

UL TEST REPORT AND PROCEDURE

Standard:	UL 60950-1, 2nd Edition, 2007-03-27 (Information Technology Equipment - Safety - Part 1: General Requirements) CSA C22.2 No. 60950-1-07, 2nd Edition, 2007-03 (Information Technology Equipment - Safety - Part 1: General Requirements)
Certification Type:	Listing
CCN:	QQGQ, QQQQ7 (Power Supplies for Information Technology Equipment Including Electrical Business Equipment)
Product:	Switching Power Supply
Model:	1.BP(a)*040(b)*(c)**(d)*(e)** 2.(a)*ENB1040(b)*(c)**(d)**(e)*(f)** (Where * may be alphanumeric, for marketing purpose and no impact safety related critical components and constructions)
Rating:	Input Rating: 100-240Vac, 50-60Hz, 1.2A Output Rating: 5Vdc, 5.0A or 9Vdc, 4.0A or 12Vdc, 3.4A or 15Vdc, 2.7A or 18Vdc, 2.2A or 24Vdc, 1.7A or 48Vdc, 0.83A
Applicant Name and Address:	BRIDGEPOWER CORP 964 GOSAEK-DONG GWONSEON-GU SUWON-SI GYEONGGI-DO 441-813 KOREA

This is to certify that representative samples of the products covered by this Test Report have been investigated in accordance with the above referenced Standards. The products have been found to comply with the requirements covering the category and the products are judged to be eligible for Follow-Up Service under the indicated Test Procedure. The manufacturer is authorized to use the UL Mark on such products which comply with this Test Report and any other applicable requirements of Underwriters Laboratories Inc. ('UL') in accordance with the Follow-Up Service Agreement. Only those products which properly bear the UL Mark are considered as being covered by UL's Follow-Up Service under the indicated Test Procedure.

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Prepared by: In-Young Hwang
Underwriters Laboratories Inc.
Reviewed by: Hyeong-Kyun Park
Underwriters Laboratories Inc.



Supporting Documentation

The following documents located at the beginning of this Procedure supplement the requirements of this Test Report:

- A. Authorization - The Authorization page may include additional Factory Identification Code markings.
- B. Generic Inspection Instructions -
- i. Part AC details important information which may be applicable to products covered by this Procedure. Products described in this Test Report must comply with any applicable items listed unless otherwise stated in the body of this Test Report.
 - ii. Part AE details any requirements which may be applicable to all products covered by this Procedure. Products described in this Test Report must comply with any applicable items listed unless otherwise stated in the body of each Test Report.
 - iii. Part AF details the requirements for the UL Certification Mark which is not controlled by the technical standard used to investigate these products. Products are permitted to bear only the Certification Mark(s) corresponding to the countries for which it is certified, as indicated in each Test Report.

Product Description

Switching Mode Power Supply(AC/DC adaptor), consists of electronic components mounted on PWB, a switching transformer and electronic components mounted on PWB, housed with a plastic enclosure.

Model Differences

BP(a)*040(b)*(c)**(d)*(e)**

- (a) Family Related Designs: * is A-Z
(b) Output: * is S (S=Single)
(c) Output Voltage: 05, 09, 12, 15, 18, 24, 48
(d) Standard Input Cord Options can be F or Q or N for input plug type.
F : (Class I - IEC320-C14),
Q: (Class II - IEC320-C18),
N: ((Class II - IEC320-C8)
- (e) Custom Options (Marking, Cord etc.) Number : 00 thru 99

(a)*ENB1040(b)*(c)**(d)**(e)*(f)**

- (a) Family Related Designs : * is A-Z
(b) Design Revision Changes: A to Z (Standard)
(c) Output Voltage: 05, 09, 12, 15, 18, 24, 48
(d) Standards Output Cord Options: Number : 00 thru 99
(e) Standard Input Cord Options can be F or Q or Nfor input plug type.
F : (Class I = IEC320-C14)
Q: (Class II = IEC320-C18)
N: ((Class II = IEC320-C8)
(f) Custom Options (Marking, Cord etc.) Number : 00 thru 99

