAT. LOAD Ta:25°C <table border="1"><thead><tr><th colspan="4">Constant Voltage</th></tr><tr><th>SPEC:</th><th>Ta=0°C (17K Ω)</th><th>Ta=25°C (5K Ω)</th><th>Ta=50°C (1.7K Ω)</th></tr></thead><tbody><tr><td></td><td>44.55±0.36V</td><td>43.2±0.36V</td><td>42.39±0.36V</td></tr><tr><td>TEST RESULT:</td><td>44.306V</td><td>43.192V</td><td>42.406V</td></tr></tbody></table>			Constant Voltage				SPEC:	Ta=0°C (17K Ω)	Ta=25°C (5K Ω)	Ta=50°C (1.7K Ω)		44.55±0.36V	43.2±0.36V	42.39±0.36V	TEST RESULT:	44.306V	43.192V	42.406V																									
Constant Voltage																																													
SPEC:	Ta=0°C (17K Ω)	Ta=25°C (5K Ω)	Ta=50°C (1.7K Ω)																																										
	44.55±0.36V	43.2±0.36V	42.39±0.36V																																										
TEST RESULT:	44.306V	43.192V	42.406V																																										

COMPONENT STRESS TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	
1	PWM Transistor (D to S) or (C to E) Peak Voltage	Q 15/Q16ated: 25 A/ 600 V	AC ON/OFF I/P: High-Line +3V =308V 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	Q15 VDS: (1) 499V (2) 543V (3) 499V (4) 499V (5) 499V (6) 519V (7) 535V	Q16 VDS: (1) 535V (2) 531V (3) 527V (4) 531V (5) 531V (6) 527V (7) 531V
2	P.F.C Transistor (D to S) or (C to E) Peak Voltage	Q1/Q4 Rated : 22A/ 600 V	I/P: High-Line +3V =308V AC ON/OFF 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	Q1 VDS: (1) 483V (2) 483V (3) 479V (4) 479V (5) 479V (6) 471V (7) 467V	Q4 VDS: (1) 495V (2) 491V (3) 487V (4) 491V (5) 487V (6) 479V (7) 479V
3	AUX MOS	U505 Rated : 1.04 A/ 725 V Q504 Rated : 5A/200V	I/P: High-Line +3V =308 V AC ON/OFF 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	U505 VDS: (1) 702V (2) 700V (3) 664V (4) 658V (5) 658V (6) 664V (7) 658V	Q504 VDS: (1) 153V (2) 150V (3) 148V (4) 153V (5) 150V (6) 152V (7) 137V
4	P.F.C DIODE	D 12 Rated : 8A/ 600V	I/P:High-Line +3V =308V AC ON/OFF	(1) 550V	

			O/P: (1)Full Load (2)Output Short (3)Dynamic Load Full Load/ Min. Load 90%Duty/5KHz (4)Dynamic Load 100% Load/ Min. Load 50%Duty/120Hz Ta:25°C	(2) 546V (3) 546V (4) 546V	
5	Diode Peak Voltage	Q100/ Q101/ Q102/ Q103 Rated : 27.4A/ 150 V	AC ON/OFF I/P:High-Line +3V =308V 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 Ta:25°C	Q101: VDS: (1) 97.0V (2) 142V (3) 98.6V (4) 98.6V (5) 98.6V (6) 103.5V (7) 104.3V (8) 97.0V Q102: VDS: (1) 101V (2) 97V (3) 102V (4) 106V (5) 104V (6) 99V (7) 101V (8) 90V Q100: VDS: (1) 101V (2) 101V (3) 101V (4) 102V (5) 101V (6) 101V (7) 1V (8) 95V Q103: VDS: (1) 103V (2) 110V (3) 102V (4) 103V (5) 103V (6) 104V (7) 104V (8) 97V	
7	Input Capacitor Voltage	C5 Rated: : 150 μ /450 V	I/P:High-Line +3V =308V 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°C	(1) 443V (2) 435V (3) 447V (4) 443V	
8	Control IC Voltage Test	PWM IC U3 Rated 8.9 V~ 15.5 V PFC IC U1 Rated 11V~ 20 V O/P IC U100 Rated 8V~ 24 V IC U801 Rated 4.5V~ 36 V MCU IC U303 Rated 2.4V~ 3.6 V AUX IC U502 Rated	AC ON/OFF I/P:High-Line +3V =308V O/P(1)FULL LOAD (2) Output Short (3)O.L.P (4)O.V.P. (5)NO LOAD (LOW LINE) Ta:25°C	U3 (1) 15.1V (2) 15.1V (3) 15.0V (4) 15.1V (5) 15.1V U1 (1) 15.5V (2) 15.4V (3) 15.4V (4) 15.4V (5) 15.4V U100	U801 (1) 12.7V (2) 12.7V (3) 12.7V (4) 12.7V (5) 12.7V U303 (1) 3.39V (2) 3.39V (3) 3.39V (4) 3.39V (5) 3.39V U502

