

**APPLICATION FOR A FM  
BROADCAST BOOSTER  
STATION LICENSE**

**FCC FORM 350**

**File Number – BMPFTB-20050629ADG**

**KBRU-FM1**

**(Facility Number 162588)**

**Commerce City, Colorado**

**CHANNEL 268 – 101.5 MHz**

**APPLICANT: On-Air Family, LLC**

**July, 2005**

**Prepared by:**



**BROADCAST TECHNICAL CONSULTANTS**

12585 Old Highway 280 East, Suite 102  
Chelsea, Alabama 35043  
(205) 618-2020

**ENGINEERING STATEMENT**

**Of**

**Lee S. Reynolds**

**And**

**Virgle Leon Strickland**

**In Support of an**

**Application for a**

**FM Booster Broadcast License**

**KBRU-FM1**

**Commerce City, Colorado**

**Channel 268 – 101.5 MHz**

**July, 2005**

**General**

As broadcast technical consultants doing business as Reynolds Technical Associates (“RTA”), we have been authorized by On-Air Family, LLC to prepare the engineering portion of an application for a license (FCC Form 350) for KBRU-FM1, Commerce City, Colorado.

The Applicant was issued a construction permit (file number BMPFTB-20050629ADG) authorizing construction of the booster facility of KBRU-FM1. The transmitter facility has been completed as authorized by the construction permit. The KBRU-FM1 facility

will broadcast the programming of KBRU-FM, Strasburg, Colorado, by receiving the signal from the main studio of KBRU-FM by using a STL (microwave).

**Special Operating Conditions Number 2**  
**(Spurious Emissions Requirements)**  
**(Exhibit E, Figure 1 through Exhibit E, Figure 3)**

Exhibit E, Figures 1 through 3 addresses the spurious emissions requirements listed in special operating condition 2. All measurements were made with all stations simultaneously utilizing the shared antenna.

**Special Operating Condition Number 3**  
**(Human Exposure to Radiofrequency Radiation)**  
**(No Exhibit)**

A policy is in effect for persons having access to the site/tower, stating that, the licensee will reduce power or cease operation, whichever is necessary to prevent excessive human radiofrequency radiation. Warning signs have been placed at appropriate intervals on the fence that restrict unauthorized accessibility to the site.

## **Conclusion**

This statement/application has been prepared for The Applicant by utilizing the information supplied by the Applicant. Careful examination of the information was performed to insure that all documentations were in full compliance with the Rule and Regulations of the Commission. We welcome the opportunity to discuss with the staff of the Federal Communications Commission the engineering data contained in this application. Should any questions arise concerning the information, please contact us.

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**Statement of the Consultants**

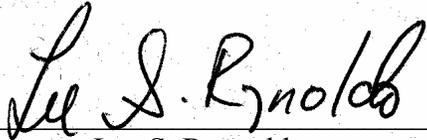
The instant engineering statement was prepared for “The Applicant” and supports an application for a FM Broadcast station license for KBRU-FM1, Commerce City, Colorado. It was developed by RTA and may not be used for purposes other than submission to the Commission by the applicant.

It may not be reproduced in its entirety, or in part, by anyone (other than from the Commission) without the written consent of RTA.

It is prepared for The Applicant under contractual agreement, and its certification by RTA is used accordingly. If The Applicant fails in its contractual obligation, RTA reserves the right to withdraw its certification.

The information in this application is compiled from the most recent Commission and outside data. RTA is not responsible for errors resulting from incorrect data or unpublished rule and procedure changes.

For RTA:

  
\_\_\_\_\_  
Lee S. Reynolds

July 27<sup>th</sup>, 2005

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(205) 618-2020

KBRU-FM 1 - 101.5 MHz.  
Booster Facility  
RF Equipment Performance Measurements  
Commerce City, Colorado  
July 2005

**Technical Statement:**

KBRU Radio has retained the services of J.C. Humke and Associates, Inc. to perform RF Equipment Performance Measurements for the KBRU-FM 1 Booster facility, as required by FCC rules section 73.1590.

This regulation requires that the transmitted signal of the station be measured for compliance with the FM transmission system requirements set forth in FCC rules section 73.317, which states as follows:

FM transmission system requirements. – (a) FM broadcast stations employing transmitters authorized after January 1, 1960, must maintain the bandwidth occupied by their emissions in accordance with the specifications detailed below. FM broadcast stations employing installed or type accepted before January 1, 1960, must achieve the highest degree of compliance with these specifications practicable with their existing equipment. In either case, should harmful interference to other authorized stations occur, the licensee shall correct the problem promptly or cease operation.

(b) Any emission appearing on a frequency removed from the carrier by between 120 kHz and 240 kHz inclusive must be attenuated by at least 25 dB below the level of the unmodulated carrier. Compliance with this requirement will be deemed to show the occupied bandwidth to be 240 kHz or less.

(c) Any emission appearing on a frequency removed from the carrier by more than 240 kHz and up to and including 600 kHz must be attenuated by at least 35 dB below the level of the unmodulated carrier.

(d) Any emission appearing on a frequency removed from the carrier by more than 600 kHz must be attenuated by at least  $43 + 10 \log_{10}(\text{Power, in watts})$  dB below the level of the unmodulated carrier, or 80 dB, whichever is the lesser attenuation.

(e) Preemphasis shall not be greater than the impedance-frequency characteristics of a series resistance network having a time constant of 75 microseconds. ( see upper curve of Figure 2 of 73.333.)

\* \* \* \* \*

J.C. Humke and Associates, Inc., 5457 South Jericho Way, Centennial, CO 80015-3648

KBRU-FM 1 - 101.5 MHz.  
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Spectrum analysis measurements performed near the KBRU-FM 1 booster transmitter site on Tuesday, July 26, 2005 between 9:30 AM and 11:30 AM Mountain Daylight Time, show that the transmitter facility far exceeds the requirements of FCC rule 73.317.

The measurements are included as Exhibit 300. A Tektronix 7L12-7613 spectrum analyzer was used, serial numbers B213740 and B377996. During the measurement of the second and third harmonics, a fundamental carrier filter was used to prevent overload of the analyzer input amplifier and mixer stages from producing harmonic signals within the analyzer itself. This filter affects the levels of actual harmonics by less than 1 dB, while lowering the fundamental carrier input by approximately 35 dB.

KBRU-FM 1 and KSIR-FM 3 boosters share the same tower facility. The output from each booster transmitter is combined through a multi-cavity combiner to feed a common antenna system. This exceptional filtering resulted in no spurious emissions being measured off air at the monitoring location, located in the parking lot of the Highpoint office building at 2170 South Parker Road, near the booster site.

Respectfully submitted,



Joel Clark Humke  
FCC PG-15-8908  
July 27, 2005

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**KBRU EQUIPMENT PERFORMANCE MEASUREMENTS**

<u>Frequency from Carrier</u>	<u>Measured Suppression</u>	<u>FCC Required Suppression</u>
120 KHz.	-35 dB	-25 dB
121 to 239 KHz.	-35 dB	-25 dB
240 KHz.	-65 dB	-25 dB
241 KHz to 599 KHz.	- 65 dB	-35 dB
600 KHz.	> -85 dB	-35 dB
601 KHz Up	> -85 dB	-80 dB
203.0 MHz. 2 <sup>nd</sup> Harmonic	-90 dB	-80 dB
304.5 MHz. 3 <sup>rd</sup> Harmonic	-100 dB	-80 dB

Measurements were taken in the parking lot of the Highpoint office building located at 2170 South Parker Road.

Carrier reference level +20 dBm.