Technical Considerations

- Equipment mobility : movable
- Connection to the mains : pluggable A

- Operating condition : continuous
- Access location : operator accessible
- Over voltage category (OVC) : OVC II
- Mains supply tolerance (%) or absolute mains supply values : +10%, -10%
- Tested for IT power systems : No
- IT testing, phase-phase voltage (V) : N/A
- Class of equipment : Class I (earthed) or Class II (double insulated)
- Considered current rating (A) : 20A
- Pollution degree (PD) : PD 2
- IP protection class : IP X0
- Altitude of operation (m) : Up to 2000m
- Altitude of test laboratory (m) : Less than 2000m
- Mass of equipment (kg) : 240g
- The product was submitted and evaluated for use at the maximum ambient temperature (T_{ma}) permitted by the manufacturer's specification of: 40 °C
- The means of connection to the mains supply is: Detachable power cord, Pluggable A
- The product is intended for use on the following power systems: TN
- The equipment disconnect device is considered to be: Appliance inlet
- The following accessible locations (with circuit/schematic designation) are within a limited current circuit: CY2
- The following circuit locations (with circuit/schematic designation) were investigated as a limited power source (LPS): All outputs

Additional Information


Original, 11CA06784

Max. Normal Load Condition: Rated output current (See Cover Page for detail).

Additional Standards

The product fulfills the requirements of: N/A

Markings and instructions

Clause Title	Marking or Instruction Details
Power rating - Ratings	Ratings (voltage, frequency/dc, current)
Power rating - Company identification	Listee's or Recognized company's name, Trade Name, Trademark or File Number
Power rating - Model	Model Number
Power rating - Class II symbol	Symbol for Class II construction  (60417-2-IEC-5172)
Warning to service personnel	"CAUTION: Double pole/neutral fusing"

Special Instructions to UL Representative

Inspect the transformer(s) listed in BD1.1 per AA 1.1-(C).

When the tests are conducted at other location, inspect test record and specification sheet provided by the component manufacturer.

Verify the specification sheet indicates 100% routine test specified in BD 1.1 be conducted at the component manufacturer.

Production-Line Testing Requirements						
<u>Electric Strength Test Special Constructions - Refer to Generic Inspection Instructions, Part AC for further information.</u>						
Model	Component	Removable Parts	Test probe location	V rms	V dc	Test Time, s
BP(a)*040(b) *(c)**(d)*(e)* * (a)*ENB1040 (b)*(c)**(d)**(e)*(f)**	T1	N/A	N/A	300 0	4242	1s
<u>Earthing Continuity Test Exemptions - This test is not required for the following models:</u>						
Class II model only						
<u>Electric Strength Test Exemptions - This test is not required for the following models:</u>						
-						
<u>Electric Strength Test Component Exemptions - The following solid-state components may be disconnected from the remainder of the circuitry during the performance of this test:</u>						
-						
<u>Sample and Test Specifics for Follow-Up Tests at UL</u>						
Model	Component	Material	Test	Sample(s)	Test Specifics	
N/A						

TABLE: List of Critical Components

Object/part or Description	Manufacturer/ trademark	type/model	technical data	CCN	Marks of Conformity
Appliance Inlet (Class I)	Rong Feng Industrial Co., Ltd.	SS-120	Rated 15 A / 250 V.	AXUT2/8	USR/CNR
Appliance Inlet (Class II)	Rong Feng Industrial Co., Ltd.	RF-180	Rated 2.5 A / 250 V.	AXUT2/9	USR/CNR
Appliance Inlet (Class II) - Alternate	Rong Feng Industrial Co., Ltd.	SS-120A	Rated 15 A / 250 V.	AXUT2/8	USR/CNR
Enclosure(Fire/Mech./Elec.)	CHEIL INDUSTRIES.	HN-1064W(+)	Overall Sized approx. 102.0 by 60.0 by 32.5mm. Min 2.0mm thickness, V-1, RTI 80 degree C. Composed of two pieces, secured together by ultrasonic welding.	QMFZ2/8	USR/CNR
Fuse (F1)	Save fusetech Inc	SS-5	Rated 250V, T3.15AL	JDYX2/8	USR/CNR
Fuse (F1) - Alternate	LITTELFUSE WICKMANN WERKE	392	Rated 250V, T3.15AL	JDYX2/8	USR/CNR
Fuse (F1) - Alternate	Hollyland co., ltd.	5ET	Rated 250V, T3.15AL	JDYX2/8	USR/CNR
Fuse (F1) - Alternate	NIPPON SEISEN CABLE, LTD.	SLT	Rated 250V, T3.15AL	JDYX2/8	USR/CNR
Fuse (F2) (Optional)	Save fusetech Inc	SS-5	Rated 250V, T3.15AL	JDYX2/8	USR/CNR
Fuse (F2) (Optional) - Alternate	LITTELFUSE WICKMANN WERKE	392	Rated 250V, T3.15AL	JDYX2/8	USR/CNR
Fuse (F2) (Optional) - Alternate	Hollyland co., ltd.	5ET	Rated 250V, T3.15AL	JDYX2/8	USR/CNR
Fuse (F2) - Alternate	NIPPON SEISEN CABLE, LTD.	SLT	Rated 250V, T3.15AL	JDYX2/8	USR/CNR
Varistor (ZNR4) (Optional)	Success Electronics	SVR14D471K	Rated 470 V, (line-to-line), Overall dimension 14 mm.	VZCA2/8	USR/CNR
Varistor (ZNR4) (Optional) - Alternate	AMOTECH CO LTD	INR14D471	Rated 470 V, (line-to-line), Overall dimension 14 mm.	VZCA2	USR
Varistor (ZNR4) (Optional) - Alternate	HONGZHI ENTERPRISES LTD	HEL14D471K	Rated 470 V, (line-to-line), Overall dimension 14 mm.	VZCA2	USR
Thermistor (TH1)	Various	Various	NTC, 5ohm at 25deg.C	XGPU2	USR
Line Filter (LF1)	Bridgepower or Wendeng Jeil	3025634	Ferrite Core; 14mm by 8mm by 7mm, Coils: Polyurethane Enamelled Wire Min.130degree C. Bobbin: (QMFZ2) Bakelite, type PM9820@, V-0,	-	-

