

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

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**FM TRANSLATOR STATION K238BD  
0.250 kW ERP ND / 95.5 MHz  
WICHITA, KANSAS**

**COMMUNITY BROADCASTING, INC.**

**NOVEMBER, 2017**

## **APPLICATION FOR LICENSE**

The following engineering statement has been prepared for **Community Broadcasting, Inc.** ("CBI"), licensee of FM translator station K238BD at Wichita, Kansas, formerly at Haysville, Kansas, and is in support of their application for license.<sup>1</sup> This application is being filed to cover the most recent construction permit for the facility under FCC File No. BMPFT-20170622ABX.

K238BD is authorized under the referenced construction permit to operate on FM channel 238 with a maximum effective radiated power of 250 Watts at a center of radiation of 506 meters above mean sea level, 107 meters above ground, utilizing a non-directional antenna. The antenna specified and utilized is a single bay Shively Labs model 6812C-1. The facility was constructed according to the terms of the construction permit.

The construction permit as issued by the Commission lists three (3) special conditions or restrictions. CBI is in compliance with each of these special conditions. Compliance with each condition will be specifically discussed in this statement.

The first of the special conditions pertains to the installation of the antenna on the radiator utilized by AM broadcast station KFH at Wichita, Kansas.<sup>2</sup> This condition requires the performance of impedance measurements on the KFH antenna relative to the installation of the K238BD antenna and transmission line. These measurements have been performed, and an application for direct measurement of power will be filed with the Commission.

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<sup>1</sup> The Facility ID for K238BD at Wichita, Kansas is

<sup>2</sup> The Facility ID for KFH at Wichita, Kansas is 53598.

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The second 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.

The third of the special conditions pertains to the submission of this license application. Under that condition, CBI is advised that this application for license must be on file prior to the commencement of program tests. CBI will operate under the provisions of automatic program test authority upon submission of this license application.

The specified transmitter power output achieves the authorized effective radiated power. The authorized effective radiated power for the facility is 250 Watts. Data from the antenna manufacturer specifies 0.46 as the power gain of the antenna. The input power to the antenna to achieve the authorized effective radiated power is 543 Watts.

Preceding the antenna is a super-flexible jumper six feet in length. The efficiency of this jumper is 97.95 percent. The input power to this jumper to achieve the authorized effective radiated power is 554.9 Watts.

Ahead of the jumper is the vertical run of transmission line, which consists of 347 feet of Cablewave/RFS LCF78-50JA-A0 coaxial cable. The insertion loss of this line, including its

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connectors, is 1.21 dB, which corresponds to an efficiency of 75.71 percent. The input power to the vertical run of line to achieve the authorized effective radiated power is 732.9 Watts.

Preceding the vertical run of transmission line is an isocoupler, which is utilized to cross the base insulator of the KFH antenna. This isocoupler, model FMC-1.5 from Kintronics Labs, has a nominal insertion loss of 0.2 dB, which corresponds to an efficiency of 95.50 percent. The input power to the isocoupler to achieve the authorized effective radiated power is 767.4 Watts.

The horizontal run of transmission line precedes the isocoupler, and consists of 51 feet of Cablewave/RFS LCF78-50JA-A0 coaxial cable. The insertion loss of this line including the connectors is 0.2084 dB, which corresponds to an efficiency of 95.31 percent. The input power to this portion of the line to achieve the authorized effective radiated power is 805.1 Watts.

Ahead of the horizontal run is a second six-foot jumper. This jumper has an efficiency of 97.95 percent. The input power to the jumper to achieve the authorized effective radiated power is 822.0 Watts.

Preceding this jumper is a Polyphaser lightning protection device. This device has an insertion loss of 0.1 dB. This corresponds to an efficiency of 97.72 percent. The input power to the Polyphaser to achieve the authorized effective radiated power is 841.1 Watts.

A third jumper exists ahead of the Polyphaser. As was the case with the other two jumpers, the efficiency is the same at 97.95 percent. The input power to this jumper to achieve the authorized effective radiated power is 858.8 Watts.

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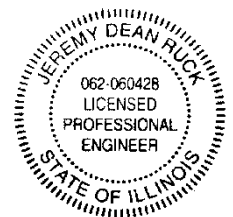
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Between the transmitter and this jumper is a transmission line adapter with a nominal insertion loss of 0.02 dB. This corresponds to an efficiency of 99.54 percent. The input power to this adapter to achieve the authorized effective radiated power is 862.7 Watts, which rounds to 863 Watts. The input to this adapter is the transmitter output, thus the specified transmitter power output achieves the authorized effective radiated power.

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

The preceding statement has been prepared by me, 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, 2019

Jeremy D. Ruck, PE  
November 3, 2017

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