



# TEST REPORT

Product Name:

IPS30000 Telecom Power  
System(48V/30A,8KW)

Product Model:

IPS30000(6404016002)

Manufacture:

Shenzhen Enatel Electronics Co., Ltd.

Test place Lab:

Anbotek Compliance Laboratory Limited

Test Item:

Consignment test

Completion time :

2013.06.13

Written by :

Judy Zhu

Inspected by :

Jenny Zhan

Approved by :

Jeff Zhu

Manager



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**Anbotek Compliance Laboratory Limited**

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Tel: (86) 755-26066544 Fax: (86) 755-26014772 Email: service@anbotek.com Http: //www.anbotek.com.cn



No:

Product Model	IPS30000 Telecom Power System(48V/30A,8KW) IPS30000(64040160002)		
Company	Shenzhen Enatel Electronics Co., Ltd.	Logo	ENATEL
Manufacture	Shenzhen Enatel Electronics Co., Ltd.	Qty	1
Contact	Lvxiongxiang	No	System: I6404016002130500001 Rectifier1: R2048130500162 Rectifier2: R2048130500163 Rectifier3: R2048130500164 Rectifier4: R2048130500165
Date	2013-5-28	Level	Q/A Pass
Type	Test	Item	
Test standard	EN 60950-1:2006+A11:2009+A1:2010+A12:2011 Information technology equipment YD/T 731-2008 telecom rectifier YD/T 1058-2007 telecom power system YD/T 1104-2001 telecom system controller requirements and test method YD/T 1051-2000 telecom power system technical requirements		
Test result	IPS30000 telecom power system (48V/30A, 8KW) made by Shenzhen Enatel Electronics Co.,Ltd was tested with 44 items, including features& specs. All test results are compliant with requirements in YD/T 1058-2007,YD/T 1104-2001 and YD/T 1051-2000 On the other hand, rectifier is compliant with 38 technical requirements in YD/T 731-2008  Test result: Pass		
Note			

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## T e s t I t e m s

## Power System

No	Items	Test requirements	Result	Note
1	AC Input Range	Single Phase 176V~242Vac	176~300Vac, full load 90~176Vac, derating linearly	
2	Input Frequency	50Hz±5 Hz	45—65Hz	
3	Voltage distortion	<5%	0.2%	
4	Power factor	≥0.99 (Full load)	0.999 (100% load) 0.996 (50% load) 0.992 (40%load) 0.984 (30%load) 0.976 (20%load) 0.951 (10%load) Note: 220VACinput	
5	Output voltage Range	-42V~-58V	-41.95V~-58.02V	
6	Output current	System Capacity 160A/48V 8KW rectifier (176Vac~300Vac)	57.6V/139.6A 48V/166.6A	
7	System efficiency	≥92%(full load)	84.90%(10% load) 90.65%(20% load) 92.57%(30% load) 93.70%(40% load) 94.05%(50% load) 94.35%(60% load) 94.58%(70% load) 94.43%(80% load) 94.10%(90% load) 93.80%(100%load)	
8	System output voltage accuracy	≤±0.6%	±0.33%	
9	Psophometric noise	≤2mV	0.8 mV(50% load) 1.4mv(100% load)	
10	PK-PK Noise	≤200 mV	92mV(50% load) 140mV(100% load)	

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11	System distribution Voltage Dips	≤500 mV	430mV	
12	Display	AC input: input voltage DC: output voltage、output current	Compliant	
13	Battery management	Float/Equal Current limit Battery temp compensation Battery capacity display	Compliant	
14	Current share	±5% (load 50~100%)	Compliant 17.2A/17.2A/18.1A/1 7.6A ±1.33%	
15	Controller function	Monitor system status Collect and save system parameters Setup parameter in EEPROM Remote monitor/collect/control Alarm Relay dry-out Install MG-SOFT MIB Browser Professional Edition and run setup.exe,then get data based on SNMP protocol	Compliant	
16	Communication port	RS232、LAN(TCP/IP,SNMP)	Compliant	
17	Acoustic noise	≤55dB	50 dB	
18	AC input SPD	Class C ,40KA	N/A	
19	AC input voltage protection	AC voltage is over 300V or below 90V, rectifier will shut down and recover when AC voltage is back to operation range	AC under-voltage: 79v, AC over-voltage: 298V AC under-voltage recover point: 89V AC over-voltage recover point: 290V	

