



Test Report: DRS-240-12

240W 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

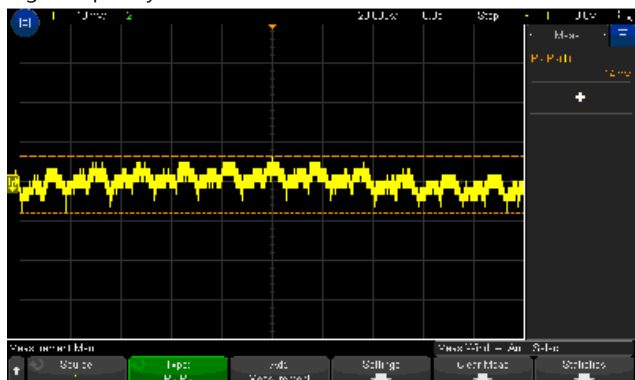
ENVIRONMENT TEST

DESIGN VERIFY TEST

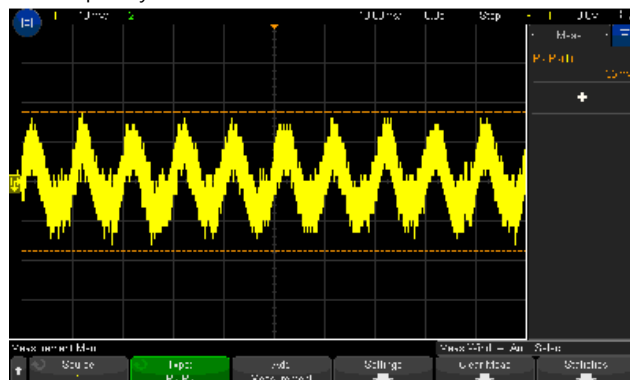
OUTPUT FUNCTION TEST

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: -0.36%~ 0.38%
2	LINE REGULATION (Max)	V1: -0.5 %~ +0.5 %	I/P: 90VAC~ 305VAC O/P:FULL LOAD Ta:25°C	V1: -0.01%~ -0.01%
3	LOAD REGULATION(Max)	V1: -0.5 %~ +0.5 %	I/P: 230VAC O/P:FULL ~MIN LOAD Ta:25°C	V1: -0.36%~ 0.38%
4	OVER/UNDERSHOOT TEST	<±5%	I/P: 230VAC O/P:FULL LOAD Ta:25°C	1.5%
5	RIPPLE & NOISE(Max)	V1: 150mVp-p	I/P:230VAC O/P: TESTING LOAD Ta:25°C	V1: 35mVp-p

high frequency :



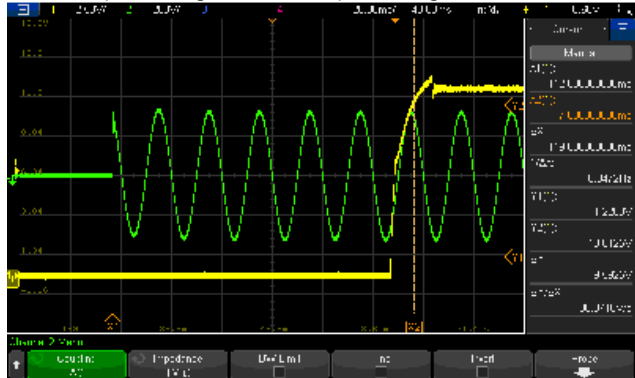
low frequency :



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/ 119.8 ms 115VAC/ 145 ms
---	------------------	--------------------------------	--	------------------------------------

