

# Certificate of Compliance

**Certificate:** 1181352

**Master Contract:** 187981 (LR 110823)

**Project:** 1400453

**Date Issued:** January 15, 2004

**Issued to:** **Beghelli S.p.a.**  
**c/o Beghelli Canada Inc.**  
**70 Esna Park Rd. Unit 12**  
**Markham, ON L3R 6E7**  
**CANADA**  
**Attention: Mr. David Rycroft**

*The products listed below are eligible to bear the CSA Mark shown with adjacent indicators 'C' and 'US'*



**Issued by:** Ken McDowell, C.E.T.

**Authorized by:** Nick Alfano  
 Operations Manager

## **PRODUCTS**

### **PART A: CLASS 3435 02 - EMERGENCY LIGHTING EQUIPMENT - Unit Equipment – Performance**

Emergency lighting units, Series LUNA, suitable for damp or wet locations, with optional low power laser path marking device. Time base 30 minutes with 2 - 10 watt lamps, 120 minutes with 2 – 5 watt lamps. AT suffix may be used to designate Automatic Test option, L suffix for laser option.

<u>Model</u>	<u>Input (Volt/Hertz/Amp)</u>	<u>Output(Volt/Watts/Time base)</u>
LA 2 5	120V/60Hz/0.05A	6V dc/10W/120 min
LA 2 10	120V/60Hz/0.05A	6V dc/21W/30 min
LA 2 5	347V/60Hz/0.02A	6V dc/10W/120 min
LA 2 10	347V/60Hz/0.02A	6V dc/21W/30 min
8213	347V/60Hz/0.02A	6V dc/21W/30 min
8214	347V/60Hz/0.02A	6V dc/21W/30 min; with AT option
8215	347V/60Hz/0.02A	6V dc/21W/30 min; with AT and laser option

Emergency lighting units, Series ECCO LUNA, suitable for damp or wet locations, with optional low power laser path marking device. At suffix may be used to designate Automatic Test option, L suffix for laser option.

The 'C' and 'US' indicators adjacent to the CSA Mark signify that the product has been evaluated to the applicable CSA and ANSI/UL Standards, for use in Canada and the U.S., respectively. This 'US' indicator includes products eligible to bear the 'NRTL' indicator. NRTL, i.e. National Recognized Testing Laboratory, is a designation granted by the U.S. Occupational Safety and Health Administration (OSHA) to laboratories which have been recognized to perform certification to U.S. Standards.



**Certificate:** 1181352  
**Project:** 1400453

**Master Contract:** 187981  
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**ECCO LUNA SERIES:**

<u>Model</u>	<u>Input (Volt/Hertz/Amp)</u>	<u>Output(Volt/Watts/Time base)</u>
COLA 2 10	120V/60Hz/0.05A	6V dc/36W/30 min
COLA 2 10	347V/60Hz/0.02A	6V dc/36W/30 min

Remote Lamps Units: 6V, or 12V or 24V . 2 lamps only with max wattage 20 watts ea. (no battery or charger in enclosure) Series RLaxx where xx indicates the wattage of 5 or 10 W per lamp.

**APPLICABLE REQUIREMENTS**

CSA C22.2 No 141-M1985 - Unit Equipment for Emergency Lighting

**PART B:**

CLASS 3435 02 - EMERGENCY LIGHTING EQUIPMENT - Unit Equipment – Performance

CLASS 3435 82 - EMERGENCY LIGHTING EQUIPMENT - Unit Equipment – Performance – Certified to US standards

Emergency lighting units, Series ECCO LUNA EL 2-8, suitable for dry locations only with the C US indicator or Suitable for damp or wet locations when marked with the CSA Monogram only, with optional low power laser path marking device. AT suffix may be used to designate Automatic Test option, L suffix for laser option.