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20	DC output voltage protection	Rectifier will alarm when output voltage reach under-voltage or over-voltage point automatically. Rectifier will shut off when output voltage is above over-voltage point and need manual operation after high over-voltage shut off	1 Rectifier will shut off when it gets over-voltage itself and give alarm, need manual operation to recover. 2 Rectifier will not shut off when it gets external over-voltage signal from other units, Red indicator will flash every 2 seconds and recover after external over-voltage is off	
21	Current limit or Power limit	Current limit range:20%~110% of rated current Constant power limit	Compliant	
22	Over-Current protection Short-circuit protection	Rectifier will protect itself and Recover after over-current or short-circuit is off	Compliant	
23	Battery Under-voltage protection	Battery low voltage disconnection	Compliant	
24	Fuse/MCB	Input fuse DC fuse or MCB	N/A	
25	Over-temp Protection	System will alarm when ambient temperature is over system temperature point and recover when temperature is normal. Rectifier will not output when system temperature is over ambient temperature point of rectifier and recover when temperature is normal	-40C to +45℃, Full load; +45℃to +75℃, Derating, 75℃ to 80℃, Shut down	
26	Alarm	Power System will release audible alarm signal and send current and history data to local/remote monitor, such as AC Fail, battery low voltage and rectifier failure.	Compliant	
27	Sleep features	System will control on/off status of rectifiers in system according to load, load time etc and make system operate safely	System efficiency with 15% system load	94.35%(1 rectifier)
			System efficiency with 20% system load	94.43%(1 rectifier)
			System efficiency with 25% system load	94.05%(2 rectifier)
			System efficiency with 30% system load	94.35%(2 rectifier)
			System efficiency with 35% system load	94.58%(2 rectifier)

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			System efficiency with 40% system load	94.58% (3 rectifier)	
			System efficiency with 45% system load	94.35% (3 rectifier)	
28	Ground	Output Ground and Protection Ground Copper Nut in ground point $d \geq M8$	Compliant		
29	Isolation resistance	AC-Ground/AC-DC/DC-Ground >2M $\Omega$	>500M $\Omega$		
30	Dielectric Strength	AC-Ground or AC-DC AC 2500V or DC3535V, 1min without damage DC-Ground AC 1000V or DC1414V, 1min without damage	Compliant		
31	Leakage current	<3.5mA	0.17mA		
32	Conducted Emission	YD/T983-1998 Class A	Compliant		
33	Radiated Emission	YD/T983-1998 Class A	Compliant		
34	Hot Plug-in	System should operate well without variation	Compliant		
35	Vibration	10~55Hz、0.35mm sinusoidal	Compliant		
36	Material flame retardant rating	PCB, V-0 in GB4943, Power Cable, requirements in GB/T18380-2001; Other isolated material, V-1 in GB4943	Compliant		
37	Lightning/Surge	AC side, 10/700us,5KV positive/negative five times. 8/20us,20KA positive/negative five times, 8/20us,40KA one time DC side, 8/20us,10KA&15KA one time	N/A		
38	MTBF	MTBF $\geq 5 \times 10^4$ h	---		

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39	Low temperature storage	-40℃±3℃	Compliant	
40	Low temperature operation	-25℃±3℃ 2h	Compliant	
41	High temperature storage	70℃±2℃	Compliant	
42	High temperature operation	45℃±2℃ 2h	Compliant	
43	Constant high temperature & humidity	Temperature 40℃±2℃ , humidity (93±3) % 2 Days work well	Compliant	
44	System mechanical view	Shelf design with good plate, coating and silkscreen etc	Compliant	

