

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

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FM Translator Station W296DE (Formerly W270AB)  
0.099 kW ERP / 107.1 MHz  
Donelson, Tennessee

Community Broadcasting, Inc.

March, 2017

## **APPLICATION FOR LICENSE**

The following engineering statement and attached exhibits have been prepared for **Community Broadcasting, Inc.** ("CBI"), licensee of FM translator station W270AB at Lebanon, Tennessee, 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, which is under FCC File No. BMPFT-20160729AKX. This construction authorized a change in the channel, primary station, and relocation of the facility, such that it will become W296DE at Donelson, Tennessee.

W296DE is authorized under the referenced construction permit to operate on FM channel 296 with a maximum effective radiated power of 99 Watts at a center of radiation of 241 meters above mean sea level, 116 meters above ground, utilizing a directional antenna. The antenna specified and utilized is a single bay Propagation Systems, Inc. ("PSI") model PSIFML-1-DA. The facility was constructed according to the terms of the construction permit.

The construction permit, as issued by the Commission, lists four special conditions or restrictions. CBI specifically complies with three of the special conditions, and respectfully requests that the remaining condition be deleted.

The first 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 conditions also advises that the translator authorization may not be assigned to another entity unless the assignee

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<sup>1</sup> The Facility ID for W296DE, formerly W270AB, is 67634.

JEREMY RUCK & ASSOCIATES, INC.

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

Tel: 309.647.1200  
Fax: 855.332.9537  
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is the license of the primary station, or the assignment provides for the continued rebroadcasting of the primary station. CBI is cognizant of the requirements of this condition, and will abide by the requirements of the same.

The second condition pertains to the location of the antenna. The antenna for W296DE is mounted to one of the constituent elements of the WCRT directional AM array.<sup>2</sup> Under the special condition, a partial proof of performance before and after construction was required. It should be noted that the W296DE antenna replaces the antenna for the WCRT-FM1 special temporary authority that had been in existence since 1988, and was most recently authorized under FCC File No. BSTA-20160216AAW.<sup>3</sup>

The transmission line utilized for WCRT-FM1 was utilized for the translator facility. This transmission line run includes an isolation coil at the base of the tower. Additionally, CBI performed phase monitor and monitor point readings immediately before and after the change in the antenna. No changes to either were observed. As a result, it is respectfully submitted that the change of the antenna at the WCRT-FM1 array did not impact the WCRT AM antenna, and that the second special condition on the translator construction permit be deleted. Attached to this technical exhibit is the tower sketch required under the special condition.

The third special condition 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

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<sup>2</sup> The Facility ID for WCRT at Donelson, Tennessee is 25031.

<sup>3</sup> The Facility ID for WCRT-FM1 is 166220.

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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 fourth and final 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 operation of the facility under program test authority.

The specified transmitter power output achieves the authorized effective radiated power. The authorized effective radiated power for the facility is 99 Watts. Data from the manufacturer of the antenna specifies 0.66 as the power gain for the directional antenna. The input power to the antenna to achieve the authorized effective radiated power is 150 Watts.

Preceding the antenna is a jumper comprised of 12 feet of LMR-400 coaxial cable. The manufacturer specifies an efficiency of this jumper of 96.5 percent at the frequency of operation of the translator. The input to this jumper to achieve the authorized effective radiated power is 155.4 Watts.

Between the transmitter and this jumper is a total of 694 feet of LDF5-50 transmission line, which is a semi-flexible foam-dielectric coaxial cable with a nominal diameter of 7/8 inch. This length also includes the isolation coil for the facility, which isolates the transmission line from the supporting structure, which is an element in the WCRT directional antenna. The efficiency of this transmission line is 54.35 percent. The input power to the transmission line run to achieve the authorized effective radiated power, when rounded, is 286 Watts. The input to the transmission

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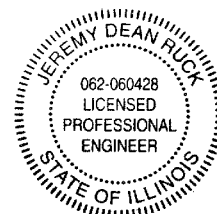
P.O. Box 415  
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Tel: 309.647.1200  
Fax: 855.332.9537  
jeremyruck.com

line is the output of the transmitter, thus the specified transmitter power output achieves the authorized effective radiated power.

The facility utilizes a directional antenna. This antenna was installed in accordance with the instructions of the manufacturer.

