



Test Report: HEP-2300-230

2300W 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

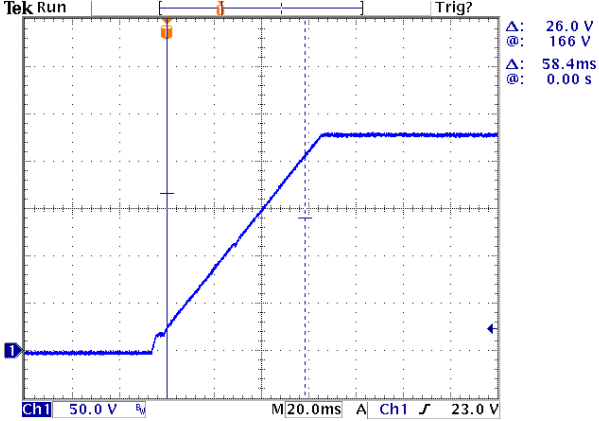
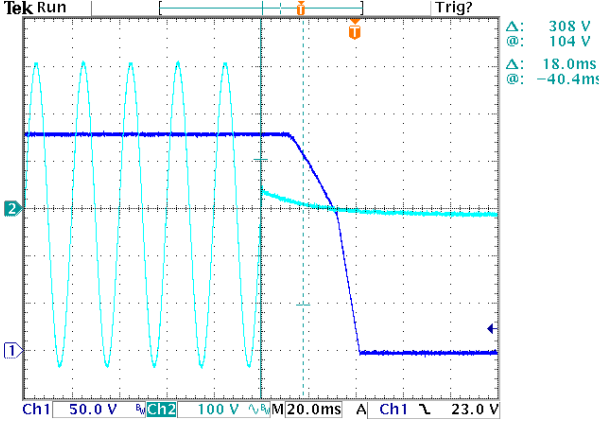
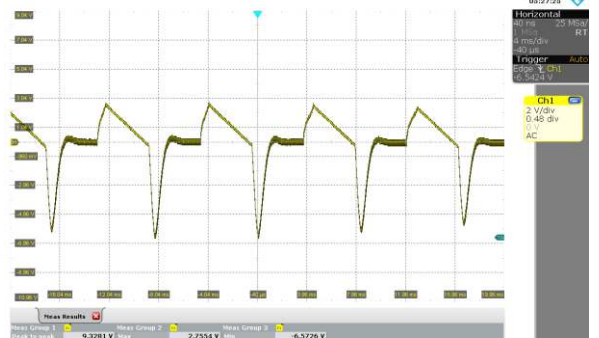
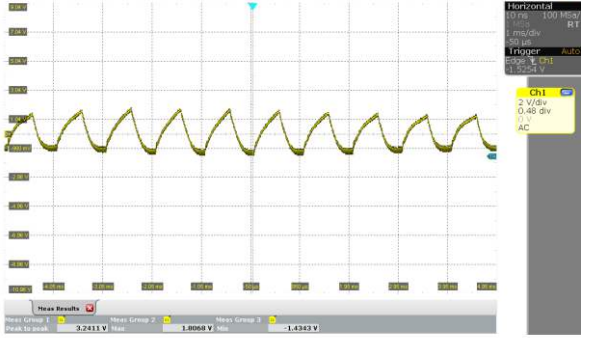
■ RELIABILITY TEST