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**Rectifier**

No	Items	Requirements	Record		Result
			R2048130500163	R2048130500164	
1	DC output range	-43.2V~-57.6V	-42V~-58V	-42V~-58V	Compliant
		Rectifier can work with battery well	Compliant	Compliant	
2	AC input range	187V~242VAC	Compliant 176V-300V(full load)	Compliant 176V-300V(full load)	Compliant
3	Power factor	I $\geq 0.99$ (100%load) $\geq 0.98$ (50% load) II $\geq 0.92$ (100%load) $\geq 0.90$ (50%load)	0.999(100% load) 0.996(50% load) 0.992(40% load) 0.984(30% load) 0.976(20% load) 0.951(10% load)	0.999 (100% load) 0.996(50% load) 0.991(40% load) 0.983 (30% load) 0.974(20% load) 0.950 (10% load)	Compliant
4	THD	I $\leq 5\%$ (100% load) $\leq 10\%$ (50% load) II $\leq 25\%$ (100% load) $\leq 28\%$ (50% load)	1.49%(50% load) 2.32%(100% load)	1.54%(50% load) 2.36%(100% load)	Compliant
5	Efficiency	$\geq 90\%$ (100% load) $\geq 89\%$ (50% load)	93.8%(100% load) 94.6%(50% load)	93.9%(100% load) 94.6%(50% load)	Compliant
6	Psophometric noise	$\leq 2\text{mV}$	0.8 mV(50% load) 1.4mv(100% load)	0.7 mV(50% load) 1.3mv(100% load)	Compliant
7	Wide bandwidth noise	$\leq 20\text{mV}$	2.7 mV	2.5mV	Compliant
8	Separate noise	3.4~150kHz $\leq 5\text{mV}$ 150~200kHz $\leq 3\text{mV}$ 200~500kHz $\leq 2\text{mV}$ 0.5~30MHz $\leq 1\text{mV}$	---	---	---
9	Pk-Pk noise	$\leq 200\text{mV}$	140 mV	138 mV	Compliant

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No	Items	Requirements	Record		Result
			R2048130500163	R2048130500164	
10	Load accuracy	$\leq \pm 0.5\%$	-0.31% 0.27%	-0.32 % 0.28%	Compliant
11	Input accuracy	$\leq \pm 0.1\%$	0 0	0 0	Compliant
12	Output voltage accuracy	$\leq \pm 0.6\%$	-0.31% 0.27%	-0.32 % 0.28%	Compliant
13	Temperature coefficient	$\leq \pm 0.02\%(1/^\circ\text{C})$	0.005%	0.004%	Compliant
14	Dynamic	Load variation from 25%→50%→25% 50%→75%→50% Voltage overshoot $\leq \pm 5\%$ Recovery times $\leq 200\mu\text{s}$	228mV/-132mV 236mV/-144mV No overshoot	226mV/-134mV 232mV/-140mV No overshoot	Compliant
15	on/off Overshoot	$< \pm 5\%$ of rated output voltage	0	0	Compliant
16	Inrush current	$\leq 150\%$ the rated input current peak value	134% (19.2A/14.3A)	132% (18.8A/14.2A)	Compliant
17	Soft start	$\geq 3\text{s}$	7.36s	7.65s	Compliant
18	Audible noise	$< 55\text{dB}$	50 dB	50dB	Compliant
19	Measure/collect/control	Measure output voltage and current	Compliant	Compliant	Compliant
		Collect rectifier status	Compliant	Compliant	
		Control On/off and float/equal test	Compliant	Compliant	