		8.5V~30V		(1) 12.1V (2) 20.1V (3) 12.0V (4) 12.1V (5) 12.5V	(1) 11.7V (2) 11.7V (3) 11.9V (4) 11.7V (5) 11.7V
--	--	----------	--	---	---

■ SAFETY& E.M.C. TEST

SAFETY TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	WITHSTAND VOLTAGE	I/P-O/P: 4KVAC/min I/P-FG :2KVAC/min O/P-FG:1.5KVAC/min	I/P-O/P: 4.2 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:5mA O/P-FG:15.03m A 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: 9999MΩ I/P-FG: 9999MΩ O/P-FG: 9999MΩ NO DAMAGE
3	GROUNDING CONTINUITY	FG(PE) TO CHASSIS OR TRACE < 100 mΩ	40A / 2min Ta:25°C	4mΩ

E.M.C TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	HARMONIC	EN61000-3-2 CLASS A	I/P:230VAC/50HZ O/P:FULL LOAD Ta:25°C	PASS
2	CONDUCTION	EN55032 CLASS B	I/P : 230 VAC (50HZ) O/P : FULL/50% LOAD Ta : 25°C	PASS Test by certified Lab
3	RADIATION	EN55032 CLASS B	I/P : 230 VAC (50HZ) O/P : FULL LOAD Ta : 25°C	PASS Test by certified Lab
4	E.S.D	EN61000-4-2 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 INPUT : 2KV	I/P : 230 VAC/50HZ O/P : FULL LOAD Ta : 25°C	■ CRITERIA A
6	SURGE	IEC61000-4-5 L-N : 1KV L,N-PE : 2KV	I/P : 230 VAC/50HZ O/P : FULL LOAD Ta : 25°C	■ CRITERIA A
7	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 : DRS-480-24 1. ROOM AMBIENT BURN-IN : 2 HRS I/P : 230VAC O/P : FULL LOAD Ta= 25.0 °C 2. HIGH AMBIENT BURN-IN : 2 HRS I/P : 230VAC O/P : FULL LOAD Ta= 50.0 °C																																																																																																																																						
		<table><tr><th>NO</th><th>Position</th><th>ROOM AMBIENT Ta= 25.0°C</th><th>HIGH AMBIENT Ta= 50.0 °C</th></tr><tr><td>1</td><td>U303</td><td>43.8°C</td><td>70.7°C</td></tr><tr><td>2</td><td>U150</td><td>59.8°C</td><td>87.7°C</td></tr><tr><td>3</td><td>U760</td><td>53.9°C</td><td>80.0°C</td></tr><tr><td>4</td><td>U151</td><td>38.0°C</td><td>62.5°C</td></tr><tr><td>5</td><td>Q303</td><td>35.7°C</td><td>59.3°C</td></tr><tr><td>6</td><td>ZNR1</td><td>35.5°C</td><td>59.0°C</td></tr><tr><td>7</td><td>LF1</td><td>40.0°C</td><td>64.4°C</td></tr><tr><td>8</td><td>C2</td><td>41.8°C</td><td>66.5°C</td></tr><tr><td>9</td><td>LF3</td><td>50.6°C</td><td>76.5°C</td></tr><tr><td>10</td><td>RTH1</td><td>50.2°C</td><td>75.9°C</td></tr><tr><td>11</td><td>BD1</td><td>56.1°C</td><td>79.0°C</td></tr><tr><td>12</td><td>C7</td><td>52.6°C</td><td>75.9°C</td></tr><tr><td>13</td><td>R5</td><td>55.0°C</td><td>78.9°C</td></tr><tr><td>14</td><td>L1</td><td>58.4°C</td><td>78.3°C</td></tr><tr><td>15</td><td>RTH4</td><td>55.1°C</td><td>76.9°C</td></tr><tr><td>16</td><td>C5</td><td>48.7°C</td><td>71.4°C</td></tr><tr><td>17</td><td>Q1</td><td>60.8°C</td><td>86.1°C</td></tr><tr><td>18</td><td>U1</td><td>52.5°C</td><td>76.0°C</td></tr><tr><td>19</td><td>Q16</td><td>53.1°C</td><td>79.6°C</td></tr><tr><td>20</td><td>U3</td><td>48.8°C</td><td>73.3°C</td></tr><tr><td>21</td><td>C59</td><td>52.1°C</td><td>76.1°C</td></tr><tr><td>22</td><td>C518</td><td>44.2°C</td><td>67.5°C</td></tr><tr><td>23</td><td>T500</td><td>51.0°C</td><td>74.5°C</td></tr><tr><td>24</td><td>T600</td><td>47.7°C</td><td>71.6°C</td></tr><tr><td>25</td><td>C501</td><td>50.4°C</td><td>74.4°C</td></tr><tr><td>26</td><td>Tlcoil</td><td>77.2°C</td><td>103.0°C</td></tr><tr><td>27</td><td>Tlcore</td><td>74.3°C</td><td>100.0°C</td></tr><tr><td>28</td><td>T2coil</td><td>80.2°C</td><td>106.3°C</td></tr><tr><td>29</td><td>T2core</td><td>57.5°C</td><td>80.6°C</td></tr><tr><td>30</td><td>Q101</td><td>75.7°C</td><td>102.5°C</td></tr><tr><td>31</td><td>Q102</td><td>70.3°C</td><td>97.3°C</td></tr><tr><td>32</td><td>C104</td><td>73.4°C</td><td>99.8°C</td></tr></table>			NO	Position	ROOM AMBIENT Ta= 25.0°C	HIGH AMBIENT Ta= 50.0 °C	1	U303	43.8°C	70.7°C	2	U150	59.8°C	87.7°C	3	U760	53.9°C	80.0°C	4	U151	38.0°C	62.5°C	5	Q303	35.7°C	59.3°C	6	ZNR1	35.5°C	59.0°C	7	LF1	40.0°C	64.4°C	8	C2	41.8°C	66.5°C	9	LF3	50.6°C	76.5°C	10	RTH1	50.2°C	75.9°C	11	BD1	56.1°C	79.0°C	12	C7	52.6°C	75.9°C	13	R5	55.0°C	78.9°C	14	L1	58.4°C	78.3°C	15	RTH4	55.1°C	76.9°C	16	C5	48.7°C	71.4°C	17	Q1	60.8°C	86.1°C	18	U1	52.5°C	76.0°C	19	Q16	53.1°C	79.6°C	20	U3	48.8°C	73.3°C	21	C59	52.1°C	76.1°C	22	C518	44.2°C	67.5°C	23	T500	51.0°C	74.5°C	24	T600	47.7°C	71.6°C	25	C501	50.4°C	74.4°C	26	Tlcoil	77.2°C	103.0°C	27	Tlcore	74.3°C	100.0°C	28	T2coil	80.2°C	106.3°C	29	T2core	57.5°C	80.6°C	30	Q101	75.7°C	102.5°C	31	Q102	70.3°C	97.3°C	32	C104	73.4°C	99.8°C
NO	Position	ROOM AMBIENT Ta= 25.0°C	HIGH AMBIENT Ta= 50.0 °C																																																																																																																																					
1	U303	43.8°C	70.7°C																																																																																																																																					
