



Date: May 20, 2014

**FEDERAL COMMUNICATIONS COMMISSION**

**Authorization and Evaluation Division**

7435 Oakland Mills Road

Columbia, MD 21046

U.S.A.

**To Whom It May Concern**

**Subject: Reassessment Certification Class II Permissive Change**

**Applicant: Siemens Canada Ltd. – Siemens Milltronics Process Instruments**  
**FCC ID: NJA-LR250**

Dear Sir/Madam:

By signing this document we, Siemens Canada Ltd. - Siemens Milltronics Process Instruments would like to obtain a Reassessment Certification Class II Permissive change for the above Certification number and Model.

**Description of changes:**

Changes were made to LR250 to make it suitable for the chemical, pharmaceutical and food industries. A new manual, updated with these changes is available.

New versions of the existing 2in and 3in flanged encapsulated horn antennas are added. The new antennas (referred herein as Hygienic Encapsulated Antenna) consist in a horn filled with a dielectric material and have a lens attached at the process end of the antenna. The gain of the new antennas is comparable to the gain of the equivalent existing SITRANS LR250 flanged encapsulated horns and smaller than the gain of the highest gain antenna (standard 4in horn) on which the current radio approval is based.

The enclosure suffered minor changes implemented to ensure suitability for the chemical, pharmaceutical and food industries; the size and nature of the openings are not changed as such shielding properties are not affected.

The potting compound was replaced with a new one with equivalent electric properties.

All the above changes are not modifying the RF characteristics of the SITRANS LR250 level radar family.

**1) Enclosure**

Changes were made to the enclosure to make it suitable for the chemical, pharmaceutical and food industries. It has the same dimensions, shape and aspect, and is built with the same materials as the enclosure currently used. As such the RF and shielding characteristics are not affected. The changes are:

- The display window edges were tapered to prevent water beading. The window shape and area are not modified. A new window gasket is used to improve sealing and aesthetics.

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- The potting compound was replaced with Henkel ES2505 (alternative replacement Royal EPOCAP 42174/52174) having electrical properties similar to the properties of the original potting compound.

The following assembly drawing shows an exploded view of the SITRANS LR250 with the Hygienic Encapsulated Antenna.

*See A5E31162057A.pdf*

## **2) Antenna and process connections**

Two new Hygienic Encapsulated Antenna versions of the existing 2in and 3in flanged encapsulated horn antennas are added. The horn construction is identical with the horn for the flanged encapsulated antenna, while the flanges are replaced by five different hygienic process connections (DIN 11864/1, DIN 11864/1, DIN 11864/1, DIN11851, ISO2852 and Tuchenhausen Varivent) The antennas are conical horn antenna (the "horn") made from stainless steel filled with an ULTEM cone (the "emitter"). The emitter is attached to the horn by a thin layer of adhesive uniformly spread around the circumference and confined into a determined area by an o-ring. The process end of the horn has various type of process connections which mates with the customer process connection. A TFM lens is attached to the emitter by screwing. The lens has multiple functions including: protection of the horn internals against process materials, to focus the microwave energy inside the tank and as a gasket holder the ensure sealing between the customer process connection and the unit.

The Hygienic Encapsulated Antenna attaches to the existing LR250 housing using the same lock nut as the LR250 antenna thus the enclosure can be rotated with respect of the antenna. O-rings are placed at different locations to ensure sealing.

The Hygienic Encapsulated Antenna connects to the circular waveguide present in the LR250 housing by a built-in waveguide with the same cross section as the housing waveguide. The microwave signal produced by the electronics inside the housing propagates through the waveguides, and it is transferred to the conical horn. It propagates through the filled horn and then it is radiated into the free space through the TFM lens. To enhance the radiation pattern the lens is shaped as a conical or hyperbolic lens.

An assembly view with the associated part numbers is shown in the following drawing.

*See 7ML5433A.pdf*

The gain of the new antennas is comparable to or smaller than the gain of the equivalent existing LR250 horns and smaller than the gain of the highest gain antenna (standard 4in horn) for which the current radio approval has been granted.

## **3) Board stack**

No changes were made to the boardstack

## **4) RF circuits**

No changes were made to the RF circuits

## **5) Firmware**

No changes affecting the RF circuitry control were made to the firmware

## **6) Manual**

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The new manuals are attached

## 7) Conclusion

Two new Hygienic Encapsulated Antennas were added and minor changes to the enclosure were implemented to the SITRANS LR250 to make it suitable for the chemical, pharmaceutical and food industries. No changes were done to the RF circuitry, boardstack or software. The gain of the new antennas is smaller than the gain of the highest gain antenna (standard 4in horn) on which the current radio approval is based. As such the radiated emissions will be smaller with the new antennas.

Kindly confirm acceptance of this Class II permissive change.

Sincere Regards



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