

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

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**FM TRANSLATOR STATION  
K234CE – SEDALIA, MISSOURI  
94.7 MHz / 0.25 kW ERP ND**

**COMMUNITY BROADCASTING, INC.**

**APRIL, 2014**

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**JEREMY RUCK & ASSOCIATES, INC.**

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**4.5.2014**

## **APPLICATION FOR LICENSE**

The following engineering statement has been prepared for **Community Broadcasting, Inc.** ("CBI"), permittee of new FM translator station K234CE to serve Sedalia, Missouri, and is in support of their application for license.<sup>1</sup> This application seeks to cover the initial construction of the facility, which was authorized by the construction permit under FCC File No. BNPFT-20130327AIA.

The facility was constructed in accordance with the terms of the construction permit. The construction permit, as issued, listed four special conditions or restrictions. CBI is in compliance with each of these conditions. Each condition will be specifically discussed in this engineering statement.

The first of the special conditions on the construction permit pertains to the site location, which is shared with AM broadcast station KDRO at Sedalia, Missouri.<sup>2</sup> Under this condition, that station is required to operate via the indirect method during the installation of the K234CE antenna and transmission line. Upon completion of the installation, antenna impedance measurements are to be performed, and an application for direct measurement of power submitted by the licensee of KDRO. The antenna impedance measurements at KDRO have been performed, with a value of  $17+j248$  ohms measured, which will be supplied via the 302-AM to be filed for that facility. The 302-AM will be filed essentially concurrently with this application for the K234CE license.

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<sup>1</sup> The Facility ID for K234CE at Sedalia, Missouri is 138443.

<sup>2</sup> The Facility ID for KDRO at Sedalia, Missouri is 40662.

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The second special condition pertains to the 2013 LPFM window. Since the LPFM filing window has long since closed, this special condition is no longer applicable to the K234CE construction permit.

Under the third special condition, CBI is required to coordinate with all other users of the site to prevent human exposure to radiofrequency radiation in excess of the applicable safety standards. CBI certifies it will coordinate with all current and future users of the site to protect workers and other personnel. Such coordination will include, but is not necessarily limited to, a reduction in transmitter power or cessation of operation.

The fourth and final special condition on the construction permit pertains to program test authority for the facility. Under this condition, CBI must have this license application on file prior to the commencement of program tests. Although CBI has conducted equipment tests, operation under automatic program test authority will commence following the submission of this application.

The specified transmitter power output achieves the authorized effective radiated power. The authorized ERP is 250 Watts. K234CE utilizes a Shively Labs model 6812B-2 antenna. The manufacturer of this antenna specifies it as having a power gain of 0.99. The input power to achieve the authorized effective radiated power is 252.5 Watts.

Ahead of the antenna is the main run of transmission line. This run consists of 280 feet of Andrew/Commscope AVA5-50FX transmission line. At the frequency of operation, this length of transmission line has an insertion loss of 0.9632 dB, which corresponds to an efficiency of 80.11

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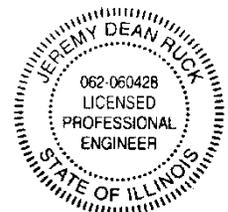
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percent. The input power to the transmission line to achieve the authorized effective radiated power is 315.2 Watts.

Preceding the main run of transmission line are three components including a Polyphaser lightning protection device between two superflexible transmission line jumpers. These jumpers connect the transmitter to the main transmission line through the Polyphaser. The efficiency of the two jumpers is 99.14 percent each. The Polyphaser has an insertion loss of 0.1 dB, which corresponds to an efficiency of 97.72 percent. These three components in series have an aggregate efficiency of 96.05 percent. The input power to the jumper at the output of the transmitter is 328 Watts, which is the specified transmitter power output. The specified TPO therefore achieves the authorized effective radiated power.

The facility was authorized with a non-directional antenna. The antenna installed, which is the specific model listed on the construction permit application, is a non-directional antenna.

The preceding statement and attached exhibits have been prepared by me, or under my direction, and are true and accurate to the best of my belief and knowledge.



Above signature is digitized copy of actual signature  
License Expires November 30, 2015

Jeremy D. Ruck, PE  
April 5, 2014

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