2	U150	59.8°C	87.7°C																																																																																																																																					
3	U760	53.9°C	80.0°C																																																																																																																																					
4	U151	38.0°C	62.5°C																																																																																																																																					
5	Q303	35.7°C	59.3°C																																																																																																																																					
6	ZNR1	35.5°C	59.0°C																																																																																																																																					
7	LF1	40.0°C	64.4°C																																																																																																																																					
8	C2	41.8°C	66.5°C																																																																																																																																					
9	LF3	50.6°C	76.5°C																																																																																																																																					
10	RTH1	50.2°C	75.9°C																																																																																																																																					
11	BD1	56.1°C	79.0°C																																																																																																																																					
12	C7	52.6°C	75.9°C																																																																																																																																					
13	R5	55.0°C	78.9°C																																																																																																																																					
14	L1	58.4°C	78.3°C																																																																																																																																					
15	RTH4	55.1°C	76.9°C																																																																																																																																					
16	C5	48.7°C	71.4°C																																																																																																																																					
17	Q1	60.8°C	86.1°C																																																																																																																																					
18	U1	52.5°C	76.0°C																																																																																																																																					
19	Q16	53.1°C	79.6°C																																																																																																																																					
20	U3	48.8°C	73.3°C																																																																																																																																					
21	C59	52.1°C	76.1°C																																																																																																																																					
22	C518	44.2°C	67.5°C																																																																																																																																					
23	T500	51.0°C	74.5°C																																																																																																																																					
24	T600	47.7°C	71.6°C																																																																																																																																					
25	C501	50.4°C	74.4°C																																																																																																																																					
26	Tlcoil	77.2°C	103.0°C																																																																																																																																					
27	Tlcore	74.3°C	100.0°C																																																																																																																																					
28	T2coil	80.2°C	106.3°C																																																																																																																																					
29	T2core	57.5°C	80.6°C																																																																																																																																					
30	Q101	75.7°C	102.5°C																																																																																																																																					
31	Q102	70.3°C	97.3°C																																																																																																																																					
32	C104	73.4°C	99.8°C																																																																																																																																					