Object/part or Description	Manufacturer/trademark	type/model	technical data	CCN	Marks of Conformity
			150 deg C		
X-capacitor (CX1) (Line to Line) - Alternate	Iskra	KNB 1530 or 1562 or 1563	Rated 250V, Max.. 0.47 uF. Marked with X1 or X2. Meets IEC/EN60384-14.	FOWX2	USR/CNR
X-capacitor (CX1) (Line to Line) - Alternate	Pilkor	PCX2 335M or PCX2 337	Rated 250V, Max.. 0.47 uF. Marked with X1 or X2. Meets IEC/EN60384-14.	FOWX2	USR/CNR
X-capacitor (CX1) (Line to Line) - Alternate	Okaya	LE	Rated 250V, Max.. 0.47 uF. Marked with X1 or X2. Meets IEC/EN60384-14.	FOWX2	USR/CNR
X-capacitor (CX1) (Line to Line) - Alternate	Sunil	436D	Rated 250V, Max.. 0.47 uF. Marked with X1 or X2. Meets IEC/EN60384-14.	FOWX2	USR/CNR
X-capacitor (CX1) (Line to Line) - Alternate	Tenta	MEX	Rated 250V, Max.. 0.47 uF. Marked with X1 or X2. Meets IEC/EN60384-14.	FOWX2	USR/CNR
BridgeDiode(BD1)	Various	Various	Min. 4.0A, Min. 600V.	FOWX2	USR/CNR
Discharging Resister (PR1, PR2)	Various	Various	510Kohm 1/8W	-	-
Electrolytic Capacitor (C1)	Various	Various	Max. 82 uF, Min. 400 V, min. 105 degree.	-	-
Switching IC (U1)	Various	Various	Max 30V, Max.4mA	-	-
FET (Q1)	Various	Various	Min 650V, Max.7.2A	-	-
Main Transformer(T1) for output 5 V	Bridgepower or Wendeng Jeil	3025688001	JEC(B), Class B. Core: Ferrite, size 28 by 20 mm. Coils: TIW:Furukawa, TEXE, 130 deg C.Bobbin:(QMFZ2), V-0, 130 degC.	-	-
Main Transformer(T1) for output 9V	Bridgepower or Wendeng Jeil	3025688002	JEC(B), Class B. Core: Ferrite, size 28 by 20 mm. Coils: TIW:Furukawa, TEXE, 130 deg C.Bobbin:(QMFZ2), V-0, 130 degC.	-	-
Main Transformer(T1) for output 12 V	Bridgepower or Wendeng Jeil	3025688003	JEC(B), Class B. Core: Ferrite, size 28 by 20 mm. Coils: TIW:Furukawa, TEXE, 130 deg C.Bobbin:(QMFZ2), V-0, 130 degC.	-	-
Main Transformer(T1) for output 15V	Bridgepower or Wendeng Jeil	3025688004	JEC(B), Class B. Core: Ferrite, size 28 by 20 mm. Coils: TIW:Furukawa, TEXE, 130 deg C.Bobbin:(QMFZ2), V-0, 130 degC.	-	-
Main Transformer(T1) for output 18 V	Bridgepower or Wendeng Jeil	3025688005	JEC(B), Class B. Core: Ferrite, size 28 by 20 mm. Coils: TIW:Furukawa, TEXE, 130 deg C.Bobbin:(QMFZ2), V-0, 130 degC.	-	-
Main Transformer(T1) for output 24 V	Bridgepower or Wendeng Jeil	3025688006	JEC(B), Class B. Core: Ferrite, size 28 by 20 mm. Coils: TIW:Furukawa, TEXE, 130 deg	-	-

