



Chirag Patel
CRESTRON ELECTRONICS INC
15 VOLVO DR
ROCKLEIGH NJ 07647-2507

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Subject: **Procedure And/Or Report Material**

The following material resulting from the investigation under the above numbers is enclosed.

Issue

<u>Date</u>	<u>Vol</u>	<u>Sec</u>	<u>Pages</u>	<u>Revised Date</u>
2017/12/14	X1	A54	Revised Proc/Rpt Section	

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Please file revised pages and illustrations in place of material of like identity. New material should be filed in its proper numerical order.

NOTE: Follow-Up Service Procedure revisions DO NOT include Cover Pages, Test Records and Conclusion Pages. Report revisions DO NOT include Authorization Pages, Indices, Section General Pages and Appendixes.

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MEL File

UL TEST REPORT AND PROCEDURE

Standard:	UL 60950-1, 2nd Edition, 2014-10-14 (Information Technology Equipment - Safety - Part 1: General Requirements) CAN/CSA C22.2 No. 60950-1-07, 2nd Edition, 2014-10 (Information Technology Equipment - Safety - Part 1: General Requirements)
Certification Type:	Listing
CCN:	NWGQ, NWGQ7 (Information Technology Equipment Including Electrical Business Equipment)
Product:	Power over DM (PoDM)
Model:	DM-PSU-16-PLUS, DM-PSU-8-PLUS
Rating:	100-240 Vac, 3.3-1.5 A, 50/60 Hz (model DM-PSU-8-PLUS) 100-240 Vac, 6.6-2.7 A, 50/60 Hz (model DM-PSU-16-PLUS) Output Per Port: 30 Watts max
Applicant Name and Address:	CRESTRON ELECTRONICS INC 15 VOLVO DR ROCKLEIGH NJ 07647-2507 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.

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Prepared by: Jeff Smith / Project Handler

Reviewed by: Lesley Green / Final Reviewer

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 Power Over DM (PoDM), models DM-PSU-8-PLUS and DM-PSU-16-PLUS, are Power over DM units for the powering of Digital Media devices in networking applications. Model DM-PSU-16-PLUS provides up to 16 output power ports and model DM-PSU-8-PLUS provides up to 8 ports, each output port is capable of supplying max 30 Watts to handle PoDM devices. Connections are made using ordinary CAT5e cables terminated with RJ-45 connectors. Front panel LEDs indicate when each port is supplying power to a PoDM powered device. The units are provided with internal, separately certified power supplies.

The unit is intended to be connected only to PoDM networks without routing to the outside plant. The unit is intended to be rack mountable or placed on a table top.

Model Differences

Model DM-PSU-16-PLUS is similar to model DM-PSU-8-PLUS except that DM-PSU-8-PLUS supports 8 PoDM output ports and DM-PSU-16-PLUS supports 16 PoDM output ports. Additional differences as noted in critical component list.

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)
- Considered current rating of protective device as part of the building installation (A) : 20A
- Pollution degree (PD) : PD 2
- IP protection class : IP X0
- Altitude of operation (m) : Less than 2000 m
- Altitude of test laboratory (m) : Less than 2000 m

- Mass of equipment (kg) : 2.4 kg
- The product was submitted and evaluated for use at the maximum ambient temperature (Tma) 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 product was investigated to the following additional standards: EN 60950-1:2006 + A11:2009 + A1:2010 + A12:2011 + A2:2013 (which includes all European national differences, including those specified in this test report).

Additional Information

Correction: The original report was corrected in order to:

- add missed alternate Fuse as Interchangeable in critical component list.

No testing was performed as a result of the Amendment. Per the previously conducted testing and the review of product technical documentation including photos, schematics, wiring diagrams and similar, it has been determined that the product continues to comply with the standard.

Additional Standards

The product fulfills the requirements of: EN 60950-1:2006 + A1:2010 + A11:2009 + A12:2011 + A2:2013