ENVIRONMENT TEST

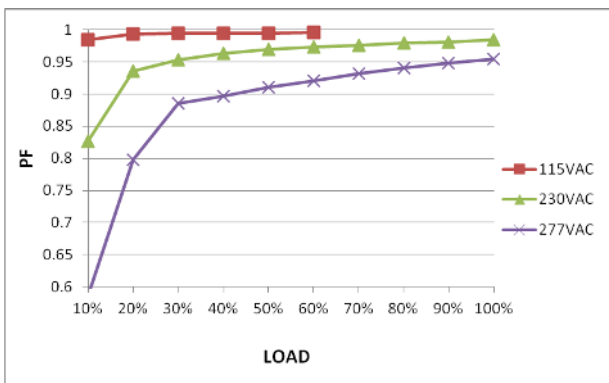
■ DESIGN VERIFY TEST

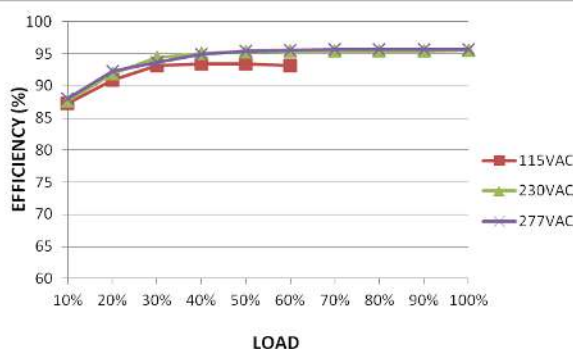
OUTPUT FUNCTION TEST

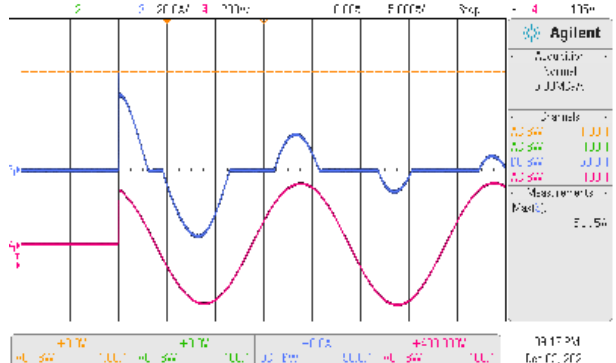
NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	OUTPUT VOLTAGE ADJUST RANGE	CH1 : 170V ~ 260V	I/P : 230 VAC I/P : 115 VAC O/P : MIN LOAD Ta : 25°C	165.28V~266.2V/230VAC 165.28V~266.2V/115VAC
2	OUTPUT VOLTAGE(Max) TOLERANCE	V1 : -1%~ +1%	I/P : 90VAC /305VAC O/P:FULL/ MIN. LOAD Ta : 25°C	V1 : 0.01%~0.017%
3	LINE REGULATION (Max)	V1 : -0.5%~ +0.5%	I/P : 220VAC~ 305VAC O/P : FULL LOAD Ta : 25°C	V1 : -0.043%~-0.009%
4	LOAD REGULATION(Max)	V1 : -0.5%~ +0.5%	I/P : 230VAC O/P : FULL ~MIN LOAD Ta : 25°C	V1 : -0.022%~0%
5	OVER/UNDERSHOOT TEST	< ±5%	I/P : 230VAC O/P : FULL LOAD Ta : 25°C	1.001%
6	RIPPLE & NOISE(Max)	V1 : 2500mVp-p	I/P : 230VAC O/P : FULL LOAD Ta : 25°C	V1 : 505mVp-p
high frequency : low frequency :				
7	SET UP TIME(Max)	230VAC/1800ms	I/P : 230 VAC O/P : FULL LOAD Ta : 25°C	230VAC/ 880ms
INPUT=230VAC/50HZ @ FULL LOAD CH1 : Output Voltage CH2 : AC Input Voltage				

