



Test Report: HEP-1000-100

1000W Switching Power Supply for Harsh Environment

■ 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

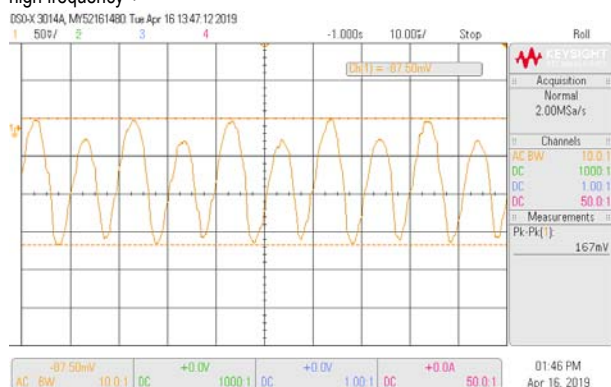
ENVIRONMENT TEST

DESIGN VERIFY TEST

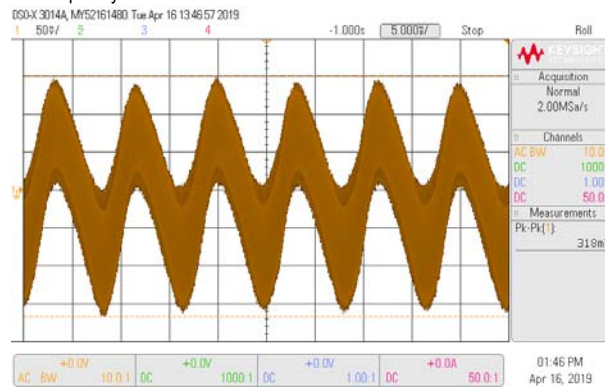
OUTPUT FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	OUTPUT VOLTAGE ADJUST RANGE	CH1: 100V~ 125V	I/P : 230 VAC I/P : 115 VAC O/P : MIN LOAD Ta : 25°C	97.65V~128.32V/230VAC 97.265V~128.31V/115VAC
2	OUTPUT VOLTAGE(Max) TOLERANCE	V1: -1%~ +1%	I/P: 90VAC /305VAC O/P:FULL/ MIN. LOAD Ta:25°C	V1: - 0.065%~0.065%
3	LINE REGULATION (Max)	V1: -0.5%~ +0.5%	I/P: 180VAC~ 305VAC O/P:FULL LOAD Ta:25°C	V1: 0%~0.019 %
4	LOAD REGULATION(Max)	V1: -0.5%~ +0.5%	I/P: 230VAC O/P:FULL ~MIN LOAD Ta:25°C	V1: -0.069%~ 0.049 %
5	OVER/UNDERSHOOT TEST	< ±5%	I/P: 230VAC O/P:FULL LOAD Ta:25°C	< 5 %
6	RIPPLE & NOISE(Max)	V1: 500mVp-p	I/P:230VAC O/P:FULL LOAD Ta:25°C	V1:318mVp-p

high frequency :



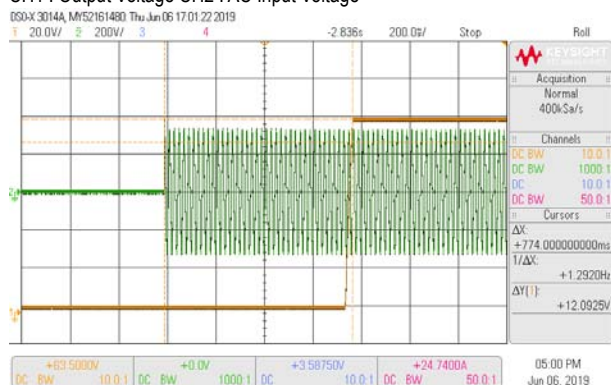
low frequency :