Markings and instructions

Clause Title	Marking or Instruction Details
Safety Instructions - Rack Mount	<p>"Rack Mount Instructions - The following or similar rack-mount instructions are included with the installation instructions:</p> <p>A) Elevated Operating Ambient - If installed in a closed or multi-unit rack assembly, the operating ambient temperature of the rack environment may be greater than room ambient. Therefore, consideration should be given to installing the equipment in an environment compatible with the maximum ambient temperature (Tma) specified by the manufacturer.</p> <p>B) Reduced Air Flow - Installation of the equipment in a rack should be such that the amount of air flow required for safe operation of the equipment is not compromised.</p> <p>C) Mechanical Loading - Mounting of the equipment in the rack should be such that a hazardous condition is not achieved due to uneven mechanical loading.</p> <p>D) Circuit Overloading - Consideration should be given to the connection of the equipment to the supply circuit and the effect that overloading of the circuits might have on overcurrent protection and supply wiring. Appropriate consideration of equipment nameplate ratings should be used when addressing this concern.</p> <p>E) Reliable Earthing - Reliable earthing of rack-mounted equipment should be maintained. Particular attention should be given to supply connections other than direct connections to the branch circuit (e.g. use of power strips)."</p>
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
Safety Instructions - PoDM Networks	The following or similar instructions are included in the installation instructions: "PoDM interfaces connected to these ports are for intra-building use only and should not be connected to lines that run outside of the building in which the PoDM switch is located."
Special Instructions to UL Representative N/A	

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	
N/A	-	-	-	-	-	-	
<u>Earthing Continuity Test Exemptions - This test is not required for the following models:</u>							
N/A							
<u>Electric Strength Test Exemptions - This test is not required for the following models:</u>							
N/A							
<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>							
N/A							
<u>Sample and Test Specifics for Follow-Up Tests at UL</u>							
Model	Component	Material	Test	Sample(s)	Test Specifics		
N/A	-	-	-	-	-		

1.5.1	TABLE: list of critical components					Pass
Object/part or Description	Manufacturer/ trademark	type/model	technical data	Product Category CCN(s)	Required Marks of Conformity	Supplement ID
Enclosure (DM-PSU-8-PLUS model)	Interchangeable	Interchangeable	Steel. Approx. 384 mm length, 430 mm wide, 45 mm height. Approx. 1.0 mm min thickness. Holes - 105 (Right Side), 126 (Left Side) measuring 5 mm in diameter.	-	-	
Enclosure (DM-PSU-16-PLUS model)	Interchangeable	Interchangeable	Steel. Approx. 38.4 length, 43.cm wide, 4.5 cm height. Approx. 1.0 mm min thickness. Holes - 160 (Right Side), 103 (Left Side) measuring 5 mm in diameter.	-	-	
Appliance Inlet Filter (DM-PSU-8-PLUS model)	Schurter	5120 Series	Rated 125 / 250 Vac, 4 A, 50 / 60 Hz	FOKY2	UR	
Appliance Inlet Filter (DM-PSU-16-PLUS model)	Schurter	5120 Series	Rated 125 / 250 Vac, 10 A, 50 / 60 Hz	FOKY2	UR	
Power Supply (DM-PSU-8-PLUS model)	Mean Well Enterprises Co., Ltd.	RSP-500-48	Input: 100-240 Vac, 5.9 A, 50/60 Hz. Output: 48 VDC, 10.5 A	QQGQ2	UR	
Power Supply (DM-PSU-16-PLUS model)	Mean Well Enterprises Co., Ltd.	RSP-750-48	Input: 100-240 Vac, 10 A, 50/60 Hz. Output: 48 VDC, 15.7 A	QQGQ2	UR	
Internal Wiring - primary	Interchangeable	Interchangeable	AWM, insulated with FEP, PTFE, PVC, TFE, neoprene, polyimide or marked VW-1; min 300 V, 105°C, 18 AWG.	AVLV2	UR	
Internal Wiring - SELV	Interchangeable	Interchangeable	AWM, insulated with FEP, PTFE, PVC, TFE, neoprene, polyimide or marked VW-1; min 30 V, 80°C, 28 AWG min.	AVLV2	UR	
Insulating Tubing /	Interchangeable	Interchangeable	FEP, PTFE, PVC, TFE,	UZFT2 or YDPU2	UR	

