

## TUV – Rheinland NRTL Certification

By Jeffrey Haney

### Abstract

This paper describes use of the TUV-Rheinland NRTL mark in lieu of the UL and C-UL (or CSA) marks for the North American Market (NAM). This paper is limited in scope and should be considered an adjunct to APC Application Note #30, “InfraStruXure Agency Listings”.

## Introduction

In order to best serve the needs of our customers, APC makes it a practice to secure the appropriate regulatory certifications for all of our products. In the case of North America, this means certification from a Nationally Recognized Testing Laboratory for the United States and from an Accredited Laboratory for Canada. By securing such approvals and placing the appropriate marks on our products, we greatly ease the process of installation, inspection, and operation of InfraStruXure products. The necessity for and benefits of these certifications are detailed in APC Application Note # 30, so we will not detail them here. In this document, we will discuss TUV-Rheinland NRTL Certifications.

## Background

Historically speaking, prior to the 1980's, there was really only one viable source for product safety certifications in the U.S. – Underwriters Laboratories (UL). The same was also true of Canada, where the Canadian Standards Association (CSA) was the *de facto* standard. However, this situation changed when a number of other testing organizations (e.g. – Edison Testing Laboratories (ETL), MET Laboratories, et. al.) began political / legal actions claiming that UL had been granted an unfair monopoly on the product safety testing business. This claim was based on, among other things, the fact that the National Electric Code (NEC) written by the National Fire Protection Association (NFPA) specifically required that components, switches, etc., used in building wiring be “UL Listed” for their intended purpose. The other laboratories claimed that this discouraged manufacturers of electrical products from utilizing the services of their own laboratories for certifying their products as safe to install and operate in the U.S.

After much consideration it was decided that the Occupation Safety and Health Administration (OSHA) would be tasked with investigating and certifying a new class of laboratory called a Nationally Recognized Testing Laboratory (NRTL). OSHA developed a number of requirements that such laboratories would have to meet in order to be certified and opened up the

process to applicants. Basically, the new rules that OSHA implemented required these labs / agencies to mimic much of what UL had put into place many years before, for example: quarterly follow-up inspections at the factory. With the new rules in place, a number of labs applied for and received accreditation: CSA, ETL, and Met Labs were all early additions.

As a result of CSA's entry into the American market, UL sought to obtain similar reciprocal accreditation for Canada. The Standards Council of Canada (SCC) set up an evaluation system and UL was soon accredited to offer their "C-UL" Mark for Canada in lieu of the familiar CSA Mark. As in the U.S., other laboratories soon followed suit and were accredited by the SCC.

## NRTL Marks Today

As a result of the NRTL accreditation process, there are now eighteen organizations which are certified as Nationally Recognized Testing Laboratories. Some of these are less-well-known organizations and may specialize in just a few particular categories of equipment. Others, like UL or CSA, are very well known and are authorized to offer product certifications across the entire spectrum of electrical, marine, and building products.

TUV-Rheinland (TUV-R) is a well-known and long-established testing and certification agency that has its world headquarters in Cologne, Germany. Its North American subdivision, TUV-Rheinland of North America (TUV-R (NA)) is headquartered in Newtown, Connecticut. TUV-Rheinland has been in business in Germany and all over the world for over 130 years. The North American division has been in place since 1980. Unlike UL and CSA, TUV-R (NA) specializes almost exclusively in electrical safety and, as such, is well-positioned to provide tried and tested electrical safety certification expertise. The engineers at TUV-R (NA) are well-versed in the various safety standards and codes that apply to APC equipment for both North America and the international market. Consequently, we believe that the TUV-R NRTL Mark (for both the U.S. and Canada) provides both APC and our customers with the same level of confidence in the safety of our equipment as the marks offered by UL or CSA, for example.

Of course, the acceptability of any NRTL mark in any given installation is at the discretion of the local Authority Having Jurisdiction (AHJ). The AHJ is usually embodied by the local electrical inspector. In years past, the AHJs often questioned the presence of any NRTL mark other than UL. However, as time has passed and the AHJs have become more familiar with the NRTL scheme, such incidents have rapidly diminished to inconsequential levels. This is especially true in the area of Information Technology equipment where the manufacturers and installers of such equipment are better educated in the area of product safety compliance and the NRTL scheme. They have, along with the various NRTLs, been actively educating the AHJ community with regard to the suitability of the various NRTL marks. In the case of TUV-R, they have aggressively promoted their mark to both AHJs and large retailers so that, to date, they have never had a mark rejected by an AHJ.

## What Standard Does APC Test To?

APC products sold in North America are tested and certified to UL/CSA 60950-1 -Information Technology Equipment – Safety – Part 1:

General Requirements:

Units intended for the EU and world markets are tested and certified to

IEC/EN 60950-1 – Information Technology Equipment – Safety – Part 1: General Requirements.

## What Does APC Test?

The safety standards are written to ensure that personnel are protected against injury and that the location where a product is installed will be protected against damage (usually fire). Tests include both normal and abnormal conditions. Factors in a Safety listing typically can include such things as:

- Electric shock (electric current passing through the human body)
- Energy hazard (e.g., short circuit between adjacent poles of high current supplies or high capacitance circuits, causing burns, arcing, and ejection of molten metal; pressurized gases such as refrigerants; suitability of pressure vessels).
- Fire hazards (hazards resulting from excessive temperatures, either under normal operating conditions or due to overloading, component failure, insulation breakdown, high resistance, or loose connections).
- Radiation and chemical hazards (injuries due to exposure to, or contact with laser radiation, X-rays from CRTs, ultraviolet light, or chemical vapors and fumes).
- Mechanical and heat hazards (injury due to hot surfaces [burns], sharp edges, ignition or flammable liquids, instability, moving parts, or imploding CRTs and exploding high pressure lamps).
- Material (strength, rigidity, flammability, thermal ratings, and dielectric withstand).
- Reliability of protection circuits

## Conclusion

In light of the history and technical expertise of TUV-Rheinland of North America and the demonstrated broad acceptance of the TUV-R NRTL mark in the U.S. and Canada, we at APC believe that the presence of the TUV-R NRTL mark on APC's products is sufficient to assure both our customers and AHJs that our products are safe to install and operate in the United States and Canada. Therefore, we affirm that the TUV-R NRTL mark is suitable for application to APC products in lieu of the UL Listing mark.