7	SET UP TIME(Max)	230VAC/1800ms 115VAC/1800ms	I/P : 230 VAC O/P : FULL LOAD I/P : 115 VAC O/P : 71% LOAD Ta : 25°C	230VAC/ 774 ms 115VAC/ 822 ms
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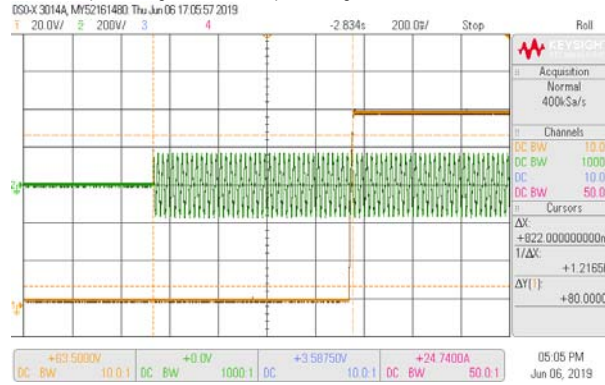
INPUT=230VAC/50HZ @ FULL LOAD

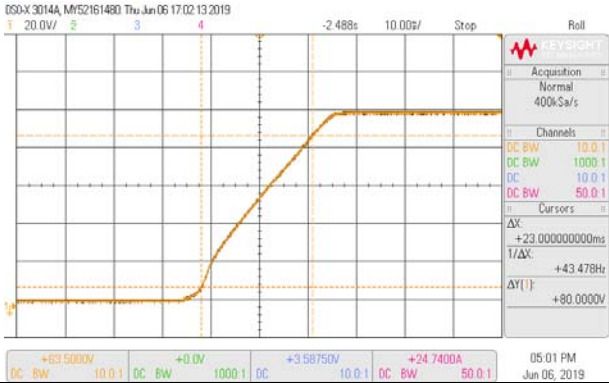
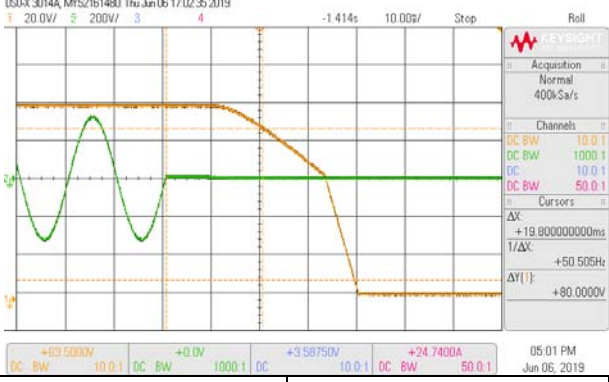
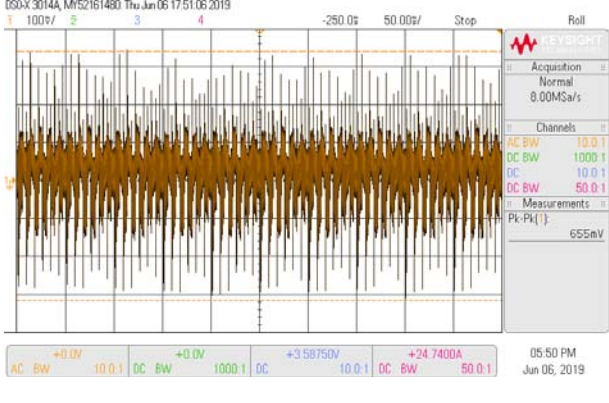
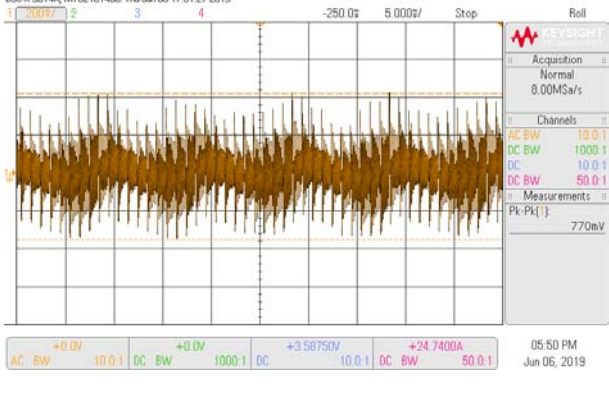
CH1 : Output Voltage CH2 : AC Input Voltage