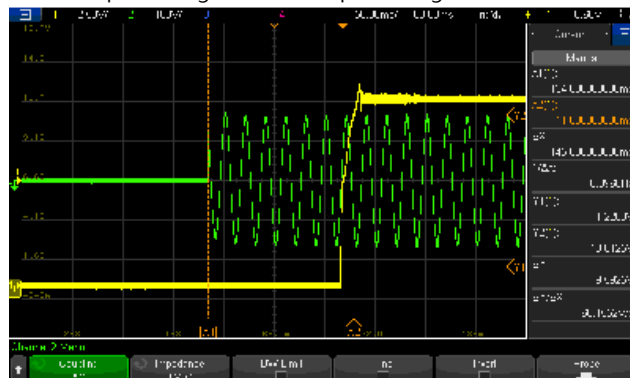
INPUT=230VAC/50HZ @ FULL LOAD

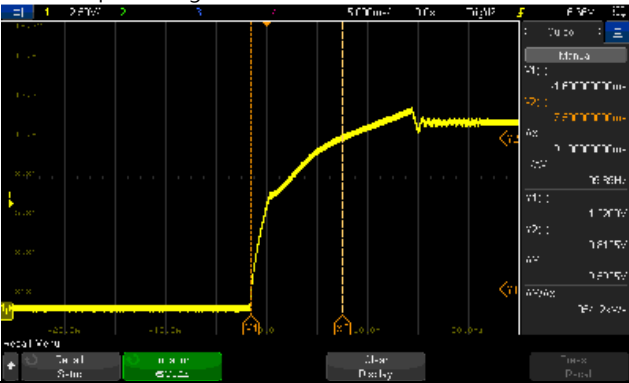
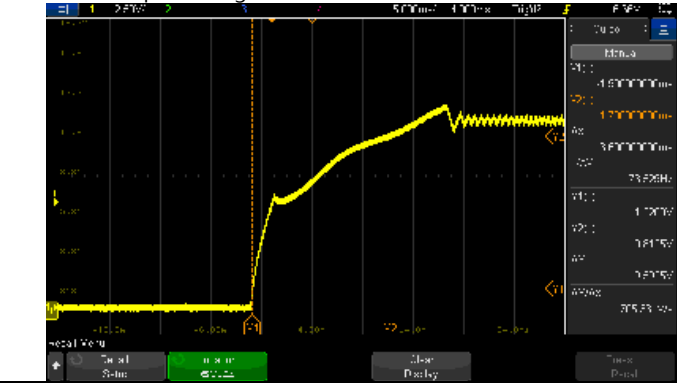
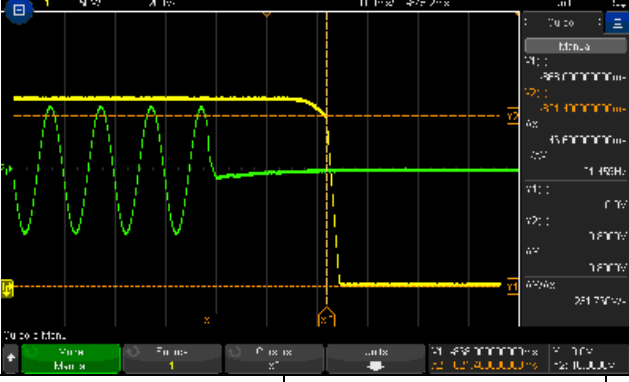
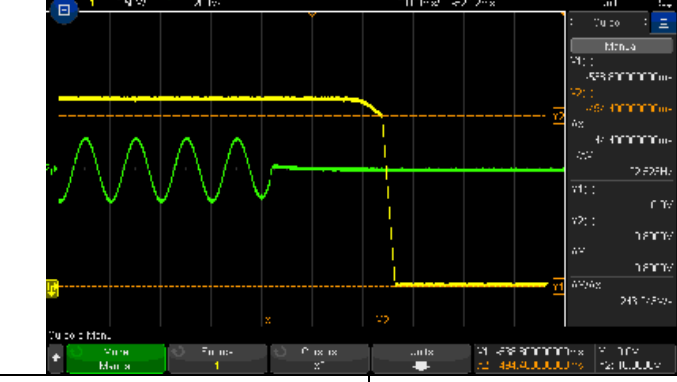
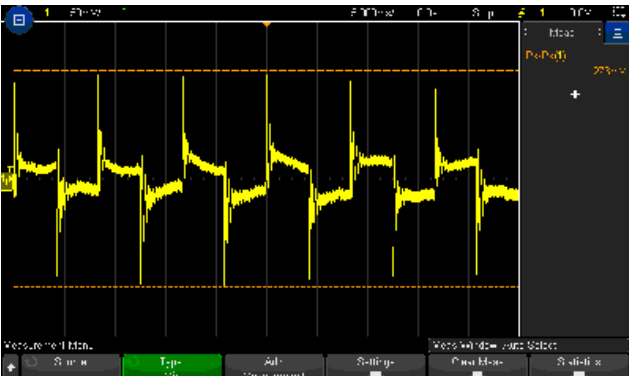
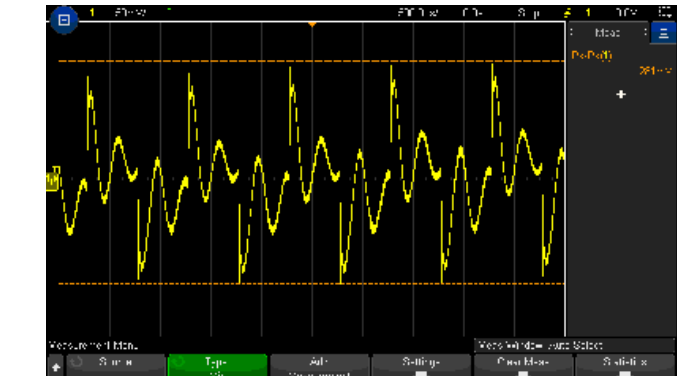
CH1 : Output Voltage CH2 : AC Input Voltage