8	RISE TIME (Max)	230VAC/100ms I/P : 230 VAC O/P : FULL LOAD Ta : 25°C	230VAC/ 58.4 ms
INPUT=230VAC/50HZ @ FULL LOAD CH1 : Output Voltage 			
9	HOLD UP TIME (Typ.)	230VAC/12ms @FULL LOAD I/P : 230 VAC O/P : FULL LOAD Ta : 25°C	230VAC/ 18 ms@ FULL LOAD
INPUT=230VAC/50HZ @ FULL LOAD CH1 : Output Voltage CH2 : AC Input Voltage 			
10	DYNAMIC LOAD	V1: 23Vp-p I/P : 230VAC O/P : (1)FULL /50% LOAD 50%DUTY / 120HZ (2)FULL /50% LOAD 50%DUTY / 1KHZ Ta : 25°C	9.32Vp-p 3.24Vp-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 : Derating Load Ta : 25°C	83.8V~305V
			I/P : LOW-LINE-3V=87 V HIGH-LINE+10V=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°C	TEST : OK
3	INPUT CURRENT (Typ.)	277/ 9.3A 230V/ 11A 115V/ 13.3A	I/P : 277 VAC O/P : FULL LOAD I/P : 230 VAC O/P : FULL LOAD I/P : 115 VAC O/P : 60% LOAD Ta : 25°C	I=9.15A/ 277VAC I=10.66A/ 230VAC I=12.84A/ 115VAC
4	LEAKAGE CURRENT	<1.8mA(peak)/240V <2 mA(peak)/277V	I/P : 264 VAC I/P : 305 VAC O/P : Min LOAD Ta : 25°C	L-FG : 1.28 mA / 264V N-FG : 1.28 mA/264V L-FG : 1.52 mA/305V N-FG : 1.52 mA/305V
5	POWER FACTOR (Typ.)	0.93/277VAC 0.95/230VAC 0.99/115VAC	I/P : 277AC O/P : FULL LOAD I/P : 230 VAC O/P : FULL LOAD I/P : 115 VAC O/P : 60% LOAD Ta : 25°C	PF=0.958/277VAC PF=0.9836/230VAC PF=0.9957/115VAC
	P.F vs LOAD 			
6	EFFICIENCY(Typ.)	95.5%	I/P : 230 VAC O/P : FULL LOAD Ta : 25°C	95.7 %
	EFFICIENCY vs LOAD			

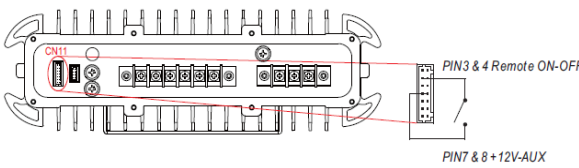
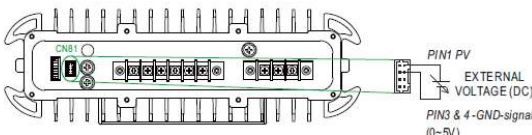
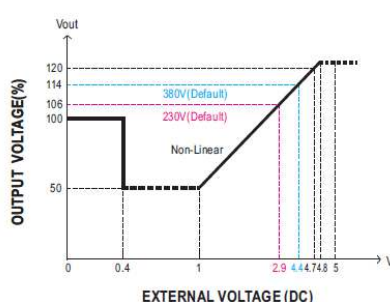
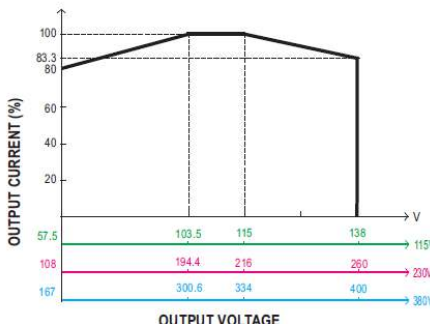


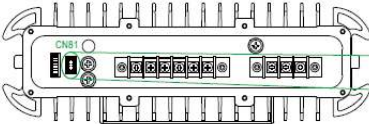
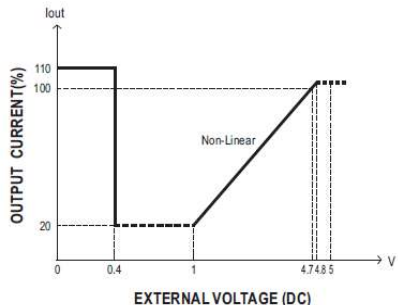
7	INRUSH CURRENT(Typ.)	230V/60A COLD START	I/P : 230 VAC O/P : FULL LOAD Ta : 25°C	I=51.5A / 230VAC T50= 1.44 ms /230V
INPUT=230VAC/50HZ @ FULL LOAD CH2 : AC Input Voltage CH4 : Input current 				