<u>Model</u>	<u>Input (Volt/Hertz/Amp)</u>	<u>Output(Volt/Watts/Time base)</u>
EL28-SE-UNV	120V or 277 V/60 Hz/0.05A max.	6V dc/16 W/90 minutes

Emergency lighting units, Series LUNA, suitable for damp or wet locations, with optional low power laser path marking device. Time base 90 minutes with 2 - 5 watt lamps. At suffix may be used to designate Automatic Test option, L suffix for laser option.

<u>Model</u>	<u>Input (Volt/Hertz/Amp)</u>	<u>Output(Volt/Watts/Time base)</u>
LA25SE/US	120V, 60 Hz/0.046A max	6V dc/10 W/90 minutes
LA25SE/US2	277 V, 60Hz/0.019A max	6V dc/10W/90 minutes

**APPLICABLE REQUIREMENTS**

CSA C22.2 No 141-M1985 - Unit Equipment for Emergency Lighting  
EMERGENCY LIGHTING AND POWER EQUIPMENT - UL924 (8<sup>th</sup> edition – 2001)



## *Supplement to Certificate of Compliance*

**Certificate:** 1181352

**Master Contract:** 187981 (LR 110823)

*The products listed, including the latest revision described below,  
are eligible to be marked in accordance with the referenced Certificate.*

### **Product Certification History**

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<b>Project</b>	<b>Date</b>	<b>Description</b>
1400453	2004-01 -15	Update report to add LA25SE/US and LA25SE/US2And compliance to UL924 (8 <sup>th</sup> Edition 2001)
135407	2002-09-06	Added ECCO LUNA series models and Model EL 28-SE-UNV
1181352	2001-06-25	Original certification.

**MASTER CONTRACT:** 187981

**REPORT:** 1181352

**PROJECT:** 1400453

**Edition 1:** June 25, 2001; Project 1181352 - Toronto  
Issued by Z. Psarski, P.Eng.

**Edition 3:** January 15, 2004; Project 1400453 - Toronto  
Issued by Ken McDowell, C.E.T.  
Report Reissued  
Replaced Attachments 5, 12, 13, 14

Contents: Certificate of Compliance - Pages 1 of 2  
Supplement to Certificate of Compliance - Page 1  
Description and Tests - Pages 1 to 14  
Attachments – Atts 1 to 77 contained in file 1181352att.pdf

## PRODUCTS

### PART A: CLASS 3435 02 - EMERGENCY LIGHTING EQUIPMENT - Unit Equipment – Performance

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At suffix may be used to designate Automatic Test option, L suffix for laser option.

<u>Model</u>	<u>Input (Volt/Hertz/Amp)</u>	<u>Output(Volt/Watts/Time base)</u>
LA 2 5	120V/60Hz/0.05A	6V dc/10W/120 min
LA 2 10	120V/60Hz/0.05A	6V dc/21W/30 min
LA 2 5	347V/60Hz/0.02A	6V dc/10W/120 min
LA 2 10	347V/60Hz/0.02A	6V dc/21W/30 min
8213	347V/60Hz/0.02A	6V dc/21W/30 min
8214	347V/60Hz/0.02A	6V dc/21W/30 min; with AT option
8215	347V/60Hz/0.02A	6V dc/21W/30 min; with AT and laser option

(\*)Note: For wet locations applications, the instruction manual shall contain mounting instructions that limit mounting options to side wall installation only, with the side wall conduit opening facing the ceiling.

Emergency lighting units, Series ECCO LUNA, suitable for damp or wet locations, with optional low power laser path marking device. At suffix may be used to designate Automatic Test option, L suffix for laser option.

### ECCO LUNA SERIES:

<u>Model</u>	<u>Input (Volt/Hertz/Amp)</u>	<u>Output(Volt/Watts/Time base)</u>
COLA 2 10	120V/60Hz/0.05A	6V dc/36W/30 min
COLA 2 10	347V/60Hz/0.02A	6V dc/36W/30min

The test report shall not be reproduced, except in full, without the approval of CSA International.