INPUT=115VAC/60HZ @ 71% LOAD

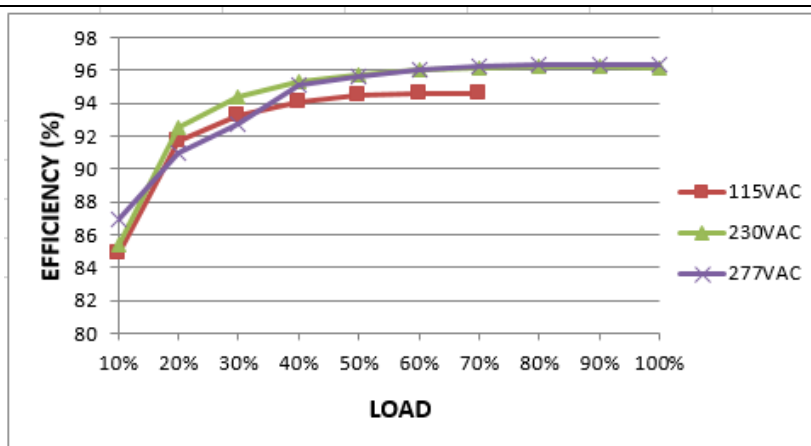
CH1 : Output Voltage CH2 : AC Input Voltage

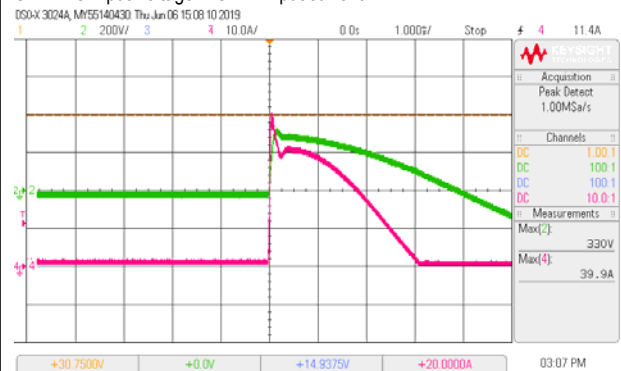


8	RISE TIME (Max) 230VAC/80ms 115VAC/80ms	I/P : 230 VAC O/P : FULL LOAD I/P : 115 VAC O/P : 71% LOAD Ta : 25°C	230VAC/ 23 ms 115VAC/ 13.1 ms
INPUT=230VAC/50HZ @ FULL LOAD CH1 : Output Voltage 		INPUT=115VAC/60HZ @ 71% LOAD CH1 : Output Voltage 	
9	HOLD UP TIME (Typ.) 230VAC/12ms @FULL LOAD 230VAC/16ms @75%LOAD	I/P : 230 VAC O/P : FULL LOAD /75% LOAD Ta : 25°C	230VAC/ 19.8 ms@ FULL LOAD 230VAC/ 31.2ms@75%LOAD
INPUT=230VAC/50HZ @ FULL LOAD CH1 : Output Voltage CH2 : AC Input Voltage 		INPUT=230VAC/50HZ @ 75% LOAD CH1 : Output Voltage CH2 : AC Input Voltage 	
10	DYNAMIC LOAD V1: 10000mVp-p	I/P: 230VAC O/P: (1)FULL /50% LOAD 50%DUTY / 120HZ (2)FULL /50% LOAD 50%DUTY / 1KHZ Ta:25°C	655mVp-p 770mVp-p
FULL /50% LOAD 50%DUTY / 120HZ 		FULL /50% LOAD 50%DUTY / 1KHZ 	