PROTECTION FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	OVER LOAD PROTECTION	105%~115% PROTECTION TYPE : Constant current limiting,unit will shutdown after 5 sec,re-power on to recover.	I/P : 305VAC I/P : 90V O/P : TESTING Ta : 25°C	111% / 305VAC 53% /90VAC
2	OVER VOLTAGE PROTECTION	273V ~ 312V Protection type : Shut down O/P voltage,re-power on to recover.	I/P : 305VAC I/P : 90VAC O/P : MIN LOAD Ta : 25°C	276.8V/ 305VAC 276.3V/ 90VAC
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 : 50% LOAD	O.T.P.Active 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

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><th>AUX</th><th>TOLERANCE</th><th>RIPPLE</th><th>TEST RESULT</th></tr><tr><td>12V / 0.5A</td><td>10.8~13.2 V</td><td>150mVp-p</td><td>11.87V/43mv</td></tr></table>	AUX	TOLERANCE	RIPPLE	TEST RESULT	12V / 0.5A	10.8~13.2 V	150mVp-p	11.87V/43mv									
AUX	TOLERANCE	RIPPLE	TEST RESULT																
12V / 0.5A	10.8~13.2 V	150mVp-p	11.87V/43mv																
2	REMOTE ON/OFF CONTROL	3.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.  <table><tr><th>Remote ON-OFF</th><th>Power Supply Status</th></tr><tr><td>Short circuit</td><td>ON</td></tr><tr><td>Open circuit</td><td>OFF</td></tr></table> I/P : 230 VAC O/P : FULL LOAD Ta : 25°C Test Result : <table><tr><th>Between ON/OFF and +5V-AUX</th><th>Power Supply Status</th></tr><tr><td>SW SHORT</td><td>ON</td></tr><tr><td>SW OPEN</td><td>OFF</td></tr></table>	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																		
Between ON/OFF and +5V-AUX	Power Supply Status																		
SW SHORT	ON																		
SW OPEN	OFF																		
3	OUTPUT VOLTAGE PROGRAMMABLE(PV)	1.Output Voltage Programming (or, PV / remote voltage programming / remote adjust / margin programming / dynamic voltage trim) ※ In addition to the adjustment via the built-in potentiometer, the output voltage can be trimmed by applying EXTERNAL VOLTAGE.   ◎ The 100% output voltage is 115/216/334V.  ◎ The rated current should change with the Output Voltage Programming accordingly. I/P : 230 VAC O/P : FULL LOAD Ta : 25°C TEST RESULT : <table><tr><th>MODEL</th><th>PV</th><th><0.4V</th><th>1V</th><th>5V</th></tr><tr><td>SPEC</td><td></td><td>230±5%</td><td>108±5%</td><td>260±5%</td></tr><tr><td>Vout</td><td></td><td>230.52V</td><td>108.43V</td><td>263.2V</td></tr></table>	MODEL	PV	<0.4V	1V	5V	SPEC		230±5%	108±5%	260±5%	Vout		230.52V	108.43V	263.2V		
MODEL	PV	<0.4V	1V	5V															
SPEC		230±5%	108±5%	260±5%															
Vout		230.52V	108.43V	263.2V															

