UL TEST REPORT AND PROCEDURE

Standard:	UL 60601-1, 1st Edition, 2006-04-26 (Medical Electrical Equipment, Part 1: General Requirements for Safety) CAN/CSA-C22.2 No. 601.1-M90, 2005 (Medical Electrical Equipment - Part 1: General Requirements for Safety)
Certification Type:	Component Recognition
CCN:	QQHM2, QQHM8 (Power Supplies, Medical and Dental)
Product:	Switching Power Supply
Model:	LCM1500Q-T
Rating:	Input: 100-240VAC, 19A max, 50/60Hz Output : +24VDC, 63A max, 1500W max, +5Vsb, 2.0A max(Optional) Output power derates at 2.5% per degree C from 50 degree C to 70 degree C ambient
Applicant Name and Address:	ASTEC INTERNATIONAL LTD - PHILIPPINE BRANCH 16TH FL LU PLAZA 2 WING YIP ST KWUN TONG KOWLOON HONG KONG

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: Jeffery Chan Reviewed by: Calvin Tang

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

This unit is a medical switching mode power supply for building-in which has been evaluated for use in Class I medical application. Unit provided with an insulation transformer and all components are mounted on 94V-0 PWB.

Model Differences

N/A

Technical Considerations

- Classification of installation and use : For built-in
- Supply connection : To be evaluated in end product.
- Accessories and detachable parts included in the evaluation : None
- Options included : None
- The product was investigated to the following additional standards:: UL 60601-1, 1st Edition, 2006-04-26 (includes National Differences for USA), CAN/CSA-C22.2 No. 601.1-M90 (R2005) (includes National Differences for Canada),
- The product was not investigated to the following standards or clauses:: Clause 52.1, Programmable Electronic Systems (IEC 601-1-4), Clause 48, Biocompatibility (ISO 10993-1), Clause 36, Electromagnetic Compatibility (IEC 601-1-2)
- The product is Classified only to the following hazards:: Casualty, Shock, Fire
- The degree of protection against harmful ingress of water is:: Ordinary
- The mode of operation is:: Continuous
- Software is relied upon for meeting safety requirements related to mechanical, fire and shock:: No
- The product is suitable for use in the presence of a flammable anesthetics mixture with air or oxygen or with nitrous oxide:: No

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:

- This power supply has been evaluated for use in/as Class I, continuous operation equipment, ordinary equipment and has not been evaluated for use in the presence of a flammable anesthetic mixture with air, oxygen, or nitrous oxide. The earthing and potential equalization test IEC 60601-1, Sub-Clause 18f) should be considered in end system.
- Depending on the end product application, additional markings and documentation may be required. This is to be evaluated in the end product.
- Total continuous output power shall not exceed the mentioned rating in operation manual.
- Consideration should be given to measuring the temperatures on power electronic components and transformer windings when the power supply is installed in the end use equipment. The primary transformer (T101, T801 and T302) incorporates a Class 155 (F) insulation system.
- The secondary circuit of this power supply has not been evaluated for patient connected applications.
- This power supply has been judged on the basis of the required creepage and Clearances in the First Edition of the Standard for Medical Electrical Equipment, UL , 60601-1, Sub clause 57.10, which covers the end-use , product for which the component was designed.
- This power supply was tested on a 30 A branch circuit. If used on a branch circuit greater than this,

additional testing may be necessary.

- This power supply shall be installed in compliance with the enclosure, mounting, spacing, casualty, markings and , segregation requirements of the end use application.
- The needs for conducting Enclosure and Patient leakage current tests should be considered as part of the end product evaluation.
- The output connectors are not acceptable for field connection and are only intended for connections to mating connectors of internal wiring inside the end use product. The acceptability of these and the mating connectors relative to secureness, insulating materials, and temperatures shall be considered in the end , use product.
- The power supply was evaluated as Double Insulation/Reinforced Insulation between Primary and Secondary and Basic Insulation , between Primary and Ground. , See Insulation Diagram.
- The maximum working voltage for T101 present is 391.0 Vrms; 1130Vpk-pk. for T801 is 262.2 Vrms; 955Vpk-pk. for T302 is 259.2 Vrms;796Vpk-pk. The electric strength tests in the end-product shall be based on this value.
- Unit not provided with power supply cord. Further consideration is necessary in end use for the means of main connection.
- This power supply is for non-patient connected equipment.
- The following tests shall be performed in the end-product evaluation: Earthing and Potential Equalization Test, Temperature Test, Dielectric Voltage Withstand Tests, and Leakage Current Test and Fuse short circuit test.
- Proper bonding to the end-product main protective earthing termination is required.
- For Model LCM1500Q-T: Additional evaluations have been considered for the +24V +/- 10% output voltage adjustability limited to the following combined conditions: maximum allowed 63.0 A output current and 1500W output power.