INPUT FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT																																												
1	INPUT VOLTAGE RANGE	90VAC~305VAC	I/P:TESTING O/P:FULL LOAD/ Derating Load Ta:25℃	158V~305V/ Full Load 57V~305V/ Derating Load																																												
			I/P: LOW-LINE-3V=87 V HIGH-LINE+15%=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 ~305 VAC O/P:FULL~MIN LOAD Ta:25℃	TEST: OK																																												
3	INPUT CURRENT (Typ.)	277V/ 4.5A 230V/ 5.3A 115V/ 10.1A	I/P : 277 VAC I/P : 230 VAC O/P : FULL LOAD I/P : 115 VAC O/P : 71% LOAD Ta : 25℃	I=3.92A/ 277VAC I=4.65A/ 230VAC I=6.56A/ 115VAC																																												
4	LEAKAGE CURRENT	<0.75 mA / 240 VAC	I/P : 240 VAC O/P : Min LOAD Ta : 25℃	L-FG : 0.48 mA N-FG : 0.52 mA																																												
5	POWER FACTOR (Typ.)	0.93/ 277VAC 0.95/ 230VAC 0.99/115VAC	I/P : 277 VAC I/P : 230 VAC O/P : FULL LOAD I/P : 115 VAC O/P : 71% LOAD Ta : 25℃	PF=0.967/277VAC PF=0.983/230VAC PF=0.995/115VAC																																												
P.F vs LOAD																																																
<table><caption>Approximate data points from P.F vs LOAD graph</caption><thead><tr><th>LOAD (%)</th><th>115VAC PF</th><th>230VAC PF</th><th>277VAC PF</th></tr></thead><tbody><tr><td>10</td><td>0.98</td><td>0.78</td><td>0.62</td></tr><tr><td>20</td><td>0.99</td><td>0.88</td><td>0.78</td></tr><tr><td>30</td><td>0.995</td><td>0.92</td><td>0.85</td></tr><tr><td>40</td><td>0.998</td><td>0.95</td><td>0.90</td></tr><tr><td>50</td><td>0.999</td><td>0.97</td><td>0.93</td></tr><tr><td>60</td><td>1.00</td><td>0.98</td><td>0.95</td></tr><tr><td>70</td><td>1.00</td><td>0.99</td><td>0.96</td></tr><tr><td>80</td><td>1.00</td><td>0.995</td><td>0.97</td></tr><tr><td>90</td><td>1.00</td><td>0.998</td><td>0.98</td></tr><tr><td>100</td><td>1.00</td><td>1.00</td><td>0.99</td></tr></tbody></table>					LOAD (%)	115VAC PF	230VAC PF	277VAC PF	10	0.98	0.78	0.62	20	0.99	0.88	0.78	30	0.995	0.92	0.85	40	0.998	0.95	0.90	50	0.999	0.97	0.93	60	1.00	0.98	0.95	70	1.00	0.99	0.96	80	1.00	0.995	0.97	90	1.00	0.998	0.98	100	1.00	1.00	0.99
LOAD (%)	115VAC PF	230VAC PF	277VAC PF																																													
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6	EFFICIENCY(Typ.)	96%	I/P:230 VAC O/P:FULL LOAD Ta:25℃	96.2%																																												
	EFFICIENCY vs LOAD																																															



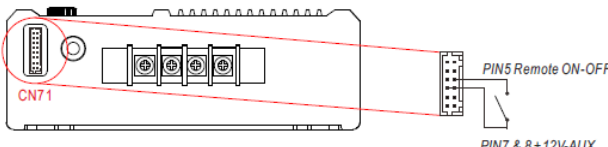
7	INRUSH CURRENT(Typ.)	230V/40A COLD START	I/P : 230 VAC O/P : FULL LOAD Ta : 25°C	I=39.9A/ 230VAC T50= 1760 us/230V
INPUT=230VAC/50HZ @ FULL LOAD CH2 : AC Input Voltage CH4 : Input current 030-X 3024A, MY55140430 Thu Jun 06 15:08:10 2019  Max(2): 330V Max(4): 39.9A				

