

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

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**FM Translator Station K242BE  
0.115 kW ERP / 96.3 MHz  
Norfolk, Nebraska**

**Community Broadcasting, Inc.**

**December, 2015**

## **APPLICATION FOR LICENSE**

The following engineering statement has been prepared for **Community Broadcasting, Inc.** ("CBI"), licensee of FM translator station K242BE at Norfolk, Nebraska, and is in support of their application for license to cover changes to the facility authorized under that permit.<sup>1</sup> The file number of the construction permit for which this license application is being submitted is BPFT-20150921AAU.

K242BE is authorized to operate with a maximum effective radiated power of 115 Watts at a center of radiation of 612 meters above mean sea level, 72 meters above ground, utilizing a non-directional antenna. The antenna proposed and utilized by the facility is a three-bay Shively Labs model 6812-3 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 two special conditions. CBI is in compliance with both of these conditions.

The first of the special conditions pertains to radiofrequency radiation safety at the site. Under this condition, CBI 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. CBI 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.

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<sup>1</sup> The Facility ID for K242BE at Norfolk, Nebraska is 140368.

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

The specified transmitter power output achieves the authorized effective radiated power. The antenna utilized by the facility is a Shively Labs model 6812-3, comprised of three bays. Data from the manufacturer indicates the power gain of this antenna is 1.52. The input power to the antenna to achieve the authorized effective radiated power is 75.7 Watts.

Ahead of the antenna is the run of transmission line, which consists of a total of 258 feet of Andrew/Commscope LDF4-50 coaxial cable, which has a nominal diameter of one-half inch, and has foam for a dielectric material. This length of line is comprised of two sections, thus there are a total of four N-connectors in this run. The transmission line plus two of the connectors has an efficiency of 67.55 percent. The additional two connectors add in an additional insertion loss of 0.06 dB, which is equivalent to an efficiency of .9863. The input power to the transmission line to achieve the authorized effective radiated power is 113.6 Watts.

Ahead of the transmission line is a Polyphaser lightning protection device. This device has a nominal insertion loss of 0.1 dB, which corresponds to an efficiency of 97.72 percent. The input power to the Polyphaser to achieve the authorized effective radiated power is 116.3 Watts.

Preceding the Polyphaser is a three-foot superflexible jumper. This jumper has an efficiency of 98.59 percent based on manufacturer data. The input power to the jumper to achieve

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the authorized effective radiated power is 117.9 Watts. The input to the jumper is, however, the output of the transmitter. The power at this location rounds to 118 Watts and it is demonstrated that the specified transmitter power output 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.



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

Jeremy D. Ruck, PE  
December 14, 2015

**JEREMY RUCK & ASSOCIATES, INC.**

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