UL TEST REPORT AND PROCEDURE

Standard:	UL 60950-1, 2nd Edition, 2011-12-19 (Information Technology Equipment - Safety - Part 1: General Requirements) CSA C22.2 No. 60950-1-07, 2nd Edition, 2011-12 (Information Technology Equipment - Safety - Part 1: General Requirements)
Certification Type:	Component Recognition
CCN:	QQGQ2, QQGQ8 (Power Supplies for Information Technology Equipment Including Electrical Business Equipment)
Product:	DC/DC Converter
Model:	1/4 Brick Intermediate Bus Converter (IBC) Series See Miscellaneous Enclosure for model matrix.
Rating:	Input: 48Vdc Output Voltage: 12Vdc max Output Power 80A or 850Wmax See Miscellaneous Enclosure for model details.
Applicant Name and Address:	VICOR CORP 25 FRONTAGE RD ANDOVER MA 01810 UNITED STATES

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 UL LLC ('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.

The applicant is authorized to reproduce the referenced Test Report provided it is reproduced in its entirety.

UL authorizes the applicant to reproduce the latest pages of the referenced Test Report consisting of the first page of the Specific Technical Criteria through to the end of the Conditions of Acceptability.

Any information and documentation involving UL Mark services are provided on behalf of UL LLC (UL) or any authorized licensee of UL.

Prepared by: Gerard Soprych Reviewed by: Daniel Pirozzi

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

The VI Brick IBC ¼ Brick family of DC-DC converters are designed for building-in. The ¼ Brick IBC converters provide Basic Insulation from Input to Output with a dielectric withstand rating of 2250Vdc. All of the ¼ Bick IBCs have a nominal input voltage of 48Vdc but the IB050 and IB054 models have a wider input range than the IB048 models. The IB054 models are IB050 variants that can withstand input transients of 75Vdc for 100ms.

Model Differences

See Miscellaneous Enclosure for model nomenclature.

Technical Considerations

- Equipment mobility : for building-in
- Connection to the mains : -
- Operating condition : continuous
- Access location : building-in
- Over voltage category (OVC) : OVC II
- Mains supply tolerance (%) or absolute mains supply values : N/A
- Tested for IT power systems : No
- IT testing, phase-phase voltage (V) : -
- Class of equipment : Not classified
- Considered current rating of protective device as part of the building installation (A) : -
- Pollution degree (PD) : PD 2
- IP protection class : IP X0
- Altitude of operation (m) : 2000
- Altitude of test laboratory (m) : 150
- Mass of equipment (kg) : 0.039
- The product was submitted and evaluated for use at the maximum ambient temperature (Tma) permitted by the manufacturer's specification of: max. allowed PCB temperature of 130°C under normal operating conditions

Engineering Conditions of Acceptability

For use only in or with complete equipment where the acceptability of the combination is determined by UL LLC. When installed in an end-product, consideration must be given to the following:

- Input Voltage: Both a nominal input voltage and an input voltage range are specified. Operation over the entire range was evaluated. The output voltage is a fixed turns ratio of the input voltage.
- Max Output: The IBC has both a maximum current and a maximum power rating. The end use application shall not exceed the lower limit of either maximum power or maximum current.
- The input is intended to be supplied from a SELV, TNV-2, or other non-hazardous secondary circuit.
- Max Temperature: The maximum allowable PCB temperature is 130°C under normal operation and should be evaluated in the end use product.
- Fusing Requirements: The IBCs were evaluated with an external fast acting fuse. Littelfuse Nano2 rated 30A or less, BEL Fuse SSQ Series rated 15A or less, or SOC Fuse 25CF Series rated 18A or less.
- The output is separated from the input by Basic Insulation
- The following secondary output circuits are SELV: All
- The following secondary output circuits are at hazardous energy levels: All
- The power supply terminals and/or connectors are: Not investigated for field wiring
- The investigated Pollution Degree is: 2
- An investigation of the protective bonding terminals has: Not been conducted
- The following end-product enclosures are required: Mechanical, Fire, Electrical

Additional Information

N/A

Additional Standards

The product fulfills the requirements of: IEC 60950-1:2005 + A1:2009

Markings and instructions

Clause Title	Marking or Instruction Details
1.7.1 Power rating - Company identification	Listee's or Recognized company's name, Trade Name, Trademark or File Number
1.7.1 Power rating - Model	Model Number

Special Instructions to UL Representative

N/A

VI Brick Intermediate Bus Converter Model Number: IBaaaQfffGwwxy-zz

Example: IB050Q096T70N1-00

IB = Constant	Intermediate Bus

aaa = Nominal Input Voltage (range, may be narrowed)	
048	48 Vdc (38-55)
050	48 Vdc (36-60)
054	48 Vdc (36-60)

Q = Constant	Quarter Brick Package

fff = Output Voltage Designator	
096	9.6 Vdc
120	12.0 Vdc

G = Product Grade	
T =	-40°C to 125°C

ww = Output Current (82 A max) / Power Designator (850Wmax)			
9.6Vdc Output		**12Vdc Output**	
64	64A or 650W	53	53A or 650W
70	70A or 750W	60	60A or 600W
73	73A or 710W		
80	80A or 850W		
82	82A or 810W		

x = Enable / Disable (non-safety related) referenced to (-) In	
N =	Negative
P =	Positive

y = Pin Style (non-safety related)
Any alphanumeric character

zz = Revision / Option Designator (non-safety related)
Any alphanumeric character, B = baseplate

Customer Special Models:	
Customer Special Model Numbers	Equivalent Standard Model Numbers
IBC055Q01-zz	IB050Q096T64N1-zz
IBC060Q01-zz	IB050Q096T73N1-zz
IBC065Q01-zz	IB050Q096T80N1-zz
IBC070Q01-zz	IB050Q096T82N1-zz
IBC080Q01-zz	IB050Q096T80N1-zz
Customer special model numbers also use the zz non-safety related alphanumeric revision designator.	