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, 2017

Jeremy D. Ruck, PE  
March 28, 2017

**JEREMY RUCK & ASSOCIATES, INC.**

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

Tel: 309.647.1200  
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jeremyruck.com

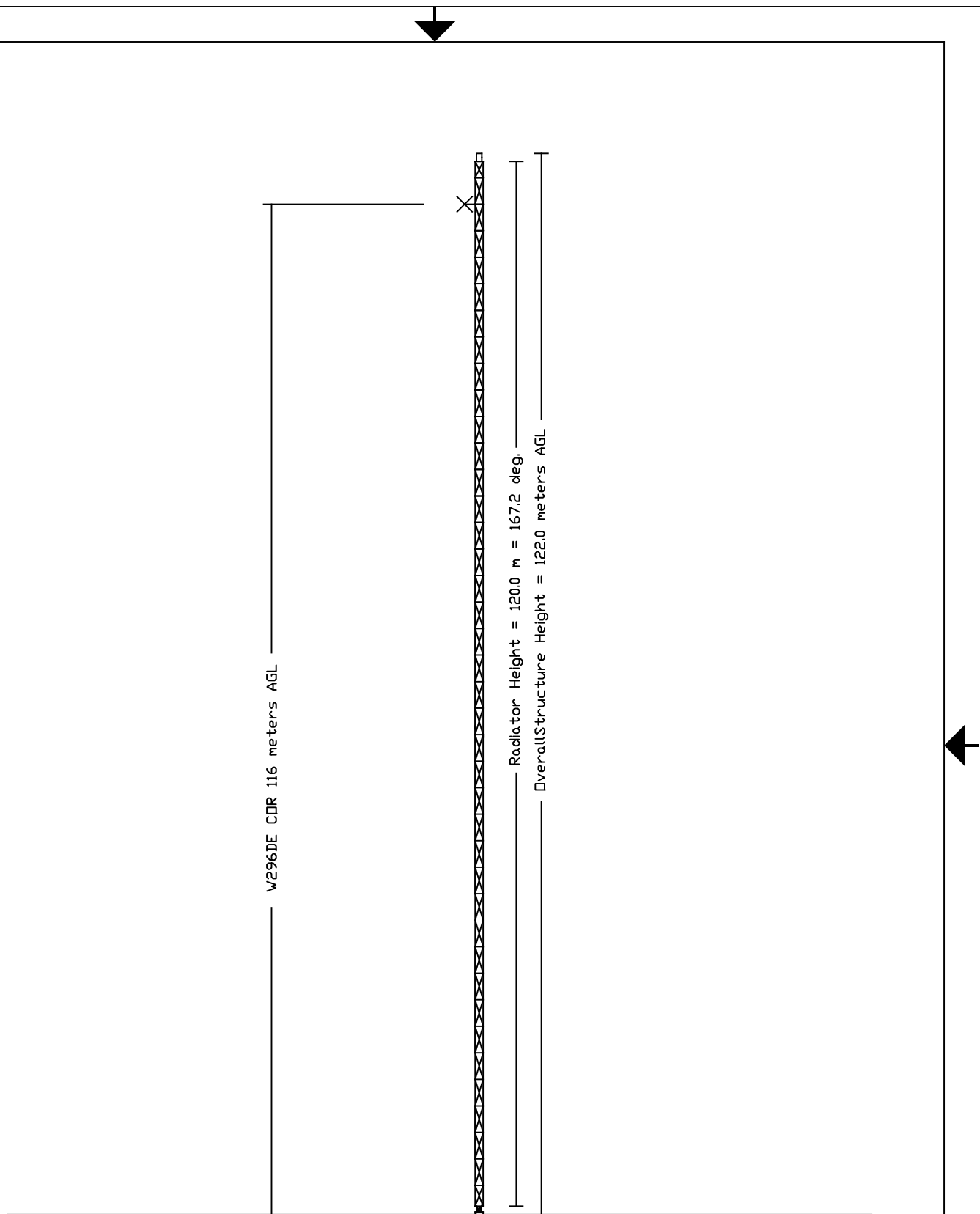


Exhibit E-1 Vertical Plan Drawing			
SIZE A	FSCM NO.	DWG NO. 170328-1	REV
SCALE NTS			SHEET