

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

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**FM TRANSLATOR STATION K216GL  
0.127 kW ERP DA / 91.1 MHz  
JONESBORO, ARKANSAS**

**FAMILY STATIONS, INC.**

**NOVEMBER, 2017**

## **APPLICATION FOR LICENSE**

The following engineering statement has been prepared for **Family Stations, Inc.** ("Family"), licensee of FM translator station K216GL at Jonesboro, Arkansas, and is in support of their application for license.<sup>1</sup> This application is being filed to cover changes to the facility authorized under FCC File No. BPFT-20171006ACI.

K216GL is authorized under the referenced construction permit to operate on FM channel 216 with a maximum effective radiated power of 127 Watts at a center of radiation of 238 meters above mean sea level, 110 meters above ground, utilizing a directional antenna. The antenna specified, authorized, and utilized for construction, is a Kathrein/Scala CA5-FM/CP/RM. This antenna is oriented with the major lobe at an azimuth of 50 degrees true. The facility was constructed in accordance with the terms of the construction permit.

The construction permit as issued by the Commission lists three special conditions or restrictions. Family is in compliance with each of these special conditions. The compliance with each condition will be discussed in this statement.

The first of the special conditions pertains to radiofrequency radiation safety at the site. Under this condition, Family 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. Family certifies that it will undertake necessary coordination activities

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<sup>1</sup> The Facility ID for K216GL at Jonesboro, Arkansas is 82546.

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 this condition, Family is advised that this application for license must be on file prior to the commencement of program tests. Family will operate under the provisions of automatic program test authority upon submission of this license application.

The third special condition pertains to the silence authority granted to Family for K216GL. This condition requires the submission of a separate resumption of operations notice in conjunction with the submission of this license. Family is submitting the required resumption notification with this license application in advance of the required December 20, 2017 date specified in the special condition.

The specified transmitter power output achieves the authorized effective radiated power. The authorized effective radiated power for the facility is 127 Watts. Data from the antenna manufacturer specifies 6 dBd, which corresponds to a numerical value of 3.98, as the power gain of the antenna. The input power to the antenna to achieve the authorized effective radiated power is 31.9 Watts.

Preceding the antenna is a super-flexible jumper that is six feet in length. The efficiency of this jumper is 97.95 percent, based on manufacturer data. The input power to this jumper to achieve the authorized effective radiated power is 32.6 Watts.

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Ahead of this tower-top jumper is the main run of transmission line, which consists of 385 feet of Andrew/Commscope LDF5-50A coaxial cable. This cable is a semi-flexible foam-dielectric coax with a nominal diameter of 7/8 inches. Data from the manufacturer indicates the insertion loss of this run, including connectors, is 1.36 dB. This value corresponds to an efficiency of 73.11 percent. The input power to the main run of transmission line to achieve the authorized effective radiated power is 44.6 Watts.

Preceding the main run of transmission line is a second super-flexible jumper, also six feet in length. This jumper also has an efficiency of 97.95 percent. The input power to this second jumper to achieve the authorized effective radiated power is 45.5 Watts.

Between this second jumper and the third jumper is a Polyphaser lightning protection device. This device has a nominal insertion loss of 0.1 dB, which corresponds to an efficiency of 97.72 percent. The input power to the Polyphaser to achieve the authorized effective radiated power is 46.5 Watts.

The third jumper in the system is located ahead of the Polyphaser, and while also consisting of one-half inch superflexible coaxial cable, is three feet in length. The efficiency of this jumper is 98.63 percent. The input power to the third jumper to achieve the authorized effective radiated power is 47.2 Watts.

Between the transmitter and the third jumper is a coaxial cable adapter with a nominal insertion loss of 0.02 dB. This value corresponds to an efficiency of 99.54 percent. The necessary

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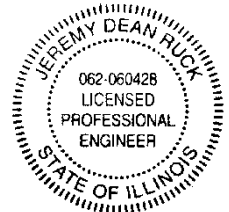
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input power to this adapter to achieve the authorized effective radiated power is 47.4 Watts, which rounds to 47 Watts. The input to this adapter is the output of the transmitter, thus the specified transmitter power output achieves the authorized effective radiated power.

The facility utilizes a directional antenna. This antenna has been installed in accordance with the instructions of the manufacturer. As previously stated, the antenna is oriented properly at an azimuth of 50 degrees true.

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, 2019

Jeremy D. Ruck, PE  
November 9, 2017

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