



APPROVAL SHEET

Power supply

MODEL NO: SP-AD-090W-E2



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1 Description

This model is an universal switching-mode power supply for Laptop and USB, operation at input AC to DC and DC to DC 2 in 1:AC input 100V ~240V 47-63Hz, DC input 11~15V. Output USB port:5V@1A max. Output DC 7 voltages: 15V/16V/18V/19V/20V@4.5Amp max, 22V/24V@3.75Amp max Output power 90 Watt max, with protection: Overload protection, Short Circuit Protection. With 8PCS tip connector to suit to almost Laptops, Select output voltage to suit to Laptop and make sure the polarity of tips connect correct before use.

2 Specification

1.Input:

AC rated input voltage:100~240V,AC input rated current 1.8Amp.

DC rated input voltage:11/15V,DC input rated current 10A

2.Output Voltage: 15V/16V/18V/19V/20V DC at 4.5 A max or 22V/24V DC at 3.75 A max

3.USB Output: 5V-1A

4. With 8 pcs interchangeable tips can use for mostly netbook/Laptop models and PDA/MP3/MP4/iPod

5. Power:90W MAX

6. Provides power supply to a wide range of notebooks Overload, short circuit and overheat protection

3 Input Characteristics

3.1 Input Voltage:

Nominal Voltage:100-240Vac

Variation Range :90-264Vac

3.2 Input Frequency:

Nominal Frequency:50/60Hz

Variation Frequency:47-63Hz

3.3 Input Current:

The maximum input current shall be less than 1.8A at 100~240Vac input

3.4 Output Current:

The maximum output current shall be less than 4.5A at 100~240Vac

input,15V/16V/18V/19V/20V output and 3.75A at 100~240Vac input, 22V/24V output

3.5 Efficiency:

85% min. measured at 100Vac and 240Vac input voltage, rated load



4 Output Characteristics

4.1 Rated Voltage

The adapter shall have one regulated DC output of 15V/16V/18V/19V/20V/22V/24V

When the output voltage is 15V, the rated voltage: 14.3V—15.7V.

When the output voltage is 16V, the rated voltage: 15.2V—16.8V.

When the output voltage is 18V, the rated voltage: 17.1V—18.9V.

When the output voltage is 19V, the rated voltage: 18.1V—19.9V.

When the output voltage is 20V, the rated voltage: 19.0V—21.0V.

When the output voltage is 22V, the rated voltage: 20.9V—23.1V.

When the output voltage is 24V, the rated voltage: 22.8V—25.2V.

4.2 Rated Output Current

At CC mode:

When the output voltage is 15V, the output current will be less than 4.5A.

When the output voltage is 16V, the output current will be less than 4.5A.

When the output voltage is 18V, the output current will be less than 4.5A.

When the output voltage is 19V, the output current will be less than 4.5A.

When the output voltage is 20V, the output current will be less than 4.5A.

When the output voltage is 22V, the output current will be less than 3.75A.

When the output voltage is 24V, the output current will be less than 3.75A.

4.3 Rated Power

This adapter is capable to support 90 Watts continuously at all specified conditions.

4.4 Ripple & Noise Voltage

Voltage	15V/16V/18V/19V/20V/22V/24V at full load	
Ripple & noise voltage	150mV	



The ripple and noise are as follows when measure with Max. Bandwidth of 20MHz and Parallel 10uF/0.1uF, crossed connected at testing point.

4.5 Hold-UP Time

The voltage reach down to 2V at CC mode more than 1ms after at AC voltage turned off.

4.6 Output voltage rise time

The rise time of all outputs voltage shall be less than 500mS measured from 10% point to 90% point.

4.7 Turn on delay time

3 second maximum from ac input to all outputs within regulation.

5 Protection Requirement

5.1 Short Circuit Protection:

The adapter is protected that a short happened between the output terminals and shall not result in a fire hazard, any damage to this adapter and will be normal operation automatically while the short is removed.

5.2 Over Voltage Protection

The unit must shutdown when output voltages detect OVP point and the unit shall not be damaged.

Output Voltage	15V/16V/18V/19V/20V/22V/24V
OVP Point	30VDC

6 Environmental Requirement

6.1 Thermal Performance

Operating : 0°C~40°C

Non-operating : -20°C~70°C

6.2 Humidity

Operating : 20% to 80%RH.

Non-operating : 10% to 90%RH.