Remote Lamps Units: 6V, or 12V or 24V. 2 lamps only with max wattage ;20 watts ea. ( no battery or charger in enclosure) Series RLAXx where xx indicates the wattage of 5 or 10W per lamp.

**APPLICABLE REQUIREMENTS**

CSA C22.2 No 141-M1985 - Unit Equipment for Emergency Lighting

**PART B:**

CLASS 3435 02 - EMERGENCY LIGHTING EQUIPMENT - Unit Equipment – Performance

CLASS 3435 82 - EMERGENCY LIGHTING EQUIPMENT - Unit Equipment – Performance – Certified to US standards

Emergency lighting units, Series ECCO LUNA EL 2-8, suitable for dry locations only with the C US indicator or Suitable for damp or wet locations when marked with the CSA Monogram only, with optional low power laser path marking device. At suffix may be used to designate Automatic Test option, L suffix for laser option.

<u>Model</u>	<u>Input (Volt/Hertz/Amp)</u>	<u>Output(Volt/Watts/Time base)</u>
EL28-SE-UNV	120V or 277 V/60 Hz/0.05A max.	6V dc/16 W/90 minutes

Emergency lighting units, Series LUNA, suitable for damp or wet locations, with optional low power laser path marking device. Time base 90 minutes with 2 - 5 watt lamps. At suffix may be used to designate Automatic Test option, L suffix for laser option.

<u>Model</u>	<u>Input (Volt/Hertz/Amp)</u>	<u>Output(Volt/Watts/Time base)</u>
LA25SE/US	120V, 60 Hz/0.046A max	6V dc/10 W/90 minutes
LA25SE/US2	277 V, 60Hz/0.019A max	6V dc/10W/90 minutes

**APPLICABLE REQUIREMENTS**

CSA C22.2 No 141-M1985 - Unit Equipment for Emergency Lighting  
EMERGENCY LIGHTING AND POWER EQUIPMENT - UL924 (8<sup>th</sup> edition – 2001)

## MARKINGS

The following marking details with letters at least 3mm high appear where readily visible after installation in a permanent manner on the product:

- CSA Mark, or CSA Mark with C-US indicator, as applicable; submittor's name or logo or Master Contract number "187981"
- Model number, catalogue number or any other designation type;
- Complete electrical ratings that include the following items: Input voltage, frequency and amperes; Output voltage (i.e.: the nominal voltage of the battery) and Output wattage.
- Time Base for rating
- The serial number of the unit
- Complete installation instructions
- The following marking shall appear close to the CSA Mark **"UNIT EQUIPMENT-CERTIFIED TO CSA STANDARD C22.2 NO 141, AND RECOGNIZED BY SECTION 46,CANADIAN ELECTRICAL CODE,PART 1 AND APPAREIL INTEGRAL –CERTIFIE SELON LA NORME C22.2 NO 141 ET RECONNU PAR LA SECTION 46,DU CODE CANADIEN DE L'ELECTRICITE ,PARTIE 1**
- Products with CSA Monogram only: "Suitable for damp locations" or "Suitable for wet locations", as applicable. Not to be applied to products with CSA Monogram with C-US indicator.

### Additional Markings

- Unit equipment is provided with a list of the lamps that are suitable for use with it, including the catalogue numbers or similar identifying designation and a watts rating.
- A statement as follows or the equivalent:
  - "The lamps listed herein when used according to the instructions with this unit are in accordance with the requirements of CSA Standard C22.2, No 141 - Unit Equipment for Emergency Lighting".
- The month and year of manufacture shall be marked in a location accessible without the use of tools. A data code may be used.
- On lamp heads, the lamp replacement caution shall indicate the lamp designation, nominal voltage and wattage.
- Battery leads are identified with the indication " - " and " + ".

