

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

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**FM Translator Station K236AA  
0.230 kW ERP / 95.1 MHz  
Cedar Rapids, Iowa**

**KZIA, Inc.**

**November, 2016**

## **APPLICATION FOR LICENSE**

The following engineering statement has been prepared for **KZIA, Inc.** ("KZIA"), licensee of FM translator station K236AA at Cedar Rapids, Iowa, and is in support of their application for license.<sup>1</sup> This application is being filed to cover changes to the facility authorized by the most recent construction permit under FCC File NO. BPFT-20160506AAE.

K236AA is authorized under the referenced construction permit to operate on FM channel 236 with a maximum effective radiated power of 230 Watts at a center of radiation of 355 meters above mean sea level, 99 meters above ground, utilizing a non-directional antenna. The facility was constructed according to the terms of the construction permit.

The construction permit, as issued by the Commission, lists two special conditions or restrictions. KZIA is in compliance with each of these conditions. This engineering statement will discuss both conditions.

The first special condition pertains to radiofrequency radiation safety at the site. Under this condition, KZIA must coordinate with other users of the site to ensure that workers and other persons having access to the site are not exposed to levels of radiofrequency radiation in excess of the applicable safety standards. KZIA certifies that it will coordinate with all other users of the site to ensure that workers and other persons having access to the site are not exposed to levels of radiofrequency radiation in excess of the applicable safety standards. Coordination activities will

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<sup>1</sup> The Facility ID for K236AA at Cedar Rapids, Iowa is 20717.

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include, but are not necessarily limited to, a reduction in transmitter power or cessation of operation.

The second special condition requires this license application to be on file prior to the commencement of program tests. K236AA is also currently on a silence authority. KZIA will commence operation of the translator in the coming weeks, and will file the necessary notification of the resumption of operations.

The specified transmitter power output achieves the authorized effective radiated power. The authorized effective radiated power is 230 Watts. The antenna authorized for use by the facility, and installed, is an Electronics Research, Inc. ("ERI") model 100A-2F. This antenna has two sections spaced one wavelength apart. The manufacturer specifies 0.9 as the power gain for this particular antenna. The input power to the antenna to achieve the authorized effective radiated power is 255.6 Watts.

Between the antenna and the main run of transmission line is a superflexible jumper four feet in length. Data from the manufacturer lists the efficiency of jumper at 98.37 percent. The input power to the jumper to achieve the authorized effective radiated power is 259.8 Watts.

The main run of transmission line consists of 324 feet of Andrew/Commscope HJ7-50A, which is a semi-flexible foam dielectric coaxial cable with a nominal diameter of 1 5/8 inches. The insertion loss of this line is 0.68 dB, which correlates to an efficiency of 85.51 percent. The input power to the line to achieve the authorized effective radiated power is 303.8 Watts.

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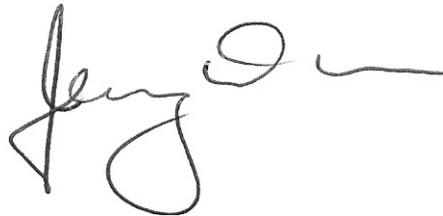
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Between the transmitter and the main run of transmission line is a second jumper, which consists of six feet of standard Andrew/Commscope LDF4-50A cable. This particular line is also a semi-flexible foam dielectric coax, but has a nominal diameter of one-half inch. The efficiency of this jumper is 98.41 percent. The input power to this jumper to achieve the authorized effective radiated power is 308.7 Watts, which rounds to 309 Watts. The input to this jumper is, however, at the output of the transmitter, thus the specified transmitter power output achieves the authorized effective radiated power.

The facility utilizes a non-directional antenna. This antenna 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, 2017

Jeremy D. Ruck, PE  
November 17, 2016

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