Object/part or Description	Manufacturer/ trademark	type/model	technical data	CCN	Marks of Conformity
			C.Bobbin:(QMFZ2), V-0, 130 degC.		
Main Transformer(T1) for output 48 V	Bridgepower or Wendeng Jeil	3025688007	JEC(B), Class B. Core: Ferrite, size 28 by 20 mm. Coils: TIW:Furukawa, TEXE, 130 deg C.Bobbin:(QMFZ2), V-0, 130 degC.	-	-
Optical Isolator (U2)	Vishay Semiconductor	TCET1103(G)D or TCET1103	Double protection optical isolator. Providing isolation voltage 5000 Vac, Internal Creepage ; 8.0mm External Creepage ; 6.0mm	-	-
Optical isolator (U2) - Alternate	COSMO ELECTRONICS CORP	KP1010X	Double protection optical isolator. Providing isolation voltage 5000 Vac,Internal Creepage ; 6.5mm External Creepage ; 6.5mm	FPQU2/8	USR/CNR
Optical isolator (U2) - Alternate	SHARP CORP ELECTRONIC COMPONENTS GROUP	PC123	Double protection optical isolator. Providing isolation voltage 5000 Vac,Internal Creepage ; 6.4mm External Creepage ; 6.4mm	FPQU2/8	USR/CNR
Optical isolator (U2) - Alternat	LITE-ON TECHNOLOGY CORP	LTV-817	Double protection optical isolator. Providing isolation voltage 5000 Vac,Internal Creepage ; 7.0mm External Creepage ; 7.0mm	FPQU2	US
Optical isolator (U2) - Alternate	KODENSHI KOREA	PC-17K	Double protection optical isolator. Providing isolation voltage 5000 Vac.,Internal Creepage ; 7.0mm External Creepage ; 7.0mm	FPQU2/8	USR/CNR
Bridging Capacitor (CY1, CY2)	SUCCESS ELECTRONICS CO LTD	SE & CB	250Vmin, 1000 pF. Marked with Y1 & Y2.	FPQU2/8	USR/CNR
Bridging Resistor(R4,R5) (Optional)	Various	Various	4.7M Ohm, 1/4W	-	-
PWB	Various	Various	Min. V-1, min 130°C.	ZPMV2	USR
Heatsink(HS1)-Primary	Various	Various	Metal, overall sized approx. 54 by 22 mm, 2 mm thickness. Wound by polyester film tape OANZ2), Min. 130 deg C,	-	-

Object/part or Description	Manufacturer/trademark	type/model	technical data	CCN	Marks of Conformity
Heatsink(HS2)-Secondary	Various	Various	Metal, overall sized approx. 35 by 22 mm, 2 mm thickness. Wound by polyester film tape OANZ2), Min. 130 deg C,	-	-
Output cable(LPS)	Various	Various	For use of external interconnection, max 3.05 m long, max. 300 V, 80 °C, min.20 AWG, Marked with VW-1 or FT-1.	AVLV2 or ZJCZ	USR
Nameplate Label	Various	Various	Suitable for use on surface of Polycarbonate (PC) with max. 60 °C surface temperature.	PGDQ2, PGJI2	USR
Bonding Glue	Various	Various	Min. V-2, min. 100 °C for additional secureness of internal conductor.	QMFZ2	USR
Wiring, internal (Primary)	Various	Various	Max. 300 V, 80 °C, min.20 AWG, Marked with VW-1 or FT-1.	AVLV2	USR
Bonding conductor	Various	Various	Mechanically clamped or secured on PWB from Appliance Inlet. Min 18 AWG, Green-and-Yellow Insulation.	AVLV2	USR

Enclosures

<u>Type</u>	<u>Supplement Id</u>	<u>Description</u>
Photographs	3-13	External View F type (Class I)
Photographs	3-17	External View N type (Class II)
Photographs	3-23	External View Q type (Class I)
Photographs	3-29	Internal View Top_ClassI
Photographs	3-30	Internal View Bottom_ClassI
Photographs	3-31	Internal View Top_ClassII
Photographs	3-32	Internal View Bottom_ClassII
Diagrams	4-01	Component Layout_ PWB Pattern
Schematics + PWB		
Manuals		
Miscellaneous	7-01	Label Drawing_ClassI
Miscellaneous	7-18	Label Drawing_ClassII