

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

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**FM Translator Station K299BS (Formerly K296FD)  
0.250 kW ERP ND / 107.7 MHz  
Lexington, Missouri**

**Community Broadcasting, Inc.**

**June, 2017**

## **APPLICATION FOR LICENSE**

The following engineering statement has been prepared for **Community Broadcasting, Inc.** ("CBI"), licensee of FM translator station K299BS, formerly K296FD, at Lexington, Missouri, 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. BPFT-20160129AEY. This construction permit modified the licensed facility located at Salina, Kansas by relocation to Lexington, Missouri under the Commission's *AM Revitalization* translator window. The construction permit also authorized a change in the channel from 296 to channel 299.

K299BS is authorized under the referenced construction permit to operate on FM channel 299 with a maximum effective radiated power of 250 Watts at a center of radiation of 388 meters above mean sea level, 137 meters above ground, utilizing a non-directional antenna. The antenna specified and utilized is a two-bay Shively Labs model 6812-2. The facility was constructed according to the terms of the construction permit.

The construction permit as issued by the Commission lists four (4) 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 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

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<sup>1</sup> The Facility ID for K299BS at Lexington, Missouri is 139224.

JEREMY RUCK & ASSOCIATES, INC.

P.O. Box 415  
221 S. 1st Avenue  
Canton, IL 61520

Tel: 309.647.1200  
Fax: 855.332.9537  
jeremyruck.com

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 second 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 third special condition pertains to the mounting of the translator antenna onto an AM antenna system, in this case KLEX also at Lexington, the primary station. Under this condition, CBI must perform impedance measurements for KLEX before and after construction. These measurements have been performed, and are being provided to the Commission via an Application for Direct Measurement of Power for KLEX. This application includes a sketch of the tower.

The fourth and final of the special conditions pertains to the revitalization of the AM Radio Service. Under this condition, CBI is advised that the primary station associated with the translator may not be changed until four years of on-air operation is achieved. Additionally, this condition also advises that the translator authorization may not be assigned to another entity unless the assignee is the licensee of the primary station, or the assignment provides for the continued rebroadcasting of the primary station. CBI is cognizant of this condition, and will abide by the requirements of the same.

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The specified transmitter power achieves the authorized effective radiated power. The authorized effective radiated power for the facility is 250 Watts. Data from the antenna manufacturer specifies 1.01 as the power gain of the antenna. The input power to the antenna to achieve the authorized effective radiated power is 247.5 Watts.

Preceding the antenna is the main run of transmission line, which consists of 564 feet of RFS LCF78-50JA. The interpolated insertion loss at the frequency of operation of the translator is 0.3675 dB per 100 feet. When appropriately multiplied for the length of line and an additional 0.04 dB insertion loss for the connectors added in, the insertion loss of the main run of line is 2.113 dB, which equates to an efficiency of 61.48 percent. The input power to the transmission line to achieve the authorized effective radiated power is 402.6 Watts.

Ahead of the main run of transmission line is a Polyphaser VHF50N lightning protection device. The nominal insertion loss of this device is 0.1 dB, which is equivalent to an efficiency of 97.72 percent. The input power to the Polyphaser to achieve the authorized effective radiated power is 412.0 Watts.

Finally between the Polyphaser and the transmitter is a super flexible jumper six feet in length. The insertion loss of this jumper is 0.1 dB, which also corresponds to an efficiency of 97.72 percent. The input power to this jumper to achieve the authorized effective radiated power is 421.6 Watts, which rounds to 422 Watts. The input power to this jumper is the output of the transmitter, thus the specified transmitter power output achieves the authorized effective radiated power.

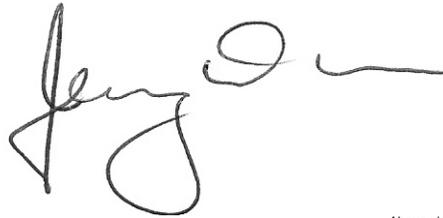
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The facility utilizes a non-directional antenna, as was previously stated. This antenna has been installed in accordance with the instructions of the manufacturer.

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, 2017

**Jeremy D. Ruck, PE**  
June 6, 2017

**JEREMY RUCK & ASSOCIATES, INC.**

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Canton, IL 61520

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