INPUT=115VAC/60HZ @ FULL LOAD

CH1 : Output Voltage CH2 : AC Input Voltage



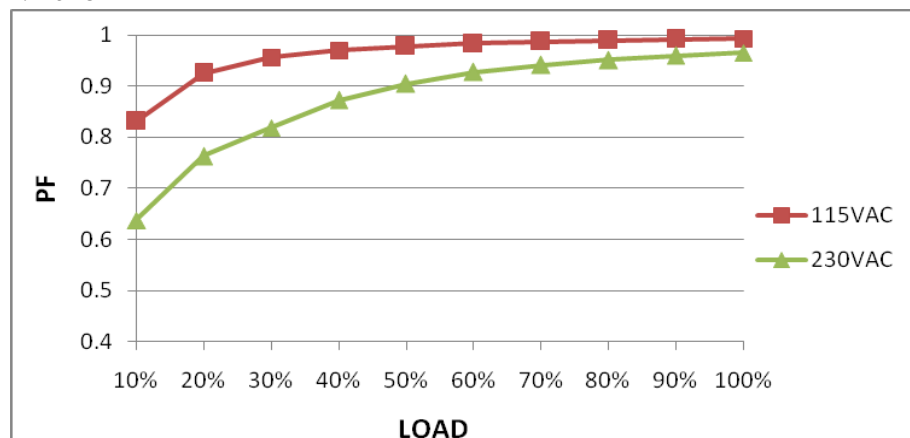
7	RISE TIME (Max)	230VAC/1000ms 115VAC/1000ms	I/P : 230 VAC I/P : 115 VAC O/P : FULL LOAD Ta : 25°C	230VAC/ 9.1 ms 115VAC/ 13.6 ms
INPUT=230VAC/50HZ @ FULL LOAD CH1 : Output Voltage 				
INPUT=115VAC/60HZ @ FULL LOAD CH1 : Output Voltage 				
8	HOLD UP TIME (Typ.)	230VAC/16ms 115VAC/10ms	I/P : 230 VAC I/P : 115 VAC O/P : FULL LOAD Ta : 25°C	230VAC/ 46.6 ms 115VAC/ 44.4 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: 1200mVp-p	I/P: 230VAC O/P: (1)FULL/MIN LOAD 50%DUTY/ 120HZ (2)FULL/MIN LOAD 50%DUTY/ 1KHZ Ta:25°C	273mVp-p 281mVp-p
FULL /50% LOAD 50%DUTY / 120HZ 				
FULL /50% LOAD 50%DUTY / 1KHZ 				