4	OUTPUT CURRENT PROGRAMMABLE (PC)	2.Output Current Programming (or, PC / remote current programming / dynamic current trim) ※ The output current can be trimmed to 20~100% of the rated current by applying EXTERNAL VOLTAGE.   ⊙ The 100% output current is rated current. ⊙ Maximum operation current <100% is recommended. I/P : 230 VAC O/P : TESTING Ta : 25°C <table><tr><td>ADJ V</td><td><0.4V</td><td>1V</td><td>5V</td></tr><tr><td>SPEC</td><td>11A±5%</td><td>2A±10%</td><td>10A±10%</td></tr><tr><td>TEST</td><td>10.914A</td><td>2.16A</td><td>10.787A</td></tr></table>			ADJ V	<0.4V	1V	5V	SPEC	11A±5%	2A±10%	10A±10%	TEST	10.914A	2.16A	10.787A
ADJ V	<0.4V	1V	5V													
SPEC	11A±5%	2A±10%	10A±10%													
TEST	10.914A	2.16A	10.787A													
5	DC-OK SIGNAL	The TTL signal out, PSU turn on = 4.5 ~ 5.5V PSU turn off = -0.5V ~ 0.5V Please refer to the Function Manual	I/P : 230VAC O/P : FULL LOAD Ta : 25°C	PSU turn on = 5.1 V PSU turn off = -0.005 V												
6	LED Indicators	※ LED Status Indicators <table><tr><td>LED</td><td>Description</td></tr><tr><td>● Green</td><td>The power supply functions normally.</td></tr><tr><td>● Red</td><td>Abnormal status (Over temperature protection, Overload protection)</td></tr><tr><td>● Red (Flashing)</td><td>The LED will flash with the red light when the internal temperature reaches 95°C; under this condition, the unit still operates normally without entering OTP. (In the meantime, an alarm signal will be sent out through the PMBus/CANBus/MODBus interface.)</td></tr></table>		LED	Description	● Green	The power supply functions normally.	● Red	Abnormal status (Over temperature protection, Overload protection)	● Red (Flashing)	The LED will flash with the red light when the internal temperature reaches 95°C; under this condition, the unit still operates normally without entering OTP. (In the meantime, an alarm signal will be sent out through the PMBus/CANBus/MODBus interface.)	PASS				
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COMPONENT STRESS TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	PWM Transistor (D to S) or (C to E) Peak Voltage	Q903 Rated 76A/600V VGS : ± 30V	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. (8)CV-1V(CHARGE MODE) I/P : Low-Line -3V =217V 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	VDS : (1) 505.53V (2) 495.72V (3) 493.68V (4) 499.68V (5) 507.58V (6) 501.58V (7) 495.72V (8) 495.72V VDS : (1) 464.1V (2) 456.2V (3) 464.1V (4) 460.12V (5) 460.15V (6) 468.06V

			(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)CV-1V(CHARGE MODE) Ta : 25℃	(7) 460.12V (8) 456.2V
2	P.F.C Transistor (D to S) or (C to E) Peak Voltage	Q66 Rated 40A/650V VGS : ± 30V	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. I/P : Low-Line -3V = 217V 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℃	VDS : (1) 562.9V (2) 543.5V (3) 551.06V (4) 547.1V (5) 562.92V (6) 578.73V (7) 578.72V VDS: (1) 531.3V (2) 483.87V (3) 519.44V (4) 523.39V (5) 523.39V (6) 491.77V (7) 503.63V
3	P.F.C DIODE	D14 Rated 10A/650V	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 I/P : Low-Line -3V = 217V 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℃	(1) 519.44V (2) 519.44V (3) 507.58V (4) 523.39V (1) 491V (2) 493.87V (3) 475.96V (4) 479.91V
4	Diode Peak Voltage	D201 Rated 4A/650V	AC ON/OFF I/P : High-Line +3V =308V O/P : (1)Full Load (2)Output Short	D201 : VDS : (1) 592.06V (2) 592.06V (3) 592.06V D207 : VDS : (1) 619.73V (2) 611.1V (3) 619.73V