### Adjacent to the Battery

- **"REPLACE BATTERY EVERY \_\_\_\_\_ YEARS, COMMENCING \_\_\_\_\_"**
  - Note:** The number of years to be inserted depends on the design and life expectancy and the commencement date is to be inserted with the date of manufacture of the battery, plus the design life expectancy.
- The identification of the replacement battery type;

Additional markings for the units with laser option: "Class IIIa laser product" "Laser radiation – avoid direct eye exposure" plus Starburst symbol and CAUTION. Aperture label: "Avoid exposure – laser radiation is emitted from this aperture." Non-interlocked housing label: "Caution - laser radiation when open. Do not stare into beam".

Safety instructions as per UL924: Instruction manual and Safety instruction according to Sections 69 and 70 of Standard UL924 are provided.

## ALTERATIONS

None.

## FACTORY TESTS

Dielectric Voltage-Withstand Test: Not applicable due to plastic enclosure.

## DESCRIPTION

General:

### PART A

Units with LAT option incorporate a low power Class III laser as a supplementary path marking device. As per attached report, these units have been evaluated by UL to 21CFR, Subchapter J, 1040, Class IIIa laser product employing laser assembly of Class IIIa level of laser radiation.

Product description is contained in the attached UL report. Model Nos 8213, 8214, 8215 are the alternative designations of 2 x 10 W lamps model series.

Battery for CSA Certified models:

Sealed lead acid battery, Cat. No LC-R065P, by Panasonic, rated 6V 5.0 Ah, expected trickle life approx. 5 years at 20C. For more information about the battery, refer to pdf attachment Page No 64, which is not a part of the attached UL report. Refer to attachments for further details

### PART B

#### **Project 1354072:**

ECCO LUNA series added:

NOTE: Cat No EL28-SE-UNV may be marked with the CSA Monogram with the C US indicator when marked for Dry Location Only. The product may be marked with the CSA Monogram only when marked for use in Damp and Wet Locations

Ecco Luna Series batteries: B&B BP4.5 –6 as tested previously for file 1118962.  
Battery rated for up to 36 watts for 30 min discharge.

Charger (CB003), transformer and battery identical to those used in File 1118962 for Model C6-36.

Alternate PC Board material supplier is to be added:

UL recognized component (**E190688**). Accepted as component

Manufacturer: **Teampower Circuits Board Ltd**

Model: 10-102

Flammability Rating: UL 94V-0

Material: CEM-1

Thickness: 1.6mm

Discharge test data is contained in Report No 1118962As Test report No 5.

Construction for US Model: Ecco Luna Series, Cat No EL28-SE-UNV

Charger is Model CB003 as used in file 1118962.

Battery: UL Recognized Component (UL file BAZR2.MH19884) B&B BP4.5 –6 as per test results added under project 1354072, see test report for discharge to UL924, DRY LOCATIONS ONLY, for B&B battery BP4.5-6 .

Charger and battery combination also tested to the requirements of Std. 141 in report 187981, as stated above.

Transformer is model TR40 –102 E. Input 120/277V. (Transformer is mounted on circuit board)

Transformer is approved under ETL file J20021918.

Project 1400453: Added Cat No LA25SE/US and LA25SE/US2 which is similar to the LA 2 5 units previously certified and tested them for compliance to UL924 Edition 8, 2001.



**TEST REPORT**

Tests were performed as per CSA Standard C22.2, No 141-M1985 with satisfactory results.

