TECHNICAL EXHIBIT
APPLICATION FOR LICENSE

FM Translator Station W231EC
0.242 kW ERP ND / 94.1 MHz
Canton, Illinois

ILLIANA COMMUNICATIONS, LLC

March 2021

JEREMY RUCK & ASSOCIATES, INC.
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APPLICATION FOR LICENSE

The following engineering statement has been prepared for **Illiana Communications, LLC** ("Illiana"), licensee of FM translator station W229BZ at Canton, Illinois, and is in support of their application license to cover authorized modifications to that facility. This application is being filed to cover the construction permit assigned LMS File No. 0000127223. This application authorized a change in the channel of operation for the translator. The callsign for the translator on the new channel is W221EC.

The referenced construction permit authorizes operation on FM channel 231, 94.1 MHz, with an effective radiated power of 250 Watts at a center of radiation of 276.9 meters above mean sea level, 78.2 meters above ground, utilizing a single bay Bext TFC2K-1 antenna. The facility has been constructed in accordance with the terms of the construction permit with the exception of the effective radiated power. This application proposes a small reduction in the effective radiated power to 242 Watts pursuant to the provisions of Section 74.1251 of the Commission's Rules.

The construction permit, as issued, lists four special conditions or restrictions. Each of these conditions or restrictions will be discussed here in this exhibit.

The first condition pertains to the submission of this application relative to program test authority. As indicated, this application for license must be on file prior to the commencement of program test operations. Illiana will commence operation under automatic program test authority upon the filing of this license application.

The second special condition or restriction pertains to the mounting of the antenna to an AM tower. Specifically, the antenna for this translator would be mounted to the tower utilized for WBYS, also at Canton, Illinois.[1] WBYS is also licensed to Illiana, and is the primary station for FM translator W231EC. The tower utilized by WBYS is a grounded tower that employs a folded unipole scheme. Impedance measurements on the tower were performed following the installation of the new antenna and transmission line. An application for direct measurement of power for WBYS is being filed essentially concurrently within this application.

The specified transmitter power output achieves the authorized effective radiated power. The specified transmitter power output is 1000 Watts. The output of the transmitter feeds into a jumper cable between the transmitter and a bandpass filter. The efficiency of this cable is 97.93 percent, which yields an input power to the bandpass filter of 979.3 Watts.

The bandpass filter utilized is a Bext model FFC2. The measured insertion loss for this filter is 0.2887 dB, which corresponds to an efficiency of 93.57 percent. The power at the output of the bandpass filter is 916.3 Watts.

The next component in the system is a second jumper cable. This cable is identical to the first, and has an efficiency of 97.93 percent. Power at the output of this second jumper cable is 897.4 Watts,

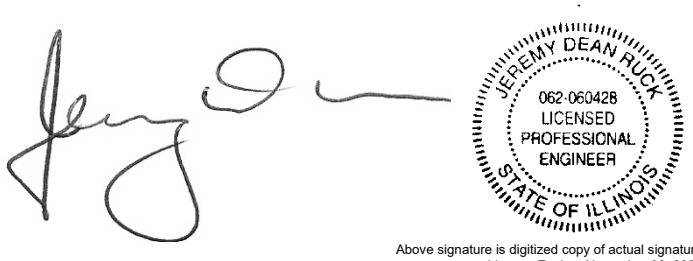
[1] The Facility ID for WBYS at Canton, Illinois is 22898.

The output of the second jumper is the input to the main run of transmission line. This run consists of 677 feet of RFS/Cablewave LCF78-50JA-A0 transmission line. This line is a semi-flexible foam-dielectric coaxial cable with a nominal one-half inch diameter. Interpolation of the measured data for 94.1 MHz, including connector loss, yields an insertion loss of 2.302 dB for this run of line, which is equivalent to an efficiency of 58.9 percent. The power at the output of this line, which is the input to the antenna, is 528.5 Watts.

The antenna utilized by the translator is a single bay Bext TFC2K-1 antenna. This antenna has a manufacturer specified value of 0.4570 for the power gain. The product of this gain and the antenna power input of 528.5 Watts yields 241.5 Watts ERP, which rounds to 242 Watts. Thus, the specified transmitter power output achieves the authorized effective radiated power.

The facility utilizes a non-directional antenna. This antenna has been installed in accordance with the instructions of the manufacturer.

The preceding statement has been prepared by me, or under my direction, and is true and accurate to the best of my belief and knowledge.



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License Expires November 30, 2021

Jeremy D. Ruck, PE
March 28, 2021

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