COMPREHENSIVE TECHNICAL EXHIBIT
APPLICATION FOR LICENSE

FM Translator Station W249CZ
0.250 kW / 97.7 MHz
Peoria, Illinois

WPEO Radio Foundation

June, 2015

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APPLICATION FOR LICENSE

The following engineering statement has been prepared for **WPEO Radio Foundation** ("WPEO"), licensee of FM translator station W249CZ at Peoria, Illinois, formerly located at Canton, Illinois, and is in support of their application for license to cover authorized changes to that facility.[1] This application seeks to cover changes to the facility authorized under FCC File No. BPFT-20140919AEA. That construction permit authorized a relocation of the facility from Canton, Illinois to Peoria, Illinois.

W249CZ is authorized to operate with a maximum effective radiated power of 250 Watts at a center of radiation of 286 meters above mean sea level, or 73 meters above ground, utilizing a non-directional antenna. The antenna proposed and utilized by the facility is a Shively Labs model 6812B-2 two-bay antenna. Construction of the facility pursuant to the terms of the underlying construction permit has been completed.

The construction permit as issued by the Commission listed four special conditions. WPEO complies with each of these special conditions.

The first special condition or restriction pertains to the grant of the *Mattoon Waiver* for the facility that was utilized in its relocation from Canton to Peoria. Under this condition, WPEO is subject to a holding period, and until four years of operation translating the primary station, WPEO at Peoria, Illinois, is achieved, no change in the primary station may occur.[2] WPEO is cognizant of

[1] The Facility ID for W249CZ at Peoria, Illinois, formerly at Canton, Illinois, is 149355.
[2] The Facility ID for WPEO at Peoria, Illinois is 52641.

this condition, and has no plans or interest in changing the primary station associated with the translator since the translator is intended to fill in the daytime only operation of WPEO.

The second condition pertains to the fact that the translator antenna is supported by the WPEO non-directional antenna system. Under this condition, impedance measurements following construction of the translator were to be completed, and submitted to the Commission in the form of an application for direct measurement of power. WPEO certifies that the required measurements have been made, and an application for direct measurement of power meeting all of the requirements specified in this condition will be submitted.

Under the third special condition, WPEO is required to coordinate with other users of the site to ensure that workers and other personnel are not exposed to levels of radiofrequency radiation in excess of the applicable safety standards. WPEO certifies that it will coordinate with all other users of the site as required. Such coordination activities will include a reduction in transmitter power, or cessation of operation as necessary.

The fourth and final special condition requires the submission of this license application prior to the commencement of program tests. WPEO has conducted limited equipment tests, but has not commenced program test operations. Such operations will begin upon the submission of this application to the Commission.

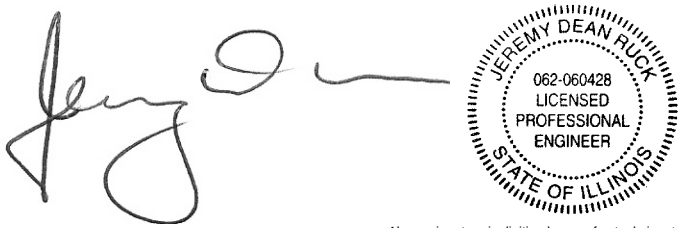
The specified transmitter power output achieves the authorized effective radiated power. The antenna utilized by the facility is a Shively Labs model 6812B-2 two-bay. This antenna has a

power gain of 0.99 as specified by the manufacturer. The input power to the antenna to achieve the authorized effective radiated power is 252.t Watts.

The transmission line system includes a total of 550 feet of Andrew/Commscope LDF4-50 semi-flexible coaxial cable with a one-half inch nominal diameter, plus an isocoupler due to the use of an AM antenna as the support structure. The total insertion loss of the transmission line is 3.62 dB, while the insertion loss of the isocoupler is 0.88 dB. Therefore, the total insertion loss of the transmission line system in its entirety is 4.5 dB, which corresponds to an efficiency of 35.48 percent. The necessary transmitter power output due to this insertion loss is 711 Watts, which is the specified transmitter power output, thus the specified TPO achieves the authorized effective radiated power.

As previously stated, the facility utilizes a non-directional antenna. The antenna utilized was 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, 2015

Jeremy D. Ruck, PE
June 8, 2015