**TEST TO CSA C22.2 141 TEST REPORT #1**  
**MODEL NO: LUNA AT-2X10 PLUS LASER**

TIME BASE:	30 MINUTES
INPUT A.C. VOLTAGE:	120V
OUTPUT D.C. VOLTAGE:	6V
OUTPUT D.C. WATTAGE:	20
TEST CONDUCTED BY:	TINO

**CLAUSE 6.3.2**  
**CLAUSE 6.4**  
**CLAUSE 6.4.2**

TABLE 4 TEMPERATURE MEASUREMENTS: TEMPERATURE RISE:  
**CLAUSE 6.6 LEAKAGE CURRENT:**  
**CLAUSE 6.6 DIELECTRIC STRENGTH:**

ALL THE ABOVE TESTS WERE CARRIED OUT AND PASSED OR RESULTS ARE CONTAINED IN THE CSA REPORT FILE #

**CLAUSE 6.8 SHORT TIME RECOVERY:**

DATE OF START OF DISCHARGE:	2-Aug-00	TIME:	2:00PM
DISCHARGE FOR 24 HRS.( OR UNTIL AFTER LVD OCCURS)			
DATE OF COMPLETION OF DISCHARGE:	3-Aug-00	TIME:	2:00PM
LVD OCCURRED DURING DISCHARGE.(DISCHARGE OCCURRED FOR 1 HR.)			
DATE OF START OF CHARGE:	3-Aug-00	TIME:	2:00PM
CHARGE FOR 24 HRS.			
DATE OF START OF DISCHARGE:	4-Aug-00	TIME:	2:00PM
BATTERY VOLTAGE AT 30 MIN:	AT 30 MIN	5.96	VOLTS
BATTERY VOLTAGE AT 60 MIN:	AT 60 MIN	5.57	VOLTS

**CLAUSE 6.9: CHARGING MEANS:**

INPUT VOLTAGE: 120 VOLTS  
DATE OF START OF CHARGE: 4-Aug-00 TIME: 3:00PM  
( CAN MAKE MEASUREMENT DURING 6.8 OR 6.10)  
FLOAT VOLTAGE: 6.8 VOLTS  
FLOAT CURRENT: AMPS

**CLAUSE 6.10: CYCLING**

**CYCLE 1:**

DATE OF START OF CHARGE: 7-Aug-00 TIME: 11:00AM  
DURATION OF CHARGE CYCLE: 47 HRS  
DATE OF START OF DISCHARGE: 9-Aug-00 TIME: 10:00AM  
DURATION OF DISCHARGE: 60 MIN

**CYCLE 2:**

DATE OF START OF CHARGE: 9-Aug-00 TIME: 11:00AM  
DURATION OF CHARGE CYCLE: 47 HRS  
DATE OF START OF DISCHARGE: 11-Aug-00 TIME: 10:00AM  
DURATION OF DISCHARGE: 60 MIN

**CYCLE 3:**

DATE OF START OF CHARGE: 14-Aug-00 TIME: 11:00AM  
DURATION OF CHARGE CYCLE: 47 HRS  
DATE OF START OF DISCHARGE: 16-Aug-00 TIME: 10:00AM  
DURATION OF DISCHARGE: 60 MIN

**CYCLE 4:**

DATE OF START OF CHARGE: 16-Aug-00 TIME: 11:00AM  
DURATION OF CHARGE CYCLE: 47 HRS  
DATE OF START OF DISCHARGE: 18-Aug-00 TIME: 10:00AM  
DURATION OF DISCHARGE: 60 MIN

**CYCLE 5:**

DATE OF START OF CHARGE: 21-Aug-00 TIME: 11:00AM  
DURATION OF CHARGE CYCLE: 47 HRS  
DATE OF START OF DISCHARGE: 23-Aug-00 TIME: 10:00AM  
DURATION OF DISCHARGE: 60 MIN  
BATTERY VOLTAGE AT 30 MIN: 5.97 VOLTS

CYCLE 6: (WITNESSED TEST)

DATE OF START OF CHARGE: 23-Aug-00 TIME: 11:00AM  
DURATION OF CHARGE CYCLE: 47 HRS  
DATE OF START OF DISCHARGE: 25-Aug-00 TIME: 10:00AM  
DURATION OF DISCHARGE: 60 MIN  
BATTERY VOLTAGE AT 30 MIN 5.96 VOLTS