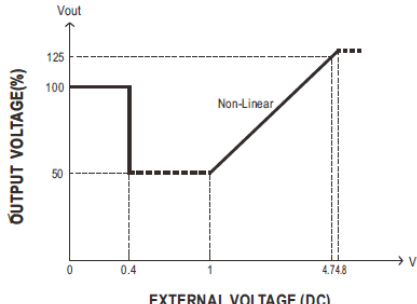
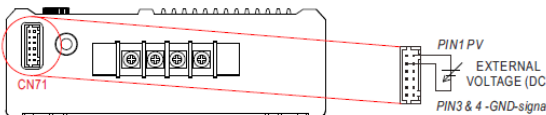
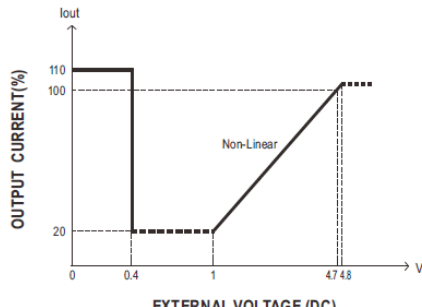
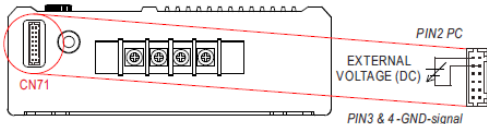
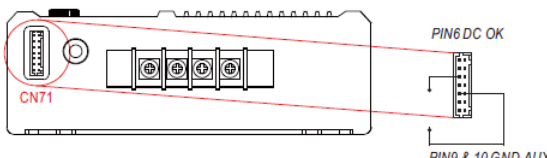
PROTECTION FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	OVER LOAD PROTECTION	105%~ 125% PROTECTION TYPE : Constant current limiting,unit will shutdown after 5 sec,re-power on to recover.	I/P: 305VAC I/P: 230VAC I/P: 180VAC O/P:TESTING Ta:25°C	112.6%/ 305VAC 112.6%/ 230VAC 112.6%/180VAC PROTECTION TYPE : Constant current limiting,unit will shutdown after 5 sec,re-power on to recover.
2	OVER VOLTAGE PROTECTION	125V~145V 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	134.5V/ 305VAC 134.19V/ 230VAC 134.43V/ 90VAC PROTECTION TYPE : Shut down O/P voltage,re-power on to recover.
3	OVER TEMPERATURE PROTECTION	Protection type : Shut down O/P voltage,, recovers automatically after temperature goes down	I/P: 305VAC O/P:FULL LOAD I/P: 90VAC O/P:70% LOAD	O.T.P.Active Protection type : Shut down O/P voltage,, recovers automatically after temperature goes down

4	SHORT PROTECTION	SHORT EVERY OUTPUT 1 HOUR NO DAMAGE PROTECTION TYPE : Constant current limiting,unit will shutdown after 5 sec,re-power on to recover.	I/P: 305VAC I/P: 90VAC O/P: FULL LOAD Ta:25°C	NO DAMAGE PROTECTION TYPE : Constant current limiting,unit will shutdown after 5 sec,re-power on to recover.
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CONTROL FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT												
1	AUXILIARY POWER (AUX)	I/P: 230 VAC O/P:FULL LOAD Ta:25°C Test Result : <table><tr><td>AUX</td><td>TOLERANCE</td><td>RIPPLE</td><td>TEST RESULT</td></tr><tr><td>12V / 0.5A</td><td>10.8~13.2 V</td><td>150mVp-p</td><td>11.7V/21mvp-p</td></tr></table>			AUX	TOLERANCE	RIPPLE	TEST RESULT	12V / 0.5A	10.8~13.2 V	150mVp-p	11.7V/21mvp-p				
AUX	TOLERANCE	RIPPLE	TEST RESULT													
12V / 0.5A	10.8~13.2 V	150mVp-p	11.7V/21mvp-p													
2	REMOTE ON/OFF CONTROL	The power supply can be turned ON/OFF individually or along with other units in parallel by using the "Remote ON-OFF" function.  I/P: 230 VAC O/P:FULL LOAD Ta:25°C Test Result : <table><tr><td>Between ON/OFF and +5V-AUX</td><td>Power Supply Status</td></tr><tr><td>SW SHORT</td><td>ON</td></tr><tr><td>SW OPEN</td><td>OFF</td></tr></table> <table><tr><td>Remote ON-OFF</td><td>Power Supply Status</td></tr><tr><td>Short circuit</td><td>ON</td></tr><tr><td>Open circuit</td><td>OFF</td></tr></table>			Between ON/OFF and +5V-AUX	Power Supply Status	SW SHORT	ON	SW OPEN	OFF	Remote ON-OFF	Power Supply Status	Short circuit	ON	Open circuit	OFF
Between ON/OFF and +5V-AUX	Power Supply Status															
SW SHORT	ON															
SW OPEN	OFF															
Remote ON-OFF	Power Supply Status															
Short circuit	ON															
Open circuit	OFF															

