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:	Half PRM Model ViP01wwxHy Half PRM2 Model PRMbbbcdddefffxzz See Enclosure Miscellaneous for model suffix details.
Rating:	Input:45Vdc (38-55) Output: 48 Vdc Power: 250W Max.
Applicant Name and Address:	VICOR CORP 25 FRONTAGE RD ANDOVER MA 01810-5499 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 half size VI Chip PRM is a non-isolating DC-DC front end Pre-Regulator Module that is designed to be used with a VI Chip VTM to make a complete regulated DC-DC converter. The PRM DC-DC converters are designed for building-in and the input is intended to be derived from a TNV-2, SELV, or other non-hazardous secondary circuit.

Model Differences

See Miscellaneous Enclosure for model nomenclature.

Technical Considerations

- Equipment mobility : for building-in
- Connection to the mains : N/A
- Operating condition : continuous
- Access location : N/A
- 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 : Class III (supplied by SELV)
- Considered current rating of protective device as part of the building installation (A) : 10
- Pollution degree (PD) : PD 2
- IP protection class : IP X0
- Altitude of operation (m) : 5000
- Altitude of test laboratory (m) : less than 2000
- Mass of equipment (kg) : 0.0065
- The product was submitted and evaluated for use at the maximum ambient temperature (Tma) permitted by the manufacturer's specification of: max. case temperature of 100°C

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:

- Max Temperature: Keep the maximum case temperature of the VI Chip at 100°C or less.
- The Half PRM is a non-isolating device. The output can be considered SELV if the input is SELV with the exception of the VIZ0050. The output of the VIZ0050 can exceed the SELV limits under a fault condition but does not exceed the limits of TNV-2 circuits..
- Fusing requirements: The Half PRM Series of DC-DC converters were evaluated with Littelfuse Nano² Fuse rated 10A.
- The output of the VIZ0050 may be considered TNV-2 or external circuitry may be added and evaluated in the end product in order to provide output over voltage protection and compliance with the limits of SELV circuits.
- The following secondary output circuits are SELV: 48Vdc
- The power supply terminals and/or connectors are: Not investigated for field wiring
- The investigated Pollution Degree is: 2
- The following end-product enclosures are required: Fire , Mechanical
- The following secondary output circuits are at non-hazardous energy levels: outputs greater than 240W

VI Chip Half PRM Family Tree Model: ViP01wwxHy

Example #1, VIP0101THJ

V = Constant

i =	**PRM Type**
I	Standard PRM
M	Military PRM

P01 = Constant

ww = defines electrical ratings				
Model	**Vin Nom (range)**	**Vout**	**Pout**	**Feedback Style**
00	45 Vdc (38-55)	0-55 Vdc	200 W	Remote Sense
01	45 Vdc (38-55)	0-55 Vdc	200 W	Remote Sense
02	45 Vdc (38-55)	0-55 Vdc	200 W	Adaptive Loop

x =	**Product Grade**	**Temp Range**
T	Telecom	-40 - 100 C
M	Military	-55 - 100 C

H = Constant for Half VIC Package Size

y =	**Lead Designator**
J	J-Lead
T	Through-Hole

Customer Special Model numbers

Customer Special Model Numbers	**Equivalent Standard Model Numbers**
VIZ0050, VIZ0050x (see license conditions)	VIP0101THJ
x = revision, any letter A through Z, non-safety related	

VI Chip Half PRM2 Family Tree Model: PRMbbbcdddefffxzz

Example: PRM48BH480T200A00

PRM = Constant

PRM Family (Pre-regulator Module)	
PRM	Standard version
MPRM	Mil-COTS version

bbb = 48B

Input Voltage	Nominal (range)
48A	48 Vdc (36-75)
48B	48 Vdc (38-55)
48D	48 Vdc (38-60)
48J	48 Vdc (42-55)

c = H

Package Size and lead designator	
H	Half VI Chip J-Lead

ddd = 480

Output Voltage Designator (range)	
480	48.0 Vdc (5-55)

e = T

Product Grade	
T	-40 to 125C
M	-55 to 125C

fff = 200

Output Power Designator (can be any three digits from 100 to 250) non-inclusive list of examples below	
100	100W
200	200W
250	250W

x = A

Revision (non-safety related)	
x	Any alphanumeric character

zz = 00

Customer reference (non-safety related)	
zz	Any alphanumeric character

Half Size Customer Configured PRM2 Model Number: PRMxyaa-zzzzzz
Example: PRM2A03-123456

PRM = Constant

PRM Family (Pre-regulator Module)

x = 2

Controller Revision, 0 through 9 (non-safety related)

y = A

Product Revision, A through Z (non-safety related)

aa = 03

Hardware Configuration, max ratings, actual ratings may be less			
HW Configuration	Vin (Vdc)	Vout (Vdc)	Pout (W)
03 = full size narrow range	48Vdc (38-55)	48 Vdc (20-55)	250W
04 = full size wide range	48Vdc (36-75)	48 Vdc (20-55)	200W

zzzzzz = 123456

Any 6 digit numeric combination, customer specific configuration, non-safety related, J-Lead or Through-Hole, T or M grade, and Feedback Style