

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

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AUXILIARY FACILITY  
FM STATION WLBC-FM - MUNCIE, INDIANA  
FACILITY ID: 17602 / BXPH-20130717ABN

WOOF BOOM RADIO MUNCIE LICENSE LLC

FEBRUARY, 2014

## **APPLICATION FOR LICENSE**

The following engineering statement and attached exhibits have been prepared for **Woof Boom Radio Muncie License LLC** ("Woof Boom"), licensee of FM broadcast station WLBC-FM at Muncie, Indiana, and are in support of their application for license to cover construction permit BXPB-20130717ABN.<sup>1</sup> The facility authorized under the specified construction permit is to be utilized for auxiliary purposes only.

WLBC-FM, along with sister AM facility WXFN at Muncie, Indiana, are part of a group of stations transferred to Woof Boom.<sup>2</sup> Prior to the transfer of the licenses, the previous licensee, Backyard Broadcasting Indiana Licensee, LLC ("Backyard"), had identified structural issues with the tower utilized as the radiator for WXFN. Backyard replaced the WXFN tower, and as part of that process, modified the height of the structure.<sup>3</sup> In addition, the above referenced construction permit relocated the WLBC-FM auxiliary antenna from the WXFN radiator to the adjacent tower utilized for the main WLBC-FM antenna. This application seeks to cover the construction authorized in the WLBC-FM aux construction permit.

The auxiliary facility would operate with a maximum effective radiated power output of 7.7 kW. To achieve this effective radiated power, a transmitter power output of 21.6 kW would be required. The transmission line system utilized is somewhat complex, and will be fully characterized in a subsequent paragraph of this text. The antenna utilized by the auxiliary facility is an Electronics Research, Inc. (ERI) SHPX-1AE, which is a single bay antenna.

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<sup>1</sup> The Facility ID for WLBC-FM at Muncie, Indiana is 17602.

<sup>2</sup> The Facility ID for WXFN at Muncie, Indiana is 17601.

<sup>3</sup> See FCC File Nos. BP-20130802ACQ and BL-20140115ACS.

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The main studio for the facility complies with the provisions of Section 73.1125 of the Commission's Rules. The main studio is co-located with the main and auxiliary transmission facilities for WLBC-FM. As a result, the main studio is located within the 70 dBu service contour of WLBC-FM. Additionally, the main studio and transmission facilities are located within the corporate limits of Muncie, Indiana, the community of license.

The specified transmitter power output achieves the authorized effective radiated power. The antenna in use is an ERI SHPX-1AE, which has a power gain of 0.461 as specified by the manufacturer. The input power to the antenna required to achieve the authorized effective radiated power is 16.7 kW.

Ahead of the antenna is the transmission line system, which is reasonably complex. In this explanation of the system, it will be split into smaller sections, and characterized as such. The first section ahead of the antenna is a section of Andrew/Commscope HJ8-50B air dielectric coax, with a 3 1/8" nominal diameter. Data from the manufacturer indicates the efficiency of this section is 86.53 percent. Therefore, the required input power to this section of line is 19.3 kW.

The second long run of transmission line in the system is an 87-foot section of Andrew/Commscope HJ8-50B. Data from the manufacturer provides an efficiency of 96.37 percent. The required input power to this section is therefore 20.0 kW.

Prior to this section of line are the components internal to the transmitter building. The first grouping inside the building wall consists of two 3" rigid elbows, which in the aggregate have an efficiency of 99.94%, requiring an input power to them of 20.0 kW. Immediately preceding these

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elbows is a coax switch, with an insertion loss of 0.15 dB, which results in an efficiency of 96.61 percent, requiring an input power of 20.7 kW. Ahead of this switch is a section of transmission line consisting of three elbows and three feet of rigid EIA line. These components taken together have an efficiency of 99.85%, which requires an input power of 20.8 kW.

Preceding this combination of elbows are two additional "sections" of the system. Working backwards toward the transmitter, the first component encountered is a second coaxial switch, which similarly has an insertion loss of 0.15 dB, or an efficiency of 96.61 percent. The required input power to this switch is 21.6 kW. Finally, ahead of the coax switch is another transmission line elbow, which has an efficiency of 99.97 percent. The input power to this elbow is 21.6 kW.

The input to this elbow is just beyond the Bird sample section, which is utilized to measure the power output of the transmitter. Ahead of the Bird section are the harmonic filter, band pass filter, and related transmission line components. These components are all considered part of the transmitter. The specified transmitter power output therefore achieves the authorized effective radiated power.

The facility was constructed in accordance with the terms of the construction permit. The construction permit listed three special conditions or restrictions. Woof Boom is in compliance with these conditions, and each will be specifically addressed in this text.

The first special condition relates to WXFN, and clarification to the Commission as to whether or not the WLBC-FM antenna has been installed on an AM radiator. Woof Boom certifies

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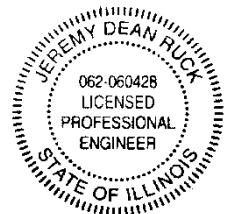
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that the WLBC-FM antenna is not mounted on an AM radiator, nor is it installed onto a tower that is either base insulated or detuned at the frequency of WXFN.

The second special condition pertains to radiofrequency radiation exposure to persons at the site. Woof Boom certifies that it will comply with this condition, and will coordinate with all other present 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 a cessation of operation as necessary.

The final special condition on the construction permit is an FAA interference condition. Woof Boom is cognizant of the requirements of this condition, and will abide by the terms of the condition. Woof Boom is also cognizant of the fact that this condition will expire after one year of interference-free operation.

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  
February 24, 2014

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