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No	Items	Requirements	Record		Result
			R2048130500163	R2048130500164	
20	Current limit	Current limit:105%~110% of rated output current	Compliant	Compliant	Compliant
	Power limit	Power limit	Compliant	Compliant	
21	Current share	<±5%	±1.3%		Compliant
22	AC input over-voltage and under-voltage	Over-voltage point	298V	299V	Compliant
		Under-voltage point	79V	80V	
23	Over-temperature protection	Rectifier will alarm when internal temperature is over protection point and recover after failure is off	50℃ full load, yellow indicator 80℃ shut down, red indicator	50℃ full load, yellow indicator 80℃ shut down, red indicator	Compliant
24	Fuse protection	Rectifier has fuse to prevent failure	--	--	--
25	Surge	Surge devices in AC side to meet requirements in YD/T944	Class D 6KV	Class D 6KV	Compliant
26	Ground resistance	<0.1Ω	0.05Ω	0.04Ω	Compliant

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No	Items	Requirements	Record		Result
			R2048130500163	R2048130500164	
27	Isolation resistance	AC-Ground, AC-DC,DC-Ground >2MΩ	>550MΩ	>550MΩ	Compliant
28	Dielectric strength	AC-Ground,2120Vdc, 1min AC-DC, 4240Vdc, 1min DC-Ground, 710Vdc, 1min Current<30mA	Compliant	compliant	Compliant
29	Leakage current	<3.5 mA	1.8 mA	1.8 mA	Compliant
30	Material flame retardant rating	PCB, V-0 in GB4943, Power Cable, requirements in GB/T18380-2001; Other isolated material, V-1 in GB4943	Compliant	Compliant	Compliant
31	EMC	Conducted Emission , YD/T983 - 1998,Class A	Compliant	Compliant	Compliant
		Radiated Emission YD/T983 -1998,Class A	Compliant	Compliant	Compliant
		harmonic current YD/T983-1998,Class A	Compliant	Compliant	Compliant
		Voltage dips, short interruptions and voltage variations YD/T17626.11-2008	100%,10ms A class 30% 500ms A class 60% 1000ms B class 100% ,5s B class	100%,10ms A class 30% 500ms A class 60% 1000ms B class 100% ,5s B class	Compliant
		Electrical fast transient/burst immunity YD/T17626.4-2008	4KV A class	4KV A class	Compliant
		Other tests	-----	-----	---

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No	Items	Requirements	Record		Result
			R2048130500163	R2048130500164	
32	MTBF	MTBF $\geq$ 100000h	--	--	---
33	Low temperature storage	-40 $^{\circ}$ C $\pm$ 3 $^{\circ}$ C	Compliant	Compliant	Compliant
34	Low temperature operation	-25 $^{\circ}$ C $\pm$ 3 $^{\circ}$ C 2h	Compliant	Compliant	Compliant
35	High temperature storage	70 $^{\circ}$ C $\pm$ 2 $^{\circ}$ C	Compliant	Compliant	Compliant
36	High temperature operation	45 $^{\circ}$ C $\pm$ 2 $^{\circ}$ C 2h	Compliant	Compliant	Compliant
37	Constant high temperature & humidity	Temperature 40 $^{\circ}$ C $\pm$ 2 $^{\circ}$ C , humidity (93 $\pm$ 3) % 2 Days work well	Compliant	Compliant	Compliant
38	Shock	Peak value:150m/s <sup>2</sup> , 11ms , Three times/XYZ	Operate well after shock	Operate well after shock	Compliant
	Vibration	10Hz $\sim$ 55Hz, 0.35mm, 30min	Operate well after Vibration	Operate well after Vibration	

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## DECLARATION

1. Reference documents for the testing: EN 60950-1, which was accredited by CNAS, the others were not accredited by CNAS.
2. Test place Lab: Anbotech Compliance Laboratory Limited  
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3. This report shall not be revised and deleted.
4. The results only related to the items tested.
5. This report shall not be published as advertisement without the approval of ANBOTEK.
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