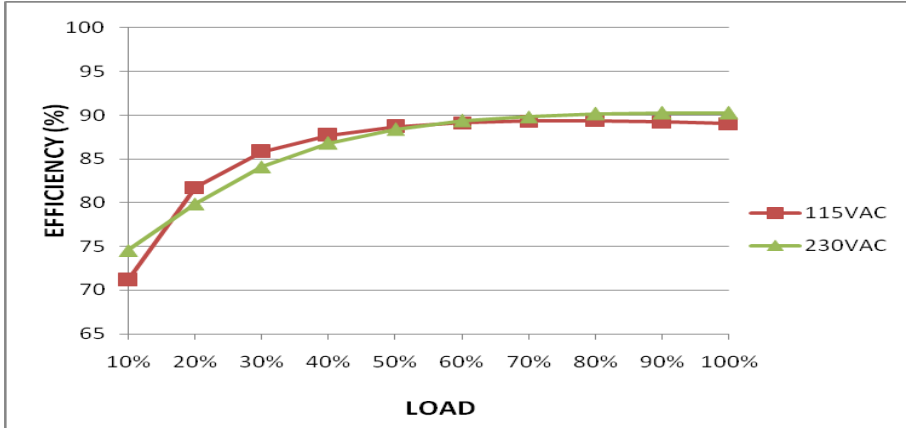
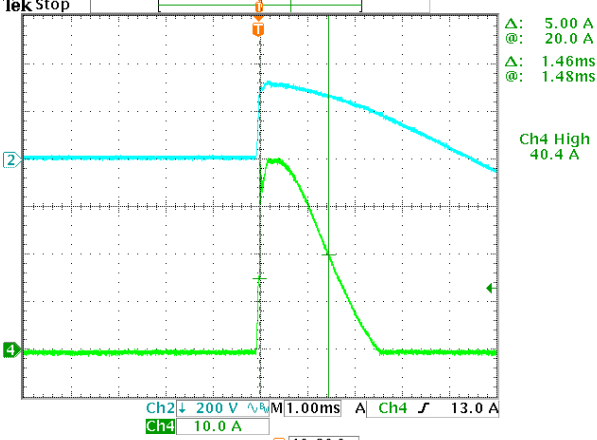
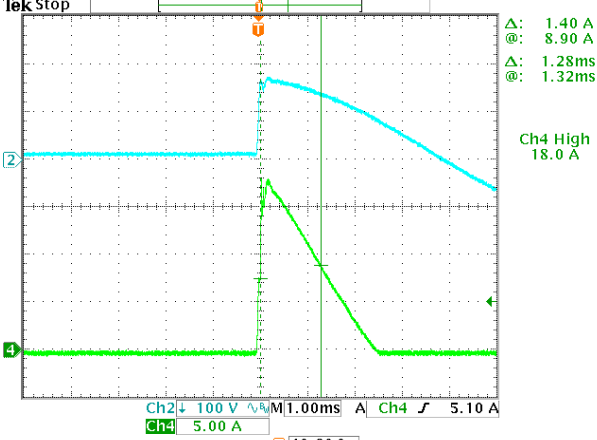
10	TRANSIENT RECOVERY TIME	V1: 1200mVp-p	I/P: 230VAC O/P:40% LOAD CHANGE 50%DUTY/120HZ 1.25A/us	436mVp-p
----	-------------------------	---------------	--	----------

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) 88.9V~305V/full load (2) 119Vdc~431Vdc/FULL LOAD 119Vdc~431Vdc/50% LOAD (3) 119Vdc~431Vdc/FULL LOAD 119Vdc~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/ 1.4 A 115V/ 2.8 A	I/P : 230 VAC I/P : 115 VAC O/P : FULL LOAD Ta : 25°C	I =1.19A/ 230VAC I =2.36A/ 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=0.965/230VAC PF=0.992/115VAC

P.F vs LOAD



5	EFFICIENCY(Typ.)	89.5%	I/P:230 VAC O/P:FULL LOAD Ta:25°C	90.4%
EFFICIENCY vs LOAD 				
6	INRUSH CURRENT(Typ.)	230V/60A 115V/30A COLD START	I/P : 230 VAC I/P : 115 VAC O/P : FULL LOAD Ta : 25°C	I =40.4A/ 230VAC I =18.0A/ 115VAC T50=1.46ms/230V
INPUT=230VAC/50HZ @ FULL LOAD CH2 : AC Input Voltage CH4 : Input current  INPUT=115VAC/ 60HZ @ FULL LOAD CH2 : AC Input Voltage CH4 : Input current 				

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	117.2%/ 305VAC 117.2%/ 230VAC 117.2%/100VAC Protection type: Constant current limiting, shutdown output voltage after 5 sec