Sleeving			neoprene, polyimide or marked VW-1; 80°C, 300V	or YDRY2 or YDTU2		
PWBs	Interchangeable	Interchangeable	Rated min. V-1, 105°C.	ZPMV2	UR	
Non-Operator Replaceable Fuses (DM-PSU-8-PLUS model - F3-F10) (DM-PSU-16-PLUS model - F3-F18)	Littelfuse	462 Series	Rated 250 V, 1 A	JDYX2	UR	
Non-Operator Replaceable Fuses (DM-PSU-8-PLUS model - F3-F10) (DM-PSU-16-PLUS model - F3-F18) (alternate)	Interchangeable	Interchangeable	Rated 250 V, 1 A	JDYX2	UR	
Modular Jacks	Interchangeable	Interchangeable	RJ45 type	DUXR or DUDR2	UL / UR	
Connectors – primary	Interchangeable	Interchangeable	Rated min. 250 V.	ECBT2	UR	
Connectors – SELV	Interchangeable	Interchangeable	-	ECBT2	UR	
Connectors – SELV (alternate)	Interchangeable	Interchangeable	Copper alloy pins housed in bodies of R/C (QMFZ2), min V-2.	QMFZ2	UR	
Protective Bonding Connection	Interchangeable	Interchangeable	Min 18 AWG. One side terminates in a quick disconnect terminal and other side terminates in a closed-loop connector and secured to metal chassis by metal stud and nut. An IEC 60417-5017 symbol may be marked adjacent to grounding stud.	-	-	
Power Supply Cord - DM-PSU-8-PLUS model	Interchangeable	Interchangeable	SVT or SJT Type, 18 AWG, minimum 120 V, minimum 3 A, maximum 4.5 m long. One end with NEMA 5-15P. Other end with appliance coupler.	ZJCZ or ELBZ	UL	
Power Supply Cord - DM-PSU-16-PLUS model	Interchangeable	Interchangeable	SVT or SJT Type, 16 AWG, minimum 120 V, minimum 6 A, maximum 4.5 m long. One end	ZJCZ or ELBZ	UL	

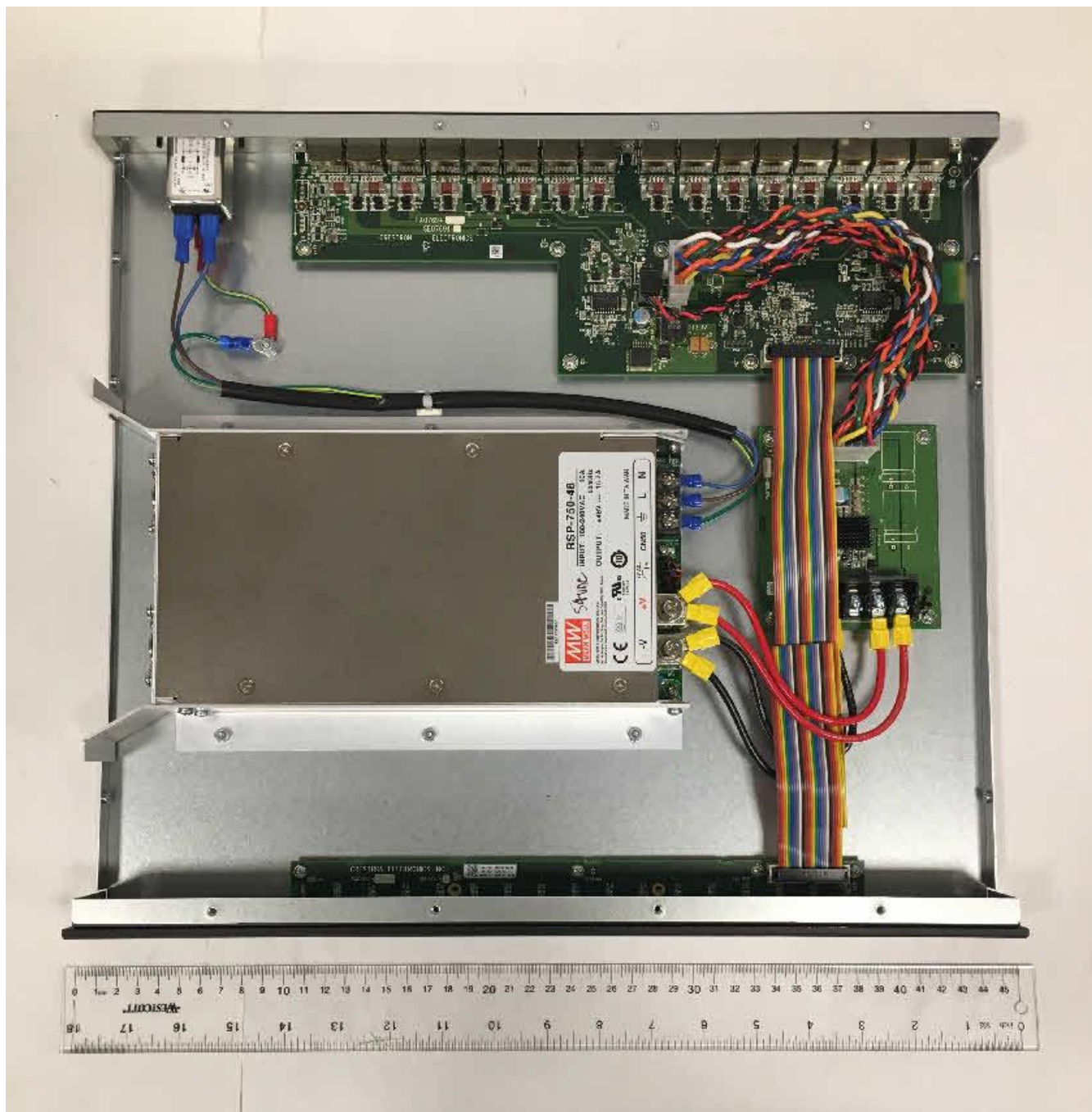
			with NEMA 5-15P. Other end with appliance coupler.			
Label	Avery Dennison Corp. Fasson Roll North America Division	TC/S-333	Min. 60°C. Suitable for the application to enclosure.	PGDQ2	UR	
Label (alternate)	Interchangeable	Interchangeable	Min. 60°C. Suitable for the application to enclosure	PGDQ2 or PGJ12	UR	