		NO	Position	ROOM AMBIENT Ta= 25.0°C	HIGH AMBIENT Ta= 50.0 °C
		33	C101	60.7°C	88.7°C
		34	U505	64.7°C	89.0°C
2	OVER LOAD BURN-IN TEST	NO DAMAGE 1 HOUR (MIN)		I/P : 230 VAC O/P : 116%LOAD Ta : 25°C	TEST : OK
3	LOW TEMPERATURE TURN ON TEST	TURN ON AFTER 2 HOUR		I/P : 264VAC/100VAC O/P : 100%LOAD Ta= -35°C	TEST : OK
4	HIGH HUMIDITY HIGH TEMPERATURE HIGH VOLTAGE TURN ON TEST	AFTER 12 HOURS IN CHAMBER ON CONTROL 50 °C/95 %R.H NO DAMAGE		I/P : 272 VAC O/P : FULL LOAD Ta=50.7°C HUMIDITY= 95 %R.H	TEST : OK
5	TEMPERATURE COEFFICIENT	± 0.03%/°C(0~50°C)		I/P : 230 VAC O/P : FULL LOAD	±0.008%/°C(0~50°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	-30~50°C		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 : 16 CYCLE 5. Input/Output condition : 15cycle:230V/ FULL LOAD AC ON 3sec/AC OFF 1sec TEST 1cycle:230V/ 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 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) 290528HRS (2) 41716.1HRS (3) 80736.6HRS (4) 134245.5HRS
10	MTBF	Conducted by Parts Stress Analysis Prediction 556.6K hrs min. Telcordia SR-332 (Bellcore) ; 74.5K hrs min. MIL-HDBK-217F (25°C)			
11	Ongoing Reliability Test	I/P : 230VAC O/P : FULL LOAD TA=50°C Demonstration Mean Time Between Failure : 30,000 hours			

TEST RESULT	TESTER	REVIEW	APPROVAL
PASS	Liutt		Wangdz

2020.10.01 TAG-QA-009