2	OVER VOLTAGE PROTECTION	Load main output : 16.2V~18.6V 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	17.2V/ 305VAC 17.2V/ 230VAC 17.2V/ 90VAC Protection type : Shut down o/p voltage, re-power on to recover
3	OVER TEMPERATURE PROTECTION	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 Automatically drop load with temperature only for bat. load Shut down o/p voltage, recovers automatically after temperature goes down
4	SHORT PROTECTION	Constant current Range: 21~28A 1 HOUR NO DAMAGE	I/P: 305VAC I/P: 90VAC O/P: FULL LOAD Ta:25°C	NO DAMAGE Constant current Range: 23.4 A PROTECTION TYPE : Constant current limiting, shutdown output voltage after 5 sec, re-power on
5	BATTERY CUT OFF	10.5±0.3V	I/P: 230 VAC O/P: BAT. LOAD Ta:25°C	10.40 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	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 : 79~89V of 120VAC, 132~187V of 220VAC. Relay contact output, ON : AC OK ; OFF : AC Fail ; max. rating : 30V/1A	TEST : <u>OK</u> 85.5 V of 120VAC, 173.4 V 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>10.79V</u>																																				
		BATTERY LOW/ ABNORMAL/ DISCONNECTED	Relay contact output, ON : Battery OK ; OFF : Battery Low ; max. rating : 30V/1A ; Battery low voltage : < 11V	TEST : <u>OK</u> <u>Vbat < 10.9 V</u>																																				
2	BATTER 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	17.5% ~99.8%																																				
5	LED INDICATOR	<table><thead><tr><th>Function</th><th>Description</th><th>Output of alarm</th></tr></thead><tbody><tr><td rowspan="2">DC OK</td><td>DC fail</td><td>OFF </td></tr><tr><td>DC OK</td><td>Green </td></tr><tr><td rowspan="2">AC fail</td><td>AC fail</td><td>Red </td></tr><tr><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: 1 Blink/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>Over load / 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: 1 Blink/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  	Over load / 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: 1 Blink/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  																																					
		Over load / short	Red : 5 Blink/Pause  																																					
		Over temperature	Red : 6 Blink/Pause  																																					
		Timeout	Red : 7 Blink/Pause  																																					
6	FORCE BUTTON	Bat over discharge protection < 85%Bat rated	I/P: 230 VAC O/P:BAT. LOAD Ta:25°C	TEST : <u>OK</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			
		Constant Voltage			
		SPEC:	Ta=0°C (17K Ω)	Ta=25°C (5K Ω)	Ta=50°C (1.7K Ω)
			14.85±0.12V	14.4±0.12V	14.13±0.12V
		TEST RESULT:	14.738V	14.293V	14.026V

COMPONENT STRESS TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	
1	PWM Transistor (D to S) or (C to E) Peak Voltage	Q 15/Q16Rated : 18 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) 454V (2) 478V (3) 458V (4) 454V (5) 450V (6) 458V (7) 442V	Q16 VDS: (1) 450V (2) 466V (3) 454V (4) 450V (5) 446V (6) 454V (7) 434V
2	P.F.C Transistor (D to S) or (C to E) Peak Voltage	Q1Rated : 13A/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) 574V (2) 574V (3) 574V (4) 574V (5) 574V (6) 574V (7) 511V	
3	AUX MOS	U505 Rated : 1.04A/ 725 V Q504 Rated : 28 A/ 150 V	I/P: High-Line +3V =308 V AC ON/OFF O/P: (1)Full Load (2)Output Short (3) Dynamic Load Full Load/	U505 VDS: (1) 649V (2) 656V (3) 649V	Q504 VDS: (1) 47.0V (2) 47.0V (3) 47.4V

			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	(4) 649V (5) 649V (6) 649V (7) 649V	(4) 45.8V (5) 45.8V (6) 45.8V (7) 45.8V
4	P.F.C DIODE	D 8 Rated : 8 A/ 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/5KHz (4)Dynamic Load 100% Load/ Min. Load 50%Duty/120Hz Ta:25°C	(1) 532V (2) 532V (3) 532V (4) 496V	
5	Diode Peak Voltage	Q101 Rated : 140A/ 85 V Q102 Rated : 140A/ 85 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) 43.0V (2) 42.6V (3) 45.4V (4) 45.8V (5) 45.4V (6) 44.6V (7) 40.6V (8) 35.8V	Q102: VDS: (1) 40.6V (2) 41.8V (3) 43.8V (4) 43.4V (5) 43.4V (6) 43.0V (7) 41.0V (8) 33.0V
6	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)449 (2)426V (3)447V (4)436V	
7	Control IC Voltage Test	PWM IC U3 Rated 8.9V~ 15.5 V PFC IC U1 Rated 9.75V~ 35 V O/P IC U100 Rated 8V~ 24 V IC U801 Rated 4.5V~ 36 V	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) 13.7V (2) 13.8V (3) 13.5V (4) 13.5V (5) 13.8V U1 (1) 14.5V (2) 14.5V	U801 (1) 12.4V (2) 12.4V (3) 12.4V (4) 12.4V (5) 12.4V U502 (1) 11.7V (2) 11.7V

