

***COMPREHENSIVE TECHNICAL EXHIBIT  
APPLICATION FOR LICENSE***

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FM Translator Station K273CX  
0.250 kW ERP / 102.5 MHz  
Wichita, Kansas

Steckline Communications, Inc.

September, 2016

## **APPLICATION FOR LICENSE**

The following engineering statement has been prepared for **Steckline Communications, Inc.** ("Steckline"), permittee of FM translator station K273CX at Wichita, Kansas, and is in support of their application for license.<sup>1</sup> This application seeks to cover the initial construction of the facility under that construction permit, which was modified under one of the Commission's AM Revitalization translator filing windows.

K273CX is authorized under the referenced construction permit to operate with a maximum effective radiated power of 250 Watts at a center of radiation of 451 meters above mean sea level, 54 meters above ground, utilizing a non-directional antenna. The particular antenna specified, and utilized for construction, is a Nicom BKG77/1 single bay antenna.

The construction permit, as issued by the Commission, lists five special conditions or restrictions. Steckline is currently in compliance with each of these conditions, or will become in compliance with each. The special conditions listed on the construction permit will be discussed, individually and specifically, in this engineering statement.

The first of the special conditions pertains to the revitalization of the AM Radio Service. Under this condition, Steckline is advised the primary station associated with the translator may not be changed until four years of on-air operation is achieved. Additionally, the authorization for the translator may not be assigned another party, unless it is the licensee of the primary station, or the

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<sup>1</sup> The Facility ID for K273CX at Wichita, Kansas is 149570.

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assignment provides for the continued rebroadcasting of the primary station. Steckline is cognizant of the requirements of this condition, and will abide by the requirements of the same.

The second condition pertains to the mounting of the antenna on one of the constituent elements in the KGSO directional array.<sup>2</sup> Under this condition, Steckline must perform partial proof of performance measurements to demonstrate that the addition of the antenna has not adversely affected the directional array. No adverse effects have been observed with the mounting of the antenna on the KGSO directional array. This includes no apparent shift in operating parameters or monitor point values. The partial proof measurements, and other required documentation, will be provided to the Commission via FCC Form 302-AM as required under the special condition assigned to this construction permit.

The third special condition pertains to radiofrequency radiation safety at the site. Under this condition, Steckline 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. Steckline certifies that it will undertake necessary coordination activities under this condition, which may include, but are not necessarily limited to, a reduction in transmitter power or cessation of operation.

The fourth special condition requires this license application to be on file prior to the commencement of program tests. Upon submission of this application for license, Steckline will commence program test operations of the facility.

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<sup>2</sup> The Facility ID for KGSO at Wichita, Kansas is 53150.

The fifth and final, special condition pertains to spurious emission testing. K273CX is intended to operate using a combined antenna system with FM translator station K254BI at Eureka, Kansas. K254BI has an outstanding construction permit under FCC File No. BPFT-20160729AGX to relocate to Wichita, and change the channel of operation.<sup>3</sup> This construction permit expires August 25, 2019.

While the equipment has been ordered for the implementation of the construction permit, the transmitter has not yet been delivered, and as such, construction on the facility is not yet completed. As a result, Steckline is unable to provide the spurious emissions testing results at this time. The delivery of the transmitter is expected to occur by the first part of November 2016. At that point, construction on K254BI will be completed, the spurious emission testing performed, and the results submitted to the Commission as an amendment to this application for license.

The specified transmitter power output achieves the authorized effective radiated power. The power gain of the antenna, as specified by the manufacturer is 0.5012. The input power to the antenna to achieve the authorized effective radiated power is 498.8 Watts.

Ahead of the antenna is a section of transmission line, which consists of 180 feet of Andrew/Commscope LDF5-50A, which is semi-flexible foam-dielectric coaxial cable with a solid outer conductor, and nominal diameter of 7/8 inches. The insertion loss of this length of line is

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<sup>3</sup> The Facility ID for K254BI is 152851. The callsign for that facility will become K230BY, once the authorized modification in Wichita is implemented.

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0.69 dB, which corresponds to an efficiency of 85.31 percent. The input power to this section of line to achieve the authorized effective radiated power is 584.7 Watts.

Preceding this run of transmission line is a Kintronic Labs Isocoil, which is used to isolate the transmission line from the tower, and appropriately cross the base insulator. The insertion loss of this device at the translator frequency of operation is 0.8 dB, which corresponds to an efficiency of 83.18 percent. The input power to the isocoil to achieve the authorized effective radiated power is 703.0 Watts.

Ahead of the isocoil is the horizontal run of transmission line, which consists of 165 feet of Andrew/Commscope LDF5-50A. The insertion loss of this run of transmission line is 0.64 dB, which corresponds to an efficiency of 86.30 percent. The input power to this run of transmission line to achieve the authorized effective radiated power is 814.6 Watts.

Before reaching the horizontal run of transmission line, the transmitted signal passes through the combiner system, which is a model FSD2000, and was manufactured by Nicom USA. This device has an insertion loss of 0.5 dB. The efficiency of the combiner is 89.13 percent. The input power to the combiner to achieve the authorized effective radiated power is 914.0 Watts.

Between the input to the combiner and the output of the transmitter is a jumper, which consists of six feet of Andrew/Commscope FSJ4-50B. This line is a superflexible coaxial cable, with a nominal diameter of one-half inch. The insertion loss of this jumper is 0.12 dB, which corresponds to an efficiency of 97.27 percent. The input power to the jumper to achieve the authorized effective radiated power is 940 Watts. The input to the jumper is the output of the

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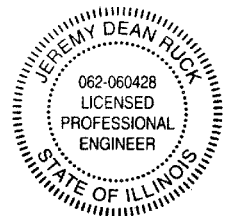
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transmitter. Thus, it is demonstrated that the specified transmitter power output achieves the authorized effective radiated power.

The facility utilizes a non-directional antenna. The antenna system 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.



Above signature is digitized copy of actual signature  
License Expires November 30, 2017

Jeremy D. Ruck, PE  
September 26, 2016

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