		D207 Rated 4A/650V	(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 (9)CV-1V(CHARGE MODE) Ta : 25°C	(4) 596.02V (5) 596.02V (6) 599.06V (7) 592.06V (8) 584.16V (9) 596.02V (10) 584.16V	(4) 623.68V (5) 623.68V (6) 627.64V (7) 627.68V (8) 607.87V (9) 623.68V (10) 599.97V
5	Input Capacitor Voltage	C5 Rated : 220u/450V -40~105°C Surge Voltage 495V	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) 449V (2) 448.29V (3) 449V (4) 449V	
6	Control IC Voltage Test	PWM IC U900 Rated 8.9 V ~ 15.5V PFC IC U301 Rated 23V ~ 27 V O/P IC U203 Rated -0.3V ~37 V MCU IC U701 Rated 2.0V ~3.6V AUX IC U601 Rated 10.5V~25V	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 VRmin (LOW LINE) Ta : 25°C	U900 : (1) 13.2V (2) 12.9V (3) 13.2V (4) 13.0V (5) 13.0V U301 : (1) 13.6V (2) 13.0V (3) 13.4V (4) 12.7V (5) 12.8V U203 : (1) 12.4V (2) 12.5V (3) 12.4V (4) 12.2V (5) 12.2V	U701 : (1) 3.37V (2) 3.39V (3) 3.59V (4) 3.37V (5) 3.39V U601 : (1) 14.4V (2) 14.3V (3) 14.4V (4) 14V (5) 14.4V
7	TOP SWITCHING STAND BY POWER	U601 Rated 3.5 A/ 800 V	AC ON/OFF I/P:High-Line +3V =308V O/P : (1)Full Load (2)Remote On/Off I/P : Low-Line -3V =217V O/P : (1)Full Load (2)Remote On/Off Ta : 25°C	U601 : (1) 564.8V (2) 576.7V (1) 529.2V (2) 541.1V	

SAFETY TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	WITHSTAND VOLTAGE	I/P-O/P : 6KVDC/min I/P-FG : 4KVDC/min O/P-FG : 4KVDC/min	I/P-O/P : 6.6KVDC/min I/P-FG : 4.8KVDC /min O/P-FG : 4.8KVDC /min Ta : 25°C	PASS 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 : 4.3GΩ I/P-FG : >30GΩ O/P-FG : 3.31GΩ NO DAMAGE

3	GROUNDING CONTINUITY	FG(PE) TO CHASSIS OR TRACE < 100 mΩ	40A / 2min Ta : 25°C	26 mΩ
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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 (CISPR32) CLASS B	I/P : 230 VAC (50HZ) O/P : FULL/50% LOAD Ta : 25°C	PASS
3	RADIATION	EN55032 (CISPR32) CLASS B	I/P : 230 VAC (50HZ) O/P : FULL LOAD Ta : 25°C	PASS
4	E.S.D	EN61000-4-2 Level 3, 8KV air Level 2, 4KV contact	I/P : 230 VAC/50HZ O/P : FULL LOAD Ta : 25°C	CRITERIA A
5	E.F.T	EN61000-4-4 Level 3	I/P : 230 VAC/50HZ O/P : FULL LOAD Ta : 25°C	CRITERIA A
6	SURGE	IEC61000-6-2 INDUSTRY 2KV/Line-Line 4KV/Line-Earth	I/P : 230 VAC/50HZ O/P : FULL LOAD Ta : 25°C	CRITERIA A
7	Test by certified Lab & Test Report Prepare			

■ RELIABILITY TEST

ENVIRONMENT TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
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1