Enclosures

<u>Type</u>	<u>Supplement Id</u>	<u>Description</u>
Photographs	3-01	DM-PSU-16-PLUS - Front / Side / Top View
Photographs	3-02	DM-PSU-16-PLUS - Rear / Side / Top View
Photographs	3-03	DM-PSU-16-PLUS - Internal View
Photographs	3-04	DM-PSU-8-PLUS - Front / Side / Top View
Photographs	3-05	DM-PSU-8-PLUS - Rear / Side / Top View
Photographs	3-06	DM-PSU-8-PLUS - Internal View
Miscellaneous	7-01	Letter of Assurance

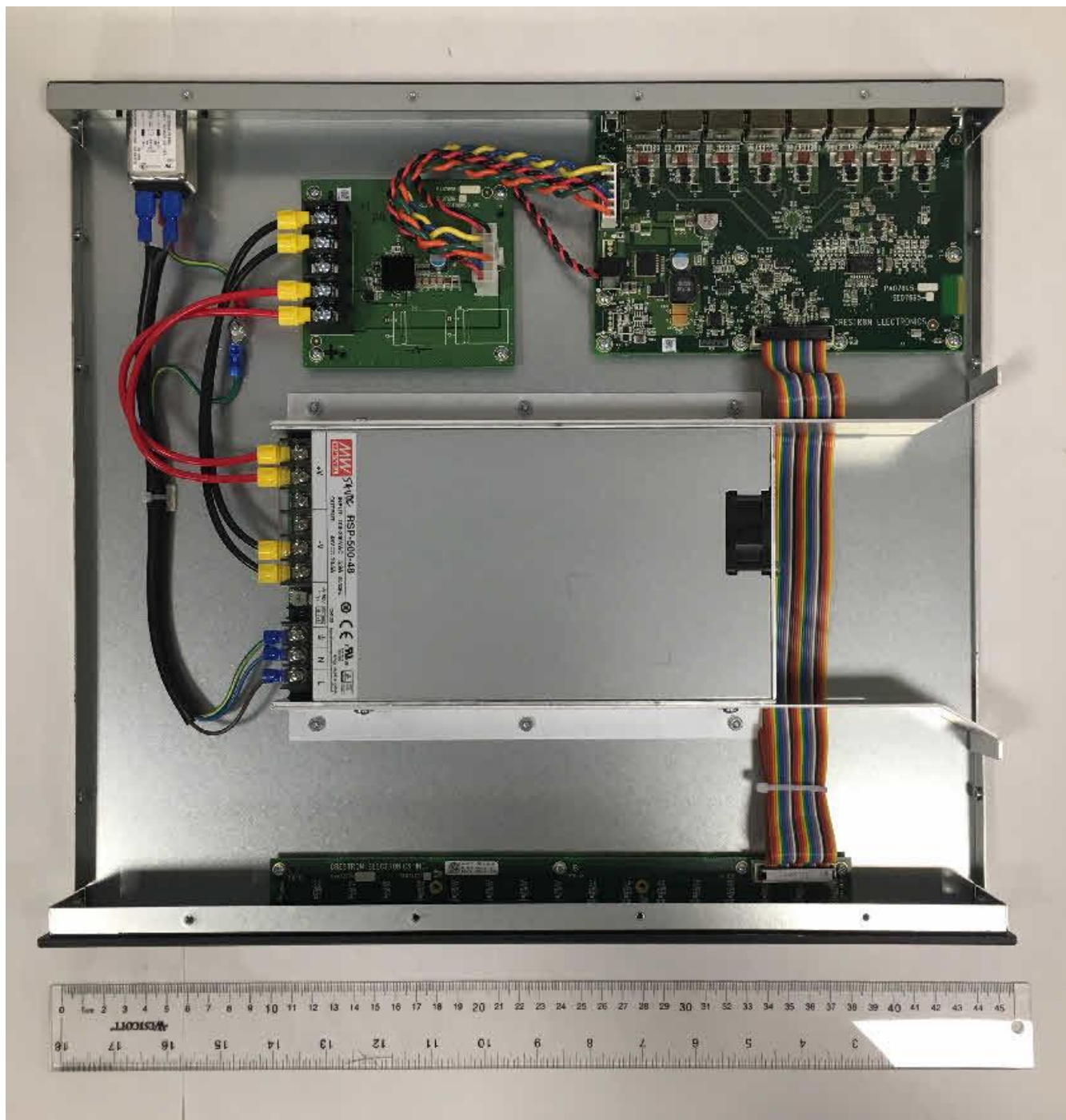














LETTER OF ASSURANCE

8/3/16

UL LLC
12 Laboratory Drive
Research Triangle Park, NC 27709
To: Jeff Smith
Subject: National Differences
Dear: Jeff Smith

This document confirms that Crestron Electronics Inc. will provide the following items needed to the accepting NCB along with the IT/CB test report.

Markings and Safety Instructions - All required safety instructions and markings in the language suitable for countries listed in the attached report will be provided at the time the IT/CB test report is submitted to the accepting NCB.

EMC Test Report - Where detailed in the National Differences, an EMC Test report or Declaration of Conformity (documentation determined by accepting NCB) will accompany this product when sent to countries that require EMC test results as part of their certification process.

Multiple Factories - This confirms that samples submitted for certification are representative of the products from each factory. The factories are noted in this CB test Report.

ROHS Directive - We have been advised that we will need to provide evidence of compliance with ROHS directive 2002/95/EC. The NCB may obtain this information from that Crestron electronics Inc. upon request.

Power Supply Cords and Plugs - All power cords and plug assemblies provided with the unit will be certified and suitable for use in the countries listed in the attached CB test report.

Production Line Tests - Production line electric strength and polarity verification testing will be carried out on 100 percent of units in accordance Annex N.