3	OUTPUT VOLTAGE PROGRAMMABLE(PV)	※ In addition to the adjustment via the built-in potentiometer, the output voltage can be trimmed by applying EXTERNAL VOLTAGE.  I/P: 230 VAC O/P:FULL LOAD Ta:25°C TEST RESULT : <table><tr><th>PV</th><th><0.4V</th><th>1V</th><th>4.7V</th><th>4.8V</th></tr><tr><td>MODEL</td><td></td><td></td><td></td><td></td></tr><tr><td>SPEC</td><td>100V±5%</td><td>50V±5%</td><td>125V±5%</td><td>127V±5%</td></tr><tr><td>Vout</td><td>100.01V</td><td>49.83V</td><td>124.97V</td><td>127.26V</td></tr></table>	PV	<0.4V	1V	4.7V	4.8V	MODEL					SPEC	100V±5%	50V±5%	125V±5%	127V±5%	Vout	100.01V	49.83V	124.97V	127.26V
PV	<0.4V	1V	4.7V	4.8V																		
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SPEC	100V±5%	50V±5%	125V±5%	127V±5%																		
Vout	100.01V	49.83V	124.97V	127.26V																		
4	OUTPUT CURRENT PROGRAMMABLE (PC)	※ The output current can be trimmed to 20~100% of the rated current by applying EXTERNAL VOLTAGE.  I/P: 230 VAC O/P:TESTING Ta:25°C <table><tr><th>ADJ V</th><th><0.4V</th><th>1V</th><th>4.7V</th><th>4.8V</th></tr><tr><td>SPEC</td><td>110%±5%</td><td>20%±5%</td><td>100%±5%</td><td>100%±5%</td></tr><tr><td>TEST</td><td>111.10%</td><td>21.10%</td><td>101.20%</td><td>103.80%</td></tr></table>	ADJ V	<0.4V	1V	4.7V	4.8V	SPEC	110%±5%	20%±5%	100%±5%	100%±5%	TEST	111.10%	21.10%	101.20%	103.80%					
ADJ V	<0.4V	1V	4.7V	4.8V																		
SPEC	110%±5%	20%±5%	100%±5%	100%±5%																		
TEST	111.10%	21.10%	101.20%	103.80%																		
5	DC-OK SIGNAL	DC-OK signal is a TTL level signal. The maximum source current is 10mA and the maximum external voltage is 5.5V. <table><tr><th>DC-OK signal</th><th>Power Supply Status</th></tr><tr><td>"High" >4.4~5.5V</td><td>ON</td></tr><tr><td>"Low" <-0.5~-0.5V</td><td>OFF</td></tr></table> I/P:230VAC O/P:FULL LOAD Ta:25°C <table><tr><th>DC-OK signal</th><th>Power Supply Status</th></tr><tr><td>"High" >4.5~5.5V</td><td>ON(5.15v)</td></tr><tr><td>"Low" <-0.5~-0.5V</td><td>OFF(-0.04V)</td></tr></table>	DC-OK signal	Power Supply Status	"High" >4.4~5.5V	ON	"Low" <-0.5~-0.5V	OFF	DC-OK signal	Power Supply Status	"High" >4.5~5.5V	ON(5.15v)	"Low" <-0.5~-0.5V	OFF(-0.04V)								
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DC-OK signal	Power Supply Status																					
"High" >4.5~5.5V	ON(5.15v)																					
"Low" <-0.5~-0.5V	OFF(-0.04V)																					