RESULTS OF CYCLING TEST: OK

CLAUSE 6.11:  
MINIMUM NORMAL VOLTAGE:

INPUT VOLTAGE: 108 VOLTS  
DATE OF START OF CHARGE: 28-Aug-00 TIME: 11:00AM  
DURATION OF CHARGE CYCLE: 47 HRS. (MAX 72 HRS)

DATE OF START OF DISCHARGE: 30-Aug-00 TIME: 10:00AM  
DURATION OF DISCHARGE: 30 MIN  
BATTERY AT 120 MIN 5.96 VOLTS  
VOLTAGE AT 30 MIN

RESULTS OF TEST: OK

CLAUSE 6.12:  
MINIMUM NORMAL TEMPERATURE:

(WITNESSED TEST)  
AMBIENT TEMPERATURE : 10 DEGREES C

DATE OF START OF CHARGE: 6-Sep-00 TIME: 11:00AM  
DURATION OF CHARGE CYCLE: 47 HRS. (MAX 72 HRS)

DATE OF START OF DISCHARGE: 8-Sep-00 TIME: 10:00AM  
DURATION OF DISCHARGE: 30 MIN  
BATTERY AT 120 MIN 5.99 VOLTS  
VOLTAGE AT 30 MIN

RESULTS OF TEST: OK

**CLAUSE 6.13**  
**MINIMUM EXTREME VOLTAGE:**

INPUT VOLTAGE:	<input type="text" value="104"/>	VOLTS	
DATE OF START OF CHARGE:	<input type="text" value="30-Aug-00"/>	TIME:	<input type="text" value="11:00AM"/>
DURATION OF CHARGE CYCLE:	<input type="text" value="47"/>	HRS.	(MAX 72 HRS)
DATE OF START OF DISCHARGE:	<input type="text" value="1-Sep-00"/>	TIME:	<input type="text" value="10:00AM"/>
DURATION OF DISCHARGE:	<input type="text" value="27 MIN"/>		
BATTERY VOLTAGE AT 27 MIN	<input type="text" value="6.02"/>	VOLTS	
RESULTS OF TEST:	<input type="text" value="OK"/>		
RESULTS OF OVERALL PERFORMANCE TESTS:	<input type="text" value="OK"/>		

**LUXNET TEST TO CSA C22.2 141      TEST REPORT #1**  
**MODEL NO:      LUNA-2X5 PLUS LASER**

TIME BASE:	<input type="text" value="120"/>	MINUTE
INPUT A.C. VOLTAGE:	<input type="text" value="120"/>	VOLTS
OUTPUT D.C. VOLTAGE:	<input type="text" value="6"/>	VOLTS
OUTPUT D.C. WATTAGE:	<input type="text" value="10"/>	
TEST CONDUCTED BY:	<input type="text" value="TINO"/>	

**CLAUSE 6.3.2**  
**CLAUSE 6.4**  
**CLAUSE 6.4.2**

TABLE 4 TEMPERATURE MEASUREMENTS:      TEMPERATURE RISE:  
**CLAUSE 6.6 LEAKAGE CURRENT:**  
**CLAUSE 6.6 DIELECTRIC**  
**STRENGTH:**

ALL THE ABOVE TESTS WERE CARRIED OUT AND PASSED OR RESULTS ARE  
CONTAINED  
IN THE CSA REPORT FILE #

**CLAUSE 6.8 SHORT TIME RECOVERY:**

DATE OF START OF DISCHARGE:  TIME:   
DISCHARGE FOR 24 HRS.(OR UNTIL AFTER LVD OCCURS)  
DATE OF COMPLETION OF DISCHARGE:  TIME:   
LVD OCCURRED DURING DISCHARGE.(DISCHARGE OCCURRED FOR 1 HR.)  
DATE OF START OF CHARGE:  TIME:   
CHARGE FOR 24 HRS.  
DATE OF START OF DISCHARGE:  TIME:   
BATTERY AT 120 MIN  VOLTS  
VOLTAGE AT 30 MIN:  
BATTERY AT 240 MIN  VOLTS  
VOLTAGE AT 60 MIN:

**CLAUSE 6.9:CHARGING MEANS:**

INPUT VOLTAGE:  VOLTS  
DATE OF START OF CHARGE:  TIME:   
( CAN MAKE MEASUREMENT DURING 6.8 OR 6.10)  
FLOAT VOLTAGE:  VOLTS  
FLOAT CURRENT:  AMPS

**CLAUSE 6.10 : CYCLING**

CYCLE 1:

DATE OF START OF CHARGE:  TIME:   
DURATION OF CHARGE CYCLE:  HRS  
DATE OF START OF DISCHARGE:  TIME:   
DURATION OF DISCHARGE: 240 MIN

CYCLE 2:

DATE OF START OF CHARGE:  TIME:   
DURATION OF CHARGE CYCLE:  HRS  
DATE OF START OF DISCHARGE:  TIME:   
DURATION OF DISCHARGE: 240 MIN

CYCLE 3:

DATE OF START OF CHARGE:  TIME:   
DURATION OF CHARGE CYCLE:  HRS  
DATE OF START OF DISCHARGE:  TIME:   
DURATION OF DISCHARGE: 240 MIN

CYCLE 4:

DATE OF START OF CHARGE: 16-Aug-00 TIME: 3:00PM  
DURATION OF CHARGE CYCLE: 44 HRS  
DATE OF START OF DISCHARGE: 18-Aug-00 TIME: 11:00AM  
DURATION OF DISCHARGE: 240 MIN

CYCLE 5:

DATE OF START OF CHARGE: 21-Aug-00 TIME: 3:00PM  
DURATION OF CHARGE CYCLE: 44 HRS  
DATE OF START OF DISCHARGE: 23-Aug-00 TIME: 11:00AM  
DURATION OF DISCHARGE: 240 MIN  
BATTERY VOLTAGE AT 30 MIN 5.74 VOLTS

CYCLE 6: (WITNESSED TEST)

DATE OF START OF CHARGE: 23-Aug-00 TIME: 3:00PM  
DURATION OF CHARGE CYCLE: 44 HRS  
DATE OF START OF DISCHARGE: 25-Aug-00 TIME: 11:00AM  
DURATION OF DISCHARGE: 240 MIN  
BATTERY VOLTAGE AT 30 MIN 5.74 VOLTS

RESULTS OF CYCLING TEST: PASS

**CLAUSE 6.11:**  
**MINIMUM NORMAL VOLTAGE:**

INPUT VOLTAGE: 108 VOLTS  
DATE OF START OF CHARGE: 28-Aug-00 TIME: 3:00PM  
DURATION OF CHARGE CYCLE: 44 HRS. (MAX 72 HRS)

DATE OF START OF DISCHARGE: 30-Aug-00 TIME: 11:00AM  
DURATION OF DISCHARGE: 120 MIN  
BATTERY AT 120 MIN 5.73 VOLTS  
VOLTAGE AT 30 MIN

RESULTS OF TEST: PASS

**CLAUSE 6.12:**

**MINIMUM NORMAL TEMPERATURE:**

(WITNESSED TEST)

AMBIENT TEMPERATURE: 10 DEGREES C

DATE OF START OF CHARGE:  TIME:   
DURATION OF CHARGE CYCLE:  HRS. (MAX 72 HRS)

DATE OF START OF DISCHARGE:  TIME:   
DURATION OF DISCHARGE: 120 MIN

BATTERY AT 120 MIN  VOLTS  
VOLTAGE AT 30 MIN

RESULTS OF TEST:

**CLAUSE 6.13**

**MINIMUM EXTREME VOLTAGE:**

INPUT VOLTAGE:  VOLTS  
DATE OF START OF CHARGE:  TIME:   
DURATION OF CHARGE CYCLE:  HRS. (MAX 72 HRS)

DATE OF START OF DISCHARGE:  TIME:   
DURATION OF DISCHARGE: 108MIN

BATTERY VOLTAGE AT 27 MIN  VOLTS

RESULTS OF TEST:

RESULTS OF OVERALL PERFORMANCE TESTS:

Light output test, Std. C22.2 No 141:

5 watt lamps:

6V:36.40 lux

5v: 24.58 lux

10 watt lamps:

6V 286.1 lux

5V 159.9 lux

The above measurements were taken at a constant distance for each lamp type.

The results meet the 50% requirement: satisfactory.

Refer to the attachment file for the following UL test results to the requirements of UL 924 std.:

- current input test
- environmental conditioning, 24h at 40C, 88% rh
- normal operation test
- battery discharge test with LC-R065PU1 Panasonic battery
- temperature test
- overvoltage test
- undervoltage test
- dielectric voltage withstand test, condition A [damp/wet location]
- environmental conditioning, condition B, 5C
- normal operation test, condition B
- battery discharge test, condition B, battery as above,
- overvoltage test, condition B
- undervoltage test, condition B
- battery compartment ventilation test, battery as above
- voltage surge test ( 10 x 3 kV, 10 x 6 kV)
- component breakdown test
- low voltage/limited energy test
- security of knockouts test
- gasket conditioning.
- mold stress relief test
- cold conditioning impact test
- conduit connection pullout test
- conduit connection bending test
- dielectric withstand test for transformers
- induced potential test for transformers
- transformer burnout test
- normal operation test with the self test diagnostic option
- low voltage/limited energy test
- conductor secureness test



Tests added under Project 1354072:

**BEGHELLI TEST TO UL924**  
**MODEL NO: ECCOLUNA SERIES MODEL EL2-8**

**SECTION: 47.7**

**BATTERY DISCHARGE TEST**

**MAXLOAD: 2 X 8W**

**BATT: BP5-6 (5V 6 AH)**

a) DATE OF START OF CHARGE: CHARGE FOR 24 HRS.	13-Jun-02	TIME: 10:30AM
c) FLOAT VOLTAGE:	6.84 V	
d) DATE OF START OF DISCHARGE: BATTERY VOLTAGE AT 90MIN: 87.5 PERCENT OF THE RATED BATTERY VOLTAGE:	14-Jun-02 5.6 V 5.25 V	TIME: 10:30AM
e) DATE OF START OF CHARGE: CHARGE FOR 24 HRS.	14-Jun-02	TIME: 12:00
f) DATE OF START OF DISCHARGE: BATTERY VOLTAGE AT 60MIN:	15-Jun-02 5.90V	TIME: 12:00
g) DATE OF START OF CHARGE: CHARGE FOR 48 HRS.	15-Jun-02	TIME: 1:30PM
h) DATE OF START OF DISCHARGE:	17-Jun-02	TIME: 1:30PM
DISCHARGE FOR 24HRS. C/W MAXIMUM RATED LOAD		
j) DATE OF START OF CHARGE: CHARGE FOR 24 HRS.	18-Jun-02	TIME: 1:30PM
j) DATE OF START OF DISCHARGE: BATTERY VOLTAGE AT 90MIN: 87.5 PERCENT OF THE RATED BATTERY VOLTAGE:	19-Jun-02 5.47 V 5.25 V	TIME: 1:30PM
RESULT OF TEST:	PASS	

Project 1400453: The following additional tests were conducted by CSA to ensure compliance with UL924, (8<sup>th</sup> edition - 2001). Refer to test results on file at CSA.

Water Shield Impact Test section SD 4.10  
Rain Test section SD 4.10  
Minimum Light Output Test section SH3  
Five Inch Flame Test C22.2 No 250.0 clause 13.3