LEDs - All LEDs operate in the 400-710nm, visible spectrum, and are used as indicators only.

Handwritten signature
Chirag Patel
Compliance Engineer

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SINGAPORE MELBOURNE

Test Record No. 1

The manufacturer submitted representative production samples of Power Over DM (PoDM) models, DM-PSU-8-PLUS and DM-PSU-16-PLUS. The following testing was deemed necessary.

The following tests were conducted:

Test	Testing Location/Comments
End Product Reference Page	
Input: Single-Phase (1.6.2)	
Capacitance Discharge (2.1.1.7)	
Limited Power Source Measurements (2.5)	
Protective Bonding II (2.6.3.4, 2.6.1)	
Humidity (2.9.1, 2.9.2, 5.2.2)	
Steady Force (4.2.1 - 4.2.4)	
Impact (4.2.5, 4.2.1, Part 22 10.2)	
Heating (4.5.1, 1.4.12, 1.4.13)	
Touch Current (Single-Phase; TN/TT System) (5.1, Annex D)	
Electric Strength (5.2.2)	
Abnormal Operation (5.3.1 - 5.3.9)	

Test results are valid only for the tested equipment. These tests are considered representative of the products covered by this Test Report. The test methods and results of the above tests have been reviewed and found to be in accordance with the requirements in the Standard(s) referenced at the beginning of this Test Report.

The following tests were waived:

Test	Rationale for Waiving
Durability of Marking (1.7.11)	Evaluated as part of E174344-A27 investigation.

The following supplements are provided as a part of this Test Record. NOTE: These supplements are only available to the Applicant via the CDA system.

Type	Supplement Id	Description
Datasheet	2-01	Datasheets 1
Datasheet	2-02	Datasheet 2

Issue Date: 2017-12-14

Page 2 of 2

Report Reference #

E174344-A54-UL

Revision Date: 2018-01-17

Test Record

Test Record No. 2

No testing was deemed necessary in order to add alternate Fuse as Interchangeable in critical component list based on the results of previous investigation.