CHARGER MODE

OUTPUT FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	BOOST CHARGE VOLTAGE	115.2V±1V	I/P: 230 VAC O/P: C.V MODE-1V Ta:25°C	115.18 V
2	FLOAT CHARGE VOLTAGE	110.4V±1V	I/P: 230 VAC O/P: C.V MODE-1V Ta:25°C	110.44V
3	OUTPUT CURRENT	8.7A±0.22A	I/P: 230 VAC O/P: C.V MODE-1V Ta:25°C	8.8A

INPUT FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	INPUT CURRENT (TYP)	230 V/ 4.5A 230 V/ 5.3 A 115 V/ 10.1 A	I/P: 277VAC I/P: 230 VAC I/P: 115 VAC O/P: C.V MODE-1V Ta:25°C	I =3.91A/ 277VAC I =4.61A/ 230VAC I =6.92A/ 115VAC
2	POWER FACTOR (TYP)	0.93/ 277 VAC 0.95/ 230 VAC 0.99/ 115 VAC	I/P: 277VAC I/P: 230 VAC I/P: 115 VAC O/P: C.V MODE-1V Ta:25°C	PF= 0.97/ 277VAC PF= 0.99/ 230VAC PF=0.99/ 115VAC
3	EFFICIENCY (TYP)	96%	I/P: 230 VAC O/P: C.V MODE-1V Ta:25°C	96.2%

COMPONENT STRESS TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	PWM Transistor (D to S) or (C to E) Peak Voltage	Q902 Rated 16A/ 650V	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	VDS (1) 435V (2) 439V (3) 439V (4) 435V (5) 439V (6) 439V (7)447V
2	P.F.C Transistor (D to S) or (C to E) Peak Voltage	Q66 Rated 16A/ 650V	I/P:High-Line +3V =308V AC ON/OFF O/P: (1)Full Load	VDS (1) 451V

			(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℃	(2) 451V (3) 451V (4) 451V (5) 447V (6) 443V (7) 451V
3	P.F.C DIODE	D14 Rated 8A/ 650V	I/P:High-Line +3V =308V AC ON/OFF O/P: (1)Full Load (2)Output Short Ta:25℃	(1) 391V (2) 399V
4	Diode Peak Voltage	Q101 Rated 38A/ 300V	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℃	Q101: VDS: (1)194V (2)194V (3)206V (4)206V (5)210V (6)206V (7)210V (8)214V
5	Input Capacitor Voltage	C5 Rated: : 220μ/ 450 V 105 °C/ TXW Series	I/P:High-Line +3V =308V O/P: (1) Min load continue (2)Full load continue Ta:25℃	(1) 447V (2) 443V

SAFETY TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	WITHSTAND VOLTAGE	I/P-O/P: 3KVAC/min I/P-FG :2KVAC/min O/P-FG:1.25KVAC/min	I/P-O/P: 3.6 KVAC/min I/P-FG: 2.4 KVAC/min O/P-FG:1.5 KVAC/min Ta:25℃	I/P-O/P: 6.7mA I/P-FG: 6.43mA O/P-FG: 6.28mA 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℃	I/P-O/P: 7.88GΩ I/P-FG: 7.53GΩ O/P-FG: 4.42GΩ NO DAMAGE
3	GROUNDING CONTINUITY	FG(PE) TO CHASSIS OR TRACE < 100 mΩ	40A / 2min Ta:25℃	22mΩ

