

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

FM Translator Station W246DP
0.250 kW ERP / 97.1 MHz
Jacksonville, Illinois

Morgan County Broadcasting Company, Inc.

September 2018

APPLICATION FOR LICENSE

The following engineering statement has been prepared for **Morgan County Broadcasting Company, Inc.** ("Morgan"), permittee of FM translator station W246DP at Jacksonville, Illinois, and is in support of their application for license to cover initial construction of that facility.¹

W246DP is authorized to operate with a maximum effective radiated power of 250 Watts at a center of radiation of 282 meters above mean sea level, 90 meters above ground level, utilizing a non-directional two-bay antenna. Construction of the facility pursuant to the terms of the underlying construction permit has been completed.

The construction permit as issued by the Commission listed four special conditions. Morgan is in compliance with these special conditions or restrictions.

The first of the special conditions pertains to radiofrequency radiation safety at the site. Under this condition, Morgan 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. Morgan 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.

¹ The Facility ID for W246DP at Jacksonville, Illinois is 201421.

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The second special condition requires this license application to be on file prior to the commencement of program tests. Upon submission of this application for license, Morgan will commence program test operation of the facility.

The third special condition pertains to the fact that the translator antenna is mounted to a constituent element in a directional antenna system. The WJIL antenna system was closely monitored before and after construction of the translator antenna system. No change in the common point impedance of the system was identified. Additionally, no change in the directional antenna parameters was found, nor was any change in the measured monitor point values. As a result, it is respectfully submitted that the addition of the W246DP antenna system to the WJIL array has not resulted in any observable impacts to the latter antenna system.

The fourth and final special condition pertains to the grant of the translator construction permit being part of the *Revitalization of the AM Radio Service*. Morgan is cognizant of the requirements of this special condition, and will abide by the same.

The specified transmitter power output achieves the authorized effective radiated power. The manufacturer specified power gain for the authorized antenna is 0.994. This results in a necessary antenna input power of 251.5 Watts to achieve the authorized effective radiated power.

Preceding the antenna is the transmission line run, which consists of 315 feet of Commscope LDF4-50A. This line is semi-flexible foam-dielectric coaxial cable with a nominal diameter of one-half inch. Data from the line manufacturer specifies an insertion loss of 2.08 dB,

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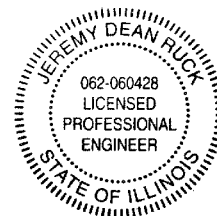
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3

which corresponds to an efficiency of 61.92 percent. The input power to the transmission line to achieve the authorized effective radiated power is 406.2 Watts, which rounds to 406 Watts. The input to the coaxial cable is the output of the transmitter, thus the specified transmitter power output achieves the authorized effective radiated power.

As previously stated, the facility utilizes a non-directional antenna. The antenna utilized was installed in accordance with the instructions of the manufacturer.

The preceding statement has been prepared by me, or under my direction, 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
September 21, 2018

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