7 Mechanical Requirement

7.1 Dimension: 135(L)*60(W)*36(H) mm

7.2 Weight: 264g±5g

7.3 Output Cord: 1.2M EU AC Cable

7.4 Plug:

1.3.5*1.3mm Yellow

2.4.0* 1.7mm Yellow

3.4.8* 1.7mm Yellow

4.5.5 *1.7mm Yellow

5.5.5*2.1mm Blue

6.5.5*2.5mm White

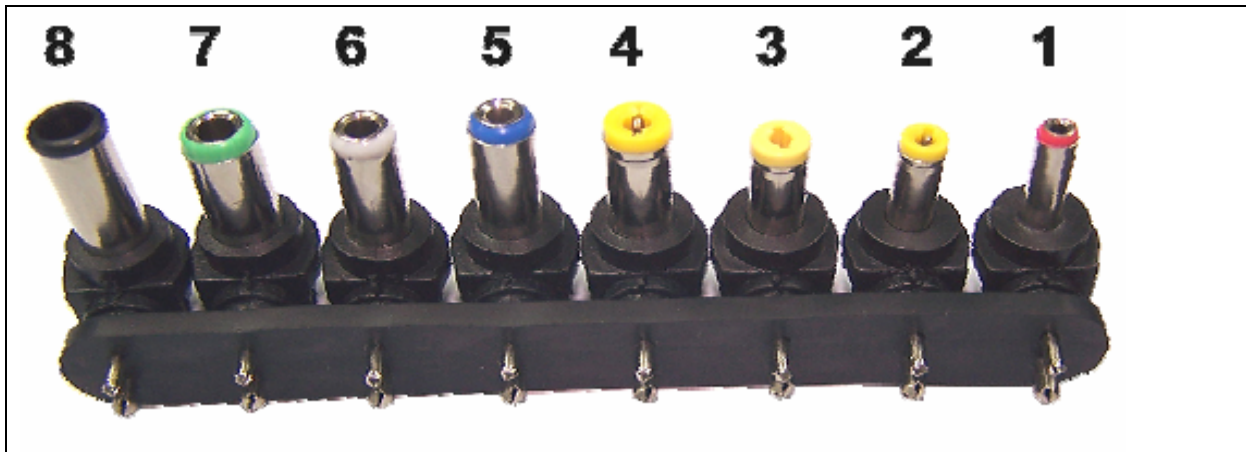
7.6.3*3mm Green

8.6*4.4mm Black

8 Correlative Certification compliance

Item #	Certification type	Certification Number	Certification listing	Remark
1	CE-EMC	BST10120427EC -1	WWW.BST-LAB.COM	
2	CE-LVD	BST10120427SC -2	WWW.BST-LAB.COM	

9 Compatible List



Connector Using Instruction

TIP	DC TIP SIZE		Notebook Model
1	3.5*1.3mm	Red	SHARP
2	4.0* 1.7mm	Yellow	HP
3	4.8* 1.7mm	Yellow	Compaq/HP/ASUS/DELL
4	5.5 *1.7mm	Yellow	ACER/
5	5.5*2.1mm	Blue	ACER/ Compaq/ IBM
6	5.5*2.5mm	White	ACER/ Compaq/ Fujitsu/ Gateway/HP/IBM/ NEC/ Toshiba/SHARP/ASUS/DELL/LENOVO
7	6.3*3.0mm	Green	Toshiba/NEC
8	6*4.4mm	Black	Fujitsu/SONY



Spire Corp.

10 Pictures:





Best Service of Testing

Certificate of Compliance

Certificate Number : BST10120427EC-1

Applicant : Bytecom Fanner B.V.
Rondven 38, 6026PX Maarheeze The Netherlands

Manufacturer : SPIRE SHENZHEN CORP.
FL7/8 Building B houhai Blvd Dongjiaotou Industrial Park
Shekou, Nanshan 518067 Shenzhen, China

Product M/N : UNIVERSAL AC ADAPTER
SP-AD-090W-E, SP-AD-090W-EU, SP-AD-090W-E2,
SP-AD-120W-E, SP-AD-120W-E2, SP-AD-120W-EU-1,
SP-AD-090W-EU-2, SP-AD-120W-EU, SP-AD-120W-EU-2

Test Standard : EN 55022:2006+A1:2007
EN 61000-3-2:2006+A2:2009
EN 61000-3-3:2008
EN 55024:1998+ A2:2003

The EUT described above has been tested by us with the listed standards and found in compliance with the council EMC directive 2004/108/EC. It is possible to use CE marking to demonstrate the compliance with this EMC Directive.

The certificate applies to the tested sample above mentioned only and shall not imply an assessment of the whole production. It is only valid in connection with the test report number: BST10120427ER-1.



Christina
Manager

Dec. 30, 2010

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Best Service of Testing

Certificate of Compliance

Certificate Number : BST10120427SC-2

Applicant : Bytecom Fanner B.V.
Rondven 38, 6026PX Maarheeze The Netherlands
Manufacturer : SPIRE SHENZHEN CORP.
FL7/8 Building B houhai Blvd Dongjiaotou Industrial Park Shekou,
Nanshan 518067 Shenzhen, China
Product : UNIVERSAL AC ADAPTER
M/N : SP-AD-090W-E, SP-AD-090W-EU, SP-AD-090W-E2,
SP-AD-120W-E, SP-AD-120W-E2, SP-AD-120W-EU-1,
SP-AD-090W-EU-2, SP-AD-120W-EU, SP-AD-120W-EU-2

Test Standard : EN 60950-1:2006+A11:2009

The EUT described above has been tested by us with the listed standards and found in compliance with the council LVD directive 2006/95/EC. It is possible to use CE marking to demonstrate the compliance with this LVD Directive.

The certificate applies to the tested sample above mentioned only and shall not imply an assessment of the whole production. It is only valid in connection with the test report number: BST10120427SR-2.



Dec. 31, 2010

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RoHS Declaration of Conformity

Spire hereby declares under our sole responsibility that the product:

Part number: **SP-AD-090W-E2**

Description: AC Input: AC100--240V 1.8A;DC Input: 11-15V

10A Max.Output voltage: 15V/16V/18V/19V/20V

DC at 4.5 A max or 22V/24V DC at 3.75 A

max,Power:90W MAX,USB Output: 5V/1A



Is tested and approved in compliance with the EUROPEAN COUNCIL ROHS DERECTIVE.

(Restriction of Hazardous Substances) which will restrict the use of certain substances in electrical and electronic products: including lead (Pb), mercury, cadmium, hexavalent chromium, and certain halide-containing flame retardants. The directive applies to all electrical and electronic products, their component parts that are placed on the market after July 1, 2006.

Spire Coolers Corp.
PM Engineering Dept.

Nanshan, Shenzhen