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 FAIL
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 INDUSTRY AIR: 8KV / Contact: 4KV	I/P : 230 VAC/50HZ O/P : FULL LOAD Ta : 25°C	CRITERIA A
5	E.F.T	EN61000-4-4 INDUSTRY INPUT : 2KV	I/P : 230 VAC/50HZ O/P : FULL LOAD Ta : 25°C	CRITERIA A
6	SURGE	IEC61000-6-2 INDUSTRY L-N : 2KV L,N-PE : 4KV	I/P : 230 VAC/50HZ O/P : FULL LOAD Ta : 25°C	CRITERIA A
7	Test by certified Lab & Test Report Prepare. 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 : HEP-1000-100 1. ROOM AMBIENT BURN-IN : 1.5 HRS I/P : 230VAC O/P : FULL LOAD Ta= 25 °C 2. HIGH AMBIENT BURN-IN : 3 HRS I/P : 230VAC O/P : FULL LOAD Ta= 50 °C		

			NO	Position	ROOM AMBIENT Ta= 25 °C	HIGH AMBIENT Ta= 50°C	
			1	BD1	71.4°C	98.7°C	
			2	ZNR2	61.8°C	89.9°C	
			3	C2	59.6°C	87.5°C	
			4	D10	72.0°C	100.0°C	
			5	Q51	64.5°C	91.9°C	
			6	Q65	65.7°C	93.4°C	
			7	T51	64.7°C	92.8°C	
			8	C417	61.3°C	89.8°C	
			9	C8	61.9°C	90.3°C	
			10	L2	66.2°C	94.8°C	
			11	L3	70.3°C	100.7°C	
			12	Q903	66.9°C	96.4°C	
			13	T1	70.3°C	101.2°C	
			14	T2	67.8°C	97.9°C	
			15	Q113	63.7°C	92.9°C	
			16	C114	60.3°C	89.3°C	
			17	C118	59.9°C	89.2°C	
			18	U601	73.0°C	100.4°C	
			19	U702	59.6°C	88.9°C	
			20	U100	62.7°C	91.5°C	
			21	RT21	61.8°C	89.8°C	
			22	RTH4	61.3°C	88.8°C	
			23	RTH5	60.7°C	89.0°C	
			24	RG61	67.4°C	96.7°C	
			25	T601	79.5°C	104.8°C	
			26	C652	68.1°C	96.8°C	
2	OVER LOAD BURN-IN TEST	NO DAMAGE 1 HOUR (MIN)			I/P : 230 VAC O/P : 107 % LOAD Ta : 25°C	TEST : OK	
3	LOW TEMPERATURE TURN ON TEST	TURN ON AFTER 2 HOUR			I/P : 264VAC/180VAC/90VAC O/P : 100 % / 65% LOAD Ta= -45 °C	TEST : OK	
4	HIGH HUMIDITY HIGH TEMPERATURE HIGH VOLTAGE TURN ON TEST	AFTER 12 HOURS IN CHAMBER ON CONTROL 50°C NO DAMAGE			I/P : 272 VAC O/P : FULL LOAD Ta= 50°C HUMIDITY= 95 %R.H	TEST : OK	
5	TEMPERATURE COEFFICIENT	± 0.03 %/°C (0~50°C)			I/P : 230 VAC O/P : FULL LOAD	± 0 %/°C (0~50°C)	
6	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				OK	
7	THERMAL SHOCK TEST	1. Thermal shock Temperature : -45°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				OK	

8	VIBRATION TEST	1 Carton & 1 Set (1) Waveform : Sine Wave (2) Frequency : 10~500Hz (3) Sweep Time : 12min/sweep cycle (4) Acceleration : 10G (5) Test Time : 72min in each axis (X.Y.Z) (6) Ta : 25°C	TEST : OK
9	CAPACITOR LIFE CYCLE	SUPPOSE C120 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) 302449 HRS (2) 40519HRS (3) 85924HRS (4) 136524HRS
10	MTBF	Conducted by Parts Stress Analysis Prediction 197.9K hrs min. Telcordia SR-332 (Bellcore) ; 52.32K 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 : 55000 hours	

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

2018.4.30 GP-A50-F010