TEMPERATURE RISE TEST

MODEL : HEP-2300-115

1. ROOM AMBIENT BURN-IN : 2 HRS

I/P : 230VAC O/P : FULL LOAD Ta= 25.5 °C

2. HIGH AMBIENT BURN-IN : 2 HRS

I/P : 230VAC O/P : FULL LOAD Ta= 51.2 °C

NO	Position	ROOM AMBIENT Ta=25.5°C	HIGH AMBIENT Ta=51.2°C
1	C2	62.0°C	89.8°C
2	LF3	68.6°C	97.2°C
3	C13	67.7°C	94.7°C
4	ZNR3	67.2°C	94.5°C
5	T51	68.2°C	96.0°C
6	L1coil	70.3°C	99.8°C
7	L1core	67.3°C	97.0°C
8	L2coil	66.2°C	94.5°C
9	L2core	64.8°C	93.2°C
10	L3coil	71.9°C	103.6°C
11	L3core	68.7°C	100.3°C
12	RT2	66.8°C	95.4°C
13	RY1	65.3°C	93.9°C
14	C5	61.1°C	88.7°C
15	C7	59.6°C	86.8°C
16	C556	64.4°C	93.0°C
17	C553	71.1°C	102.1°C
18	Q910	70.2°C	100.8°C
19	T1 Primary	74.6°C	105.3°C
20	T1 Secondary	70.7°C	99.9°C
21	T1core	66.2°C	95.8°C
22	T2 Primary	72.1°C	102.6°C
23	T2 Secondary	69.7°C	99.3°C
24	T2core	58.9°C	86.1°C
25	C111	66.8°C	96.7°C
26	C114	60.2°C	87.3°C
27	C124	59.1°C	85.9°C
28	LF201	58.6°C	85.5°C
29	C132	56.1°C	82.6°C
30	C325	62.0°C	89.7°C
31	BD1	79.6°C	106.6°C
32	BD2	80.4°C	106.9°C

33	U301	65.8℃	93.4℃
34	U900	61.3℃	89.4℃
35	Q51	72.2℃	99.7℃
36	Q65	71.6℃	99.5℃
37	D14	83.4℃	112.1℃
38	Q901	69.9℃	100.6℃
39	Q904	69.5℃	101.2℃
40	Q202	75.2℃	104.2℃
41	Q204	67.7℃	95.9℃
42	Q206	73.8℃	101.2℃
43	Q209	74.0℃	103.0℃
44	Q214	71.2℃	98.4℃
45	U201	69.0℃	97.0℃
46	RT31	63.1℃	91.6℃
47	RT5	66.6℃	94.7℃
48	U601	76.4℃	104.9℃
49	C611	65.4℃	93.8℃
50	T601	67.6℃	95.9℃
51	D651	67.0℃	94.5℃
52	C652	65.2℃	92.9℃
53	C675	61.0℃	88.1℃
54	R613	74.3℃	103.0℃
55	U751	61.5℃	88.6℃
56	RG75	58.0℃	84.8℃
57	L751	59.5℃	86.7℃
58	RG65	62.8℃	90.1℃
59	TC	57.6℃	85.3℃

2	OVER LOAD BURN-IN TEST	NO DAMAGE 1 HOUR (MIN)	I/P : 230 VAC O/P : 108.5%LOAD Ta : 25℃	TEST : OK
3	LOW TEMPERATURE TURN ON TEST	TURN ON AFTER 2 HOUR	I/P : 305VAC/220VAC 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 50℃/95 %R.H NO DAMAGE	I/P : 315 VAC O/P : FULL LOAD Ta= 50 °C HUMIDITY= 95 %R.H	TEST : OK
5	TEMPERATURE COEFFICIENT	± 0.03 %/℃(0~50℃)	I/P : 230 VAC O/P : FULL LOAD	± 0.003 %/℃(0~50℃)

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	-40~50°C	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
8	VIBRATION TEST	20~500Hz, 10G 12min./1cycle, 72min. each along X, Y, Z axes	1 Carton & 1 Set (1) Waveform : Sine Wave (2) Frequency : 20~500Hz (3) Sweep Time : 12min/sweep cycle (4) Acceleration : 10G (5) Test Time : 180min in each axis (X.Y.Z) (6) Ta : 25°C
9	CAPACITOR LIFE CYCLE	SUPPOSE C111 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) 201245HRS (2) 26590HRS (3) 96451HRS (4) 267975HRS
10	MTBF	Conducted by Parts Stress Analysis Prediction 478K hrs min. Telcordia SR-332 (Bellcore) ; 44.8K 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 : 55,000 hours	

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

2020.10.1 TAG-QA-009