		MCU IC U303 Rated 2.4V~ 3.6 V		(3) 14.2V (4) 14.2V (5) 1.6V	(3) 11.6V (4) 11.6V (5) 11.6V
		AUX IC U502 Rated 8.5V~30V		U100 (1) 12.3V (2) 14.0V (3) 12.3V (4) 12.3V (5) 12.3V	U303 (1) 3.33V (2) 3.33V (3) 3.33V (4) 3.33V (5) 3.33V

■ SAFETY& E.M.C. TEST

SAFETY TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	WITHSTAND VOLTAGE	I/P-O/P: 4 KVAC/min I/P-FG: 2 KVAC/min O/P-FG:1.5 KVAC/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:10.78mA I/P-FG:8.78mA O/P-FG:19.43m 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	6mΩ

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-240-12 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>LF1</td><td>37.9°C</td><td>66.5°C</td></tr><tr><td>2</td><td>C3</td><td>42.5°C</td><td>78.8°C</td></tr><tr><td>3</td><td>LF2</td><td>43.2°C</td><td>75.9°C</td></tr><tr><td>4</td><td>RTH4</td><td>45.1°C</td><td>71.7°C</td></tr><tr><td>5</td><td>RTH1</td><td>47.5°C</td><td>77.5°C</td></tr><tr><td>6</td><td>C26</td><td>51.9°C</td><td>80.9°C</td></tr><tr><td>7</td><td>BD1</td><td>61.5°C</td><td>89.3°C</td></tr><tr><td>8</td><td>C10</td><td>49.3°C</td><td>77.1°C</td></tr><tr><td>9</td><td>L3</td><td>48.2°C</td><td>76.1°C</td></tr><tr><td>10</td><td>C5</td><td>43.5°C</td><td>75.9°C</td></tr><tr><td>11</td><td>D12</td><td>51.6°C</td><td>79.8°C</td></tr><tr><td>12</td><td>L1</td><td>52.4°C</td><td>79.3°C</td></tr><tr><td>13</td><td>Q2</td><td>54.6°C</td><td>82.9°C</td></tr><tr><td>14</td><td>R4</td><td>56.0°C</td><td>83.0°C</td></tr><tr><td>15</td><td>U1</td><td>47.5°C</td><td>75.2°C</td></tr><tr><td>16</td><td>U4</td><td>47.5°C</td><td>74.0°C</td></tr><tr><td>17</td><td>C39</td><td>46.6°C</td><td>74.2°C</td></tr><tr><td>18</td><td>U502</td><td>57.1°C</td><td>85.1°C</td></tr><tr><td>19</td><td>T600</td><td>48.0°C</td><td>76.8°C</td></tr><tr><td>20</td><td>T500</td><td>55.5°C</td><td>83.0°C</td></tr><tr><td>21</td><td>U3</td><td>50.8°C</td><td>80.9°C</td></tr><tr><td>22</td><td>Q504</td><td>52.9°C</td><td>80.5°C</td></tr><tr><td>23</td><td>Q15</td><td>54.8°C</td><td>83.6°C</td></tr><tr><td>24</td><td>T1coil</td><td>73.3°C</td><td>95.1°C</td></tr></table>			NO	Position	ROOM AMBIENT Ta= 25.0°C	HIGH AMBIENT Ta= 50.0 °C	1	LF1	37.9°C	66.5°C	2	C3	42.5°C	78.8°C	3	LF2	43.2°C	75.9°C	4	RTH4	45.1°C	71.7°C	5	RTH1	47.5°C	77.5°C	6	C26	51.9°C	80.9°C	7	BD1	61.5°C	89.3°C	8	C10	49.3°C	77.1°C	9	L3	48.2°C	76.1°C	10	C5	43.5°C	75.9°C	11	D12	51.6°C	79.8°C	12	L1	52.4°C	79.3°C	13	Q2	54.6°C	82.9°C	14	R4	56.0°C	83.0°C	15	U1	47.5°C	75.2°C	16	U4	47.5°C	74.0°C	17	C39	46.6°C	74.2°C	18	U502	57.1°C	85.1°C	19	T600	48.0°C	76.8°C	20	T500	55.5°C	83.0°C	21	U3	50.8°C	80.9°C	22	Q504	52.9°C	80.5°C	23	Q15	54.8°C	83.6°C	24	T1coil	73.3°C	95.1°C
NO	Position	ROOM AMBIENT Ta= 25.0°C	HIGH AMBIENT Ta= 50.0 °C																																																																																																					
1	LF1	37.9°C	66.5°C																																																																																																					
2	C3	42.5°C	78.8°C																																																																																																					
3	LF2	43.2°C	75.9°C																																																																																																					
4	RTH4	45.1°C	71.7°C																																																																																																					
5	RTH1	47.5°C	77.5°C																																																																																																					
6	C26	51.9°C	80.9°C																																																																																																					
7	BD1	61.5°C	89.3°C																																																																																																					
8	C10	49.3°C	77.1°C																																																																																																					
9	L3	48.2°C	76.1°C																																																																																																					
10	C5	43.5°C	75.9°C																																																																																																					
11	D12	51.6°C	79.8°C																																																																																																					
12	L1	52.4°C	79.3°C																																																																																																					
13	Q2	54.6°C	82.9°C																																																																																																					
14	R4	56.0°C	83.0°C																																																																																																					
15	U1	47.5°C	75.2°C																																																																																																					
16	U4	47.5°C	74.0°C																																																																																																					
17	C39	46.6°C	74.2°C																																																																																																					
18	U502	57.1°C	85.1°C																																																																																																					
19	T600	48.0°C	76.8°C																																																																																																					
20	T500	55.5°C	83.0°C																																																																																																					
21	U3	50.8°C	80.9°C																																																																																																					
22	Q504	52.9°C	80.5°C																																																																																																					
23	Q15	54.8°C	83.6°C																																																																																																					
24	T1coil	73.3°C	95.1°C																																																																																																					

			NO	Position	ROOM AMBIENT Ta= 25.0℃	HIGH AMBIENT Ta= 50.0 ℃
			25	T1core	61.8℃	89.2℃
			26	C60	58.3℃	84.9℃
			27	RTH5	56.5℃	82.3℃
			28	C106	62.9℃	90.1℃
			29	LF100	82.3℃	101.9℃
			30	U100	76.8℃	92.5℃
			31	Q102	98.4℃	96.2℃
			32	Q522	38.6℃	66.7℃
			33	C103	72.9℃	93.2℃
			34	Q303	40.6℃	67.9℃
			35	Q350	53.7℃	81.9℃
			36	D503	55.2℃	83.6℃
			37	U505	66.1℃	94.4℃
			38	Q500	56.0℃	84.7℃
			39	J101	73.5℃	99.3℃
			40	D651	60.6℃	88.5℃
			41	U303	52.7℃	81.8℃
			42	U801	50.0℃	79.2℃
			43	U150	63.8℃	92.1℃
44	R171	53.7℃	82.1℃			
2	OVER LOAD BURN-IN TEST	NO DAMAGE 1 HOUR (MIN)	I/P : 230 VAC O/P : 116%LOAD Ta : 25℃		TEST : OK	
3	LOW TEMPERATURE TURN ON TEST	TURN ON AFTER 2 HOUR	I/P : 264VAC/100VAC O/P : 100%LOAD Ta= -35℃		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℃ HUMIDITY= 95 %R.H		TEST : OK	
5	TEMPERATURE COEFFICIENT	± 0.03%/°C(0~50℃)	I/P : 230 VAC O/P : FULL LOAD		±0.006%/°C(0~50℃)	
6	STORAGE TEMPERATURE TEST	-40~85℃	1. Thermal shock Temperature : -45℃~ +90℃ 2. Temperature change rate : 25℃ / 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℃	1. Thermal shock Temperature : -35℃~ +55℃ 2. Temperature change rate : 25℃ / 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 C103 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) 115366.8HRS (2) 28248.1HRS (3) 48993.9HRS (4) 134604.1HRS
10	MTBF	Conducted by Parts Stress Analysis Prediction 564.7K hrs min. Telcordia SR-332 (Bellcore) ; 73.3K 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

2020.10.1 TAG-QA-009